


TRI-COUNTY
Multi-Jurisdictional Natural Hazards Mitigation Plan

Participants

Bartonville, Village of
Chillicothe, City of
East Peoria, City of
Eureka, City of
Germantown Hills, Village of
Greater Peoria Sanitary District
Hanna City, Village of
Morton, Village of
Pekin, City of
Peoria, City of
Peoria Heights, Village of
Roanoke, City of
Tazewell County
Tri-County Regional Planning Commission
Tremont, Village of
Washington, City of
Woodford County

January 2019
Updated November 2020

The five year update of this Plan must be completed on or before October 23, 2024.

ACKNOWLEDGEMENTS

Updating this Plan in a way that will be useful for the participating jurisdictions involved a considerable amount of cooperation. For this update, more emphasis was needed on developing specific mitigation projects for the participating jurisdictions. Through this effort, approximately 220 specific mitigation actions are identified and described. This is a substantial accomplishment that was achieved through many phone calls, one-on-one discussions, and small group meetings that were conducted in addition to the Mitigation Advisory Committee meetings held in East Peoria.

This updated Plan should serve as the "road map" to better protect current residents from the physical and emotional impacts caused by severe weather and other natural hazards. Information assembled in this Plan clearly describes these impacts, and the weather information collected over the past 60+ years in the Tri-County area and the rest of Illinois supports the weather findings in our neighboring states—that there has been a continuing increase in the number of severe weather events. Even if this increase was not occurring, this Plan provides local leaders with the information they need to reduce the impacts that will continue to be caused by future severe weather events.

We strongly encourage those who read this Plan and other residents throughout the Tri-County area to support their county EMA coordinators and municipal officials in actively seeking the implementation of the mitigation actions identified in this document.

Identifying, verifying and gathering information about severe weather events involved research into various files and discussions with individuals. Chris Miller and Heather Stanley at the National Weather Service Weather Forecast Office in Lincoln kindly responded to requests for additional information and helped verify natural hazard events, especially tornadoes, within the Tri-County area. Tony O'Neal, Ameren Illinois, was able to provide infrastructure damage information for several of the major severe storms and severe winter storms between 2010 and 2017. This information was not available in state or federal databases and provides a glimpse into the scope of the damages sustained to infrastructure as a result of natural hazard events that have impacted the area.

Cover photographs from top to bottom and left to right:

- *November 17, 2013 EF4 tornado destroyed homes in Washington*
  Photograph obtained from National Weather Service Weather Forecast Office in Lincoln
- *April 17 & 18, 2013 flooding damaged homes in Roanoke*
  Photograph provided courtesy of the Village of Roanoke
- *February 28, 2017 EF3 tornado damaged homes near Washburn*
  Photograph provided courtesy of the Woodford County Emergency Management Agency

TRI-COUNTY MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN

TAZEWELL COUNTY, ILLINOIS
WOODFORD COUNTY, ILLINOIS
PARTICIPATING MUNICIPALITIES & GPSD – PEORIA COUNTY, ILLINOIS

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

LIST OF FIGURES CONTINUED…

Researched and written for the Tri-County Mitigation Advisory Committee
by Andrea J. Bostwick, Zachary A. Krug and Greg R. Michaud
American Environmental Corporation

American
Environmental

[this page is intentionally left blank]

1.0 INTRODUCTION

1.0 INTRODUCTION

Each year natural hazards (i.e., severe thunderstorms, tornadoes, severe winter storms, flooding, etc.) cause damage to property and threaten the lives and health of the residents of the Tri-County area. Since 1973, the Tri-County area has been a part of 12 federal disaster declarations. **Figure 1** identifies each declaration including the year the disaster was declared, the counties covered under the declaration and the type of natural hazard that triggered the declaration.

Figure 1
Federal Disaster Declarations: Tri-County Area

Declaration Number	Year	Natural Hazard(s) Covered by Declaration	County(s) Covered
373	1973	severe storms; flooding	Tazewell & Peoria
438	1974	severe storms; flooding	Tazewell, Woodford & Peoria
583	1979	severe storms; flooding	Tazewell, Woodford & Peoria
674	1982	severe storms; flooding	Tazewell, Woodford & Peoria
735	1985	severe storms; flooding	Tazewell, Woodford & Peoria
871	1990	severe storms; flooding; tornadoes	Tazewell
1469	2003	severe storms; tornadoes	Tazewell & Woodford
1681	2006	severe winter storm	Woodford
1800	2008	severe storms; flooding	Woodford & Peoria
1960	2011	severe winter storm	Tazewell, Woodford & Peoria
4116	2013	severe storms; straight-line winds; flooding	Tazewell, Woodford & Peoria
4157	2013	severe storms; straight-line winds; tornadoes	Tazewell & Woodford

Since 2010, Tazewell and Woodford counties and select participating Peoria County municipalities have experienced 343 natural hazard events including thunderstorms with damaging winds, hail one inch or greater in diameter, lightning strikes, severe winter storms, extreme cold, riverine flooding, flash flooding, tornadoes, drought, excessive heat and landslides. While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning.

While natural hazards cannot be avoided, their impacts can be reduced through effective hazard mitigation planning. This prevention-related concept of emergency management often receives the least amount of attention, yet it is one of the most important steps in creating a hazard-resistant community.

What is hazard mitigation planning?

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural hazards. This process helps the participating jurisdictions reduce their risk from natural hazards by identifying vulnerabilities and developing mitigation actions to lessen and sometimes even eliminate the effects of a hazard. The results of this process are documented in a natural hazards mitigation plan.

Why prepare an all hazards mitigation plan?

By preparing, adopting and updating a natural hazards mitigation plan, participating jurisdictions become eligible to apply for and receive federal hazard mitigation funds to implement mitigation actions identified in the plan. These funds can help provide local government entities with the opportunity to complete mitigation projects that would not otherwise be financially possible.

The federal hazard mitigation funds are made available through the Disaster Mitigation Act of 2000, an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, which provides federal aid for mitigation projects, but only if the local government entity has a Federal Emergency Management Agency (FEMA) approved hazard mitigation plan.

How is this plan different from other emergency plans?

A natural hazards mitigation plan is aimed at identifying projects and activities that can be conducted prior to a natural disaster, unlike other emergency plans which provide direction on how to respond to a disaster after it occurs. This is the second update of the Tri-County hazard mitigation plan which was last updated in 2010. This update describes in detail the actions that can be taken to help reduce or eliminate damages caused by specific types of natural hazards.

1.1 PARTICIPATING JURISDICTIONS

Recognizing the benefits of having an updated natural hazards mitigation plan, the Tri-County Regional Planning Commission invited Tazewell and Woodford counties and all the municipalities within these two counties to participate. In addition, the municipalities within Peoria County were invited to participate since the County chose to prepare its own multi-hazard mitigation plan in 2017 covering just the unincorporated areas of the County. **Figure 2** identifies the participating jurisdictions that are represented in the Plan.

Figure 2
Participating Jurisdictions Represented in the Plan

- Tazewell County
  - East Peoria, City of
  - Morton, Village of
  - Pekin, City of
  - Tremont, Village of
  - Washington, City of
- Woodford County
  - Eureka, City of
  - Germantown Hills, Village of
  - Roanoke, Village of
- Participating Peoria County Municipalities
  - Bartonville, Village of
  - Chillicothe, City of
  - Greater Peoria Sanitary District
  - Hanna City, Village of
  - Peoria, City of
  - Peoria Heights, Village of

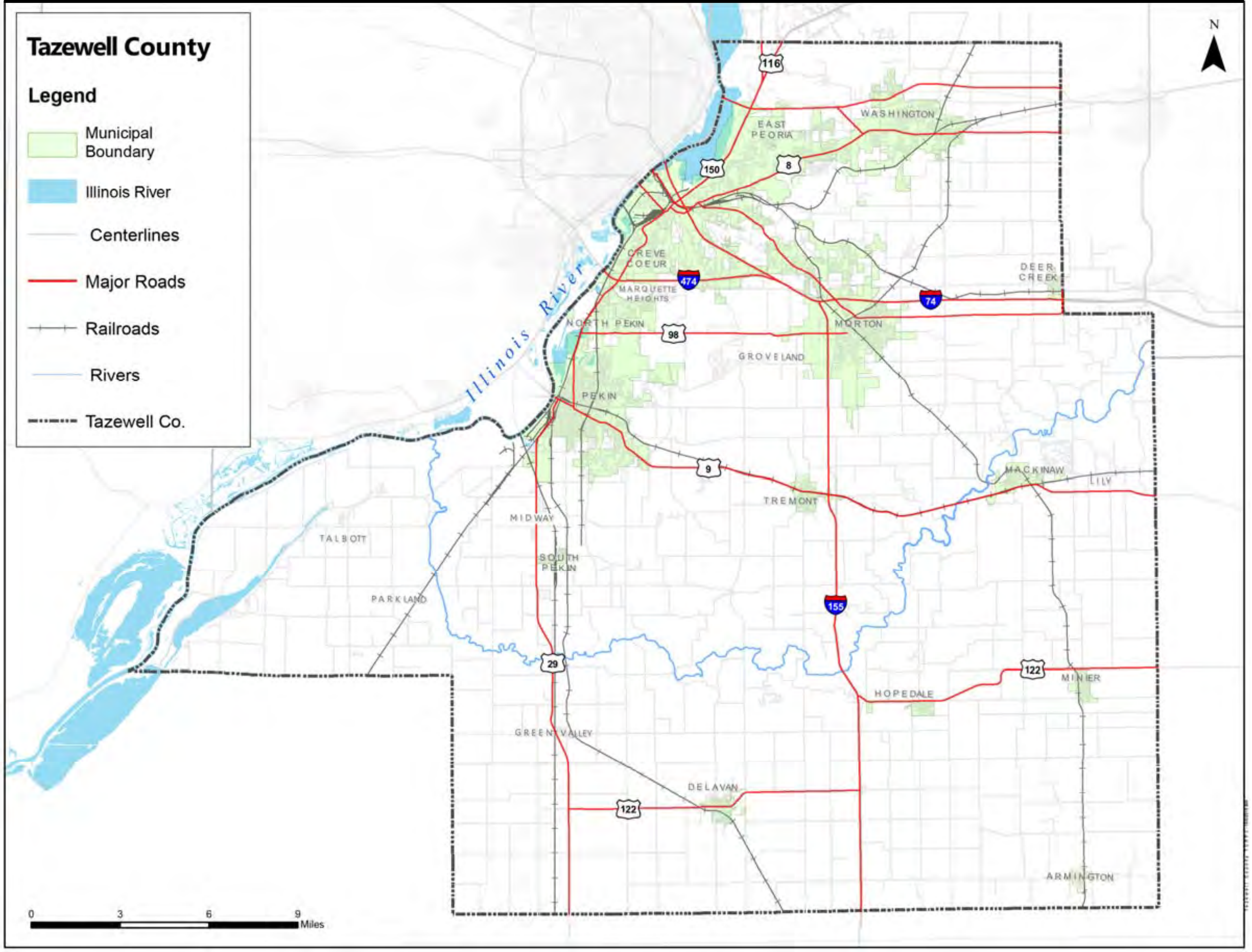
The following provides information by county on the geography, topography, economy and population/demographics of the study area as well as land use and development trends.

1.1.1 TAZEWELL COUNTY

COUNTY PROFILE

Tazewell County is located in central Illinois and is part of the Peoria-Pekin Metropolitan Statistical Area (MSA), which also includes Woodford and Peoria counties. The County covers approximately 658 square miles. **Figure 3** provides a location map of Tazewell County and the

Figure 3
Tazewell County Location Map



participating municipalities. The topography is generally flat to moderate sloping with the areas adjacent to streams and drainage ways gently sloping to very steep. The County is located between the metropolitan areas of Peoria and Bloomington-Normal and is bounded to the north by Woodford County, to the east by McLean County, to the south by Logan and Mason counties, and to the west by the Illinois River. The City of Pekin is the county seat.

Tazewell County has traditional been known for its agriculture history and economy. According to the 2012 Census of Agriculture, there were 942 farms in Tazewell County occupying approximately 81% (337,376 acres) of the total land area in the County. The major crops include corn, soybeans, vegetables, pumpkins and popcorn while the major livestock includes hogs and pigs, sheep and lambs and turkeys. The County ranks 1st in the State for pumpkins, 2nd for vegetables and popcorn, 25th for corn and 26th for soybeans. In terms of livestock, the County ranks 7th for sheep and lambs, 8th for turkeys and 34th for hogs and pigs. Tazewell County ranks 18th in crop cash receipts and 24th in livestock cash receipts.

Manufacturing is the largest industry in Tazewell County. A total of 15,427 jobs in manufacturing exist in the county or 27% of the workforce. The top three private sector companies in Tazewell County are Caterpillar with 3,710 employees, Walmart with 1,351 employees, and Farmers Insurance with 1,260 employees. According to U.S. Cluster Mapping the top traded economic cluster in the County is distribution and electronic commerce with 3,720 jobs in 2016.

Figure 4 provides demographic data on the County and each of the participating municipalities along with information on housing units and assessed values. The assessed values are for all residential structures and associated buildings (including farm homes and building associated with the main residence.) The assessed value of a residence in Tazewell County is approximately one-third of the market value.

Figure 4
Demographic Data by Participating Jurisdiction – Tazewell County

Participating Jurisdiction	Population (2010)	Projected Population (2025)	Total Area (Sq. Miles) (2010)	Number of Housing Units (2010)	Housing Unit Density (Units/ Sq. Mile) Rounded Up	Total Assessed Value of Housing Units (2016)
Tazewell County (unincorporated)	25,755	25,953	586.280	10,285	18	$408,622,464
East Peoria	23,402	23,582	22.144	10,590	531	$307,711,479
Morton	16,267	16,392	12.997	6,973	539	$345,125,877
Pekin	34,094	34,356	15.137	14,714	1,011	$318,602,708
Tremont	2,236	2,253	0.944	942	---	$34,645,060
Washington	15,134	15,250	8.187	6,189	757	$289,130,261

Sources: Illinois Department Public Health, Population Projects for Illinois Counties 2010 to 2025.
Tazewell County Assessments Office.
U. S. Census Bureau, 2010 Census U.S. Gazetteer Files.
U.S. Census Bureau, American FactFinder.

LAND USE AND DEVELOPMENT TRENDS

Population growth and economic development are two major factors that trigger changes in land use. Tazewell County is the largest county by area in the Tri-County region and has a high percentage of farmland. As discussed previously, approximately 81% of the land area within the County is used for farming practices. Agriculture is and will continue to be a major industry within the County and a vital part of the County's economy.

The City of East Peoria has become a regional retail hub, offering a wide selection of nationally recognized retailers and restaurants. It is also home of the Per-A-Dice Hotel and Casino. Pekin, Morton, and Washington are communities of choice for family living. The County is also home to Illinois Central College's main campus in East Peoria, as well as their south campus in Pekin.

Between 2000 and 2010 the population increased by 5% from 128,485 to 135,394. This growth is part of a larger trend. U.S. Census Bureau records indicate that between 1900 and 2000, the population of Tazewell County increased over 300% from 33,221 to 128,485. All of the participating municipalities have experienced increases in their populations, some significantly, since 2000. Washington had the largest increase of 40% from 10,841 to 15,134. Tremont's population increased by 10% from 2,029 to 2,236; Morton increased by 7% from 15,198 to 16,267; East Peoria increased by 3% from 22,638 to 23,402 and Pekin increased by 1% from 33,857 to 34,094.

According the Tazewell County Community Development Administrator, no substantial changes in development have occurred within hazard prone areas of the County that have impacted its overall vulnerability since the first Plan update was approved. In terms of the participating jurisdictions, none have experienced substantial changes in development that have impacted their overall vulnerability since the first Plan update was approved with the exception of East Peoria according to the Tri-County Regional Planning Commission.

Between 2012 and 2017 sixteen commercial development projects, seven of them multi-tenant, the East Peoria City Hall and the East Peoria Library/Civic Plaza were constructed in the Levee District of East Peoria. These structures are protected from the 1% annual chance flood (100-year flood) by a provisionally-accredited levee. While the levee reduces the risk of flooding, it cannot eliminate all flood risk. The USACE's Levee Safety Senior Oversight Group considers the risk associated with this levee to be low. This change in development has the potential to increase the City's vulnerability to flooding along the riverfront if a flood overtops or breaches the levee allowing floodwaters to inundate the protected areas behind. No other substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the last Plan update was completed.

There are no large-scale economic initiatives underway in the County. Substantial changes in land use (from forested and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No sizeable increases in residential or commercial/industrial developments are expected within the next five years.

1.1.2 WOODFORD COUNTY

COUNTY PROFILE

Woodford County is located in central Illinois and is part of the Peoria-Pekin Metropolitan Statistical Area (MSA), which also includes Tazewell and Peoria counties. The County covers approximately 542 square miles. **Figure 5** provides a location map of Woodford County and the participating municipalities. The topography is generally flat to moderate sloping with the areas adjacent to streams and drainage ways gently sloping to very steep. The County is located between the metropolitan areas of Peoria and Bloomington-Normal and is bounded to the north by Marshall and LaSalle counties, to the east by Livingston County, to the south by McLean and Tazewell counties, and to the west by the Illinois River. The City of Eureka is the county seat.

Woodford County has traditionally been known for its prime agricultural land and family farms. According to the 2012 Census of Agriculture, there were 958 farms in Woodford County occupying almost 96% (322,983 acres) of the total land area in the County. The major crops include corn and soybeans while the major livestock includes hogs and pigs, roosters, pullets for laying and layers. The County ranks 23rd in the State for corn and 28th for soybeans. In terms of livestock, the County ranks 1st for roosters, for pullets for laying, 7th for layers and 13th for hogs and pigs. Woodford County ranks 22nd in crop cash receipts and 18th in livestock cash receipts.

Woodford County is home to Eureka College, the college home of President Ronald Reagan. Manufacturing in the County does not have a large base; however, manufacturing is the largest industry in Woodford County. A total of 2,516 jobs in manufacturing exist in the county or 23% of the workforce. The top three private sector companies in in Woodford County are Eureka Community Unit School District 140 with 260 employees, Parsons Company with 221 employees, and CNH America LLC with 208 employees. According to U.S. Cluster Mapping the top traded economic cluster in Woodford County is distribution and electronic commerce with 976 jobs in 2016.

Figure 6 provides demographic data on the County and each of the participating municipalities along with information on housing units and assessed values. The assessed values are for all residential structures and associated buildings (including farm homes and building associated with the main residence.) The assessed value of a residence in Woodford County is approximately one-third of the market value.

LAND USE AND DEVELOPMENT TRENDS

Population growth and economic development are two major factors that trigger changes in land use. Woodford County is largely rural with a growing bedroom community population. Agricultural dominates the majority of Woodford County land use. As discussed previously, approximately 96% of the land area within the County is used for farming practices. Agriculture is and will continue to be a major enterprise within the County and a vital part of the County's economy.

Figure 5
Woodford County Location Map

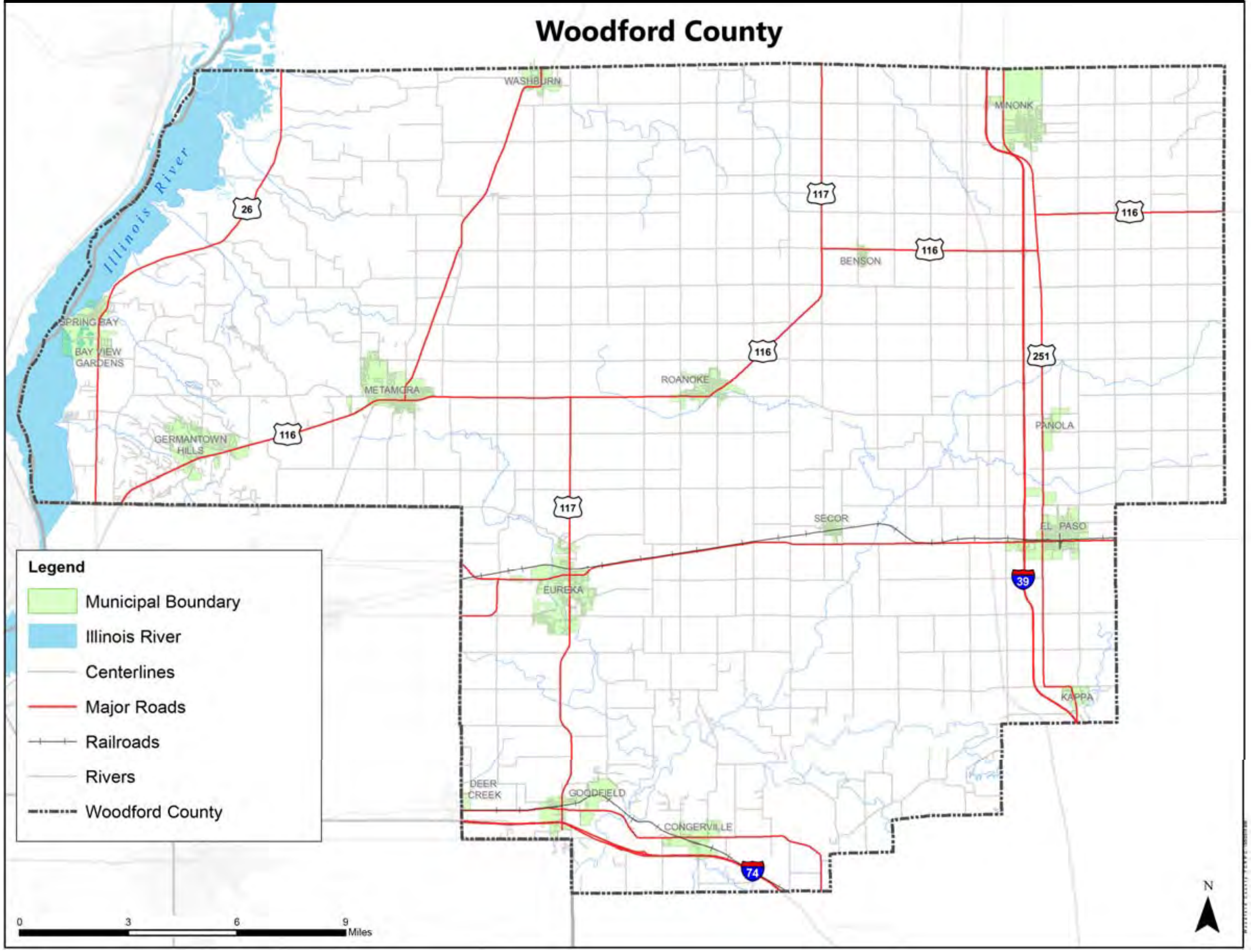


Figure 6
Demographic Data by Participating Jurisdiction – Woodford County

Participating Jurisdiction	Population (2010)	Projected Population (2025)	Total Area (Sq. Miles) (2010)	Number of Housing Units (2010)	Housing Unit Density (Units/ Sq. Mile) Rounded Up	Total Assessed Value of Housing Units (2016)
Woodford County (unincorporated)	14,955	15,998	524.014	5,755	12	$260,938,760
Eureka	5,295	5,664	3.071	2,023	670	$58,089,549
Germantown Hills	3,438	3,678	1.673	1,218	749	$81,900,782
Roanoke	2,065	2,209	0.961	867	---	$22,289,797

Sources: Illinois Department Public Health, Population Projects for Illinois Counties 2010 to 2025.
Woodford County Supervisor of Assessments.
U. S. Census Bureau, 2010 Census U.S. Gazetteer Files.
U.S. Census Bureau, American FactFinder.

Between 2000 and 2010 the population increased by 9% from 35,469 to 38,664. This is part of a larger trend. U.S. Census Bureau records indicates that between 1900 and 2000, the population of Woodford County increased by 62% from 21,822 to 35,469. All of the participating municipalities have experienced increased in their populations since 2000. Germantown Hills had the largest increase of 62.9% from 2,111 to 3,438 while Eureka increased by 8.7% from 4,871 to 5,295 and Roanoke increased by 3.6% from 1,994 to 2,065.

No substantial changes in development within hazard prone areas have occurred within Woodford County that have impacted its overall vulnerability since the first Plan update was approved according to the Woodford County Emergency Management Agency Director with the exception of the buyout of twelves homes located in floodways between 2013 and 2015. In terms of the participating jurisdictions, none have experienced substantial changes in development that have impacted their overall vulnerability since the first Plan update was approved according to the Tri-County Regional Planning Commission.

There are no large-scale economic initiatives underway in the County. Substantial changes in land use (from forested and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No sizeable increases in residential or commercial/industrial developments are expected within the next five years.

1.1.3 PEORIA COUNTY (INCLUDING THE PARTICIPATING JURISDICTIONS)

COUNTY PROFILE

An overview of Peoria County is being provided given the interconnectedness between the participating municipalities, the Greater Peoria Sanitary District (GPSD) and Peoria County. This information is necessary for the reader when evaluating the natural hazards and mitigation actions contained later in this Plan.

Peoria County is located in central Illinois and is home to the region's metropolitan center, the City of Peoria. Peoria County is part of the Peoria-Pekin Metropolitan Statistical Area (MSA), which also includes Tazewell and Woodford counties. The County covers approximately 631 square miles. **Figure 7a** provides a location map of Peoria County and the participating municipalities while **Figure 7b** identifies the GPSD's boundaries. The topography is generally flat to moderate sloping with the areas adjacent to streams and drainage ways gently sloping to very steep. The County is bounded to the north by Stark and Marshall counties, to the east by Illinois River, to the south by Fulton County and to the west by Knox County. The City of Peoria is the county seat.

Agriculture has played a major role in making Peoria what it is today and is still the largest land use in the County. According to the 2012 Census of Agriculture, there were 917 farms in Peoria County occupying approximately 63% (250,263 acres) of the total land area in the County. The major crops include corn, soybeans, and forage-land used for all hay and haylage, grass silage and greenchop while the major livestock includes hogs and pigs, cattle and calves, layers and broilers. The County ranks 35th in the State for 45th in the state forage-land used for all hay and haylage, grass silage and greenchop, 45th for corn and 53rd for soybeans. In terms of livestock, the County ranks 12th for broilers, 26th for layers, 35th for horses, 36th for cattle and calves and 51st for hogs and pigs. Peoria County ranks 35th in crop cash receipts and 46th in livestock cash receipts.

Naturally, residents and visitors alike equate Peoria with Caterpillar Inc., but the region also boasts the USDA's National Center for Agricultural Utilization Research Lab, a renowned medical community with the only Level 1 trauma center in the Tri-County region, and many innovative high-tech firms. The Peoria Next Innovation Center, a technology business incubator, is leading the region's growth in its manufacturing economy through innovation and improving the manufacturing process.

With the presence of Caterpillar Inc., one would equate the largest industry in Peoria County as manufacturing. However, the largest industry in Peoria County is actually health care and social services with 24,327 jobs or 24% of the workforce. The top three private sector companies in Peoria County are Caterpillar Inc. with 8,157 employees, OSF Saint Francis Medical Center with 5,800 employees, and Unity Point Health Methodist with 2,979 employees. According to US cluster Mapping, the top traded economic cluster is Business Services with 20,957 jobs in 2016.

In addition, the County is also home to the Greater Peoria Sanitary District, a special government unit organized in 1927 by Illinois statute for the purpose of treating sewage before it's discharged into the Illinois River. The GPSD serves an area of approximately 66 square miles and treats wastewater collected from 716 miles of sewer. Its operational area includes Peoria, Peoria Heights, West Peoria, Bartonville, Bellevue as well as adjacent unincorporated areas.

Figure 8 provides demographic data on each of the participating Peoria County municipalities along with information on housing units and assessed values. The assessed values are for all residential structures and associated buildings. The assessed value of a residence in Peoria County is approximately one-third of the market value.

Figure 7a
Peoria County Location Map

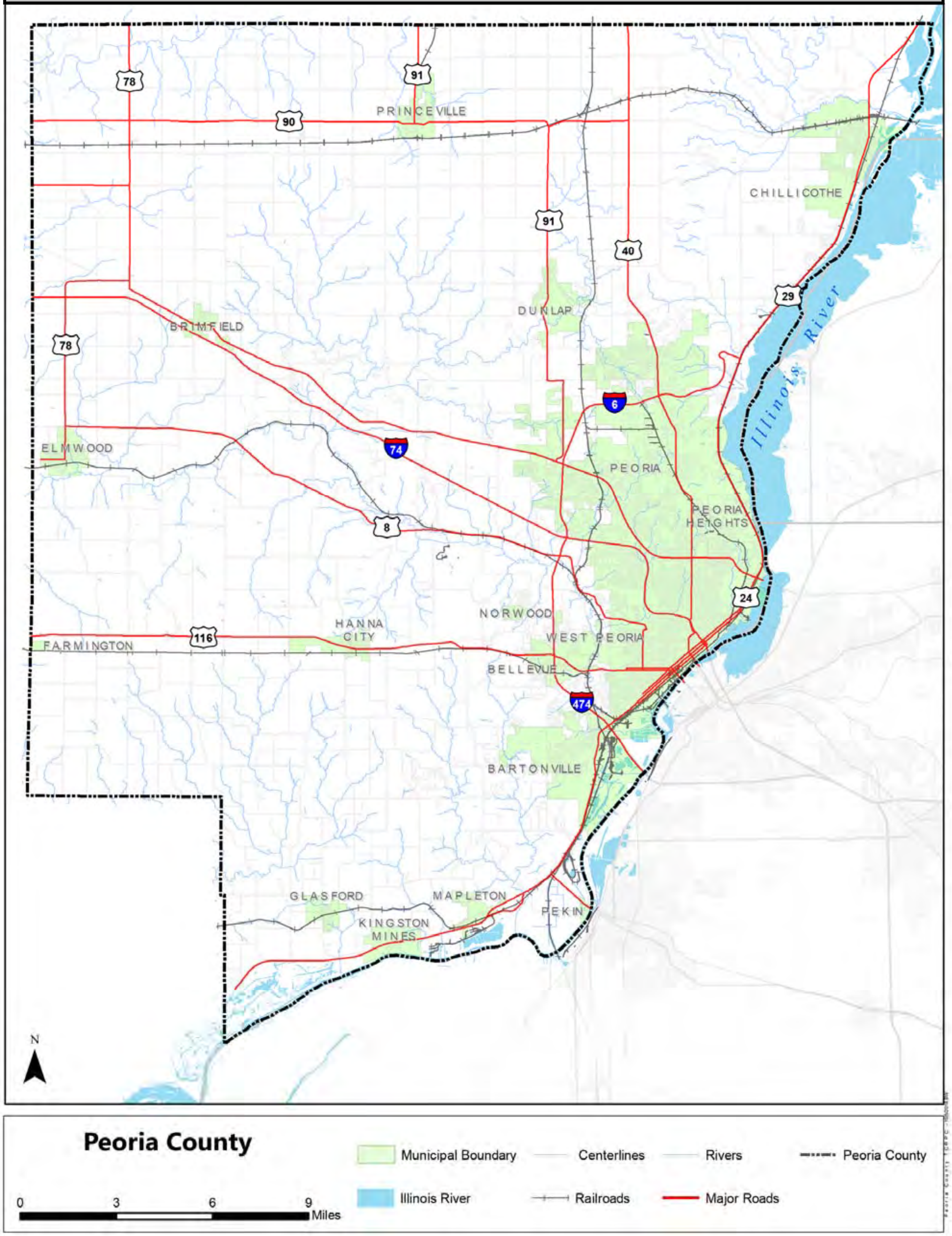


Figure 7b
Greater Peoria Sanitary District Boundary Map

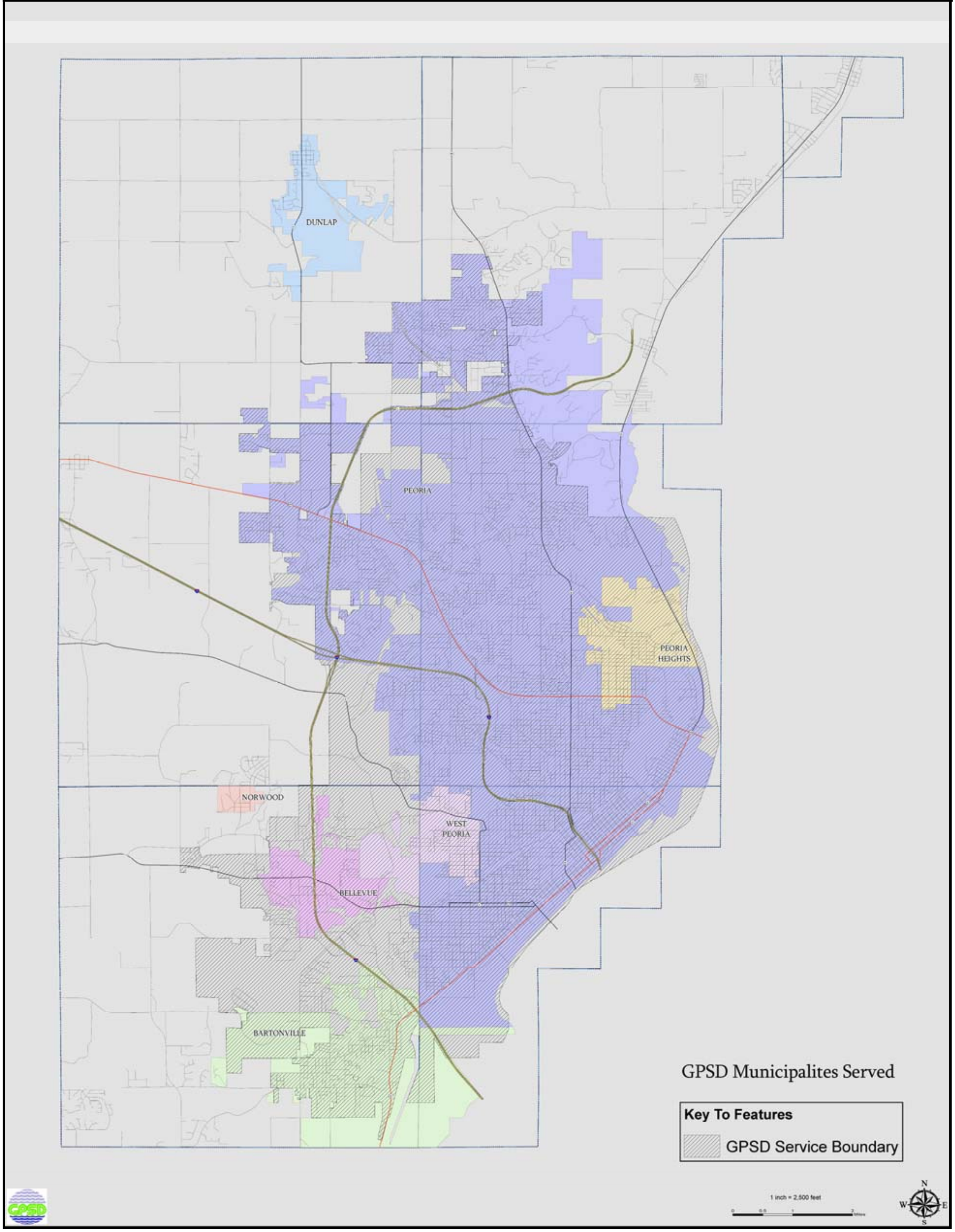


Figure 8
Demographic Data for Participating Peoria County Municipalities

Participating Jurisdiction	Population (2010)	Projected Population (2025)	Total Area (Sq. Miles) (2010)	Number of Housing Units (2010)	Housing Unit Density (Units/ Sq. Mile) Rounded Up	Total Assessed Value of Housing Units (2016)
Bartonville	6,471	6,338	8.612	2,812	327	$71,993,160
Chillicothe	6,097	5,972	5.416	2,719	502	$75,928,298
Hanna City	1,225	1,200	0.478	584	---	$15,185,830
Peoria	115,007	112,649	50.227	52,621	1,048	$1,372,986,619
Peoria Heights	6,156	5,962	6.973	3,093	444	$72,652,006

Sources: Illinois Department Public Health, Population Projects for Illinois Counties 2010 to 2025.
Peoria County Clerk's Office.
U. S. Census Bureau, 2010 Census U.S. Gazetteer Files.
U.S. Census Bureau, American FactFinder.

LAND USE AND DEVELOPMENT TRENDS

Population growth and economic development are two major factors that trigger changes in land use. Peoria County is the largest county by population in the Tri-County region and is home to the region's metropolitan center, the City of Peoria. As discussed previously, approximately 63% of the land area within the County is used for farming practices. Agriculture is an important part of the County's economy and will continue to be a key enterprise.

The City of Peoria is primarily known for heavy manufacturing with the strong presence of Caterpillar Inc. and Komatsu Mining Division; however, it is also home of USDA's National Center for Agriculture Utilization Research Lab, a renowned medical community, and several post-secondary educational institutions. The County is home to Bradley University, Illinois Central College's Downtown and North campuses, Robert Morris College, Midstate College and the University of Illinois College of Medicine.

Between 2000 and 2010 the population increased by 2% from 183,433 to 186,494. U.S. Census Bureau records indicate that between 1900 and 2000, the population of Peoria County has increased over 107% from 88,608 to 183,433. All of the participating municipalities, with the exception of Peoria Heights, experienced increases in their populations since 2000. Hanna City had the largest increase of 21% from 1,013 to 1,225. Bartonville's population increased by 3% from 6,310 to 6,471; Chillicothe increased by 2% from 5,996 to 6,097 and Peoria increased by 2% from 112,936 to 115,007. Peoria Heights population decreased by 8% from 6,635 to 6,087.

According to the Tri-County Regional Planning Commission no substantial changes in development within hazard prone areas have occurred within the participating Peoria County municipalities that have impacted their overall vulnerability since the first Plan update was approved, with the exception of Peoria. In 2017 the Riverfront Village Platform and parking deck, which housed three restaurants and 200 parking spaces and was located in the floodplain of the Illinois River, was demolished and replaced with green space. This change in development decreased the City's vulnerability to flooding along the riverfront. No other substantial changes in development have occurred in hazard prone areas that would increase or decrease the City's vulnerability since the last Plan update was completed.

With the exception of a small housing development being built in Peoria Heights, there are no large-scale economic initiatives underway in the participating municipalities. Substantial changes in land use (from forested land to residential, commercial and industrial) are not anticipated within the participating municipalities in the immediate future. No sizeable increases in residential or commercial/industrial developments are expected within the next five years.

2.0 PLANNING PROCESS

2.0 PLANNING PROCESS

The Tri-County Multi-Jurisdictional Natural Hazards Mitigation Plan (the Plan) was updated through the Tri-County Mitigation Action Committee (MAC or Committee). The Plan was prepared to comply with the Disaster Mitigation Act of 2000 and incorporates the Federal Emergency Management Agency's (FEMA) 10-step planning process approach. **Figure 9** provides a brief description of the process utilized to prepare this Plan.

Figure 9
Description of Planning Process

Tasks	Description
Task One: Organize	The MAC was reformed with broad representation and specific expertise to assist the Tri-County Regional Planning Commission and the Consultant in updating the Plan.
Task Two: Public Involvement	Early and ongoing public involvement activities were conducted throughout the Plan's development to ensure the public was given every opportunity to participate and provide input.
Task Three: Coordination	Agencies and organizations were contacted to identify plans and activities currently being implemented that impact or might potentially impact hazard mitigation activities.
Task Four: Risk Assessment	The Consultant identified and profiled the natural hazards that have impacted the Tri-County area (Tazewell and Woodford counties and select municipalities in Peoria County) and conducted a vulnerability assessment to evaluate the risk to each participating jurisdiction.
Task Five: Goal Setting	After reviewing existing plans and completing the risk assessment, the Consultant assisted the MAC in updating the goals and objectives for the Plan.
Task Six: Mitigation Activities	The participating jurisdictions were asked to identify mitigation actions that had been started and/or completed since the 2010 Plan was adopted. In addition, they were also asked to identify any new mitigation actions based on the results of the risk assessment. The new mitigation actions were then analyzed, categorized and prioritized.
Task Seven: Draft Plan	The updated draft Plan summarized the results of Tasks One through Six. In addition, it described the responsibilities to monitor, evaluate and update the Plan. The updated draft Plan was reviewed by the participants and a public forum was held to give the public an additional opportunity to provide input. Comments received were incorporated into the updated draft Plan and submitted to the Illinois Emergency Management Agency (IEMA) and FEMA for review and approval.
Task Eight: Final Plan	Comments received from IEMA and FEMA were incorporated in to the final updated Plan. The final updated Plan was then submitted to the counties and participating municipalities for adoption. The Plan will be reviewed periodically and updated again in five years.

The Plan update and development was led at the staff level by Reema Abi-Akar, Planner I and Michael Bruner, Planner I of the Tri-County Regional Planning Commission. American Environmental Corp. (AEC), an environmental consulting firm with experience in hazard mitigation, risk assessment and public involvement, was employed to guide the Commission and participating jurisdictions through the planning process.

Participation in the planning process, especially by the counties and local government representatives, was crucial to the update and development of the Plan. To ensure that all participating jurisdictions took part in the planning process, participation requirements were established. Each participating jurisdiction agreed to satisfy the following requirements in order to be included in the updated Plan. All of the participating jurisdictions met the participation requirements.

- Attend MAC meetings.
- Submit a list of documents (i.e., plans, studies, reports, maps, etc.) relevant to the hazard mitigation planning process.
- Identify and submit a list of critical infrastructure and facilities.
- Review the risk assessment and provide information on additional events and damages.
- Participate in the update of the mitigation goals.
- Submit a list of mitigation actions started and/or completed since the adoption of the 2010 Plan, if applicable.
- Identify and submit a list of new mitigation actions.
- Review and comment on the updated draft Plan.
- Formally adopt the updated Plan.
- Where applicable, incorporate the updated Plan into existing planning efforts.
- Participate in the updated Plan maintenance.

2.1 MITIGATION ADVISORY COMMITTEE

As previously mentioned, at the start of the planning process, the Tri-County Mitigation Action Committee (MAC) was reformed to update the hazard mitigation plan. The MAC included representatives from each participating jurisdiction, as well as emergency services (fire, law enforcement and American Red Cross), healthcare, higher education, insurance, GIS, planning and utilities.

Figure 10 details the entities represented on the MAC and the individuals who attended on their behalf. The MAC was chaired by the Tri-County Regional Planning Commission.

Additional technical expertise was provided by the staff at the Illinois Emergency Management Agency Hazard Mitigation Unit, the Illinois Department of Natural Resources Office of Water Resources, the Illinois Environmental Protection Agency, the Illinois State Water Survey, the Illinois State Geological Survey, National Weather Service Weather Forecast Office in Lincoln and the University of Illinois.

Figure 10
Sheet 1 of 2
Tri-County Mitigation Action Committee Member Attendance Record

Representing	Name	Title	10/25/2017	3/14/2018	6/20/2018	9/27/2018	1/10/2019
Ameren	O'Neal, Anthony	Emergency Response Specialist	X	X			
American Environmental Corp.	Bostwick, Andrea	Senior Project Manager	X	X	X	X	X
American Environmental Corp.	Krug, Zachary	Environmental Specialist		X	X	X	X
American Environmental Corp.	Michaud, Greg	Emergency Services Manager	X				
American Red Cross	Coker, John	Government Operations	X	X			
American Red Cross	Learned, Julie	Distaster Program Manager			X		
Bartonville, Village of	Nelson, Larry	ESDA Director		X			X
Bartonville, Village of	Ricca, Leon	President					X
Bradley University	Joschko, Brian	Police Chief	X	X			
Chillicothe, City of	Mettille, Scott	Police Chief	X				
Chillicothe, City of	Parker, Rachel	Economic Development Director		X		X	
East Peoria, City of	Barron, Dennis	Director of Public Works		X		X	X
East Peoria, City of	Grugan, Garry	Assistant Fire Chief	X				
East Peoria, City of	Knapp, John	Deputy Fire Chief/Fire Marshal		X	X		X
East Peoria, City of	Servis, Alan	Fire Chief	X				
Eureka, City of	Brown, Melissa	City Administrator	X		X	X	X
Eureka College	Ege, Daryle	Physical Plant Director	X				
Fondulac Rehabilitation & Healthcare	Milburn, Connie	CRC/Marketing	X				
Fondulac Rehabilitation & Healthcare	Mehaffy, Ryan	Administrator	X				
Germantown Hills, Village of	Hinrichsen, Mike	President	X	X	X	X	
Germantown Hills, Village of	Brecklin, Rich	Superintendent of Public Works		X	X		X
Germantown Hills, Village of	Sasso, Ann	Village Administrator		X	X		
Greater Peoria Sanitary District	Meyer, Thomas	Director of Operations	X	X			
Hanna City, Village of	Path, Charles	Trustee	X				
Hanna City, Village of	Stear, Bill	Trustee	X				
Hanna City, Village of	Winterroth, Fred	Mayor		X	X	X	X
Heartland Health Services	Shake, Melody	Vice President of Quality & Compliance		X			
Illinois American Water	Horstmann, Lori	Superintendent	X				
Illinois American Water	Krolicki, Ryan	Supervisor	X				
Illinois Central College	Schwiderski, Erika	Police Lieutenant	X		X		
Luthern Hillside Village	Corrie, Richard	Plant Operations Director		X			
Luthern Hillside Village	Heiden, Shelly	Executive Director	X				
Morton, Village of	Bullard, James	Engineering Technician	X		X		X
National Weather Service	Stanley, Heather	Meteorologist	X	X			
OSF Healthcare	Orr, Nick	IT Disaster Recovery Specialist			X		
Pekin, City of	Nelson, Kurt	Fire Chief	X	X			
Pekin Insurance	Vincent, Larry	Disaster Recovery Manager		X			
Peoria, City of	Vaughn, Mike	Emergency Management Coordinator	X	X	X	X	
Peoria City/County Health Department	Marks, Jason	Emergency Preparedness Coordinator			X		X
Peoria Heights, Village of	Fick, Matt	Administrator	X	X			
Peoria Heights, Village of	Sutton, Dustin	Administrator			X		
Peoria Regional Office of Education	Derry, Beth	Regional Superintendent	X				
Roanoke, Village of	Knepp, Bob	Trustee				X	X
Roanoke, Village of	Smith, Michael	President					X
Snyder Village	Brownfield, Mike	Maintenance Director	X	X			
Tazewell County - EMA	Cook, Dawn	Director	X	X	X		
Tazewell County - EMA	Zuercher, Jerry	Deputy Director					X
Tazewell County - GIS	Baker, Janna	Coordinator	X	X	X		
Tazewell County - Health Department	Goetze, Melissa	Environmental Helath Supervisor	X				
Tazewell County - Health Department	Neavear, Ev	Director of Environmental Health	X				
Tazewell County - Highway	Parr, Dan	Assistant County Engineer	X		X		
Tazewell County - Sheriff	Gillespie, Tim	Captain	X				
Tazewell County - Sheriff	Kempf, Gerald	Captain		X			
Tazewell County - Sheriff	Kline, Kyle	Captain					X
Tremont, Village of	Dodwell, Mike	Police Chief	X		X		

Figure 10
Sheet 2 of 2
Tri-County Mitigation Action Committee Member Attendance Record

Representing	Name	Title	10/25/2017	3/14/2018	6/20/2018	9/27/2018	1/10/2019
Tri-County Regional Planning Commission	Abi-Akar, Reema	Planner	X	X	X	X	X
Tri-County Regional Planning Commission	Bruner, Michael	Planner	X	X	X	X	X
Tri-County Regional Planning Commission	Lees, Ray	Planning Program Manager	X				
Tri-County Regional Planning Commission	Miller, Eric	Executive Director	X				
Washington, City of	Oliphant, Jon	Planning & Development Director	X		X		X
Washington, City of	Andrews, Ed	City Engineer/Public Works Director	X	X	X	X	
Woodford County - EMA	McCanless, Kent	Director	X	X	X		X
Woodford County - Health Department	Schulz, Dustin	Emergency Planner	X				
Woodford County - Highway Department	Loy, Lindell	County Engineer	X				
Woodford County - Sheriff	Smith, Matt	Sheriff		X			X
Woodford County - Supervisor of Assessments	Bell, Mary	Supervisor of Assessments	X				
Woodford County - Zoning	Jording, Lisa	Zoning Administrator	X			X	

Mission Statement

Over the course of the first two meetings, the MAC developed a mission statement that described their objectives for this Plan update.

"The mission of the Tri-County Mitigation Advisory Committee is to develop a mitigation plan that documents project and activities to reduce the negative impacts of natural hazards on citizens, infrastructure, private property and critical facilities."

MAC Meetings

The MAC met five times between October, 2017 and January 2019. **Figure 10** identifies the representatives present at each meeting. **Appendices A** and **B** contain copies of the attendance sheets and meeting minutes for each meeting. The purpose of each meeting, including the topics discussed, is provided below.

First MAC Meeting – October 25, 2017

The purpose of this meeting was to explain the planning process to the MAC members and give them a brief overview on what a natural hazards mitigation plan is and why it needs to be updated. Drafts of a mission statement and updated mitigation goals were presented for review. Committee members were asked to identify of any natural hazard events that have occurred within the County since the 2010 Plan was completed.

Representatives for the participating jurisdictions were asked to complete the forms entitled "List of Existing Planning Documents", "Critical Facilities" and "Identification of Severe Weather Shelters" and return them at the next meeting. Copies of a hazard events questionnaire and citizen questionnaire were also distributed.

Second MAC Meeting – March 14, 2018

At the second MAC meeting portions of the updated natural hazard risk assessment section associated with the most significant hazards were presented for review. The MAC discussed the draft mission statement and updated mitigation goals and finalized both.

MAC members were asked to identify any mitigation projects and activities their jurisdictions had started and/or completed since adopting 2010 Plan. Ideas for new potential mitigation projects and activities were presented. All participating jurisdictions were asked to complete the form entitled "New Hazard Mitigation Projects" while those jurisdictions who participated in the 2010 Plan were also asked to complete the form entitled "Existing Mitigation Project/Activity Status" and return at the next meeting.

Third MAC Meeting – June 20, 2018

The purpose of the third MAC meeting was to review the portions of the updated natural hazard risk assessment section associated with the less significant hazards and to discuss the vulnerability analysis for tornadoes. The MAC also reviewed and approved the updated mitigation project prioritization methodology and discussed how the mitigation projects and activities identified by the participating jurisdictions would be presented in the updated Plan.

Fourth MAC Meeting – September 27, 2018

At the fourth meeting the vulnerability analysis for floods was presented for review. The MAC members also reviewed the draft jurisdiction-specific mitigation action tables which identified and prioritized the new and existing mitigation projects and activities provided by the participants. Members were given the opportunity to add additional projects and activities to their tables. The sections outline the mitigation strategy, plan maintenance and adoption were also discussed.

Fifth MAC Meeting – January 10, 2019

The purpose of the fifth MAC meeting was to provide the public an opportunity to provide comments on the draft updated Plan.

2.2 PUBLIC INVOLVEMENT

To engage the public in the planning process, a comprehensive public involvement strategy was developed. The strategy was structured to engage the public in a two-way dialogue, encouraging the exchange of information throughout the planning process. A mix of public involvement techniques and practices were utilized to:

- disseminate information;
- identify additional useful information about natural hazard occurrences and impacts;
- assure that interested residents would be involved throughout the updated Plan's development; and
- cultivate a sense of ownership of the updated Plan, thus increasing the likelihood of adoption by the participating jurisdictions.

The dialogue with the public followed proven risk communication principles to help assure clarity and avoid overstating or understating the impacts posed by the natural and man-made hazards identified in the updated Plan. The following public involvement techniques and practices were applied to give the public an opportunity to access information and participate in the dialogue at their level of interest and availability.

Citizen Questionnaire

A citizen questionnaire was developed to help gather information and gauge public perceptions about the types of natural hazards that affect the Tri-County region. The questionnaire was distributed to the MAC members who were encouraged to make it available to their residents. A copy of the questionnaire is contained in **Appendix C**.

A total of 40 questionnaires were completed and returned to the MAC. Of the 40 responses, 20 were received from Tazewell County residents, 13 were received from Peoria County residents (including the participating municipalities) and seven were received from Woodford County residents. Questionnaires were completed by residents in each participating jurisdiction, with the exception of Bartonville and Chillicothe. The responses provided useful information to the MAC members as they identify how best to disseminate information on natural hazards and safeguard the public and their property. Furthermore, these responses identify the kinds of projects and activities the public is likely to support. The following provides a summary of the results by county.

Tazewell County

A review of the 20 questionnaires received for Tazewell County residents revealed the following:

- Respondents felt the most frequently encountered natural hazards in Tazewell County are severe storms (thunderstorms, hail, lightning and heavy rain) and severe winter storms, followed by floods and tornadoes. These results are consistent with the weather records compiled for the County and as described in this Plan.
- The most effective ways identified to communicate when natural hazards occur, as noted by respondents, were via the internet, social media (Facebook, Twitter, etc.) and television. Information disseminated via radio and mail also ranked among the highest effective means.
- In terms of the most needed mitigation projects and activities, the following three categories received the strongest support:
  - maintaining power during storms by burying power lines, trimming trees and/or purchasing backup generators (80%);
  - retrofitting critical infrastructure to reduce potential damages (65%); and
  - maintaining/installing siren(s) or other alert systems (60%).

  Flood or drainage protection projects (55%) and maintaining roadways during snow and heavy rain events (50%) also received strong support.

Woodford County

A review of the seven questionnaires received for Woodford County residents revealed the following:

- Respondents felt the most frequently encountered natural hazards in Woodford County are severe storms (thunderstorms, hail, lightning and heavy rain) followed by severe winter storms and floods. Weather records indicate that severe storms are in fact the most frequently occurring natural hazard in the County, followed by severe winter storms.

- The most effective ways identified to communicate when natural hazards occur, as noted by respondents, were via social media (Facebook, Twitter, etc.) and through municipal/county government, although most of the respondents did not answer this question. Information disseminated via the internet, fact sheets or brochures or by local fire and law enforcement were also identified as effective means of communication.
- In terms of the most needed mitigation projects and activities, the following four categories received the strongest support:
  - maintaining power during storms by burying power lines, trimming trees and/or purchasing backup generators (28.6%);
  - maintaining/installing siren(s) or other alert systems (28.6%);
  - constructing tornado safe shelters (28.6%); and
  - maintaining roadways during snow and heavy rain events (28.6%).

Peoria County (including the participating municipalities)

A review of the 13 questionnaires received for Peoria County residents revealed the following:

- Respondents felt the most frequently encountered natural hazards in Peoria County are severe storms (thunderstorms, hail, lightning and heavy rain) followed by severe winter storms. These results are consistent with the weather records compiled for the participating municipalities and as described in this Plan.
- The most effective ways identified to communicate when natural hazards occur, as noted by respondents, were via television and the internet. Information disseminated via newspapers, radio and fact sheets or brochures were also identified as effective means of communication.
- In terms of the most needed mitigation projects and activities, the following three categories received the strongest support:
  - maintaining power during storms by burying power lines, trimming trees and/or purchasing backup generators (76.9%);
  - maintaining roadways during snow and heavy rain events (69.2%); and
  - retrofitting critical infrastructure to reduce potential damages (65%).

  Disseminating public information fact sheets (61.5%) and flood or drainage protection projects (53.8%) also received strong support.

FAQ Fact Sheet

The "Frequently Asked Questions" fact sheet was updated and disseminated to help explain what a natural hazards mitigation plan is and briefly described the planning process. The fact sheet was made available at the government offices of participating jurisdictions. A copy of the fact sheet is contained in **Appendix D**.

Press Releases

Press releases were prepared and submitted to local print media outlets prior to each MAC meeting. The releases announced the purpose of the meetings and how the public could become involved in the updated Plan's development. **Appendix E** contains a list of the print media outlets that received the press releases while copies of the releases and any news articles published can be found in **Appendix F**.

MAC Meetings

All of the meetings conducted by the MAC were open to the public and publicized in advance to encourage public participation. At the end of each meeting, time was set aside for public comment. In addition, Committee members were available throughout the planning process to talk with residents and local government officials and were responsible for relaying any concerns and questions voiced by the public to the MAC.

Public Forum

The final meeting of the MAC, held on January 10, 2019, was conducted as an open-house public forum. The open-house format was chosen for this forum instead of a hearing to provide greater convenience for residents who wished to participate. Residents were able to come and go at any time during the forum, reducing conflicts with business, family, and social obligations.

At the forum, residents were able to review a draft of the updated Plan; meet with representatives from the participating jurisdictions, the Tri-County Regional Planning Commission and the Consultant; ask any questions; and provide comments on the draft updated Plan. Individuals attending the public forum were provided with a two-page handout summarizing the planning process and a comment sheet that could be used to provide feedback on the draft updated Plan. **Appendices G** and **H** contain copies of these materials.

Public Comment Period

After the public forum, the draft updated Plan was made available for public review and comment through January 25, 2019 at the Tri-County Regional Planning Commission's Office and website. Residents were encouraged to submit their comments electronically, by mail or through representatives of the MAC.

Results of Public Involvement

The public involvement strategy implemented during the planning process created a dialogue among participants and interested residents, which resulted in many benefits, a few of which are highlighted below.

- *Acquired additional information about natural hazards*. Verifiable hazard event and damage information was obtained from participants that presents a clearer assessment of the extent and magnitude of natural hazards that have impacted the Tri-County area. This information included details about thunderstorms with damaging winds, severe winter storms, floods, tornadoes and landslides not available from state and federal databases.
- *Obtained infrastructure and critical facilities damage information*. Data collection surveys soliciting information about infrastructure and critical facilities damaged by severe storms and other natural hazards were used to supplement information obtained from government databases. This information was vital to the preparation of the vulnerability assessment.
- *Increased awareness of the impacts associated with natural hazard events within the Tri-County area*. Understanding how mitigation actions can reduce risk to life and property

helped generate ***144 new mitigation projects and activities*** at the local level that had not been previously identified in either the original or 2010 Plan or any other planning process. In addition, six municipalities (Tremont, Morton, Eureka, Germantown Hills, Bartonville and Hanna City) that had not previously taken part in the mitigation planning process chose to participate in this Plan update.

2.3 PARTICIPATION OPPORTUNITIES FOR INTERESTED PARTIES

As part of the formation of the MAC, the Tri-County Regional Planning Commission reached out to numerous different entities (including schools, not-for-profit organizations, healthcare facilities, utilities and other interested parties) in the Tri-County area to provide them an opportunity to participate in the planning process. In addition, the Planning Commission contacted regional media outlets to publicize the process and reach anyone who might have an interest or possess information which could be helpful in updating the Plan.

Healthcare

Input was sought from the regional healthcare community. Representatives from Fondulac Rehabilitation & Healthcare, Heartland Health Services, Lutheran Hillside Village, OSF Healthcare and Snyder Village all attended MAC meetings and provided input and support to the planning process.

Schools

Representatives from Illinois Central College, Bradley University, Eureka College and the Peoria Regional Office of Education attended MAC meetings. These individuals participated in the planning process and were able disseminate information to their various organizations regarding the impacts natural hazard events have had on the Tri-County area.

Not-for-Profit

The Government Operations Liaison and the Disaster Program Manager with the Central Illinois Chapter of the American Red Cross served on the MAC and provided input into the planning process. Two meteorologists with the National Weather Service Forecast Office in Lincoln participated in the planning process and served on the MAC. They proved invaluable in identifying and verifying additional natural hazard event records. Their resources and experience helped to provide a more comprehensive understanding of the natural hazards that have impacted the Tri-County area.

Utilities

Utility companies serving the area were also invited to participate in the Plan update. Representative from the GPSD, Illinois American Water and Ameren Illinois all attended MAC meetings and provided support to the planning process. The Emergency Response Specialist for Ameren Illinois was able to provide infrastructure damage information not available in state or federal databases that provides a glimpse into the scope of the damages that have be sustained to infrastructure from natural hazard events in the region.

Neighboring Counties

A memo was sent to EMA/ESDA coordinators in the surrounding counties inviting them to participate in the mitigation planning process and attend the Public Forum. The counties contacted included Fulton, Knox, LaSalle, Livingston, Logan, Marshall, Mason, McLean, Stark and Peoria. **Appendix I** contains a copy of the invitation memo.

2.4 INCORPORATING EXISTING PLANNING DOCUMENTS

As part of the planning process, each participating jurisdiction was asked to identify and provide existing documents (plans, studies, reports and technical information) relevant to the updated Plan. **Figure 11** summarizes the availability of existing planning documents by participating jurisdiction. These documents were reviewed and incorporated into the Plan whenever applicable.

Tazewell and Woodford counties as well as a majority of the participating municipalities and the Greater Peoria Sanitary District (GPSD) are fortunate to have the resources and abilities to potentially expand on and improve the existing policies and programs identified in Figure 11. This conclusion is based on an examination of their capabilities related to: staff and organization; technical capability; fiscal situation; policies and programs; present legal authority; and political resolve.

Many of the participating jurisdictions have actively sought and received assistance from the Tri-County Regional Planning Commission and Greater Peoria Economic Development Council as well as technical assistance from the Tazewell County Community Development Department, the Woodford Building and Zoning Department and the Peoria County Planning and Zoning Department to develop and maintain a wide array of plans, programs and ordinances. All but one of the participating jurisdictions have comprehensive plans in place and a majority have land use plans. All of the participating Peoria County municipalities as well as all of the Tazewell County participating jurisdictions have enacted building codes. While there is still resistance from unincorporated Woodford County residents towards building codes, the County's Building and Zoning Department has worked diligently to implement community and economic development initiatives. The GPSD also has a wide array of plans, programs and codes in place.

Figure 11
Existing Planning Documents by Participating Jurisdiction

Existing Planning Documents	Participating Jurisdictions by County															
	Tazewell County						Woodford County				Peoria County					
	Tazewell County	East Peoria	Morton	Pekin	Tremont	Washington	Woodford County	Eureka	Germantown Hills	Roanoke	Bartonville	Chillicothe	Hanna City	Peoria	Peoria Heights	Greater Peoria Sanitary District
PLANS																
Municipal/County																
Comprehensive Plan	X		X	X	X	X	X	X	X	X	X	X	X	X	X	
Emergency Management Plan	X	X		X		X	X	X	X		X	X		X	X	
Land Use Plan			X		X	X	X	X	X	X	X	X	X	X	X	
Sanitary District																
Sewer System Management Plan																X
Collection System Master Plan																
Strategic Plan																
Emergency Management Plan																
Capital Improvement Plan																X
CODES & ORDINANCES																
Municipal/County																
Building Codes	X	X	X	X	X	X		X		X	X	X	X	X	X	
Drainage Ordinances	X		X		X	X	X	X	X		X	X			X	
Historic Preservation Ordinance						X					X			X	X	
Subdivision Ordinance(s)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Zoning Ordinances	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sanitary District																
Sewer Use Ordinance																X
Capacity Fees Ordinance																X
Sewer Service/User Charge Ordinance																X
Plan Review/Permitting Ordinance																X
Standard Specifications & Details																X
MAPS																
Municipal/County																
Existing Land Use Map	X		X		X	X	X	X	X	X	X	X		X	X	
Infrastructure Map	X	X	X		X	X		X	X		X	X			X	
Zoning Map	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sanitary District																
Service Area																X
OTHER TECHNICAL DOCUMENTS																
Municipal/County																
Flood Ordinance(s)	X	X	X	X	X	X	X	X		X	X	X		X	X	
Flood Insurance Rate Maps	X	X	X	X	X	X	X	X		X	X	X		X	X	
Repetitive Flood Loss List	X		X				X					X				
Elevation Certificates for Buildings	X		X			X	X				X	X				
Sanitary District																
Bylaws																X
Comprehensive Annual Financial Report & Audit																X
Annual Operations & Maintenance Report																X
Discharge Monitoring Report																X
Performance Report																X

3.0 RISK ASSESSMENT

3.0 RISK ASSESSMENT

Overview

Risk assessment is the process of evaluating the vulnerability of people, buildings and infrastructure in order to estimate the potential loss of life, personal injury, economic injury and property damage resulting from natural hazards. This section summarizes the results of the risk assessment conducted on the natural hazards in the Tri-County area (Tazewell and Woodford counties and select municipalities in Peoria County). The information contained in this section was gathered by evaluating local, state and federal records from the last 68 years.

This risk assessment identifies the natural hazards deemed most important to the Tri-County Mitigation Advisory Committee (MAC) and includes a profile of each that identifies past occurrences, the severity or extent of the hazard, and the likelihood of future occurrences. It also provides a vulnerability assessment which identifies the impacts to public health and property, evaluates the assets of the participating jurisdictions (i.e., residential buildings, critical facilities and infrastructure) and estimates the potential impacts each natural hazard would have on the health and safety of the residents as well as buildings, critical facilities and infrastructure. Where applicable, the differences in vulnerability between participating jurisdictions are described.

The subsequent sections provide detailed information on each of the selected natural hazards. The sections are color coded and ordered by the frequency with which the natural hazard has previously occurred within the Tri-County area, starting with severe storms (thunderstorms, hail, and lightning). Each natural hazard section contains three subsections: identifying the hazard, profiling the hazard and assessing vulnerability.

Hazard Selection

One of the responsibilities of the Tri-County MAC was to review the natural hazards included in the 2010 Plan and decide if additional hazards should be included in the Plan update. Over the course of the first two meetings, the MAC members discussed their experiences with natural hazard events and reviewed information about various hazards.

After discussing the hazards, the Committee chose not to add any additional natural hazards to those included in the 2010 Plan. The Committee also chose not to include wildfires in the Plan update due to their limited impact on the people and infrastructure within the Tri-County area. Historical data indicates that wildfires have been virtually non-existent and no documentation was found on wildfire events in the Tri-County area.

The following identifies the hazards included in this Plan update:

- severe storms (thunderstorms, hail, lighting & heavy rain)
- severe winter storms (snow, ice & extreme cold)
- tornadoes
- floods
- extreme heat
- drought
- landslides
- earthquakes
- mine subsidence & sinkholes
- dams
- levees

Critical Facilities & Infrastructure

Critical facilities and infrastructure are structures, institutions and systems that are critical for life safety and economic viability and necessary for a community's response to and recovery from emergencies. The loss of function of any of these assets can intensify the severity of the impacts and speed of recovery associated a hazard event. Critical facilities and infrastructure may include, but are not limited to the following:

- ***Essential Facilities***: Facilities essential to the health and welfare of the whole population including hospitals and other medical facilities, police and fire stations, emergency operations centers, evacuation shelters and schools.
- ***Government Facilities***: Facilities associated with the continued operations of government services such as courthouses, city/village halls, township buildings and highway/maintenance centers.
- ***Infrastructure Systems***: Infrastructure associated with drinking water, wastewater, transportation (roads, railways, waterways), communication systems, electric power, natural gas and oil.
- ***Housing Facilities***: Facilities that serve populations that have access and function needs such as nursing homes, skilled and memory care facilities, residential group homes and day care centers.
- ***High Potential Loss Facilities***: Facilities that would have an impact or high loss associated with them if their functionality is compromised such as nuclear power plants, dams, levees, military installations and facilities housing industrial or hazardous materials.
- ***Gathering Places***: Facilities such as parks, libraries, community centers and churches.

As part of the planning process each participating jurisdiction completed a questionnaire identifying the critical facilities and infrastructure located within their jurisdiction, both publicly and privately-owned. Identifying these assets makes local leaders more aware of the critical facilities and infrastructure located within their jurisdictions and helps them make informed choices on how to better protect these key resources.

While considered a "local government entity" for planning purposes, the Greater Peoria Sanitary District (GPSD) located in Peoria County does not have an extensive inventory of assets in which to consider when conducting the risk assessment. The main treatment facility is located within the participating municipality of Peoria while the 19 lift stations are located in the participating municipalities of Bartonville, Peoria and Peoria Heights or in developed unincorporated areas immediately adjacent to participating municipalities. Since the assets of GPSD are located within or immediately adjacent to participating municipalities and are a subset of these municipalities' critical facilities and infrastructure, their risk is considered to be the same or similar to the risk experienced by the municipalities for those hazards that either impact the entire planning area or can occur at any location within the planning area (i.e., severe storms, severe winter storms, etc.) For those hazards where the risk to the GPSD infrastructure varies from the risk facing the planning area (i.e., the participating Peoria County municipalities), a separate narrative assessment will be provided under the appropriate hazard's vulnerability subsection.

3.1 SEVERE STORMS (THUNDERSTORMS, HAIL, LIGHTNING & HEAVY RAIN)

HAZARD IDENTIFICATION

What is the definition of a severe storm?

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) defines a "severe storm" as any thunderstorm that produces one or more of the following:

- winds with gust of 50 knots (58 mph) or greater;
- hail that is at least one inch in diameter (quarter size) or larger; and/or
- a tornado.

While severe storms are capable of producing deadly lightning, the NWS does not use lightning to define a severe storm. However, a discussion of lightning is included in this section because it is capable of causing extensive damage. ***For the purposes of this report, tornadoes and flooding are categorized as separate hazards and are not discussed under severe storms.***

What is a thunderstorm?

A thunderstorm is a rain shower accompanied by lightning and thunder. An average thunderstorm is approximately 15 miles in diameter, affecting a relatively small area when compared to winter storms or hurricanes, and lasts an average of 30 minutes. Thunderstorms can bring heavy rain, damaging winds, hail, lightning and tornadoes.

There are four basic types of thunderstorms: single-cell, multi-cell, squall line, and supercell. The following provides a brief description of each.

Single-cell Thunderstorm

Single cell storms are small, weak storms that only last about ½ hour to an hour and are not usually considered severe. They are typically driven by heating on a summer afternoon. Occasionally a single cell storm will become severe, but only briefly. When this happens, it is called a pulse severe storm.

Multi-cell Thunderstorm

Multi-cell storms are the most common type of thunderstorms. A multi-cell storm is organized in clusters of at least two to four short-lived cells. Each cell usually lasts 30 to 60 minutes while the system as whole may persist for many hours. Multi-cell storms may produce hail, strong winds, brief tornadoes, and/or flooding.

Squall Line

A Squall line is a group of storms arranged in a line, often accompanied by "squalls" of high wind and heavy rain. The line of storms can be continuous or there can be gaps and breaks in the line. Squall lines tend to pass quickly and can be hundreds of miles long but are typically only 10 to 20 miles wide. A "bow echo" is a radar signature of a squall line that "bows out" as winds fall behind the line and circulation develops on either end.

Supercell Thunderstorm

Supercell storms are long-lived (greater than one hour) and highly organized storms that feed off a rising current of air (an updraft). The main characteristic that sets a supercell storm apart from other thunderstorm types is the presence of rotation in the updraft. The rotating updraft of a supercell (called a mesocyclone when visible on radar) helps a supercell storm produce extreme weather events. Supercell storms are potentially the most dangerous storm type and have been observed to generate the vast majority of large and violet tornadoes, as well as downburst winds and large hail.

Despite their size, all thunderstorms are dangerous and capable of threatening life and property. Of the estimated 100,000 thunderstorms that occur each year in the United States, roughly 10% are classified as severe.

What kinds of damaging winds are produced by a thunderstorm?

Aside from tornadoes, thunderstorms can produce straight-line winds. A straight-line wind is defined as any wind produced by a thunderstorm that is not associated with rotation. There are several types of straight-line winds including downdrafts, downbursts, microbursts, gust fronts and derechos.

Damage from straight-line winds is more common than damage from tornadoes and accounts for most thunderstorm wind damage. Straight-line wind speeds can exceed 87 knots (100 mph), produce a damage pathway extending for hundreds of miles and can cause damage equivalent to a strong tornado.

The NWS measures a storm's wind speed in knots or nautical miles. A wind speed of one knot is equal to approximately 1.15 miles per hour. **Figure 12** shows conversions from knots to miles per hour for various wind speeds.

Figure 12
Wind Speed Conversions

Knots (kts)	Miles Per Hour (mph)	Knots (kts)	Miles Per Hour (mph)
50 kts	58 mph	60 kts	69 mph
52 kts	60 mph	65 kts	75 mph
55 kts	63 mph	70 kts	81 mph
58 kts	67 mph	80 kts	92 mph

What is hail?

Hail is precipitation in the form of spherical or irregular-shaped pellets of ice that occur within a thunderstorm when strong rising currents of air (updrafts) carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice.

Hailstones grow by colliding with supercooled water drops. The supercooled water drops freeze on contact with ice crystals, frozen rain drops, dust, etc. Thunderstorms with strong updrafts continue lifting the hailstones to the top of the cloud where they encounter more supercooled water and continue to grow. Eventually the updraft can no longer support the weight of the hail or the updraft weakens and the hail falls to the ground.

In the United States, hail causes more than $1 billion in damages to property and crops annually. Hail has been known to cause injuries, although it rarely causes fatalities or serious injury.

How is the severity of a hail event measured?

The severity or magnitude of a hail event is measured in terms of the size (diameter) of the hailstones. The hail size is estimated by comparing it to known objects. **Figure13** provides descriptions for various hail sizes.

Figure 13
Hail Size Descriptions

Hail Diameter (inches)	Description	Hail Diameter (inches)	Description
0.25 in.	pea	1.75 in.	golf ball
0.50 in.	marble/mothball	2.50 in.	tennis ball
0.75 in.	penny	2.75 in.	baseball
0.88 in.	nickel	3.00 in.	tea cup
1.00 in.	quarter	4.00 in.	grapefruit
1.50 in.	ping pong ball	4.50 in.	softball

Source: NOAA, National Severe Storm Laboratory.

Hail size can vary widely. Hailstones may be as small as 0.25 inches in diameter (pea-sized) or, under extreme circumstances, as large as 4.50 inches in diameter (softball-sized). Typically hail that is one (1) inch in diameter (quarter-sized) or larger is considered severe.

The severity of a hail event can also be measured or rated using the TORRO Hailstorm Intensity Scale. This scale was developed in 1986 by the Tornado and Storm Research Organisation of the United Kingdom. It measures the intensity or damage potential of a hail event based on several factors including: maximum hailstone size, distribution, shape and texture, numbers, fall speed and strength of the accompanying winds.

The Hailstorm Intensity Scale identifies ten different categories of hail intensity, H0 through H10. **Figure 14** gives a brief description of each category. This scale is unique because it recognizes that, while the maximum hailstone size is the most important parameter relating to structural damage, size alone is insufficient to accurately categorize the intensity and damage potential of a hail event.

It should be noted that the typical damage impacts associated with each intensity category reflect the building materials predominately used in the United Kingdom. These descriptions may need to be modified for use in other countries to take into account the differences in building materials typically used (i.e., whether roofing materials are predominately shingle, slate or concrete, etc.).

Figure 14
TORRO Hailstorm Intensity Scale

Intensity Category		Typical Hail Diameter		Description	Typical Damage Impacts
		millimeters (approx.)*	inches (approx.)*		
H0	Hard Hail	5 mm	0.2”	pea	no damage
H1	Potentially Damaging	5-15 mm	0.2” – 0.6”	pea / mothball	slight general damage to plants, crops
H2	Significant	10-20 mm	0.4” – 0.8”	dime / penny	significant damage to fruit, crops, vegetation
H3	Severe	20-30 mm	0.8” – 1.2”	nickel / quarter	severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40 mm	1.0” – 1.6”	half dollar / ping pong ball	widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50 mm	1.2” – 2.0”	golf ball	wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60 mm	1.6” – 2.4”	golf ball / egg	bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75 mm	2.0” – 3.0”	egg / tennis ball	severe roof damage, risk of serious injuries
H8	Destructive	60-90 mm	2.4” – 3.5”	tennis ball / tea cup	severe damage to aircraft bodywork
H9	Super Hailstorms	75-100 mm	3.0” – 4.0”	tea cup / grapefruit	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	> 100 mm	> 4.0”	softball	extensive structural damage, risk of severe or even fatal injuries to persons caught in the open

* Approximate range since other factors (i.e., number and density of hailstones, hail fall speed and surface wind speed) affect severity.

Source: Tornado and Storm Research Organisation, TORRO Hailstorm Intensity Scale Table.

What is lightning?

Lightning, a component of all thunderstorms, is a visible electrical discharge that results from the buildup of charged particles within storm clouds. It can occur from cloud-to-ground, cloud-to-cloud, within a cloud or cloud-to-air. The air near a lightning strike is heated to approximately 50,000°F (hotter than the surface of the sun). The rapid heating and cooling of the air near the lightning strike causes a shock wave that produces thunder.

Lightning on average causes 60 fatalities and 400 injuries annually in the United States. Most fatalities and injuries occur when people are caught outdoors in the summer months during the afternoons and evenings. In addition, lightning can cause structure and forest fires. Many of the wildfires in the western United States and Alaska are started by lightning. According to the NWS lightning strikes cost more than $1 billion in insured losses each year.

Are alerts issued for severe storms?

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***severe thunderstorm watches*** and ***warning**s* for Peoria, Tazewell and Woodford Counties depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A severe thunderstorm watch is issued when conditions are possible in or near the watch area. Individuals should stay alert for the latest weather information and be prepared to take shelter.
- **Warning.** A severe thunderstorm warning is issued when a severe thunderstorm is approaching or occurring. Warnings indicate imminent danger to life and property for those who are in the path of the storm.

3.1.1 TAZEWELL COUNTY

HAZARD PROFILE

The following identifies past occurrences of severe storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe storms occurred previously? What is the extent of these previous severe storms?

Figures 15, **16**, and **17** located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Tazewell County. The severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning and heavy rain. Severe storms are the most frequently occurring natural hazard in Tazewell County.

Severe Storms Fast Facts – Occurrences

Number of recorded Thunderstorms with Damaging Winds (1960 – 2017): ***236***

Number of recorded Severe Hail Events (1960 – 2017): ***98***

Number recorded of Lightning Strike Events (1991 – 2017): ***3***

Highest Recorded Wind Speed: ***83 knots (June 29, 1998 countywide)***

Largest Hail Recorded: ***3.00 inches (May 28, 2003 at Washington)***

Most Likely Month for Thunderstorms with Damaging Winds to Occur: ***June***

Most Likely Month for Severe Hail to Occur: ***May***

Most Likely Time for Thunderstorms with Damaging Winds to Occur: ***Afternoon/Early Evening***

Most Likely Time for Severe Hail to Occur: ***Afternoon/Early Evening***

Thunderstorms with Damaging Winds

NOAA's Storm Events Database and NOAA's Storm Data Publications were used to document 237 reported occurrences of thunderstorms with damaging winds in Tazewell County between 1960 and 2017. Of the 236 occurrences, 156 had reported wind speeds of 50 knots or greater. There were 80 occurrences, however, where the wind speed was not recorded.

The highest wind speed recorded in Tazewell County occurred county-wide on June 29, 1998 when winds reached 83 knots (95 mph) during a thunderstorm event. Thunderstorms with damaging winds have been *recorded* in every participating municipality within the County on multiple occasions.

Figure 18 charts the reported occurrences of thunderstorms with damaging winds in Tazewell County by month. Of the 236 events, 172 (73%) took place in May, June, July and August making this the peak period for thunderstorms with damaging winds in Tazewell County. Of those 172 events, 62 (36%) occurred during June, making this the peak month for thunderstorms with damaging winds.

Figure 18
Graph: Thunderstorms with Damaging Winds by Month Tazewell County: 1960 – 2017

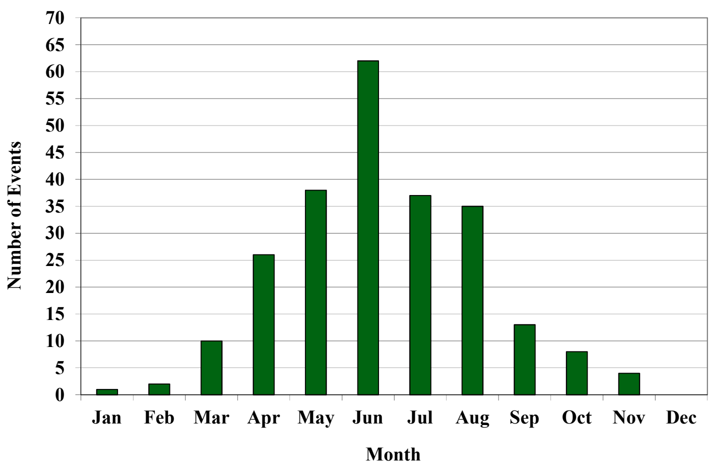
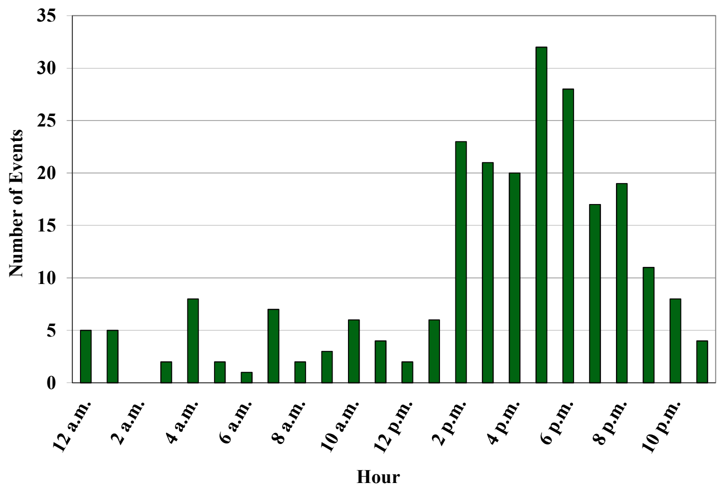


Figure 19 charts the reported occurrences of thunderstorms with damaging winds by hour. Of the 236 occurrences, approximately 81% occurred during the p.m. hours, with 160 of the events (68%) taking place between 2 p.m. and 9 p.m.

Figure 19
Graph: Thunderstorms with Damaging Winds by Hour Tazewell County: 1960 – 2017



Hail

NOAA's Storm Events Database was used to document 98 reported occurrences of severe storms with hail one (1) inch in diameter or greater in Tazewell County between 1960 and 2017. Of the 98 occurrences, 45 produced hailstones 1.50 inches or larger in diameter.

The largest hail stones documented in Tazewell County measured 3.00 inches in diameter (tea cup-sized) and fell on May 28, 2003 at Washington. Hail one (1) inch in diameter or greater has been *recorded* in every participating municipality on multiple occasions.

Figure 20 charts the reported occurrences of hail by month. Of the 98 occurrences, 69 (70%) took place in April, May and June making this the peak period for hail in Tazewell County. Of the 69 events, 28 (41%) occurred during May, making this the peak month for hail events.

Figure 20
Graph: Hail Events by Month Tazewell County:
1960 – 2017

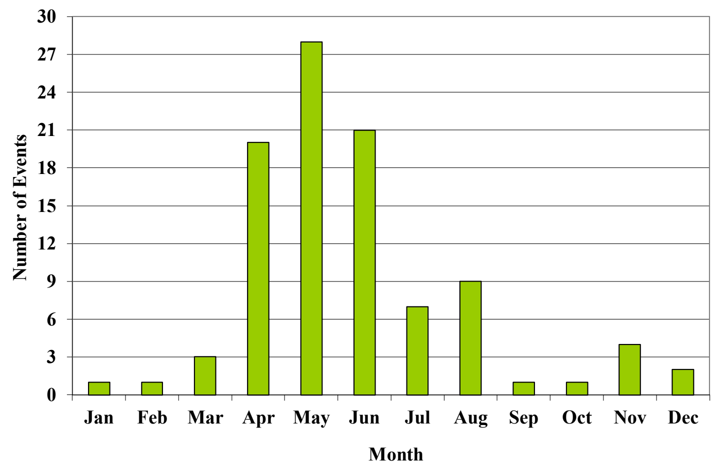


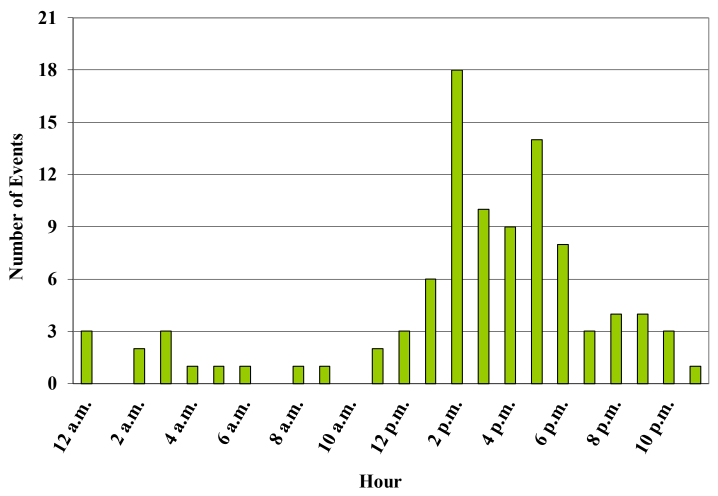
Figure 21 charts the reported occurrences of hail by hour. Approximately 85% of all the hail events occurred during the p.m. hours, with 59 of the events (60%) taking place between 2:00 p.m. and 7:00 p.m.

Lightning

While lightning strike events occur regularly across central Illinois, NOAA's Storm Events Database and NOAA's Storm Data Publications only identified three recorded occurrences of lightning strikes in Tazewell County between 1991 and 2017. One event each took place in June, July and October. All three events occurred during the p.m. hours.

These represent the ***reported occurrences*** of lightning strike events. The NWS acknowledges that lightning strike events area not well recorded, due in part to the rural nature of most Illinois counties. Only those events with impacts, such as property damage or injuries/fatalities, are reported. As a result, lightning strike events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

Figure 21
Graph: Hail Events by Hour Tazewell County:
1960 – 2017



According to data from Vaisala's National Lightning Detection Network, Tazewell County averaged at least 12 to 20 cloud-to-ground lightning flashes per square mile annually between 2005 and 2014. **Figure 22** illustrates the cloud-to-ground lightning flash density (number of cloud-to-ground flashes per square mile) by county for the continental United States. In comparison, Illinois averaged 14.1 cloud-to-ground lightning flashes per square mile between 2006 and 2015, ranking it eighth in the Country for lightning flash density.

<u>Heavy Rain</u>

While heavy rain events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database does not include any *recorded* heavy rain events for Tazewell County. This may be due in part to a lack of uniform reporting guidelines for heavy rain events.

What locations are affected by severe storms?

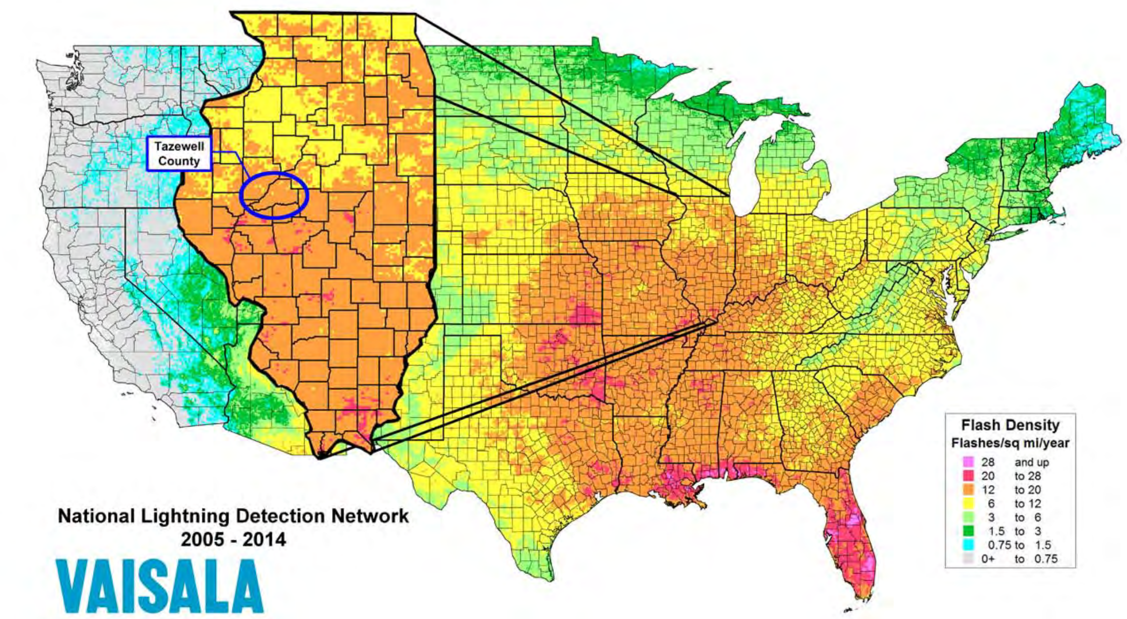
Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency (IEMA) classifies Tazewell County's hazard rating for severe storms as "severe." (IEMA's hazard rating system has five levels: low, guarded, elevated, high and severe.)

What is the probability of future severe storm events occurring?

<u>Thunderstorms with Damaging Winds</u>

Tazewell County has had 236 verified occurrences of thunderstorms with damaging winds between 1960 and 2017. With 236 occurrences over the past 58 years, Tazewell County should expect to experience at least four thunderstorms with damaging winds each year. There were 33 years over the last 58 years where multiple (three or more) thunderstorms with damaging winds occurred. This indicates that the probability that multiple thunderstorms with damaging winds may occur during any given year within the County is 57%.

Figure 22
Cloud-to-Ground Lightning Flash Density: Tazewell County



Hail

There have been 98 verified occurrences of hail one (1) inch in diameter or greater between 1960 and 2017. With 98 occurrences over the past 58 years, Tazewell County should expect to experience at least one severe hail event each year. There were 24 years over the last 58 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the County is 41%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe storms.

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of Tazewell County is vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across central Illinois. Since 2008, Tazewell County has recorded 68 thunderstorms with damaging winds, 35 severe storms with hail one (1) inch in diameter or greater and one verified lightning strike event.

Figure 23 details the number thunderstorms with damaging winds and hail events that were recorded in or near each participating municipality while **Figure 24** details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Tazewell County. Of the participating municipalities, Pekin has had more recorded occurrences of thunderstorms with damaging winds and hail events than any of the other municipalities. Of the three recorded lightning strikes, one occurred in the participating municipality of Morton.

Figure 23
Verified Severe Storm Events by Participating Municipality – Tazewell County

Participating Municipality	Number of Events	
	Thunderstorm & High Wind	Severe Hail
East Peoria	14	9
Morton	29	13
Pekin	53	22
Tremont	19	10
Washington	21	14

Figure 24
Verified Severe Storm Events in Unincorporated Tazewell County

Unincorporated Area	Number of Events	
	Thunderstorm & High Wind	Severe Hail
Allentown	3	1
Dillon	3	1
Groveland	7	6
Lilly	1	1
Mayfair	0	1
Midway	2	0
Parkland	5	1
Pekin Municipal Airport	1	0
Schaeferville	3	3
Spring Lake	2	1
Talbott	1	0

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated $6.99 million in recorded property damages and $1 million in recorded crop damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database and NOAA's Storm Data Publications indicates that between 1960 and 2017, 85 of the 236 thunderstorms with damaging winds caused $6.89 million in property damages and $1 million in crop damages. Damage information was either unavailable or none was recorded for the remaining 151 reported occurrences.

NOAA's Storm Events Database documented 14 injuries as the result of three separate thunderstorm with damaging wind events. The following provides a brief description of each event.

- On June 23, 1995 six workers were injured when a thunderstorm with damaging winds blew down the roof of a motel that was being constructed.
- Six semi-truck drivers were injured on February 11, 1999 when a thunderstorm with damaging winds blew their semis over on Interstate 74.

- On April 23, 2009 two individuals suffered minor injuries when a thunderstorm with damaging winds flipped a car over on the US Route 150 bridge.

Hail

Damage information was either unavailable or none was recorded for any of the 98 hail events experienced between 1960 and 2017. No injuries or fatalities were reported as a result of any of the recorded hail events either.

Lightning

Data obtained from NOAA's Storm Events Database and NOAA's Storm Data Publications indicates that between 1991 and 2017, lightning strike events caused $95,050 in property damages. No injuries or fatalities were reported as a result of any of the three lightning strike events.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts

- Total Property Damage: ***$6,894,950***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***$1,025,000***
- Injuries: ***14***
- Fatalities: ***n/a***

Severe Hail Impacts

- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Lightning Strike Impacts

- Total Property Damage: ***$95,050***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Severe Storms Risk/Vulnerability to:

- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

What other impacts can result from severe storms?

In Tazewell County, the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that wet road surface conditions were present for 11.6% to 16.2% of all crashes recorded annually in the County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure 25** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

What is the level of risk/vulnerability to public health and safety from severe storms?

For Tazewell County the level of risk or vulnerability posed by severe storms to public health and safety is considered to be low. This assessment is based on the fact that despite their relative frequency, the number of injuries and fatalities is low. In addition, UnityPoint Health – Pekin in Pekin as well as hospitals in Peoria (Peoria County), Eureka (Woodford County), Bloomington/Normal (McLean County), Lincoln (Logan County), Havana (Mason County) and Canton (Fulton County) and regional health centers in Springfield (Sangamon County) and the

Quad Cities area (Rock Island County) are equipped to provide care to persons injured during a severe storm.

Figure 25
Severe Weather Crash Data – Tazewell County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2011	2,507	406	134	1
2012	2,502	290	105	0
2013	2,559	406	129	0
2014	2,567	336	100	3
2015	2,499	346	127	1
Total:	**12,634**	**1,784**	**595**	**5**

Source: Illinois Department of Transportation.

Are existing buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in Tazewell County and the participating municipalities are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and can cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines, power substations, transformers and poles, and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Participating jurisdictions acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as municipal buildings, storm shelters, police and fire stations, heating and cooling centers, and lift stations. Of the participants, Tremont does not have emergency backup generators at its drinking water well sites or one of its lift stations while Washington will require a backup generator at Five Points should it become a designated warming center.

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered and government services can be affected.

Based on the frequency with which severe storms occur in Tazewell County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is medium to high.

Are future buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes and No. All of the participating jurisdictions have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 88 of the 337 recorded events listing property damage numbers for all categories of severe storms, there is no way to accurately estimate future potential dollar losses. Since all existing structures within Tazewell County are vulnerable to damage, it is highly probable that there will be future dollar losses from severe storms.

Tazewell County

Figure 15
(Sheet 1 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/16/1960	3:00 p.m.	Tremont⮝	n/a	n/a	n/a	n/a	n/a	
7/21/1961	4:40 p.m.	Pekin	n/a	n/a	n/a	n/a	n/a	
8/7/1968	2:30 p.m.	East Peoria Washington	n/a	n/a	n/a	n/a	n/a	winds downed tree limbs and caused minor building damage
5/29/1969	4:10 p.m.	Hopedale⮝	n/a	n/a	n/a	n/a	n/a	
10/10/1969	8:00 p.m.	Pekin	n/a	n/a	n/a	n/a	n/a	
5/1/1973	10:15 p.m.	South Pekin⮝	n/a	n/a	n/a	n/a	n/a	
5/1/1973	11:15 p.m.	Pekin	52 kts	n/a	n/a	$25,000	n/a	
6/26/1973	9:00 a.m.	Spring Lake⮝	n/a	n/a	n/a	n/a	n/a	winds uprooted trees and caused damage to a few homes
6/19/1974	6:20 p.m.	Dillon⮝	n/a	n/a	n/a	n/a	n/a	
6/21/1974	7:25 p.m.	Delavan	n/a	n/a	n/a	n/a	n/a	
4/29/1975	5:24 p.m.	Delavan	60 kts	n/a	n/a	n/a	n/a	
5/19/1975	4:40 p.m.	Delavan	52 kts	n/a	n/a	n/a	n/a	
3/26/1976	8:55 p.m.	Pekin	n/a	n/a	n/a	n/a	n/a	
3/26/1976	9:00 p.m.	Creve Coeur	n/a	n/a	n/a	n/a	n/a	
3/26/1976	9:10 p.m.	Groveland Morton Tremont	n/a	n/a	n/a	n/a	n/a	
5/4/1977	5:30 p.m.	Delavan Hopedale Tremont	n/a	n/a	n/a	n/a	n/a	
6/5/1977	3:20 p.m.	Pekin	50 kts	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$25,000**	**$0**	

⮝ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 2 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/13/1980	5:35 p.m.	Morton	54 kts	n/a	n/a	n/a	n/a	
9/1/1980	3:00 a.m.	Tremont	n/a	n/a	n/a	n/a	n/a	2 steel grain bins were destroyed
9/16/1980	5:10 p.m.	East Peoria	n/a	n/a	n/a	n/a	n/a	
8/24/1982	12:55 p.m.	Tremont	n/a	n/a	n/a	n/a	n/a	
8/24/1982	1:00 p.m.	Delevan	n/a	n/a	n/a	n/a	n/a	
7/29/1983	3:45 p.m.	Pekin Municipal Airport	n/a	n/a	n/a	n/a	n/a	winds damaged 2 planes
4/29/1984	8:00 p.m.	Green Valley Delavan	n/a	n/a	n/a	n/a	n/a	winds blew down trees in the southwestern part of the County
4/29/1984	8:50 p.m.	Washington^	n/a	n/a	n/a	n/a	n/a	
7/10/1984	9:30 p.m.	South Pekin	n/a	n/a	n/a	n/a	n/a	winds downed tree limbs and power lines
7/2/1985	6:45 p.m.	northern half of the county	n/a	n/a	n/a	n/a	n/a	scattered power outages occurred due to trees falling across power lines
7/4/1985	9:45 p.m.	northern half of the county	n/a	n/a	n/a	n/a	n/a	winds caused widespread minor damage to trees, telephone and electric utilities
7/31/1986	1:30 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	- winds downed thousands of trees - widespread power outages were experienced - 5,000 houses without power
9/19/1986	4:50 a.m.	Hopedale Minier	52 kts	n/a	n/a	n/a	n/a	*Hopedale/Minier area* many large trees blocked roads
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 3 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

<table>
<tr><th>Date(s)</th><th>Start Time</th><th>Location(s)</th><th>Magnitude (Knots)</th><th>Injuries</th><th>Fatalities</th><th>Property Damage</th><th>Crop Damage</th><th>Description</th></tr>
<tr><td>5/21/1987</td><td>8:25 p.m.</td><td>Pekin</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>winds blew down trees</td></tr>
<tr><td>5/21/1987</td><td>9:45 p.m.</td><td>Morton</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>400 homes were without power for several hours when trees fell across power lines</td></tr>
<tr><td>7/31/1987</td><td>3:05 p.m.</td><td>Pekin</td><td>52 kts</td><td>n/a</td><td>n/a</td><td>$25,000</td><td>n/a</td><td>- winds toppled large trees in and around the City
- one home was so badly damaged by a large tree that it was rendered uninhabitable</td></tr>
<tr><td>4/22/1988</td><td>8:00 p.m.</td><td>East Peoria^</td><td>n/a</td><td>n/a</td><td>n/a</td><td>$25,000</td><td>n/a</td><td>winds demolished a large construction trailer and a building under construction a mile south of the City</td></tr>
<tr><td>4/22/1988</td><td>8:50 p.m.</td><td>Morton</td><td>n/a</td><td>n/a</td><td>n/a</td><td>$2,500</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="9"><u>Morton</u>
- a large part of a motel roof was torn off
<u>Morton area</u>
- winds nearly demolished a large turkey farm building
- some downed trees and power lines blocked roads</td></tr>
<tr><td>5/8/1988</td><td>4:10 p.m.</td><td>Pekin</td><td>n/a</td><td>n/a</td><td>n/a</td><td>$250,000</td><td>n/a</td><td>- winds severely damaged a block/brick beach house
- 2 homes were damaged by falling trees</td></tr>
<tr><td colspan="4">Subtotal:</td><td>0</td><td>0</td><td>$102,500</td><td>$0</td><td></td></tr>
</table>

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 4 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/8/1988	4:20 p.m.	East Peoria	61 kts	n/a	n/a	$1,500,000	n/a	*Event Description Provided Below*
- strong winds and downbursts severely damaged 33 homes • some of the heaviest damage occurred in Fond Du Lac Heights and a two-block stretch from Clayton Court to near Oakwood Drive - parts of roofs were blown off of homes - a couple of garages were destroyed - a restaurant on IL Rte. 116 and Caterpillar Drive lost its entire roof while 70 individuals were dining but no injuries occurred								
5/8/1988	4:30 p.m.	Marquette Heights	n/a	n/a	n/a	$25,000	n/a	- winds damaged 25 large trees, uprooting some of them - 10 homes had roof damage - 3 cars were damaged by falling trees
11/15/1988	10:00 p.m.	Minier Hopedale^	n/a	n/a	n/a	$25,000	n/a	<u>*Minier*</u> - a roof was blown off a house <u>*Hopedale area*</u> - winds destroyed a hog building - part of the roof of a farmhouse was torn off
4/27/1990	5:01 p.m.	Hopedale^	52 kts	n/a	n/a	n/a	n/a	
8/29/1990	1:00 a.m.	Pekin^	n/a	n/a	n/a	n/a	$25,000	
5/17/1991	8:32 p.m.	Parkland^	n/a	n/a	n/a	n/a	n/a	winds blew down trees
5/17/1991	8:44 p.m.	Minier	n/a	n/a	n/a	n/a	n/a	winds blew down trees
5/31/1991	6:20 p.m.	Pekin	n/a	n/a	n/a	$25,000	n/a	winds toppled trees and blew down power lines
6/15/1991	2:46 p.m.	Morton^	55 kts	n/a	n/a	n/a	n/a	
6/15/1991	3:20 p.m.	Pekin	n/a	n/a	n/a	$2,500	n/a	winds downed power lines
5/4/1992	1:52 p.m.	Pekin	n/a	n/a	n/a	$250	n/a	several medium to large sized trees were blown down
Subtotal:				**0**	**0**	**$1,577,750**	**$25,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 5 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/17/1992	3:00 p.m.	Morton	n/a	n/a	n/a	n/a	n/a	
6/17/1992	3:00 p.m.	South Pekin	n/a	n/a	n/a	n/a	n/a	
6/7/1992	3:20 p.m.	Delavan	n/a	n/a	n/a	n/a	n/a	- trees and power lines were blown down - a tree was blown onto a house causing damage
6/23/1992	8:40 p.m.	Pekin	52 kts	n/a	n/a	n/a	n/a	
7/2/1992	1:10 p.m.	Creve Coeur	n/a	n/a	n/a	n/a	n/a	the roof was blown off of a community recreation center
9/7/1992	9:40 p.m.	Pekin	n/a	n/a	n/a	n/a	n/a	trees were blown down
9/9/1992	4:30 p.m.	Washington▲	57 kts	n/a	n/a	n/a	n/a	
9/9/1992	5:03 p.m.	Deer Creek	n/a	n/a	n/a	n/a	n/a	winds damaged trees
5/12/1993	5:43 p.m.	East Peoria	n/a	n/a	n/a	n/a	n/a	winds blew down tree limbs and power lines
8/15/1993	8:15 p.m.	Creve Coeur	n/a	n/a	n/a	n/a	n/a	a large tree was blown down onto power lines
8/15/1993	8:20 p.m.	East Peoria	n/a	n/a	n/a	$500	n/a	a 20-inch diameter tree was blown down
8/23/1993	4:40 p.m.	Creve Coeur	n/a	n/a	n/a	$50	n/a	large tree limbs were blown down
8/23/1993	4:50 p.m.	Washington	n/a	n/a	n/a	n/a	n/a	
8/23/1993	4:56 p.m.	Deer Creek▲	n/a	n/a	n/a	n/a	n/a	
8/23/1993	5:05 p.m.	Deer Creek	n/a	n/a	n/a	$500	n/a	a 10-inch diameter tree was blown down
8/23/1993	5:35 p.m.	Deer Creek	n/a	n/a	n/a	$50	n/a	large tree limbs were blown down
8/23/1993	6:10 p.m.	Groveland	n/a	n/a	n/a	$500	n/a	large tree limbs were blown down
Subtotal:				**0**	**0**	**$1,600**	**$0**	

▲ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 6 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/26/1994	5:45 p.m.	Washington	n/a	n/a	n/a	$2,500	n/a	<u>*Washington*</u> - several houses had siding damage <u>*Washington area*</u> - winds damaged a two mile wide swath of crops
6/26/1994	5:50 p.m.	Creve Coeur	n/a	n/a	n/a	$2,500	n/a	- a vent stack was blown off the roof of the Wesleyan Church - 3-inch diameter tree limbs were blown down
6/26/1994	5:52 p.m.	Pekin	n/a	n/a	n/a	$2,500	n/a	- large tree limbs were blown down - trees were blown down along IL Rte. 98
6/26/1994	5:55 p.m.	Tremont^	n/a	n/a	n/a	$25,000	n/a	- winds damaged siding on several homes - large trees were blown down on Townline and Schrader Roads - winds damaged crops
7/2/1994	5:05 p.m.	Marquette Heights	n/a	n/a	n/a	n/a	n/a	a 3-inch diameter tree was blown down
7/20/1994	5:07 p.m.	South Pekin	n/a	n/a	n/a	$50	n/a	power lines were blown down
7/20/1994	5:22 p.m.	Pekin	n/a	n/a	n/a	$50	n/a	- part of the roof of a Western Auto Parts store was blown off - large tree limbs were blown down
6/20/1995	6:45 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	winds downed 6 to 12 inch diameter tree limbs
Subtotal:				**0**	**0**	**$32,600**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 7 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/21/1995	6:55 p.m.	Minier	52 kts	n/a	n/a	n/a	n/a	winds blew a trained spotter's truck 3 feet off the road
6/23/1995	11:05 p.m.	Morton	n/a	6	0	n/a	n/a	- wind blew down the roof of a motel that was being constructed - 6 workers were injured, though none seriously - at another nearby construction site, the top two floors of a three-story townhouse complex were flattened
3/25/1996	4:00 a.m.	countywide	n/a	n/a	n/a	n/a	n/a	winds blew down numerous power lines and caused minor damage across the County *rain could not be documented with this event*
6/23/1996	10:18 p.m.	Delavan	55 kts	n/a	n/a	n/a	n/a	winds blew down a 12-inch diameter tree which landed on a pickup truck
6/23/1996	10:44 p.m.	South Pekin Midway	n/a	n/a	n/a	n/a	n/a	wind blew down numerous large tree limbs and power lines
7/24/1996	11:45 a.m.	Morton	n/a	n/a	n/a	n/a	n/a	several large trees were blown down in the Pine Lake area
10/29/1996	4:40 p.m.	Pekin Armington	n/a	n/a	n/a	n/a	n/a	*Pekin* - winds blew down numerous tree limbs and power lines *Armington* - a carport was blown off a house
Subtotal:				**6**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 8 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
10/30/1996	1:00 a.m.	countywide	57 kts	n/a	n/a	n/a	n/a	winds blew down trees, tree limbs and power lines *<u>Pekin</u>* - a tree fell onto a house causing damage to a bedroom *rain could not be documented with this event*
4/5/1997	3:12 p.m.	Parkland^	n/a	n/a	n/a	n/a	n/a	winds blew over a carport
4/5/1997	3:27 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down throughout the area with some areas sustaining more serious damage
4/6/1997	9:15 a.m.	countywide	52 kts	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines *rain could not be documented with this event*
4/30/1997	2:19 p.m.	Pekin	58 kts	n/a	n/a	n/a	n/a	trees, tree limbs and power lines were knocked down
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 9 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/30/1997	2:00 p.m.	countywide	61 kts	n/a	n/a	n/a	n/a	- hundreds of power lines were blown down across the area - numerous trees and tree limbs were blown down - widespread structural damage was reported - numerous sheds, grain bins and machine sheds were either blown over, damaged or destroyed
5/18/1997	9:23 p.m.	Pekin	n/a	n/a	n/a	n/a	n/a	winds blew down numerous large tree limbs
6/12/1997	11:55 a.m.	Parkland^	n/a	n/a	n/a	n/a	n/a	winds blew down several power lines
9/29/1997	10:00 a.m.	countywide	52 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down *rain could not be documented with this event*
3/27/1998	6:55 p.m.	Delavan Green Valley South Pekin Tremont Morton	52 kts	n/a	n/a	$500,000	n/a	*Green Valley/South Pekin/Tremont* - winds blew down numerous trees and tree limbs *Morton* - winds damaged a car dealership as shingles, rocks and other debris were blown onto approx. 300 cars, knocking out windows in some and causing large dents in others
Subtotal:				**0**	**0**	**$500,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 10 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/19/1998	6:05 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	numerous trees and tree limbs were blown down
5/24/1998	1:25 a.m.	Pekin	n/a	n/a	n/a	n/a	n/a	winds blew down a large tree limb onto a driveway
6/14/1998	7:30 a.m.	Washington	n/a	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines
6/18/1998	6:17 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	- numerous trees, tree limbs and power lines were blown down *Morton* - winds blew off part of the roof of a shopping center - some of the debris damaged several vehicles in the adjacent parking lot *Washington* - a construction trailer was blown over
6/28/1998	7:24 p.m.	Armington	n/a	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
6/29/1998	3:40 p.m.	countywide	83 kts	n/a	n/a	$2,000,000	$1,000,000	*Event Description Provided Below*
Morton - as a tornado moved through the southwestern portions of the Village, strong microburst winds caused considerable tree and power line damage as well as structural damage in and close to the tornado path *South Pekin* - 7 railroad cars were blown over 2 high-tension towers were blown down								
Subtotal:				**0**	**0**	**$2,000,000**	**$1,000,000**	

⮝ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 11 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	**Start Time**	**Location(s)**	**Magnitude (Knots)**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**	**Description**
11/10/1998	5:30 a.m.	countywide	n/a	n/a	n/a	n/a	n/a	winds downed thousands of power lines and tree limbs and blew over hundreds of trees across the region *Creve Coeur area* - winds ripped sheet metal from a storage tank containing ammonia - some pieces of sheet metal sheared open two relief valves, releasing gas fumes into the air - homes were evacuated *rain could not be documented with this event*
2/11/1999	3:23 p.m.	countywide	51 kts	6	0	$40,000	n/a	*Event Description Provided Below*
numerous trees were blown over and several sheds, barns and outbuildings were either damaged or destroyed *Delavan* - blew the roof off a house *Delavan area* - winds took the roof off a corn crib and flipped over an irrigation rig 3 miles southwest of the City *South Pekin* - a dozen power poles were blown down *Tremont* - a semi was blown over on IL Rte. 9 near the interchange with I-155 *Tremont area* - tops of numerous trees were torn off and a swing set was blown over *Morton area* - 6 semis were blown over on I-74 causing 6 minor injuries and damaging 2 of the semis								
Subtotal:				**6**	**0**	**$40,000**	**$0**	

▲ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 12 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

<table>
<tr><th>Date(s)</th><th>Start Time</th><th>Location(s)</th><th>Magnitude (Knots)</th><th>Injuries</th><th>Fatalities</th><th>Property Damage</th><th>Crop Damage</th><th>Description</th></tr>
<tr><td>6/4/1999</td><td>3:34 p.m.</td><td>Delavan^</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>- a semi was blown over on I-155 east of Delavan, the driver was uninjured
- several trees were blown down nearby</td></tr>
<tr><td>7/28/1999</td><td>1:20 a.m.</td><td>Pekin
Groveland
Morton</td><td>52 kts</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td><u>Pekin</u>
several large tree limbs were blown down</td></tr>
<tr><td>8/12/1999</td><td>7:15 p.m.</td><td>Armington</td><td>n/a</td><td>n/a</td><td>n/a</td><td>$10,000</td><td>n/a</td><td>several trees were blown down</td></tr>
<tr><td>8/23/1999</td><td>5:40 p.m.</td><td>Delavan
Tremont
Morton</td><td>52 kts</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>several large tree limbs were blown down</td></tr>
<tr><td>4/20/2000</td><td>4:59 a.m.</td><td>countywide</td><td>64 kts</td><td>n/a</td><td>n/a</td><td>$600,000</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="9">numerous trees, tree limbs, power poles and power lines were blown down countywide
<u>Green Valley</u>
- a large empty grain bin was blown over
- several sheds were destroyed
- an irrigation system was wrapped around a couple of power poles
<u>Groveland</u>
- a radio tower was blown down causing $500,000 in damage
<u>Pekin</u>
- new townhouses under construction were destroyed
<u>Morton</u>
- part of a roof from a business was blown off
- debris from the roof damaged 3 cars in the parking lot
<u>Washington</u>
- a building housing a restaurant and bakery was destroyed
- a hanger at a private airport was destroyed
- 3 planes in the hanger were damaged
<u>Minier</u>
- several homes sustained roof damage
- a couple shed were destroyed</td></tr>
<tr><td>6/20/2000</td><td>7:02 p.m.</td><td>Pekin</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>several power lines were blown down</td></tr>
<tr><td>6/23/2000</td><td>4:25 p.m.</td><td>countywide</td><td>77 kts</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous trees, tree limbs and power lines were blown down</td></tr>
<tr><td colspan="4">Subtotal:</td><td>0</td><td>0</td><td>$610,000</td><td>$0</td><td></td></tr>
</table>

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 13 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/17/2000	5:45 p.m.	Parkland^	n/a	n/a	n/a	n/a	n/a	a 12-inch diameter tree was blown down onto some power lines
8/23/2000	5:15 p.m.	Mackinaw	n/a	n/a	n/a	n/a	n/a	a 15-inch diameter tree was blown down
9/11/2000	9:46 p.m.	Pekin Schaeferville Dillon^	52 kts	n/a	n/a	n/a	n/a	*Pekin* - numerous trees and power lines were reported down - a construction trailer was blown over and traveled some 100 feet from its original location *Pekin Energy Plant* - a large construction sign made of steel and brick was partially blown over
4/21/2001	5:50 p.m.	Green Valley^	50 kts	n/a	n/a	n/a	n/a	an irrigation tower was blown over
6/14/2001	6:05 p.m.	Pekin North Pekin Marquette Heights East Peoria Creve Coeur Morton Washington	50 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down
7/23/2001	3:15 p.m.	Hopedale Armington	52 kts	n/a	n/a	n/a	n/a	several trees were blown down
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 14 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/9/2001	7:20 p.m.	Pekin Tremont	52 kts	n/a	n/a	n/a	n/a	power lines and trees were blown down
8/22/2001	5:46 p.m.	South Pekin Pekin Groveland Morton East Peoria^ Washington	50 kts	n/a	n/a	n/a	n/a	<u>*South Pekin*</u> - an out building was destroyed - trees were blown down <u>*Washington area*</u> - trees were blown down
8/22/2001	5:46 p.m.	Hopedale^	50 kts	n/a	n/a	n/a	n/a	trees were blown down
8/30/2001	7:10 p.m.	Pekin North Pekin Marquette Heights Creve Coeur East Peoria	52 kts	n/a	n/a	n/a	n/a	<u>*Pekin*</u> 4 to 6 inch limbs were blown down
10/24/2001	11:40 a.m.	Delavan^	56 kts	n/a	n/a	n/a	n/a	
3/9/2002	3:00 a.m.	countywide	54 kts	n/a	n/a	n/a	n/a	- numerous reports of downed power lines, power poles and trees - several reports of minor damage to roofs and storage sheds *rain could not be documented with this event*
4/24/2002	2:30 p.m.	Mackinaw^	50 kts	n/a	n/a	n/a	n/a	numerous trees were blown down in the Mackinaw River State Fish & Wildlife area
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 15 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/13/2002	6:43 p.m.	Delavan	50 kts	n/a	n/a	n/a	n/a	several power lines were blown down
6/4/2002	4:18 p.m.	countywide	55 kts	n/a	n/a	n/a	n/a	numerous limbs and several trees were blown down countywide, especially in the Washington area
7/26/2002	4:10 a.m.	Pekin^ Allentown Mackinaw	52 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down
2/11/2003	6:41 p.m.	Tremont	51 kts	n/a	n/a	n/a	n/a	
4/4/2003	8:30 a.m.	Delavan^	56 kts	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
5/28/2003	2:00 p.m.	Washington	60 kts	n/a	n/a	n/a	n/a	- numerous trees were blown down - some of the trees landed on buildings causing minor to moderate damage
6/25/2003	6:30 p.m.	countywide	60 kts	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines, especially in the northern half of the County *Morton* several cars in a shopping center parking lot were damaged due to flying debris
7/8/2003	2:35 p.m.	Pekin Allentown Mackinaw^	52 kts	n/a	n/a	n/a	n/a	several trees, tree limbs and power lines were blown down
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 16 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/21/2003	12:55 a.m.	Creve Coeur East Peoria Groveland Tremont	60 kts	n/a	n/a	n/a	n/a	- numerous trees, tree limbs and power lines were blown down - several of the fallen trees caused minor damage to the roof of a couple of houses - several cars sustained damage from the trees
4/20/2004	4:45 p.m.	Pekin Schaeferville	52 kts	n/a	n/a	n/a	n/a	
4/24/2004	7:28 p.m.	Delavan	52 kts	n/a	n/a	n/a	n/a	
5/23/2004	8:30 a.m.	Delavan	52 kts	n/a	n/a	n/a	n/a	winds blew down several telephone poles as well as large tree limbs
5/30/2004	3:43 p.m.	Morton	55 kts	n/a	n/a	n/a	n/a	several large trees were blown down
5/30/2004	4:30 p.m.	Pekin Hopedale Armington	52 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were down between Pekin and Armington
7/11/2004	3:45 p.m.	Hopedale Tremont^ Morton	52 kts	n/a	n/a	n/a	n/a	*Hopedale* a machine shed lost a small portion of its roof *Morton* numerous large tree limbs were blown down
7/22/2004	11:00 a.m.	Pekin	50 kts	n/a	n/a	n/a	n/a	- winds blew down several trees, tree limbs and power lines - one tree fell onto an unoccupied truck damaging it
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 17 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/18/2004	8:04 p.m.	South Pekin	50 kts	n/a	n/a	n/a	n/a	several large tree limbs were blown down
10/29/2004	10:35 p.m.	Parkland Green Valley Delavan	55 kts	n/a	n/a	n/a	n/a	*Parkland area* an addition to a house that was under construction had half of its roof blown off
5/19/2005	5:32 p.m.	Mackinaw^	52 kts	n/a	n/a	n/a	n/a	
5/19/2005	5:45 p.m.	Washington^	50 kts	n/a	n/a	n/a	n/a	a large tree was blown down
6/4/2005	10:40 a.m.	South Pekin^	50 kts	n/a	n/a	n/a	n/a	winds blew down a 10-inch diameter tree
6/8/2005	1:55 p.m.	Delavan^	50 kts	n/a	n/a	n/a	n/a	
7/26/2005	3:31 p.m.	Morton	50 kts	n/a	n/a	n/a	n/a	numerous large tree branches were blown down
7/26/2005	3:40 p.m.	Mackinaw^	52 kts	n/a	n/a	n/a	n/a	several 12-inch diameter trees were blown down
7/26/2005	4:00 p.m.	South Pekin	50 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down
9/19/2005	2:38 p.m.	Groveland	52 kts	n/a	n/a	n/a	n/a	
9/19/2005	2:41 p.m.	Morton	60 kts	n/a	n/a	n/a	n/a	part of the roof of a shopping center was torn off
9/19/2005	2:50 p.m.	Hopedale	50 kts	n/a	n/a	n/a	n/a	numerous tree limbs were blown down across the Village
9/19/2005	2:52 p.m.	Pekin	50 kts	n/a	n/a	$1,500	n/a	a large tree limb fell on a house
9/19/2005	3:08 p.m.	Armington	n/a	n/a	n/a	n/a	n/a	- numerous trees were blown down - one tree fell on top of a car
Subtotal:				**0**	**0**	**$1,500**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 18 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
11/5/2005	9:24 p.m.	Pekin Tremont Mackinaw Delavan Hopedale	52 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down
3/12/2006	8:30 p.m.	Allentown^	52 kts	n/a	n/a	n/a	n/a	windows were blown in on a house
4/2/2006	5:20 p.m.	Pekin	50 kts	n/a	n/a	n/a	n/a	- several tree limbs were blown down - siding was blown off a house
4/2/2006	5:30 p.m.	Minier	52 kts	n/a	n/a	n/a	n/a	power lines were blown down
4/2/2006	5:45 p.m.	Mackinaw	52 kts	n/a	n/a	n/a	n/a	winds damaged the roof of a small building
4/13/2006	10:30 p.m.	Washington	52 kts	n/a	n/a	$30,000	n/a	- power lines were blown down - the local Walmart lost $30,000 in food due to loss of power
4/13/2006	10:55 p.m.	South Pekin^ Dillon	60 kts	n/a	n/a	n/a	n/a	- a shed was destroyed and 2 large outbuildings were damaged - numerous trees, power poles and power lines were blown down
4/16/2006	12:45 p.m.	Tremont^	60 kts	n/a	n/a	n/a	n/a	2 large two-wheel grain hauling trailers were flipped over
5/24/2006	2:39 p.m.	Tremont Mackinaw	56 kts	n/a	n/a	n/a	n/a	*Mackinaw area* numerous large tree limbs and several highway signs were blown down
5/24/2006	2:40 p.m.	Hopedale	62 kts	n/a	n/a	n/a	n/a	- several large trees were blown down - a garage was shifted off its foundation
Subtotal:				**0**	**0**	**$30,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 19 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/24/2006	2:43 p.m.	Hopedale^	61 kts	n/a	n/a	n/a	n/a	
6/22/2006	7:10 a.m.	South Pekin	52 kts	n/a	n/a	n/a	n/a	a 12-inch diameter tree was blown down
6/22/2006	7:12 a.m.	Pekin	52 kts	n/a	n/a	n/a	n/a	1 15-inch diameter tree was blown down
6/22/2006	7:13 a.m.	Washington	50 kts	n/a	n/a	n/a	n/a	
6/22/2006	7:20 a.m.	Mackinaw	52 kts	n/a	n/a	n/a	n/a	a circus tent was partially blown down
7/2/2006	7:09 p.m.	Armington^	56 kts	n/a	n/a	n/a	n/a	
7/19/2006	2:55 p.m.	countywide	56 kts	n/a	n/a	n/a	n/a	numerous trees and power lines were blown down
3/31/2007	6:30 p.m.	Morton^ Washington^	65 kts	n/a	n/a	n/a	n/a	*Morton area* - at a farmstead a shed was severely damaged and a couple of grain bins sustained minor damage - minor damage occurred to the siding and gutters of the home *Washington area* - power lines were blown down
5/15/2007	1:05 p.m.	Deer Creek	52 kts	n/a	n/a	n/a	n/a	several 2 to 3 inch tree branches were blown down
8/7/2007	11:25 p.m.	Spring Lake^	53 kts	n/a	n/a	n/a	n/a	
8/22/2007	7:05 p.m.	Pekin	61 kts	n/a	n/a	$15,000	n/a	numerous trees were blown down
1/7/2008	5:11 p.m.	Morton Allentown Mackinaw	52 kts	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$15,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 20 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/26/2008	1:10 a.m.	Morton	56 kts	n/a	n/a	$2,000	n/a	a large tree was blown down across North Main Street
6/15/2008	2:11 p.m.	Creve Coeur	61 kts	n/a	n/a	$75,000	n/a	- numerous trees, large tree limbs and power lines were blown down - an A frame house was destroyed when 2 large trees fell on it
6/15/2008	2:15 p.m.	Green Valley	61 kts	n/a	n/a	$20,000	n/a	numerous trees were blown down along IL Rte. 29
6/15/2008	2:19 p.m.	Pekin	52 kts	n/a	n/a	$10,000	n/a	numerous large tree limbs were blown down
6/15/2008	2:25 p.m.	Tremont	56 kts	n/a	n/a	n/a	n/a	
6/15/2008	2:30 p.m.	Morton Deer Creek	62 kts	n/a	n/a	$20,000	n/a	numerous tree and tree limbs were blown down
7/21/2008	7:25 p.m.	Delavan	52 kts	n/a	n/a	n/a	n/a	a portion of a large tree fell across a road
8/5/2008	4:05 a.m.	East Peoria	61 kts	n/a	n/a	$2,000	n/a	winds snapped 3 six to eight-inch diameter trees
4/23/2009	7:30 p.m.	East Peoria	61 kts	2	0	$10,000	n/a	- winds flipped a car over on the US Rte. 150 bridge - 2 minor injuries were reported - a wooden playset was destroyed - minor shingle damage occurred to several homes - approx. 500 people were without power
6/1/2009	6:25 p.m.	Hopedale^	52 kts	n/a	n/a	n/a	n/a	a large tree limb was blown down
Subtotal:				**2**	**0**	**$139,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 21 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	**Start Time**	**Location(s)**	**Magnitude (Knots)**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**	**Description**
6/1/2009	6:30 p.m.	Pekin	52 kts	n/a	n/a	$12,000	n/a	- a few trees were blown down - scattered power outages were noted
6/18/2009	4:06 a.m.	Morton	61 kts	n/a	n/a	$50,000	n/a	several trees and power lines were blown down
6/27/2009	7:19 p.m.	Washington	52 kts	n/a	n/a	$35,000	n/a	numerous large tree branches and power lines were blown down
7/24/2009	10:21 p.m.	Mackinaw	52 kts	n/a	n/a	$5,000	n/a	- a tree was blown down onto a john boat docked at the Heritage Lake fishing pier - the boat later sank
8/4/2009	7:30 a.m.	Pekin	61 kts	n/a	n/a	$25,000	n/a	numerous tree limbs were blown down
8/4/2009	7:55 a.m.	Washington	52 kts	n/a	n/a	$2,000	n/a	large tree branches were blown down near Beverly Manor School
8/19/2009	2:30 p.m.	Mackinaw Washington	52 kts	n/a	n/a	$35,000	n/a	*Mackinaw* several 9-iunch diameter tree limbs were blown down *Mackinaw area* several large tree limbs were blown down near Heritage Lake *Washington* numerous tree limbs were blown down
8/19/2009	2:50 p.m.	Talbott◭	52 kts	n/a	n/a	$65,000	n/a	- a machine shed was destroyed - a barn was pushed off its foundation - windows were broken out - several trees were broken off or uprooted
Subtotal:				**0**	**0**	**$229,000**	**$0**	

◭ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 22 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/4/2010	7:03 p.m.	South Pekin	52 kts	n/a	n/a	$10,000	n/a	several large tree limbs were broken down
5/13/2010	6:25 a.m.	South Pekin^	52 kts	n/a	n/a	n/a	n/a	a few tree limbs were broken
6/2/2010	12:40 a.m.	Armington^	70 kts	n/a	n/a	$125,000	n/a	- grain bins and machine sheds were damaged - a large tree limb was blown down onto the roof of a house
6/2/2010	12:40 a.m.	Washington^	52 kts	n/a	n/a	$30,000	n/a	a tree and several power lines were blown down at IL Rte. 24 and Pleasantview Road
6/2/2010	12:40 a.m.	Mackinaw^ Lilly	70 kts	n/a	n/a	$116,000	n/a	*Mackinaw area* - the roof of a house and several outbuildings were damaged - numerous trees and power lines were blown down *Lilly* - the roof of a barn was damaged - a large tree was blown down across Fast Avenue - a semi-truck was tipped over
6/23/2010	6:10 p.m.	Pekin	52 kts	n/a	n/a	$20,000	n/a	a tree was blown down onto a house on Prince Street
6/23/2010	6:13 p.m.	Morton	52 kts	n/a	n/a	$15,000	n/a	numerous small tree limbs were blown down
Subtotal:				**0**	**0**	**$328,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 23 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
10/26/2010	4:12 a.m.	Pekin	52 kts	n/a	n/a	$15,000	n/a	- several 18-inch branches were blown down - a large tree was blown down on Walnut Street
10/26/2010	4:30 a.m.	Morton Tremont Hopedale Mackinaw^	52 kts	n/a	n/a	$75,000	n/a	*<u>Morton</u>* power poles were blown down *<u>Hopedale</u>* - several power poles were blown down - the roof of a shed was damaged - 4 pear trees were toppled *<u>Mackinaw area</u>* a tree limb was blown onto power lines, resulting in a power outage to much of Mackinaw and Heritage Lake
10/26/2010	4:36 a.m.	Washington	52 kts	n/a	n/a	$40,000	n/a	power poles were blown down
5/25/2011	5:15 a.m.	Delavan	52 kts	n/a	n/a	$95,000	n/a	*<u>Delavan</u>* - part of the roof was blown off the high schools - power was knocked out to the south side of the City *<u>Delavan area</u>* - windows were broken at a house - a metal shed was blown down onto a road
Subtotal:				**0**	**0**	**$225,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 24 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/25/2011	5:05 p.m.	Pekin	52 kts	n/a	n/a	n/a	n/a	- a 3-inch diameter tree branch was blown down
6/4/2011	6:18 p.m.	Pekin	52 kts	n/a	n/a	$15,000	n/a	several trees were blown down
6/21/2011	6:05 p.m.	Morton	52 kts	n/a	n/a	$2,000	n/a	winds snapped a 12-inch diameter tree
8/8/2011	5:44 p.m.	East Peoria Creve Coeur	56 kts	n/a	n/a	$242,000	n/a	<u>*East Peoria*</u> wind damage occurred over a 2-block radius with several trees blown down on cars and house in the 1100 block of Springfield Road <u>*Creve Coeur*</u> a 12-inch diameter tree fell onto a house <u>*East Peoria/Creve Coeur area*</u> several trees were blown down on Pekin Avenue
6/16/2012	6:55 p.m.	Tremont	52 kts	n/a	n/a	n/a	n/a	- a tree was blown onto a house - several power lines were knocked down
6/16/2012	7:15 p.m.	Washington	52 kts	n/a	n/a	n/a	n/a	a tree and several tree limbs were blown down
7/26/2012	6:10 p.m.	Armington	52 kts	n/a	n/a	$42,000	n/a	- the roof an old school was damaged - numerous trees and tree branches were blown down - power lines were knocked down as well, causing power outages
5/20/2013	6:39 p.m.	Creve Coeur	52 kts	n/a	n/a	$4,000	n/a	a tree was blown onto a fence
Subtotal:				**0**	**0**	**$305,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 25 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/31/2013	3:00 p.m.	Morton	52 kts	n/a	n/a	$10,000	n/a	several branches were blown down at Queenwood and Main Street
5/12/2014	8:40 p.m.	Pekin	52 kts	n/a	n/a	$30,000	n/a	a few trees and power lines were blown down
5/12/2014	8:45 p.m.	East Peoria	52 kts	n/a	n/a	n/a	n/a	an 8-inch diameter tree limb was blown down on Fondulac Drive
6/30/2014	8:41 p.m.	Washington	5 kts	n/a	n/a	$1,000	n/a	a 5 to 6-inch diameter tree branch was blown down
7/14/2014	10:20 a.m.	Pekin	52 kts	n/a	n/a	$30,000	n/a	- 2 trees were uprooted and several large tree limbs were blown down - numerous power lines were knocked down as well
7/14/2014	10:27 a.m.	Schaeferville	52 kts	n/a	n/a	$4,000	n/a	a large tree was blown onto power lines
7/14/2014	10:30 p.m.	Pekin	52 kts	n/a	n/a	$5,000	n/a	windows were blown out of the Menards
8/4/2014	6:13 p.m.	Marquette Heights	52 kts	n/a	n/a	$30,000	n/a	a few trees and power lines were blown down
8/23/2014	10:30 a.m.	Pekin	52 kts	n/a	n/a	$18,000	n/a	several tree branches were blown down
6/7/2015	6:30 p.m.	Pekin	70 kts	n/a	n/a	n/a	n/a	several trees were snapped and uprooted
6/7/2015	6:45 p.m.	Pekin	70 kts	n/a	n/a	$30,000	n/a	a large tree was blown onto a garage and the roof of a house
Subtotal:				**0**	**0**	**$158,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 26 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/10/2015	8:50 p.m.	Marquette Heights Creve Coeur East Peoria	52 kts	n/a	n/a	$179,000	n/a	*Marquette Heights* - a 10-inch diameter tree was blown down at Douglas and Pontiac Streets - a 16-inch diameter tree split and blocked a road *Creve Coeur* - numerous trees and power lines were blown down - a few trees fell onto houses *East Peoria* - numerous trees and power lines were blown down
6/10/2015	8:50 p.m.	Pekin	52 kts	n/a	n/a	$80,000	n/a	numerous trees and tree branches were blown down
6/10/2015	9:00 p.m.	Washington Tremont^	52 kts	n/a	n/a	$52,000	n/a	*Washington* several trees and power lines were blown down *Tremont area* a 14 to 16-inch diameter tree was blown down onto Townline Road at the Mackinaw River Bridge
7/16/2015	4:23 p.m.	Armington	61 kts	n/a	n/a	$12,000	n/a	several trees were blown down
8/18/2015	4:52 p.m.	Hopedale^	52 kts	n/a	n/a	$20,000	n/a	a 45 by 50-foot pole barn under construction was blown over
8/18/2015	4:55 p.m.	Hopedale	52 kts	n/a	n/a	$2,000	n/a	a power line was blown down on Oak Street
Subtotal:				**0**	**0**	**$345,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 27 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
11/11/2015	7:20 p.m.	Pekin Groveland Morton	52 kts	n/a	n/a	$11,000	n/a	*Event Description Provided Below*
Pekin - a large tree branch was blown down onto a house causing minor roof damage - several large tree branches were blown down blocking Fenley Ave. - $11,000 in property damage was recorded in the City *Morton* - a tree was snapped *Ameren (regional information, including Tazewell County)* - 20,000 customers were without power for up to a day - 43 wires downed - 13 poles replaced - 25 service lines to individual customers damaged - 20 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed								
4/2/2016	9:00 a.m.	Pekin	52 kts	n/a	n/a	$5,000	n/a	winds caused scattered damage and power outages *Pekin* shingles were blown off the roof of a house *rain could not be documented with this event*
7/13/2016	3:50 p.m.	Marquette Heights	61 kts	n/a	n/a	$2,000	n/a	an 18-inch diameter tree was snapped
Subtotal:				**0**	**0**	**$18,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 28 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/13/2016	5:05 p.m.	Mackinaw	61 kts	n/a	n/a	$30,000	n/a	*Mackinaw* numerous trees were snapped around the Village *Mackinaw area* a 50-foot tall poplar tree approx. 12 to 15 feet in diameter was blown over onto Heritage Drive at Heritage Lake
7/24/2016	7:38 p.m.	Green Valley	52 kts	n/a	n/a	$3,000	n/a	2 – 12-inch diameter trees were blown down across IL Rte. 29
7/24/2016	9:59 p.m.	Hopedale	52 kts	n/a	n/a	$15,000	n/a	- a large, rotten tree was snapped about 10 feet above the ground - numerous large branches were blown down - a strip of tin was torn from a metal roof - a flag pole was bent to the ground
3/6/2017	11:43 p.m.	Morton	52 kts	n/a	n/a	$12,000	n/a	a semi was blown over on I-155 at the Main Street exit
3/7/2017	12:12 a.m.	Washington^	52 kts	n/a	n/a	$10,000	n/a	a wall of the Washington Township shed was blown down
5/26/2017	2:07 p.m.	Morton	61 kts	n/a	n/a	$100,000	n/a	numerous trees and power lines were blown down on the north side of the Village north of I-74 from Lakeland Rd. eastward to Tennessee Ave.
Subtotal:				**0**	**0**	**$170,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Tazewell County

Figure 15
(Sheet 29 of 29)
Severe Storms – Thunderstorms with Damaging Winds
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/19/2017	5:50 p.m.	Mackinaw^	52 kts	n/a	n/a	n/a	n/a	2 – 6-inch diameter tree limbs were blown down
7/10/2017	6:23 p.m.	Pekin^	61 kts	n/a	n/a	$30,000	n/a	several trees were blown over
7/10/2017	7;01 p.m.	South Pekin	61 kts	n/a	n/a	$12,000	n/a	a 24-inch diameter tree was blown onto a car
8/3/2017	6:00 p.m.	Minier	52 kts	n/a	n/a	n/a	n/a	several small tree branches were blown down across the Village
Subtotal:				**0**	**0**	**$42,000**	**$0**	
GRAND TOTAL:				**14**	**0**	**$6,894,950**	**$1,025,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tony O'Neal, Emergency Response Specialist – Illinois Crisis Management, Ameren Illinois.
Tri-County MAC member responses to Natural Hazard Events Questionnaire.

Tazewell County

Figure 16
(Sheet 1 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/4/1960	7:00 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
6/10/1963	1:15 p.m.	Washington	1.00 in.	n/a	n/a	n/a	n/a	
5/15/1968	6:10 p.m.	Morton^	1.75 in.	n/a	n/a	n/a	n/a	
5/13/1970	2:45 a.m.	Lilly^	1.00 in.	n/a	n/a	n/a	n/a	
6/9/1972	3:40 p.m.	Pekin	1.75 in.	n/a	n/a	n/a	n/a	
6/14/1974	6:37 p.m.	Tremont	1.75 in.	n/a	n/a	n/a	n/a	
5/30/1975	1:05 p.m.	Minier	1.00 in.	n/a	n/a	n/a	n/a	
6/20/1975	4:11 p.m.	Washington	1.00 in.	n/a	n/a	n/a	n/a	
8/18/1975	5:45 p.m.	Dillon^	1.75 in.	n/a	n/a	n/a	n/a	
5/28/1978	2:00 p.m.	Washington East Peoria	1.25 in.	n/a	n/a	n/a	n/a	
7/26/1978	2:00 p.m.	Hopedale^	1.75 in.	n/a	n/a	n/a	n/a	
7/26/1978	2:55 p.m.	Mackinaw	2.00 in.	n/a	n/a	n/a	n/a	
6/2/1980	12:50 a.m.	Pekin^	1.75 in.	n/a	n/a	n/a	n/a	
6/2/1980	9:55 a.m.	Pekin Schaeferville	1.75 in.	n/a	n/a	n/a	n/a	
7/13/1982	4:45 p.m.	Washington^	1.75 in.	n/a	n/a	n/a	n/a	
3/27/1985	9:13 p.m.	Mackinaw	1.75 in.	n/a	n/a	n/a	n/a	
3/28/1985	12:30 a.m.	Minier^	1.50 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Tazewell County

Figure 16
(Sheet 2 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	**Start Time**	**Location(s)**	**Magnitude (Diameter)**	**Injuries**	**Fatalities**	**Property Damage**	**Crop Damage**	**Description**
6/23/1985	12:10 p.m.	Tremont	1.75 in.	n/a	n/a	$2,500	$2,500	*Tremont* - vehicles and roofs sustained minor damage *Tremont area* - crops sustained minor damage
4/22/1988	8:50 p.m.	Morton Groveland	1.75 in.	n/a	n/a	n/a	n/a	
6/15/1991	2:45 p.m.	East Peoria	1.75 in.	n/a	n/a	n/a	n/a	
10/23/1991	3:15 p.m.	Washington	1.75 in.	n/a	n/a	n/a	n/a	
12/8/1991	2:22 p.m.	Tremont	2.75 in.	n/a	n/a	n/a	n/a	
8/23/1993	4:14 p.m.	Washington	1.00 in.	n/a	n/a	n/a	n/a	
8/23/1993	5:45 p.m.	Minier	1.75 in.	n/a	n/a	n/a	n/a	
4/26/1994	6:12 p.m.	Minier	1.75 in.	n/a	n/a	n/a	n/a	
6/26/1994	5:54 p.m.	Greene Valley	1.00 in.	n/a	n/a	n/a	n/a	
6/26/1994	5:55 p.m.	Tremont	1.75 in.	n/a	n/a	n/a	n/a	
6/26/1994	6:00 p.m.	Delavan	1.00 in.	n/a	n/a	n/a	n/a	
7/20/1994	5:39 p.m.	East Peoria	1.50 in.	n/a	n/a	n/a	n/a	
5/9/1995	5:15 p.m.	Schaeferville	1.75 in.	n/a	n/a	n/a	n/a	
5/13/1995	5:46 p.m.	Pekin[ᴧ]	1.75 in.	n/a	n/a	n/a	n/a	
4/18/1996	6:55 p.m.	Delavan	1.75 in.	n/a	n/a	n/a	n/a	
4/19/1996	5:38 p.m.	Delavan	1.75 in.	n/a	n/a	n/a	n/a	
12/23/1996	12:37 p.m.	Tremont[ᴧ]	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

[ᴧ] Hail event verified in the vicinity of this location(s).

Tazewell County

Figure 16
(Sheet 3 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/24/1997	1:54 p.m.	Hopedale^	1.25 in.	n/a	n/a	n/a	n/a	
8/24/1997	2:10 p.m.	East Peoria Morton Delavan	1.00 in.	n/a	n/a	n/a	n/a	
4/7/1998	5:30 p.m.	Marquette Heights	1.75 in.	n/a	n/a	n/a	n/a	
4/15/1998	10:43 p.m.	Pekin	1.75 in.	n/a	n/a	n/a	n/a	
5/12/1998	5:50 p.m.	Pekin	1.75 in.	n/a	n/a	n/a	n/a	
6/11/1998	2:50 p.m.	Delavan^	1.25 in.	n/a	n/a	n/a	n/a	
6/4/1999	3:20 p.m.	Tremont	1.75 in.	n/a	n/a	n/a	n/a	
4/20/2000	5:00 a.m.	Parkland^ South Pekin Midway Pekin Schaeferville Groveland Morton Washington^	1.75 in.	n/a	n/a	n/a	n/a	
5/8/2000	9:20 p.m.	Green Valley Delavan	1.00 in.	n/a	n/a	n/a	n/a	
5/12/2000	6:40 a.m.	Delavan	1.25 in.	n/a	n/a	n/a	n/a	
5/12/2000	3:30 p.m.	Groveland Morton	1.50 in.	n/a	n/a	n/a	n/a	
5/18/2000	5:02 p.m.	Hopedale^	1.75 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Tazewell County

Figure 16
(Sheet 4 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/10/2001	12:15 a.m.	Tremont	1.00 in.	n/a	n/a	n/a	n/a	
4/21/2001	4:50 p.m.	Spring Lake Pekin Mackinaw	1.25 in.	n/a	n/a	n/a	n/a	
8/18/2001	11:39 a.m.	Delavan	2.50 in.	n/a	n/a	n/a	n/a	
7/26/2002	4:15 a.m.	Mackinaw	1.00 in.	n/a	n/a	n/a	n/a	
4/4/2003	2:40 p.m.	Green Valley^	1.75 in.	n/a	n/a	n/a	n/a	
5/8/2003	9:30 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
5/8/2003	9:50 p.m.	Pekin Groveland Morton	2.50 in.	n/a	n/a	n/a	n/a	
5/9/2003	7:15 p.m.	Armington^ Minier	2.00 in.	n/a	n/a	n/a	n/a	
5/28/2003	1:54 p.m.	Washington Mayfair Mackinaw	3.00 in.	n/a	n/a	n/a	n/a	
6/28/2003	3:22 p.m.	Washington	1.75 in.	n/a	n/a	n/a	n/a	
7/8/2003	2:35 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
5/30/2004	3:33 p.m.	Morton Washington	1.25 in.	n/a	n/a	n/a	n/a	
5/30/2004	4:36 p.m.	Delavan	2.75 in.	n/a	n/a	n/a	n/a	
3/30/2005	3:29 p.m.	Delavan^	1.00 in.	n/a	n/a	n/a	n/a	
6/29/2005	4:20 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
6/29/2005	4:28 p.m.	Tremont^	1.75 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Tazewell County

Figure 16
(Sheet 5 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/13/2006	10:38 p.m.	Pekin Groveland Morton	1.75 in.	n/a	n/a	n/a	n/a	
1/7/2008	5:11 p.m.	Morton	1.00 in.	n/a	n/a	n/a	n/a	
5/13/2008	4:49 p.m.	Washington East Peoria Morton	2.00 in.	n/a	n/a	n/a	n/a	
6/3/2008	8:13 p.m.	Delavan^	1.00 in.	n/a	n/a	n/a	n/a	
6/3/2008	8:33 p.m.	Delavan	1.00 in.	n/a	n/a	n/a	n/a	
6/19/2009	2:12 p.m.	Tremont	1.00 in.	n/a	n/a	n/a	n/a	
5/6/2010	11:15 p.m.	Hopedale	1.00 in.	n/a	n/a	n/a	n/a	
5/24/2010	7:30 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
2/27/2011	8:16 p.m.	Armington^	1.00 in.	n/a	n/a	n/a	n/a	
4/15/2011	6:43 p.m.	Delavan	1.00 in.	n/a	n/a	n/a	n/a	
5/11/2011	4:25 p.m.	Delavan^	1.75 in.	n/a	n/a	n/a	n/a	
5/13/2011	5:06 p.m.	Tremont	1.00 in.	n/a	n/a	n/a	n/a	
5/13/2011	5:36 p.m.	Hopedale	1.00 in.	n/a	n/a	n/a	n/a	
5/22/2011	12:47 p.m.	Tremont^	1.00 in.	n/a	n/a	n/a	n/a	
5/22/2011	1:10 p.m.	Deer Creek	1.00 in.	n/a	n/a	n/a	n/a	
6/26/2011	10:40 p.m.	Armington	1.00 in.	n/a	n/a	n/a	n/a	
8/13/2011	1:52 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
8/13/2011	2:03 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
8/13/2011	2:45 p.m.	Allentown^	1.00 in.	n/a	n/a	n/a	n/a	
4/1/2012	2:38 a.m.	Morton	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Tazewell County

Figure 16
(Sheet 6 of 6)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
9/7/2012	8:20 a.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
4/17/2013	6:10 p.m.	Washington	1.00 in.	n/a	n/a	n/a	n/a	
11/17/2013	11:29 a.m.	Armington^	1.00 in.	n/a	n/a	n/a	n/a	
4/8/2015	3:09 a.m.	Morton	1.25 in.	n/a	n/a	n/a	n/a	
4/8/2015	3:39 a.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
4/8/2015	3:34 a.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
11/2/2016	3:27 p.m.	East Peoria	1.25 in.	n/a	n/a	n/a	n/a	
11/2/2016	3:33 p.m.	Groveland	1.00 in.	n/a	n/a	n/a	n/a	
11/2/2016	3:35 p.m.	Morton	1.50 in.	n/a	n/a	n/a	n/a	
4/10/2017	2:42 p.m.	East Peoria	1.75 in.	n/a	n/a	n/a	n/a	
4/10/2017	2:45 p.m.	Washington	1.00 in.	n/a	n/a	n/a	n/a	
4/10/2017	2:52 p.m.	Washington	1.75 in.	n/a	n/a	n/a	n/a	
5/26/2017	2:01 p.m.	East Peoria	1.00 in.	n/a	n/a	n/a	n/a	
5/26/2017	2:06 p.m.	East Peoria	1.00 in.	n/a	n/a	n/a	n/a	
5/26/2017	2:08 p.m.	Morton	1.00 in.	n/a	n/a	n/a	n/a	
7/10/2017	6:28 p.m.	Pekin	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	
GRAND TOTAL:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Tazewell County

Figure 17

Severe Storms – Lightning Events

1991 – 2017

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damage	Crop Damage	Description
10/23/1991	3:40 p.m.	Green Valley⚡	n/a	n/a	$45,000	n/a	lightning started a fire which gutted a two-story farmhouse
7/20/1994	5:35 p.m.	Morton	n/a	n/a	$50	n/a	lightning struck a tree and started a fire
6/26/2008	2:45 p.m.	Washington⚡	0	0	$50,000	$0	- lightning struck a tree next to a house, setting the house on fire - 2 rooms were burned and damage was done to the roof and siding - a vehicle parked nearby also sustained damage
GRAND TOTAL:			**0**	**0**	**$95,050**	**$0**	

⚡ Lightning strike event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

3.1.2 WOODFORD COUNTY

HAZARD PROFILE

The following identifies past occurrences of severe storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe storms occurred previously? What is the extent of these previous severe storms?

Figures 26, **27**, and **28** located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in Woodford County. The severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning and heavy rain. Severe storms are the most frequently occurring natural hazard in Woodford County.

Severe Storms Fast Facts – Occurrences

Number of recorded Thunderstorms with Damaging Winds (1966 – 2017): ***161***

Number of recorded Severe Hail Events (1974 – 2017): ***47***

Number recorded of Lightning Strike Events (1960 – 2017): ***5***

Highest Recorded Wind Speed: ***70 knots (July 21, 2008 at Roanoke)***

Largest Hail Recorded: ***4.00 inches (May 30, 2004 at Secor)***

Most Likely Month for Thunderstorms with Damaging Winds to Occur: ***June***

Most Likely Month for Severe Hail to Occur: ***May***

Most Likely Time for Thunderstorms with Damaging Winds to Occur: ***Afternoon/Early Evening***

Most Likely Time for Severe Hail to Occur: ***Afternoon/Early Evening***

Thunderstorms with Damaging Winds

NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan were used to document 161 reported occurrences of thunderstorms with damaging winds in Woodford County between 1966 and 2017. Of the 161 occurrences, 114 had reported wind speeds of 50 knots or greater. There were 47 occurrences, however, where the wind speed was not recorded.

The highest actual wind speed recorded in Woodford County occurred at Roanoke on July 21, 2008 when winds reached 70 knots (81 mph) during a thunderstorm event. Thunderstorms with damaging winds have been *recorded* in every participating municipality within the County on multiple occasions.

Figure 29 charts the reported occurrences of thunderstorms with damaging winds in Woodford County by month. Of the 161 events, 98 (61%) took place in May, June and July making this the peak period for thunderstorms with damaging winds in Woodford County. Of those 98 events, 43 (44%) occurred during June, making this the peak month for thunderstorms with damaging winds.

Figure 30 charts the reported occurrences of thunderstorms with damaging winds by hour. Of the 161 occurrences, approximately 76% occurred during the p.m. hours, with 90 of the events (56%) taking place between 2 p.m. and 8 p.m.

Figure 29
Graph: Thunderstorms with Damaging Winds by Month Woodford County: 1966 – 2017

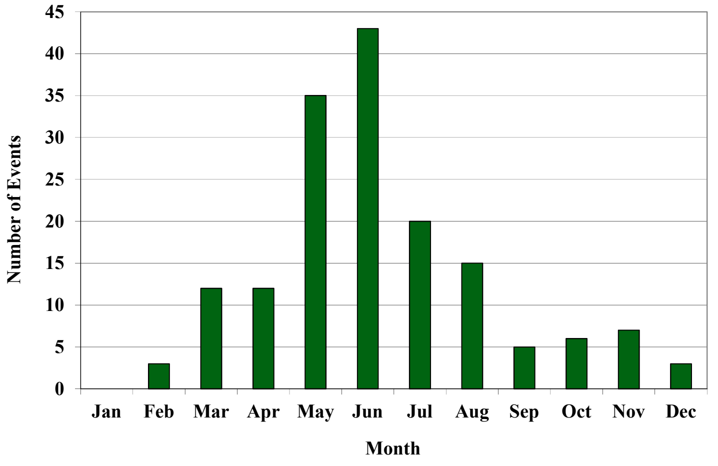
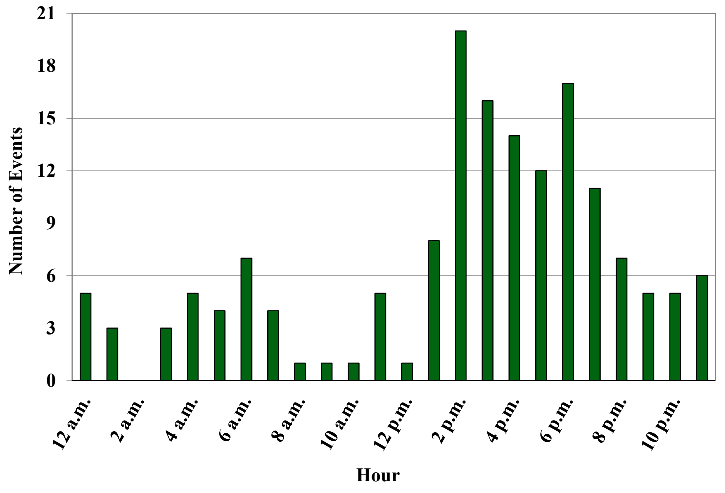


Figure 30
Graph: Thunderstorms with Damaging Winds by Hour Woodford County: 1966 – 2017



Hail

NOAA's Storm Events Database was used to document 47 reported occurrences of severe storms with hail one (1) inch in diameter or greater in Woodford County between 1974 and 2017. Of the 47 occurrences, 26 produced hailstones 1.50 inches or larger in diameter.

The largest hail stones documented in Woodford County measured 4.00 inches in diameter (grapefruit-sized) and fell on May 30, 2004 at Secor. Hail one (1) inch in diameter or greater has been *recorded* in every participating municipality on multiple occasions.

Figure 31 charts the reported occurrences of hail by month. Of the 47 occurrences, 34 (72%) took place in April, May and June making this the peak period for hail in Woodford County. Of the 34 events, 14 (41%) occurred during May, making this the peak month for hail events.

Figure 31
Graph: Hail Events by Month Woodford County:
1974 – 2017

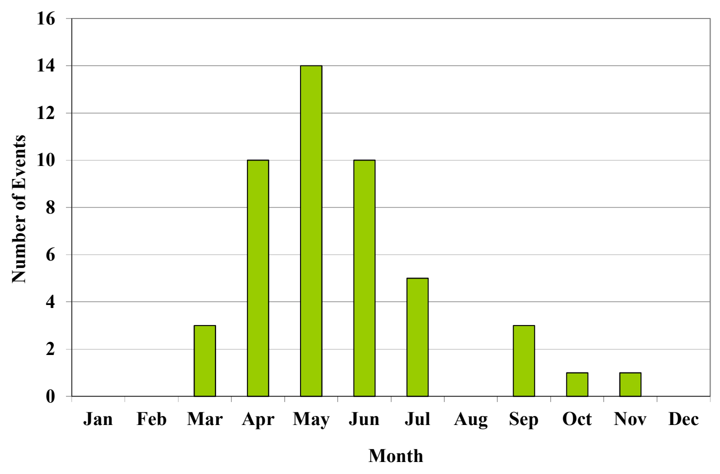
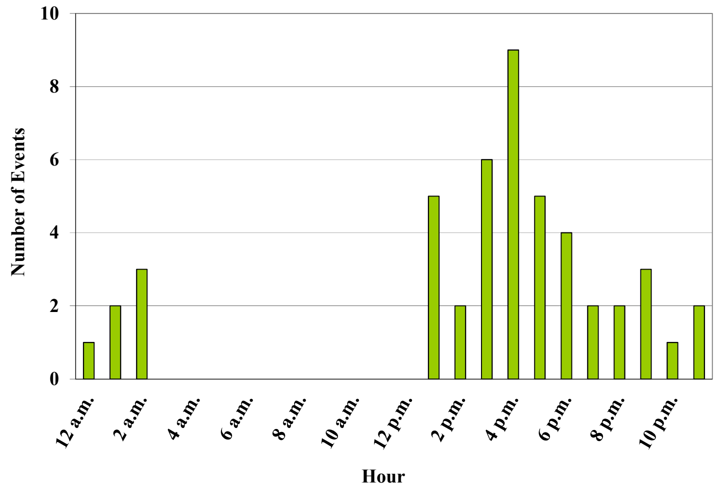


Figure 32 charts the reported occurrences of hail by hour. Approximately 87% of all the hail events occurred during the p.m. hours, with 31 of the events (66%) taking place between 1:00 p.m. and 7:00 p.m.

Figure 32
Graph: Hail Events by Hour Woodford County:
1974 – 2017



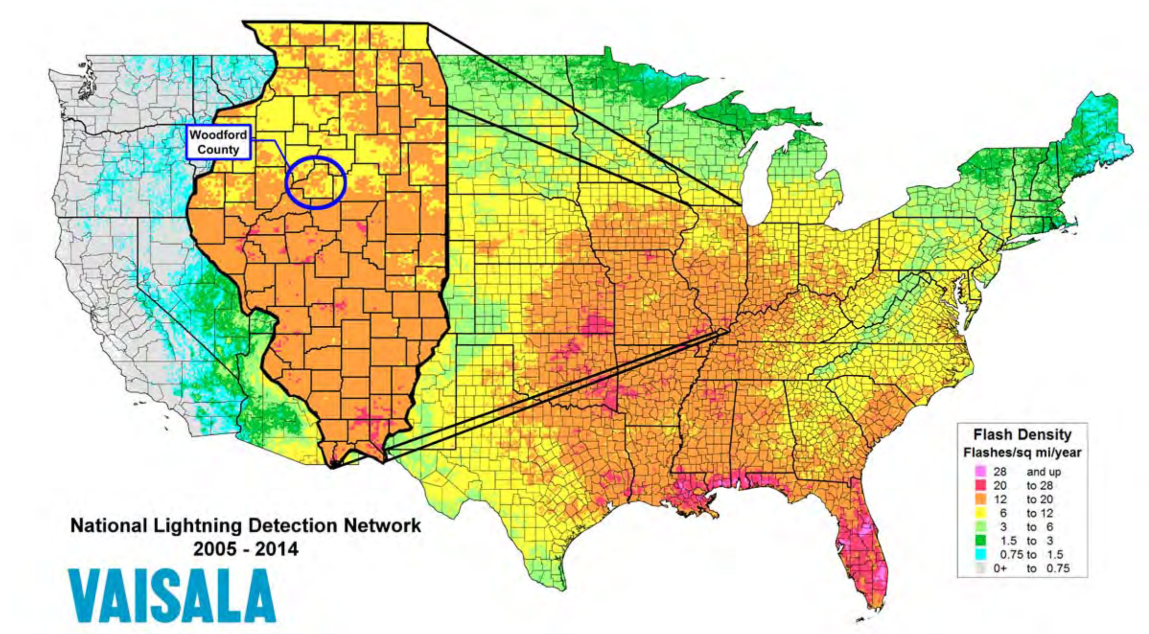
Lightning

While lightning strike events occur regularly across central Illinois, NOAA's Storm Events Database and NOAA's Storm Data Publications only identified five recorded occurrences of lightning strikes in Woodford County between 1960 and 2017. Three of the five events each took place in June while the remaining two events took place in May and July. Of the four events with recorded times, half occurred during the a.m. hours and half occurred during the p.m. hours.

These represent the ***reported occurrences*** of lightning strike events. The NWS acknowledges that lightning strike events area not well recorded, due in part to the rural nature of most Illinois counties. Only those events with impacts, such as property damage or injuries/fatalities, are reported. As a result, lightning strike events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

According to data from Vaisala's National Lightning Detection Network, Woodford County averaged at least 9 to 16 cloud-to-ground lightning flashes per square mile annually between 2005 and 2014. **Figure 33** illustrates the cloud-to-ground lightning flash density (number of cloud-to-ground flashes per square mile) by county for the continental United States. In comparison, Illinois averaged 14.1 cloud-to-ground lightning flashes per square mile between 2006 and 2015, ranking it eighth in the Country for lightning flash density.

Figure 33
Cloud-to-Ground Lightning Flash Density: Woodford County



Heavy Rain

While heavy rain events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database does not include any *recorded* heavy rain events for Woodford County. This may be due in part to a lack of uniform reporting guidelines for heavy rain events.

What locations are affected by severe storms?

Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency (IEMA) classifies Woodford County's hazard rating for severe storms as "severe." (IEMA's hazard rating system has five levels: low, guarded, elevated, high and severe.)

What is the probability of future severe storm events occurring?

Thunderstorms with Damaging Winds

Woodford County has had 161 verified occurrences of thunderstorms with damaging winds between 1966 and 2017. With 161 occurrences over the past 52 years, Woodford County should expect to experience at least three thunderstorms with damaging winds each year. There were 23 years over the last 52 years where multiple (three or more) thunderstorms with damaging winds occurred. This indicates that the probability that multiple thunderstorms with damaging winds may occur during any given year within the County is 44%.

Hail

There have been 47 verified occurrences of hail one (1) inch in diameter or greater between 1974 and 2017. With 47 occurrences over the past 44 years, Woodford County should expect to experience at least one severe hail event each year. There were 14 years over the last 44 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the County is 32%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe storms.

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of Woodford County is vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across central Illinois. Since 2008, Woodford County has recorded 59 thunderstorms with damaging winds, 15 severe storms with hail one (1) inch in diameter or greater and four verified lightning strike events.

Figure 34 details the number thunderstorms with damaging winds and hail events that were recorded in or near each participating municipality while **figure 35** details the number of thunderstorms with damaging winds and hail events that were recorded in or near unincorporated areas of Woodford County. Of the participating municipalities, Roanoke has had more recorded occurrences of thunderstorms with damaging winds and hail events than any of the other municipalities. Of the five recorded lightning strikes, two occurred in participating municipalities, one in Germantown Hills and one in Roanoke.

Figure 34
Verified Severe Storm Events by Participating Municipality – Woodford County

Participating Municipality	**Number of Events**	
	Thunderstorm & High Wind	**Severe Hail**
Eureka	20	7
Germantown Hills	13	4
Roanoke	26	8

Figure 35
Verified Severe Storm Events in Unincorporated Woodford County

Unincorporated Area	**Number of Events**	
	Thunderstorm & High Wind	**Severe Hail**
Cazenovia	2	0
Cruger	1	0
Low Point	7	0
Oak Ridge	2	0
Woodford	4	1

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated $2.45 million in recorded property damages and $30,000 in recorded crop damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan indicates that between 1966 and 2017, 61 of the 161 thunderstorms with damaging winds caused $1.7 million in property damages and $30,000 in crop damages. Damage information was either unavailable or none was recorded for the remaining 100 reported occurrences.

NOAA's Storm Events Database documented 2 injuries as the result of two separate thunderstorm with damaging wind events. Detailed information on the injuries sustained was only available for one of the events. On July 5, 1980 an individual was injured when a thunderstorm with damaging winds overturned a mobile home.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts
- Total Property Damage: ***$1,711,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***$30,000***
- Injuries: ***2***
- Fatalities: ***n/a***

Severe Hail Impacts
- Total Property Damage: ***$400,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Lightning Strike Impacts
- Total Property Damage: ***$348,500***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***1***
- Fatalities: ***n/a***

Severe Storms Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Hail

Data obtained from NOAA's Storm Events Database indicates that between 1974 and 2017, two of the 47 severe hail events caused $400,000 in property damages. Damage information was either unavailable or none was recorded for the remaining 45 reported occurrences. No injuries or fatalities were reported as a result of any of the hail events.

Lightning

Data obtained from NOAA's Storm Events Database and NOAA's Storm Data Publications indicates that between 1960 and 2017, four of the five lightning strike events caused $348,500 in property damages. NOAA's Storm Events Database documented one injury as the result of a lightning strike event. On July 6, 2010 a road construction flagger on Illinois Route 89 between Washburn and Cazenovia was struck by lightning. The flagger was struck in the left shoulder and had part of his left boot blown off where the lightning exited his body.

What other impacts can result from severe storms?

In Woodford County, the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that wet road surface conditions were present for 10.7% to 14.4% of all crashes recorded annually in the County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure 36** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

Figure 36
Severe Weather Crash Data – Woodford County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2011	465	67	12	0
2012	447	53	17	0
2013	501	62	16	0
2014	525	56	26	0
2015	467	59	16	1
Total:	**2,405**	**297**	**87**	**1**

Source: Illinois Department of Transportation.

What is the level of risk/vulnerability to public health and safety from severe storms?

For Woodford County the level of risk or vulnerability posed by severe storms to public health and safety is considered to be low. This assessment is based on the fact that despite their relative frequency, the number of injuries and fatalities is low. In addition, Advocate Eureka Hospital in Eureka as well as hospitals in Peru and Ottawa (LaSalle County), Pontiac (Livingston County), Bloomington/Normal (McLean County), the Peoria area (Tazewell and Peoria Counties) and regional centers in Springfield (Sangamon County) and the Quad Cities area (Rock Island County) are equipped to provide care to persons injured during a severe storm.

Are existing buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in Woodford County and the participating municipalities are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and can cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines, power substations, transformers and poles, and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Participating jurisdictions have acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as municipal and county buildings, storm shelters, police and fire stations, heating and cooling centers, and lift stations. Of the participants, Germantown Hills does not have emergency backup generators at its lift stations or village hall while the County does not have an emergency backup generator at the Courthouse which serves as the Emergency Operations Center/Joint Information Center for the County.

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered and government services can be affected.

Based on the frequency with which severe storms occur in Woodford County, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is medium to high.

Are future buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes and No. While Eureka and Roanoke have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms, the County and Germantown Hills do not. In addition, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 67 of the 213 recorded events listing property damage numbers for all categories of severe storms, there is no way to accurately estimate future potential dollar losses. Since all existing structures within Woodford County are vulnerable to damage, it is highly probable that there will be future dollar losses from severe storms.

Woodford County

Figure 26
(Sheet 1 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/5/1966	8:15 p.m.	Metamora⮝ Roanoke⮝ Eureka⮝	52 kts	n/a	n/a	n/a	n/a	
8/7/1968	2:30 p.m.	Eureka	n/a	n/a	n/a	n/a	n/a	
5/27/1973	1:00 p.m.	Minonk⮝	n/a	n/a	n/a	n/a	n/a	
6/20/1974	6:30 p.m.	Eureka	n/a	n/a	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)***
5/24/1975	5:30 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	winds knocked down two-69 kilovolt power lines causing a 6-hour power outage in the central portion of the County
12/14/1975	2:55 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	- winds uprooted several pine trees - siding was torn from a house - a pickup truck was turned partially around
3/26/1976	9:15 p.m.	Germantown Hills	n/a	n/a	n/a	n/a	n/a	
3/26/1976	9:20 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	
3/26/1976	9:25 p.m.	Washburn	n/a	n/a	n/a	n/a	n/a	
5/4/1977	6:10 p.m.	Roanoke	52 kts	n/a	n/a	n/a	n/a	
5/29/1978	6:50 p.m.	Secor	n/a	n/a	n/a	n/a	n/a	
7/21/1978	4:20 p.m.	Washburn	n/a	n/a	n/a	n/a	n/a	
7/5/1980	3:00 a.m.	Goodfield	n/a	1	0	n/a	n/a	an individual was injured when winds overturned a mobile home
8/13/1980	5:35 p.m.	Metamora	52 kts	n/a	n/a	n/a	n/a	
Subtotal:				**1**	**0**	**$0**	**$0**	

⮝ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 2 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
9/1/1980	3:25 p.m.	Eureka	n/a	n/a	n/a	n/a	n/a	winds caused severe tree and building damage
4/13/1981	11:50 p.m.	Goodfield	n/a	n/a	n/a	n/a	n/a	
6/20/1981	6:05 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	
12/27/1982	11:22 p.m.	Roanoke	61 kts	n/a	n/a	n/a	n/a	
12/27/1982	11:55 p.m.	Cazenovia	61 kts	n/a	n/a	n/a	n/a	
3/6/1983	5:06 p.m.	Roanoke	n/a	n/a	n/a	n/a	n/a	
4/29/1983	8:00 p.m.	southwestern part of the county	n/a	n/a	n/a	$2,500	n/a	
4/29/1984	8:23 p.m.	Roanoke	56 kts	n/a	n/a	n/a	n/a	
5/14/1985	5:30 p.m.	Minonk	n/a	n/a	n/a	n/a	n/a	
7/2/1985	6:25 p.m.	Germantown Hills Oak Ridge^	52 kts	n/a	n/a	n/a	n/a	*<u>Germantown Hills</u>* many tree limbs were blown down
11/19/1985	2:00 p.m.	Low Point^	n/a	n/a	n/a	n/a	n/a	
5/20/1987	6:10 p.m.	Roanoke^	n/a	n/a	n/a	n/a	n/a	
5/21/1987	8:25 p.m.	Spring Bay Low Point	57 kts	n/a	n/a	n/a	n/a	winds blew trees down
5/8/1988	4:45 p.m.	Goodfield^	69 kts	n/a	n/a	$25,000	n/a	winds destroyed 3 trailers and heavily damaged 5 others at the Timberline Court
Subtotal:				**0**	**0**	**$27,500**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 3 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
10/17/1988	7:45 a.m.	Spring Bay Germantown Hills Metamora	n/a	n/a	n/a	n/a	n/a	*Metamora* winds shattered a 12’ x 12’ plate glass window *Metamora area* winds destroyed a mobile home several miles west of the Village
11/17/1988	7:45 a.m.	Roanoke^	55 kts	1	0	n/a	n/a	
5/24/1989	11:45 p.m.	Eureka^	n/a	n/a	n/a	$250,000	n/a	winds caused heavy damage to farm buildings east of the City
6/13/1990	7:50 p.m.	Washburn^	52 kts	n/a	n/a	n/a	n/a	
6/13/1991	7:37 p.m.	Benson	n/a	n/a	n/a	$2,500	n/a	winds downed trees and utility poles
6/17/1992	2:41 p.m.	Roanoke	61 kts	n/a	n/a	n/a	n/a	winds damaged trees
6/17/1992	3:00 p.m.	El Paso	n/a	n/a	n/a	n/a	n/a	
7/2/1992	1:17 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	winds caused heavy roof damage to several homes
7/2/1992	1:27 p.m.	Roanoke	52 kts	n/a	n/a	n/a	n/a	
9/9/1992	4:47 p.m.	Eureka	n/a	n/a	n/a	n/a	n/a	winds damaged trees
8/15/1993	7:50 p.m.	Spring Bay	n/a	n/a	n/a	$5,000	n/a	several 6-inch diameter trees were blown down
7/20/1994	6:31 p.m.	El Paso	n/a	n/a	n/a	n/a	n/a	a large tree and a street light pole were blown down
Subtotal:				**1**	**0**	**$257,500**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 4 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
3/25/1996	4:00 a.m.	countywide	n/a	n/a	n/a	n/a	n/a	winds blew down numerous power lines and caused minor damage across the County *rain could not be documented with this event*
7/24/1996	11:51 a.m.	Metamora Washburn	n/a	n/a	n/a	n/a	n/a	winds blew down several trees
7/28/1996	6:30 p.m.	Benson[ᐱ]	n/a	n/a	n/a	n/a	n/a	- winds uprooted several large trees and knocked down numerous tree limbs - winds blew the roof off a shed
10/29/1996	4:59 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	- winds uprooted a large tree and blew down numerous tree limbs - several business signs were destroyed
10/30/1996	1:00 a.m.	countywide	57 kts	n/a	n/a	n/a	n/a	winds blew down trees, tree limbs and power lines <u>Roanoke</u> the roof of a large storage building was blown off which damaged a small storage shed and a few trees when the roof landed on them *rain could not be documented with this event*
Subtotal:				**0**	**0**	**$0**	**$0**	

[ᐱ] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 5 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/5/1997	3:45 p.m.	countywide	n/a	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down throughout the area with some areas sustaining more serious damage
4/6/1997	9:15 a.m.	countywide	52 kts	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines *El Paso area* a semi was blown over on US Rte. 24 but no injuries were reported *rain could not be documented with this event*
4/30/1997	2:00 p.m.	countywide	61 kts	n/a	n/a	n/a	n/a	- hundreds of power lines were blown down across the area - numerous trees and tree limbs were blown down - widespread structural damage was reported - numerous sheds, grain bins and machine sheds were either blown over, damaged or destroyed
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 6 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/18/1997	9:26 p.m.	Benson	n/a	n/a	n/a	$80,000	n/a	- winds blew down a few trees and tree limbs - the grain leg was blown off a grain bin - several large sheds had their doors blown in - some siding damage was reported in the area
9/29/1997	10:00 a.m.	countywide	52 kts	n/a	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down *rain could not be documented with this event*
5/12/1998	7:00 p.m.	Goodfield[^]	n/a	n/a	n/a	n/a	n/a	a tree was blown down across a road
5/19/1998	5:40 p.m.	Roanoke[^]	n/a	n/a	n/a	n/a	n/a	- winds moved a grain bin off its foundation and caused another to cave in - a storage building had its north facing doors blown in - numerous tree limbs were blown down
6/14/1998	7:30 a.m.	Spring Bay	n/a	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines
6/18/1998	6:30 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
Subtotal:				**0**	**0**	**$80,000**	**$0**	

[^] Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 7 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/29/1998	3:43 p.m.	countywide	52 kts	n/a	n/a	n/a	n/a	*Event Description Provided Below*
Regionally - wind blew down or uprooted thousands of trees, tree limbs, power poles and power lines - hundreds of trees fell onto structures causing damage ranging from torn gutters to major roof and structural damage - hundreds of vehicles sustained damage from fallen trees and numerous outbuildings, sheds and silos were either damaged or destroyed - considerable crop damage was sustained in most areas								
11/10/1998	5:40 a.m.	El Paso Kappa	n/a	n/a	n/a	n/a	n/a	*El Paso/Kappa* several power poles were blown down *El Paso area* - a couple of outbuildings were destroyed - the top half of a barn was blown off - several power lines were blown down
11/10/1998	6:00 a.m.	countywide	n/a	n/a	n/a	n/a	n/a	winds downed thousands of power lines and tree limbs and blew over hundreds of trees across the region *rain could not be documented with this event*
2/11/1999	4:00 p.m.	Minonk^	n/a	n/a	n/a	n/a	n/a	a semi was blown over on I-39 just west of the City
6/1/1999	6:35 p.m.	Roanoke^	n/a	n/a	n/a	n/a	n/a	winds damaged a roof on a shed and caused minor damage to another one
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 8 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/4/1999	3:24 p.m.	Metamora	n/a	n/a	n/a	n/a	n/a	- several trees were uprooted and numerous tree limbs were blown down - one power pole was snapped off
6/6/1999	5:32 p.m.	Low Point	n/a	n/a	n/a	n/a	n/a	*Low Point* several trees and power lines were blown down *Low Point area* winds blew down a tree onto a house
6/10/1999	4:40 p.m.	Goodfield^	59 kts	n/a	n/a	n/a	n/a	several power poles were blown down
6/11/1999	2:14 p.m.	El Paso Secor^	n/a	n/a	n/a	n/a	n/a	*El Paso* several large tree limbs and power lines were blown down *Secor area* a roof was blown off a building at a campground and a semi was blown over
4/20/2000	5:24 a.m.	countywide	59 kts	n/a	n/a	$300,000	n/a	*Event Description Provided Below*

countywide
- numerous power poles, power lines and trees were blown down
- numerous sheds were destroyed

Metamora/Roanoke area
- 56 power poles were snapped off near the intersection of IL Routes 116 & 117

Roanoke
- the roof of a business was blown off and it damaged 20 cars in the adjacent parking lot

Benson
- the legs of a grain elevator were damaged causing approx. $300,000 in damages
- several outbuildings were destroyed
- a large tree fell onto a home causing moderate damage

	Injuries	Fatalities	Property Damage	Crop Damage
Subtotal:	**0**	**0**	**$300,000**	**$0**

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 9 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/8/2000	8:55 p.m.	Bay View Gardens Germantown Hills Metamora Low Point Benson Minonk	70 kts	n/a	n/a	n/a	n/a	- numerous trees, power poles and power lines were blown down - several machine sheds were destroyed - homes affected along the path sustained only minor shingle and siding damage
5/18/2000	4:22 p.m.	Metamora⮝	n/a	n/a	n/a	n/a	n/a	a large tree was snapped off
9/11/2000	10:00 p.m.	Secor⮝	n/a	n/a	n/a	n/a	n/a	several large trees were blown down at a campground east of the Village
5/22/2001	1:00 p.m.	Germantown Hills Metamora	50 kts	n/a	n/a	n/a	n/a	a couple of trees, tree limbs and power lines were blown down
6/14/2001	6:28 p.m.	Spring Bay Oak Ridge Metamora	50 kts	n/a	n/a	n/a	n/a	*Spring Bay* a tree was blown down across the road *Metamora* several power lines were blown down
7/8/2001	1:45 p.m.	Woodford⮝	50 kts	n/a	n/a	n/a	n/a	a downburst flattened a large cornfield
8/22/2001	5:55 p.m.	Spring Bay Germantown Hills⮝ Metamora⮝ Eureka	51 kts	n/a	n/a	n/a	n/a	*Spring Bay* trees blocked roads in the Village
Subtotal:				**0**	**0**	**$0**	**$0**	

⮝ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 10 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
8/30/2001	7:36 p.m.	Germantown Hills	52 kts	n/a	n/a	n/a	n/a	
3/9/2002	12:00 p.m.	countywide	53 kts	n/a	n/a	n/a	n/a	- numerous reports of downed power lines, power poles and trees - several sheds and barns were damaged *rain could not be documented with this event*
5/8/2002	11:18 p.m.	Eureka˄	55 kts	n/a	n/a	n/a	n/a	
6/4/2002	4:40 p.m.	Metamora	55 kts	n/a	n/a	n/a	n/a	several large tree limbs were blown down around the Village
6/25/2002	6:34 p.m.	Metamora	50 kts	n/a	n/a	n/a	n/a	- several trees, tree limbs and power lines were blown down - a small shed was destroyed
2/11/2003	6:30 p.m.	Eureka Roanoke Benson Secor El Paso Panola Woodford Minonk	54 kts	n/a	n/a	n/a	n/a	winds blew down power lines in Eureka, Roanoke, Minonk & El Paso
Subtotal:				**0**	**0**	**$0**	**$0**	

˄ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 11 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/10/2003	6:15 a.m.	countywide	52 kts	n/a	n/a	n/a	n/a	- winds blew down numerous trees, tree limbs and power lines - several reports of minor damage to roofs and storage sheds *rain could not be documented with this event*
6/25/2003	6:42 p.m.	Germantown Hills	54 kts	n/a	n/a	n/a	n/a	several trees were blown down
6/28/2003	3:57 p.m.	Congerville	63 kts	n/a	n/a	n/a	n/a	winds blew down several large tree limbs
7/8/2003	5:52 p.m.	Eureka	55 kts	n/a	n/a	n/a	n/a	winds blew down several power poles
7/21/2003	12:50 a.m.	Washburn Low Point Cazenovia Metamora Roanoke	55 kts	n/a	n/a	n/a	n/a	- winds blew down several large trees *Washburn area* - one large tree was blown down across IL Rte. 89 just south of the Village *Metamora* - a couple of the fallen trees and tree limbs were blown down onto homes causing minor roof damage - numerous power lines were blown down
5/7/2004	5:00 a.m.	Benson^	52 kts	n/a	n/a	n/a	n/a	winds blew down several large tree limbs
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 12 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/11/2004	4:05 p.m.	Germantown Hills Metamora Roanoke Benson Minonk	52 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down in Germantown Hills, Eureka and Minonk
7/13/2004	2:23 p.m.	Roanoke^	65 kts	n/a	n/a	n/a	n/a	a microburst caused extensive damage to a cornfield
3/30/2005	3:10 p.m.	Metamora^	50 kts	n/a	n/a	n/a	n/a	6 power poles were blown down
6/4/2005	11:06 a.m.	Roanoke	50 kts	n/a	n/a	n/a	n/a	a few trees and power lines were blown down
6/4/2005	11:25 a.m.	Minonk	60 kts	n/a	n/a	n/a	n/a	- a semi-trailer was blown over on Interstate 39 - power lines were downed along IL Rte. 251
7/26/2005	3:55 p.m.	Germantown Hills	50 kts	n/a	n/a	n/a	n/a	several trees were blown down
3/13/2006	3:00 a.m.	Minonk	50 kts	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
4/2/2006	6:10 p.m.	Roanoke^	55 kts	n/a	n/a	n/a	n/a	a hog barn was damaged
4/13/2006	10:10 p.m.	Roanoke	56 kts	n/a	n/a	n/a	n/a	
4/13/2006	10:15 p.m.	Washburn	52 kts	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 13 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/13/2006	10:36 p.m.	Eureka Roanoke⮝	61 kts	n/a	n/a	n/a	n/a	*Roanoke area* - 114 power poles were blown down near a substation (7 miles worth) *Eureka area* - winds blew down power poles - minor structural damage was experienced
5/17/2006	4:45 p.m.	Metamora	50 kts	n/a	n/a	n/a	n/a	power lines were blown down
5/24/2006	2:56 p.m.	Eureka⮝	65 kts	n/a	n/a	n/a	n/a	numerous trees and power lines were blown down
5/24/2006	3:05 p.m.	Washburn	52 kts	n/a	n/a	n/a	n/a	several trees and power lines were blown down
5/24/2006	3:15 p.m.	Minonk	50 kts	n/a	n/a	n/a	n/a	a few large branches were blown down
5/24/2006	3:25 p.m.	Washburn⮝	60 kts	n/a	n/a	n/a	n/a	- an 18-foot diameter grain silo was destroyed - a large tree was blown down
7/19/2006	2:42 p.m.	Metamora	52 kts	n/a	n/a	n/a	n/a	several large tree limbs were blown down
7/17/2007	6:52 a.m.	Germantown Hills Metamora Roanoke	55 kts	n/a	n/a	$20,000	n/a	numerous trees and large tree limbs were blown down *Roanoke* an awning was damaged on a house
8/23/2007	1:36 p.m.	Spring Bay⮝	55 kts	n/a	n/a	n/a	n/a	a tree was blown down
Subtotal:				**0**	**0**	**$20,000**	**$0**	

⮝ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 14 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/26/2008	1:10 a.m.	Goodfield^	56 kts	n/a	n/a	$9,000	n/a	- a large tree and power line were blown down - a roof sustained minor wind damage
6/15/2008	2:34 p.m.	Goodfield Eureka	61 kts	n/a	n/a	$30,000	n/a	numerous tree limbs and power lines were blown down
6/15/2008	2:49 p.m.	Secor^ El Paso^	61 kts	n/a	n/a	$40,000	n/a	numerous trees and tree limbs were blown down *El Paso area* a house had part of its roof blown off
7/21/2008	6:14 a.m.	Roanoke	70 kts	n/a	n/a	$30,000	n/a	numerous trees were blown down
7/21/2008	6:15 a.m.	Minonk	61 kts	n/a	n/a	$25,000	n/a	numerous trees and tree limbs were blown down across the City
8/5/2008	3:38 a.m.	Eureka^ Cruger	61 kts	n/a	n/a	$10,000	n/a	2 ½ to 3-foot diameter tree branches were blown down
8/5/2008	4:05 a.m.	Roanoke	61 kts	n/a	n/a	$10,000	n/a	3-foot diameter tree was blown down onto a house
8/5/2008	4:15 a.m.	Eureka	61 kts	n/a	n/a	$15,000	n/a	winds sheared off approx. 12 oak trees at Lake Eureka
3/8/2009	6:10 a.m.	Metamora	52 kts	n/a	n/a	$25,000	n/a	several houses experienced shingle and trim damage
3/8/2009	6:28 a.m.	Benson^	52 kts	n/a	n/a	$10,000	n/a	power lines were blown down south of the intersection of IL Routes 116 & 117
3/8/2009	11:15 a.m.	Eureka	52 kts	n/a	n/a	$10,000	n/a	power poles were blown down on the west side of the City
Subtotal:				**0**	**0**	**$214,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 15 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
3/24/2009	1:51 p.m.	countywide	52 kts	n/a	n/a	$6,000	n/a	*Roanoke* power lines were blown down across Douglas and East Woodford Streets *rain could not be documented with this event*
6/18/2009	4:29 a.m.	Congerville	52 kts	n/a	n/a	n/a	n/a	small tree branches were blown down
6/19/2009	2:38 p.m.	Metamora^	52 kts	n/a	n/a	$3,000	n/a	a 9-inch diameter tree was blown down across Morris Road north of the Village
6/27/2009	7:19 p.m.	Eureka^	52 kts	n/a	n/a	$20,000	n/a	power lines were blown down onto IL Rte. 24
8/4/2009	7:50 a.m.	Germantown Hills	61 kts	n/a	n/a	$2,000	n/a	a tree was blown down onto Old Germantown Hills Road
8/4/2009	8:15 a.m.	El Paso^	52 kts	n/a	n/a	$3,000	n/a	a large tree was blown down across a road just north of the City
8/19/2009	2:44 p.m.	Eureka	52 kts	n/a	n/a	$20,000	n/a	several trees and power lines were blown down
8/19/2009	2:45 p.m.	Woodford^	52 kts	n/a	n/a	$5,000	$30,000	- roofing material was stripped off a building - a nearby cornfield was flattened near Interstate 39
6/2/2010	12:30 a.m.	Spring Bay^	52 kts	n/a	n/a	$2,000	n/a	a tree was blown down across the road at the intersection of IL Rte. 26 & Lourdes Rd.
Subtotal:				**0**	**0**	**$61,000**	**$30,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 16 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/2/2010	12:35 a.m.	Eureka▲	52 kts	n/a	n/a	$1,000	n/a	- a stop sign was bent over - construction barricades were scattered across the road at IL Rte. 24 and Dee-Mac Rd.
6/2/2010	12:42 a.m.	Roanoke▲	52 kts	n/a	n/a	$3,000	n/a	a large tree was uprooted
6/2/2010	12:58 a.m.	Minonk	52 kts	n/a	n/a	$7,000	n/a	- shingles were blown off the Millennium Park Pavilion - a door was blown out at the Sewage Treatment Plant
6/12/2010	1:10 p.m.	Metamora▲	52 kts	n/a	n/a	$10,000	n/a	power poles were blown down at 900E and 1200N
6/23/2010	5:51 p.m.	Minonk	52 kts	n/a	n/a	$3,000	n/a	a 10-inch diameter limb and a baseball diamond fence were blown down
9/21/2010	2:25 p.m.	Roanoke	61 kts	n/a	n/a	$170,000	n/a	- 8 large 64,000-volt power lines were blown down on the south edge of the Village - the entire town lost power for over 15 hours
10/26/2010	4:43 a.m.	Metamora▲	52 kts	n/a	n/a	$4,000	n/a	- a metal chicken coop was destroyed - a large tree branch broke a window in a home
10/26/2010	5:05 a.m.	Minonk	52 kts	n/a	n/a	n/a	n/a	a semi-truck was blown over on Interstate 39
Subtotal:				**0**	**0**	**$198,000**	**$0**	

▲ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 17 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/29/2011	11:20 a.m.	El Paso	52 kts	n/a	n/a	$3,000	n/a	a 12 to 18-inch diameter rotted tree knocked down power lines at the intersection of US Rte. 24 and IL Rte. 251
5/3/2012	11:45 p.m.	Low Point^	52 kts	n/a	n/a	$8,000	n/a	power lines were blown down at 1950N and 1400E
5/20/2013	6:45 p.m.	Roanoke	52 kts	n/a	n/a	$12,000	n/a	a few small trees were blown down
5/29/2013	1:50 a.m.	El Paso^	61 kts	n/a	n/a	$14,000	n/a	- 5 trees were blown down - a power pole was damaged
5/30/2013	2:20 p.m.	El Paso	52 kts	n/a	n/a	$65,000	n/a	numerous trees and power lines were blown down
5/30/2013	2:32 p.m.	Minonk^	52 kts	n/a	n/a	$2,000	n/a	a large tree was blown down onto IL Rte. 116 at 3000E &1900N
5/30/2013	2:43 p.m.	Panola^	52 kts	n/a	n/a	$2,000	n/a	a tree was blown down
4/28/2014	4:30 p.m.	Washburn^	52 kts	n/a	n/a	$6,000	n/a	a power pole was blown down
5/11/2014	4:17 p.m.	Washburn^	52 kts	n/a	n/a	$22,000	n/a	- a machine shed was damaged - a power pole was blown over
5/11/2014	4:20 p.m.	Benson^	52 kts	n/a	n/a	$32,000	n/a	- a machine shed was damaged - a large tree and several power lines were blown down
5/11/2014	4:22 p.m.	Benson^	52 kts	n/a	n/a	$14,000	n/a	- the roof and doors of a machine shed were blown off - a power pole was snapped
Subtotal:				**0**	**0**	**$180,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 18 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/7/2015	3:10 p.m.	Benson	61 kts	n/a	n/a	$11,000	n/a	*Benson* a tree was blown down onto a power line *Benson area* a tree was blown onto a garage south of the Village
6/7/2015	3:15 p.m.	Eureka	61 kts	n/a	n/a	$20,000	n/a	several trees were damaged
6/7/2015	3:16 p.m.	Metamora	61 kts	n/a	n/a	$25,000	n/a	numerous trees limbs were blown down
6/10/2015	8:00 p.m.	Germantown Hills^	52 kts	n/a	n/a	$8,000	n/a	trees were blown down onto IL Rte. 116 southwest of the Village
8/18/2015	5:12 p.m.	Congerville	52 kts	n/a	n/a	$12,000	n/a	numerous 4 to 6-inch diameter tree branches were blown down
8/18/2015	5:15 p.m.	Goodfield^	52 kts	n/a	n/a	$45,000	n/a	- a few trees were blown down along Interstate 74 - damage was done to the roof of a barn/dinner theater
11/11/2015	7:50 p.m.	Goodfield^	52 kts	n/a	n/a	$15,000	n/a	2 power poles were blown down
11/11/2015	7:56 p.m.	Metamora^	52 kts	n/a	n/a	n/a	n/a	a 24-inch diameter tree was blown down
11/11/2015	8:09 p.m.	El Paso Panola Woodford Minonk	52 kts	n/a	n/a	$50,000	n/a	*El Paso* several power lines were blown down *Minonk* several power lines were blown down
Subtotal:				**0**	**0**	**$186,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 19 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/13/2016	3:58 p.m.	Metamora	61 kts	n/a	n/a	$12,000	n/a	a large tree was blown over onto a house
2/28/2017	10:25 p.m.	Goodfield^	61 kts	n/a	n/a	$15,000	n/a	a semi was blown over on Interstate 74 west of the Village
5/10/2017	5:51 p.m.	Washburn^	70 kts	n/a	n/a	$15,000	n/a	- winds damaged several trees - tree limbs were blown down on 2 farms - a gas grill and singles on a home were also damaged by winds
5/17/2017	9:55 p.m.	Secor^	52 kts	n/a	n/a	$27,000	n/a	several trees were blown down, including one that fell onto power lines
6/14/2017	2:42 p.m.	Spring Bay	n/a	n/a	n/a	$25,000	n/a	numerous trees were blown down
6/14/2017	2:45 p.m.	Washburn^	52 kts	n/a	n/a	$30,000	n/a	numerous trees were blown down along IL Rte. 26 from the Woodford-Marshall County line southward for about 3 miles
6/14/2017	3:00 p.m.	Metamora Low Point	52 kts	n/a	n/a	$50,000	n/a	numerous trees were blown down
Subtotal:				**0**	**0**	**$174,000**	**$0**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Woodford County

Figure 26
(Sheet 20 of 20)
Severe Storms – Thunderstorms with Damaging Winds
1966 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/17/2017	7:30 p.m.	Roanoke^	70 kts	n/a	n/a	n/a	n/a	- a detached garage was destroyed - a dairy barn was damaged - several 18 to 20-inch diameter trees were blown down near 1800N and 1700E
6/17/2017	7:49 p.m.	Secor^	70 kts	n/a	n/a	n/a	n/a	a garage was severely damaged
6/17/2017	7:56 p.m.	El Paso	70 kts	n/a	n/a	n/a	n/a	numerous trees and tree branches were blown down
10/14/2017	6:20 p.m.	Spring Bay^	61 kts	n/a	n/a	$12,000	n/a	- a power line was blown down closing IL Route 26 near the Village - numerous trees were blown down onto IL Route 26 about 5.5 miles northeast of the Village
Subtotal:				**0**	**0**	**$12,000**	**$0**	
GRAND TOTAL:				**2**	**0**	**$1,711,000**	**$30,000**	

^ Thunderstorm with damaging winds verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Woodford County Hazard Identification and Risk Assessment Packet.

Woodford County

Figure 27
(Sheet 1 of 4)
Severe Storms – Hail Events
1974 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
7/10/1974	5:00 p.m.	Roanoke^ Metamora^ Washburn^	1.75 in.	n/a	n/a	n/a	$2,500,000	*Roanoke area* - destroyed a three square-mile area of crops - severely damaged corn, wheat and bean crops
7/10/1974	5:25 p.m.	Benson Woodford	1.75 in.	n/a	n/a	n/a	n/a	
7/10/1974	5:30 p.m.	Washburn	1.50 in.	n/a	n/a	n/a	n/a	
6/13/1975	11:40 p.m.	Benson^	2.00 in.	n/a	n/a	n/a	n/a	
7/26/1978	2:00 p.m.	Metamora	2.00 in.	n/a	n/a	n/a	n/a	
5/21/1987	9:10 p.m.	Roanoke^	1.25 in.	n/a	n/a	n/a	n/a	
4/22/1988	2:00 a.m.	El Paso^	1.75 in.	n/a	n/a	n/a	n/a	golf ball-sized hail piled up 4 inches deep near the City
5/17/1991	6:14 p.m.	Minonk	2.00 in.	n/a	n/a	n/a	n/a	
6/13/1991	7:10 p.m.	Eureka	1.75 in.	3	0	n/a	n/a	a police car was damaged by falling tree limbs
10/23/1991	3:25 p.m.	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
4/15/1992	1:40 a.m.	Eureka	1.50 in.	n/a	n/a	n/a	n/a	
5/13/1995	6:29 p.m.	El Paso^	1.75 in.	n/a	n/a	n/a	n/a	
4/14/1996	7:23 p.m.	Roanoke	1.00 in.	n/a	n/a	n/a	n/a	
4/7/1998	6:49 p.m.	Roanoke^	1.75 in.	n/a	n/a	n/a	n/a	
4/20/1998	3:30 p.m.	Benson^	1.75 in.	n/a	n/a	n/a	n/a	several windows in a car were broken
5/5/1999	8:13 p.m.	Benson^	1.75 in.	n/a	n/a	n/a	n/a	
Subtotal:				**3**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Woodford County

Figure 27
(Sheet 2 of 4)
Severe Storms – Hail Events
1974 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/4/1999	3:20 p.m.	Germantown Hills	1.75 in.	n/a	n/a	n/a	n/a	
5/12/2000	4:01 p.m.	Eureka^ Roanoke^	2.50 in.	n/a	n/a	$300,000	n/a	over 100 cars sustained hail damage in the Eureka/Roanoke area
5/18/2000	4:54 p.m.	Congerville^ El Paso	1.00 in.	n/a	n/a	n/a	n/a	*El Paso* 2 squad cars sustained damage
4/10/2001	12:35 a.m.	Minonk	1.75 in.	n/a	n/a	$100,000	n/a	- widespread damage was noted to vehicles in the area – at least 50 vehicles were reported to have between $2,000 and $4,000 in damage each - some minor roof damage was also reported
4/21/2001	4:30 p.m.	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
5/9/2003	10:30 p.m.	Washburn^	1.75 in.	n/a	n/a	n/a	n/a	
5/28/2003	1:53 p.m.	Germantown Hills	1.75 in.	n/a	n/a	n/a	n/a	numerous buildings and vehicles were damaged
6/28/2003	4:00 p.m.	Germantown Hills^ Eureka^ Goodfield Congerville	1.50 in.	n/a	n/a	n/a	n/a	
9/26/2003	1:59 p.m.	Minonk	1.25 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$400,000**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Woodford County

Figure 27
(Sheet 3 of 4)
Severe Storms – Hail Events
1974 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
5/30/2004	4:00 p.m.	Metamora^ Roanoke Eureka Secor	4.00 in.	n/a	n/a	n/a	n/a	
7/13/2004	2:05 p.m.	El Paso Kappa	2.75 in.	n/a	n/a	n/a	n/a	
3/30/2005	3:02 p.m.	Germantown Hills	1.00 in.	n/a	n/a	n/a	n/a	
3/30/2005	6:24 p.m.	Secor^	1.75 in.	n/a	n/a	n/a	n/a	
6/9/2005	1:25 a.m.	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
9/22/2006	4:08 p.m.	Roanoke	1.00 in.	n/a	n/a	n/a	n/a	
9/22/2006	4:10 p.m.	Roanoke	1.25 in.	n/a	n/a	n/a	n/a	
6/3/2008	9:07 p.m.	Goodfield	1.75 in.	n/a	n/a	n/a	n/a	
5/13/2009	4:53 p.m.	El Paso	1.00 in.	n/a	n/a	n/a	n/a	
6/1/2009	4:54 p.m.	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
6/1/2009	5:15 p.m.	Spring Bay	1.00 in.	n/a	n/a	n/a	n/a	
6/1/2009	5:24 p.m.	Metamora^	1.75 in.	n/a	n/a	n/a	n/a	
5/22/2011	1:15 p.m.	Goodfield	1.00 in.	n/a	n/a	n/a	n/a	
5/22/2011	1:26 p.m.	Eureka	1.00 in.	n/a	n/a	n/a	n/a	
5/22/2011	1:31 p.m.	Secor	1.50 in.	n/a	n/a	n/a	n/a	
11/17/2013	11:10 p.m.	Metamora	1.00 in.	n/a	n/a	n/a	n/a	
4/3/2014	2:30 a.m.	Eureka	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Woodford County

Figure 27
(Sheet 4 of 4)
Severe Storms – Hail Events
1974 – 2017

Date(s)	Start Time	Location(s)	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Crop Damage	Description
4/8/2015	2:30 a.m.	Washburn	1.00 in.	n/a	n/a	n/a	n/a	
6/8/2015	3:55 p.m.	Congerville^	1.00 in.	n/a	n/a	n/a	n/a	
3/15/2016	8:07 p.m.	Secor	1.50 in.	n/a	n/a	n/a	n/a	
4/10/2017	3:20 p.m.	Panola^	1.00 in.	n/a	n/a	n/a	n/a	
5/17/2017	9:45 p.m.	Bay View Gardens	1.00 in.	n/a	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	**$0**	
GRAND TOTAL:				**0**	**0**	**$400,000**	**$0**	

^ Hail event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Woodford County

Figure 28
Severe Storms – Lightning Events
1960 – 2017

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damage	Crop Damage	Description
6/16/1960	n/a	Roanoke	n/a	n/a	$2,500	n/a	lightning struck a transformer and switchboard at the feed mill
6/25/2008	3:50 a.m.	Germantown Hills	0	0	$300,000	$0	- lightning struck a house and started a fire which destroyed the house and its contents
5/12/2009	10:30 p.m.	Kappa	0	0	$45,000	$0	- lightning struck a tree near a house setting the power lines and part of the house on fire - the kitchen, staircase and room above the kitchen were damaged
7/6/2010	5:00 p.m.	Washburn⚡	1	0	n/a	n/a	- a road construction flagger on IL Rte. 89 between Washburn and Cazenovia was struck by lightning - the victim was struck in the left shoulder with the bolt exiting his left foot, where part of his boot was blown off - the individual was treated for burns
6/5/2011	8:31 a.m.	Secor⚡	n/a	n/a	$1,000	n/a	lightning struck a house knocking a hole in the roof and taking out the electrical service
GRAND TOTAL:			**1**	**0**	**$348,500**	**$0**	

⚡ Lightning strike event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

3.1.3 PARTICIPATING PEORIA COUNTY JURISDICTIONS

HAZARD PROFILE

The following identifies past occurrences of severe storms; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe storms occurred previously? What is the extent of these previous severe storms?

Figures 37, **38**, and **39** located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe storm events recorded in the participating Peoria County jurisdictions. The severe storm events are separated into four categories: thunderstorms with damaging winds, hail, lightning and heavy rain. Severe storms are the most frequently occurring natural hazard in the participating jurisdictions.

Severe Storms Fast Facts – Occurrences

Number of recorded Thunderstorms with Damaging Winds (1953 – 2017): ***173***

Number of recorded Severe Hail Events (1960 – 2017): ***57***

Number recorded of Lightning Strike Events (1955 – 2017): ***11***

Highest Recorded Wind Speed: ***83 knots (July 5,1953 at Peoria)***

Largest Hail Recorded: ***2.75 inches (June 2, 1980 at Peoria)***

Most Likely Month for Thunderstorms with Damaging Winds to Occur: ***June***

Most Likely Month for Severe Hail to Occur: ***June***

Most Likely Time for Thunderstorms with Damaging Winds to Occur: ***Afternoon/Early Evening***

Most Likely Time for Severe Hail to Occur: ***Afternoon/Early Evening***

Thunderstorms with Damaging Winds

NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan were used to document 173 reported occurrences of thunderstorms with damaging winds in the participating Peoria County jurisdictions between 1953 and 2017. Of the 173 occurrences, 120 had reported wind speeds of 50 knots or greater. There were 53 occurrences, however, where the wind speed was not recorded.

The highest wind speed recorded in the participating jurisdictions occurred in Peoria on July 5, 1953 when winds reached 83 knots (95 mph) during a thunderstorm event. Thunderstorms with damaging winds have been *recorded* in every participating jurisdiction on multiple occasions.

Figure 40 charts the reported occurrences of thunderstorms with damaging winds in the participating municipalities by month. Of the 173 events, 112 (65%) took place in May, June, and July making this the peak period for thunderstorms with damaging winds in participating jurisdictions. Of those 112 events, 52 (46%) occurred during June, making this the peak month for thunderstorms with damaging winds.

Figure 41 charts the reported occurrences of thunderstorms with damaging winds by hour. Of the 173 occurrences, start times were unavailable for six events. Of the remaining 167 severe storms events with recorded times, approximately 81% occurred during the p.m. hours, with 101 of the events (60%) taking place between 2 p.m. and 8 p.m.

Figure 40
Graph: Thunderstorms with Damaging Winds by Month
Participating Peoria County Jurisdictions: 1960 – 2017

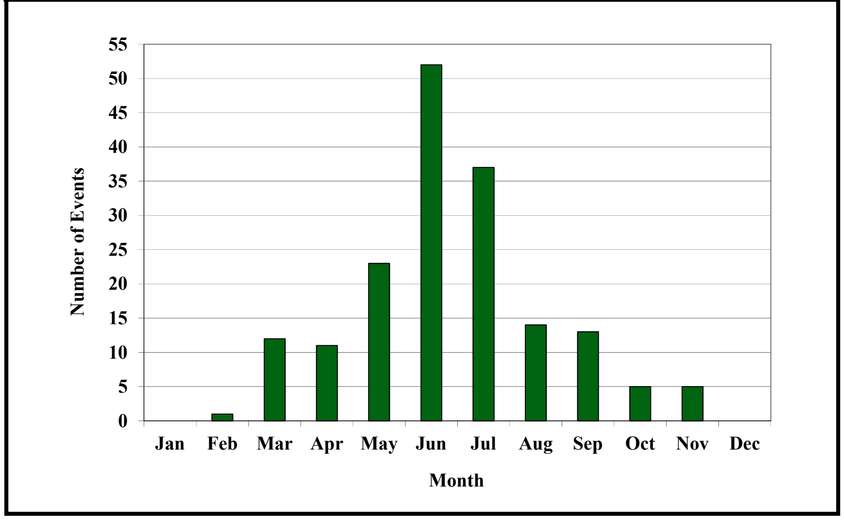
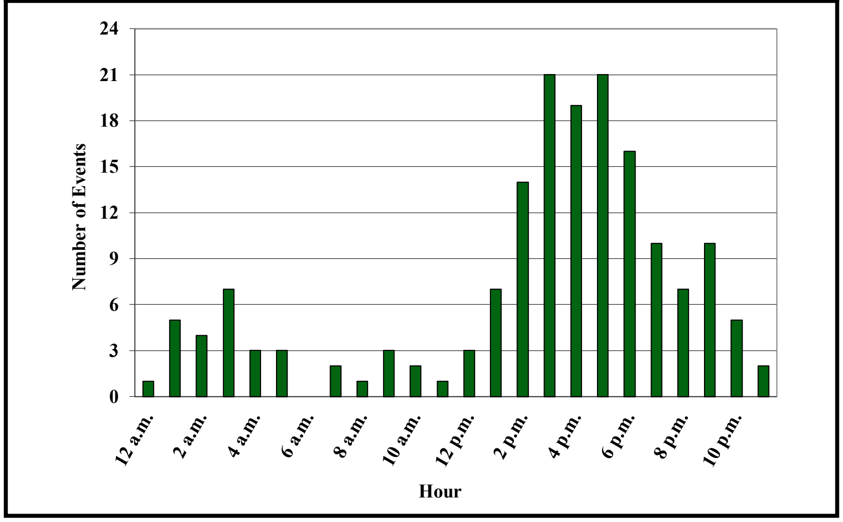


Figure 41
Graph: Thunderstorms with Damaging Winds by Hour
Participating Peoria County Jurisdictions: 1960 – 2017



Hail

NOAA's Storm Events Database and information included in the 2010 Plan were used to document 57 reported occurrences of severe storms with hail one (1) inch in diameter or greater in participating Peoria County jurisdictions between 1960 and 2017. Of the 57 occurrences, 23 produced hailstones 1.50 inches or larger in diameter.

The largest hail stones documented in participating jurisdictions measured 2.75 inches in diameter (baseball-sized) and fell on June 2, 1980 at Peoria. Hail one (1) inch in diameter or greater has been *recorded* in every participating municipality.

Figure 42 charts the reported occurrences of hail by month. Of the 57 occurrences, 34 (60%) took place in April, May and June making this the peak period for hail in participating jurisdictions. Of the 34 events, 14 (41%) occurred during June, making this the peak month for hail events.

Figure 42
Graph: Hail Events by Month Participating Peoria County Jurisdictions: 1960 – 2017

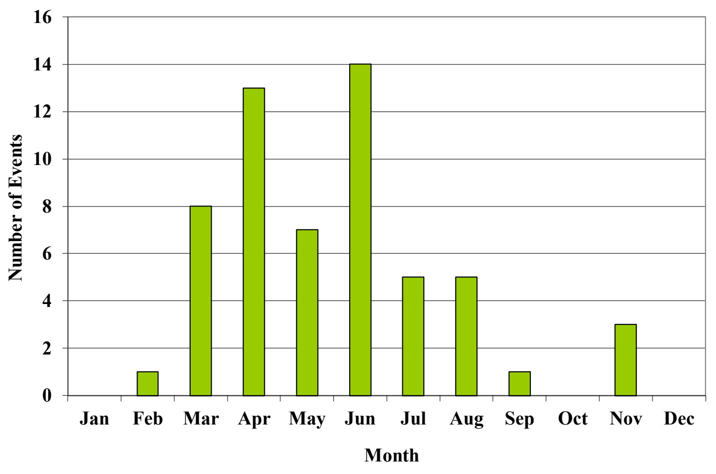
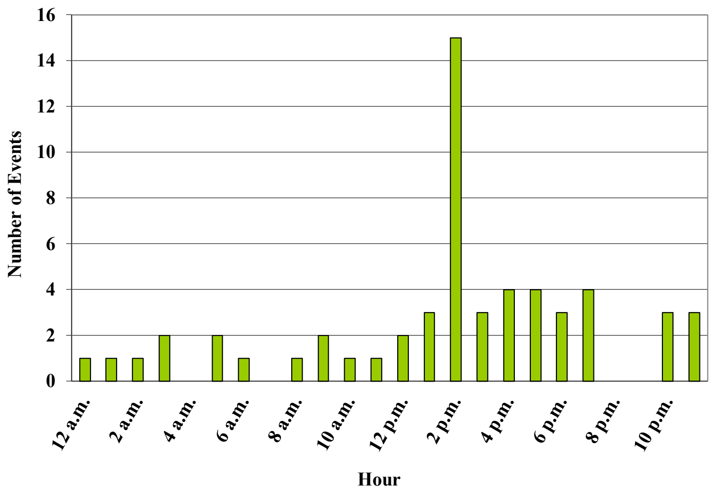


Figure 43 charts the reported occurrences of hail by hour. Approximately 77% of all the hail events occurred during the p.m. hours, with 33 of the events (58%) taking place between 2:00 p.m. and 8:00 p.m.

Figure 43
Graph: Hail Events by Hour Participating Peoria County Jurisdictions: 1960 – 2017



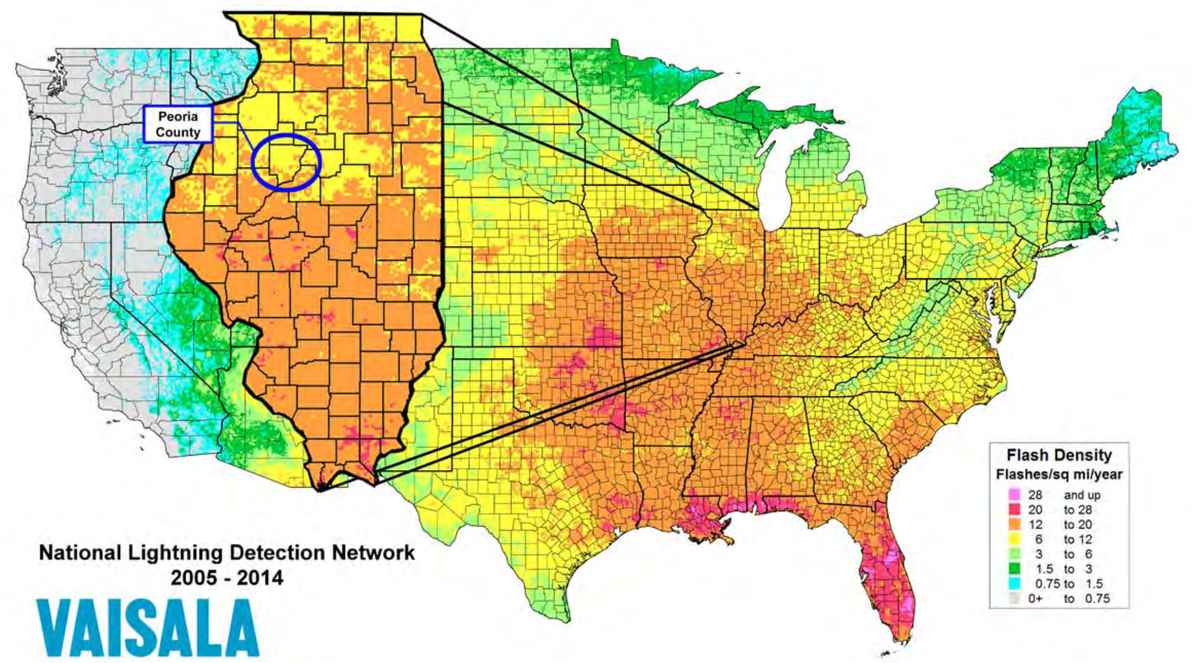
Lightning

While lightning strike events occur regularly across central Illinois, NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan only identified 11 *recorded* occurrences of lightning strikes in the participating Peoria County jurisdictions between 1955 and 2017. Three of the events took place during August while the remaining events took place in May, June, July and September. Three of the five events with recorded times occurred during the p.m. hours.

These represent the ***reported occurrences*** of lightning strike events. The NWS acknowledges that lightning strike events area not well recorded, due in part to the rural nature of most Illinois counties. Only those events with impacts, such as property damage or injuries/fatalities, are reported. As a result, lightning strike events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

According to data from Vaisala's National Lightning Detection Network, Peoria County (including the participating jurisdictions) averaged at least 6 to 12 cloud-to-ground lightning flashes per square mile annually between 2005 and 2014. **Figure 44** illustrates the cloud-to-ground lightning flash density (number of cloud-to-ground flashes per square mile) by county for the continental United States. In comparison, Illinois averaged 14.1 cloud-to-ground lightning flashes per square mile between 2006 and 2015, ranking it eighth in the Country for lightning flash density.

Figure 44
Cloud-to-Ground Lightning Flash Density: Participating Peoria County Jurisdictions



Heavy Rain

While heavy rain events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database does not include any *recorded* heavy rain events for the participating jurisdictions. This may be due in part to a lack of uniform reporting guidelines for heavy rain events.

What locations are affected by severe storms?

Severe storms affect the entire County. A single severe storm event will generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by the Illinois Emergency Management Agency (IEMA) classifies Peoria County's hazard rating for severe storms as "severe." (IEMA's hazard rating system has five levels: low, guarded, elevated, high and severe.)

What is the probability of future severe storm events occurring?

Thunderstorms with Damaging Winds

The participating Peoria County jurisdictions have had 173 verified occurrences of thunderstorms with damaging winds between 1953 and 2017. With 173 occurrences over the past 65 years, the participating jurisdictions should expect to experience at least two thunderstorms with damaging winds each year. There were 24 years over the last 65 years where multiple (three or more) thunderstorms with damaging winds occurred. This indicates that the probability that multiple thunderstorms with damaging winds may occur during any given year within the participating jurisdictions is 37%.

Hail

There have been 57 verified occurrences of hail one (1) inch in diameter or greater between 1960 and 2017. With 57 occurrences over the past 58 years, the participating jurisdictions should expect to experience approximately one severe hail event each year. There were 14 years over the last 58 years where two or more hail events occurred. This indicates that the probability that more than one severe storm with hail may occur during any given year within the participating jurisdictions is 24%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe storms.

Are the participating jurisdictions vulnerable to severe storms?

Yes. All of the participating jurisdictions are vulnerable to the dangers presented by severe storms due to the topography of the region and its location in relation to the movement of weather fronts across central Illinois. Since 2008, the participating Peoria County jurisdictions have recorded 55 thunderstorms with damaging winds, 28 severe storms with hail one (1) inch in diameter or greater and five verified lightning strike events.

Figure 45 details the number thunderstorms with damaging winds and hail events that were recorded in each participating municipality. Of the participating jurisdictions, Peoria has had more recorded occurrences of thunderstorms with damaging winds, severe hail events and lightning strikes than any of the other jurisdictions.

Figure 45
Verified Severe Storm Events by Participating Peoria County Jurisdictions

Participating Municipality	**Number of Events**		
	Thunderstorm & High Wind	**Severe Hail**	**Lightning Strikes**
Bartonville[1]	36	16	1
Chillicothe	33	7	1
Hanna City	19	8	0
Peoria[2]	144	29	9
Peoria Heights[2]	38	2	0

[1] Partially located within the GPSD service area

[2] Located within the GPSD service area

What impacts resulted from the recorded severe storms?

Severe storms as a whole have caused an estimated $6.8 million in recorded property damages. The following provides a breakdown of impacts by category.

Thunderstorms with Damaging Winds

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1953 and 2017, 51 of the 173 thunderstorms with damaging winds caused $5.2 million in property damages. Damage information was either unavailable or none was recorded for the remaining 122 reported occurrences.

NOAA's Storm Events Database and NOAA's Storm Data Publications documented 11 injuries as the result of four separate thunderstorm with damaging wind events. Detailed information on the injuries sustained was only available for two of the events. The following provides a brief description of each event.

- On July 20, 1994 a thunderstorm with damaging winds caused the brick façade of a building in Peoria to collapse on a car injuring the individual inside.
- A roofer was blown off a roof by a thunderstorm with damaging winds on June 8, 2005.

Severe Storms Fast Facts – Impacts/Risk

Thunderstorms with Damaging Winds Impacts
- Total Property Damage: ***$5,205,900***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***11***
- Fatalities: ***n/a***

Severe Hail Impacts
- Total Property Damage: ***$1,400,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Lightning Strike Impacts
- Total Property Damage: ***$197,700***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***4***
- Fatalities: ***n/a***

Severe Storms Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Hail

Data obtained from NOAA's Storm Events Database, the 2010 Plan and MAC member records indicates that between 1960 and 2017, two of the 57 severe hail events caused $1.4 million in property damages. Damage information was either unavailable or none was recorded for the remaining 55 reported occurrences. No injuries or fatalities were reported as a result of any of the hail events either.

Lightning

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1955 and 2017, seven of the 11 lightning strike events caused $197,700 in property damages. Damage information was either unavailable or none was recorded for the remaining four reported occurrences.

NOAA's Storm Events Database and NOAA's Storm Data Publications documented four injuries as the result of three separate lightning strike events. Detailed information on the injuries sustained was only available for one of the events. On May 26, 2017 two individuals were injured when lightning struck an outdoor music festival in Chillicothe.

What other impacts can result from severe storms?

In Peoria County (including the participating municipalities), the greatest risk to health and safety from severe storms is vehicle accidents. Hazardous driving conditions resulting from severe storms (i.e., wet pavement, poor visibility, high winds, etc.) can contribute to accidents that result in injuries and fatalities. Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that wet road surface conditions were present for 12.8% to 16.5% of all crashes recorded annually in Peoria County.

While other circumstances cause wet road surface conditions (i.e., melting snow, condensation, light showers, etc.), law enforcement officials agree that hazardous driving conditions caused by severe storms add to the number of crashes. **Figure 46** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when wet road surface conditions were present.

Figure 46
Severe Weather Crash Data – Peoria County

Year	Total # of Crashes	Presence of Wet Road Surface Conditions		
		# of Crashes	# of Injuries	# of Fatalities
2011	4,896	810	296	0
2012	4,789	612	201	0
2013	4,438	712	232	1
2014	4,538	643	235	2
2015	4,454	707	232	2
Total:	**23,115**	**3,484**	**1,196**	**5**

Source: Illinois Department of Transportation.

What is the level of risk/vulnerability to public health and safety from severe storms?

For the participating jurisdictions the level of risk or vulnerability posed by severe storms to public health and safety is considered to be low. This assessment is based on the fact that despite their relative frequency, the number of injuries and fatalities is low. In addition, UnityPoint Health Methodist and OSF St. Francis Medical Center in Peoria as well as hospitals in Pekin (Tazewell County), Eureka (Woodford County), Galesburg (Knox County) and Canton (Fulton County) and regional health centers in Springfield (Sangamon County) and the Quad Cities area (Rock Island County) are equipped to provide care to persons injured during a severe storm.

Are existing buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes. All existing buildings, infrastructure and critical facilities located in the participating jurisdictions are vulnerable to damage from severe storms. Structural damage to buildings is a relatively common occurrence with severe storms. Damage to roofs, siding, awnings and windows can occur from hail, flying and falling debris and high winds. Lightning strikes can damage electrical components and equipment (i.e., appliances, computers etc.) and can cause fires that consume buildings. If the roof is compromised or windows are broken, rain can cause additional damage to the structure and contents of a building.

Infrastructure and critical facilities tend to be just as vulnerable to severe storm damage as buildings. The infrastructure and critical facilities that are the most vulnerable to severe storms are related to power distribution and communications. High winds, lightning and flying and falling debris have the potential to cause damage to communication and power lines, power substations, transformers and poles, and communication antennas and towers.

The damage inflicted by severe storms often leads to disruptions in communication and creates power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service. Power outages and disruptions in communications can impair vital services, particularly when backup power generators are not available. Participating jurisdictions acknowledged the need for emergency backup generators to allow continued operation of critical facilities such as municipal buildings, storm shelters, police and fire stations, heating and cooling centers, and lift stations. Of the participating municipalities, Peoria does not have emergency backup generators at all of its fire stations which also serve as warming/cooling centers.

The GPSD is fortunate to have permanent emergency backup generators or dual power feeds at its main treatment facility and 12 of its 19 lift stations. The remaining seven lift stations are smaller in nature and the District has portable pumps and generators that can be deployed to these location if needed. In addition, the GPSD installed lightning protection equipment on the SCADA system at its main facility about 10 years ago and uninterrupted power supply (UPS) systems at its remote locations. These improvements have increased the GPSD’s system resilience and helps it maintain continuity of operations during extended power outages.

In addition to affecting power distribution and communications, debris and flooding from severe storms can block state and local roads hampering travel. When transportation is disrupted, emergency and medical services are delayed, rescue efforts are hindered and government services can be affected.

Based on the frequency with which severe storms occur in the participating jurisdictions, the amount of property damage previously reported and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe storms is medium to high.

Are future buildings, infrastructure and critical facilities vulnerable to severe storms?

Yes and No. All of the participating jurisdictions have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe storms. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe storms as long as they are located above ground. High winds, lightning and flying and falling debris can disrupt power and communication. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas.

What are the potential dollar losses to vulnerable structures from severe storms?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe storms. With only 60 of the 241 recorded events listing property damage numbers for all categories of severe storms, there is no way to accurately estimate future potential dollar losses. Since all existing structures within the participating jurisdictions are vulnerable to damage, it is highly probable that there will be future dollar losses from severe storms.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 1 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
7/23/1953	n/a	Peoria	n/a	n/a	n/a	n/a	- winds caused damage at Heart of Illinois Fair - scattered power outages occurred
7/5/1953	8:15 p.m.	Peoria	83 kts	3	0	$1,500,000	- roof damaged sustained by Sacred Heart Church & White School - many planes sustained damage at the Airport
10/7/1955	1:00 p.m.	Peoria	n/a	n/a	n/a	n/a	
3/14/1957	n/a	Peoria Bartonville	n/a	n/a	n/a	n/a	*<u>Peoria</u>* - winds knocked out power and phone lines *<u>Bartonville</u>* - 250-foot length of roof was ripped off CECo Steel Products warehouse
8/18/1960	3:00 p.m.	Peoria	n/a	n/a	n/a	n/a	winds downed many trees and utility lines
7/22/1962	3:08 a.m.	Peoria	55 kts	n/a	n/a	n/a	
4/21/1964	4:30 a.m.	Peoria Peoria Heights	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- winds destroyed two houses and caused severe damage to 25 other houses - several homes under construction were leveled in the Wardcliffe Hamilton Park subdivision - wind downed a high voltage power line and knocked out phone service to 40 homes							
11/20/1964	n/a	Peoria	61 kts	6	0	n/a	- winds blew a garbage container into a gas pipe causing a gas leak - winds downed electric and utility lines
9/14/1965	2:28 p.m.	Peoria	63 kts	n/a	n/a	n/a	
5/7/1966	7:30 p.m.	Peoria	61 kts	n/a	n/a	n/a	
Subtotal:				**9**	**0**	**$1,500,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 2 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/10/1968	10:30 p.m.	Peoria	n/a	n/a	n/a	n/a	- winds overturned a mobile home - winds blew over the walls of a building under construction
4/29/1970	11:30 p.m.	Peoria	n/a	n/a	n/a	n/a	
7/3/1970	3:55 a.m.	Peoria	n/a	n/a	n/a	n/a	
9/28/1972	9:30 p.m.	Peoria	n/a	n/a	n/a	n/a	
6/16/1973	8:09 p.m.	Peoria Airport Peoria Bartonville	56 kts	n/a	n/a	n/a	
6/9/1974	5:00 p.m.	Peoria Peoria Heights	n/a	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)*** - wind gusts varying from 30-70 mph - minor property damage as well as damage to trees and power lines was reported
6/19/1974	n/a	Peoria Airport Peoria	n/a	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)*** *Peoria Airport* - a Cessna flipped while trying to land *Peoria* - roof of the Union Stockyards blew off - 12,000 homes without power
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 3 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/20/1974	6:20 p.m.	Peoria Airport Peoria Bartonville	55 kts	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)*** winds blew two aircraft over at the Airport
6/20/1974	6:15 p.m.	Chillicothe	n/a	n/a	n/a	n/a	***This event was part of a federally-declared disaster (Declaration #438)***
7/10/1974	4:00 p.m.	Peoria Peoria Heights	52 kts	n/a	n/a	n/a	*Peoria* numerous trees were reported down
6/5/1975	2:30 a.m.	Peoria	n/a	n/a	n/a	n/a	
7/23/1975	5:40 p.m.	Peoria Airport Peoria Bartonville	74 kts	n/a	n/a	n/a	winds knocked over trees
3/26/1976	9:05 p.m.	Peoria Peoria Heights	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- winds uprooted trees, ripped the sides off a garage, broke windows and damage billboards - Jet City & Bartonville CILCO substation was knocked out, leaving 5,000 homes without power							
3/28/1977	n/a	Peoria	41 kts	n/a	n/a	n/a	- winds blew down billboards, utility poles and trees - the United Facilities Warehouse sustained wind damage - 200 homes were without power
5/4/1977	5:02 p.m.	Peoria	52 kts	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 4 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
7/9/1978	2:23 a.m.	Peoria Airport Peoria Bartonville	50 kts	n/a	n/a	n/a	
7/5/1980	1:30 a.m.	Peoria	n/a	n/a	n/a	n/a	
7/5/1980	2:05 a.m.	Peoria Airport Peoria Bartonville	58 kts	n/a	n/a	n/a	
9/1/1980	1:22 a.m.	Peoria Airport Peoria Bartonville	50 kts	n/a	n/a	n/a	
9/16/1980	5:30 p.m.	Peoria	n/a	n/a	n/a	n/a	windows were blown in
6/24/1981	4:40 p.m.	Hanna City	61 kts	n/a	n/a	n/a	
6/24/1981	4:55 p.m.	Peoria Airport Peoria Bartonville	65 kts	n/a	n/a	n/a	
4/3/1982	n/a	Peoria	54 kts	n/a	n/a	n/a	8,000 homes without power
7/18/1982	10:12 p.m.	Peoria	n/a	n/a	n/a	n/a	
6/14/1983	4:30 p.m.	Peoria	n/a	n/a	n/a	n/a	winds downed power lines causing power failures in parts of the City
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 5 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
8/21/1983	11:00 p.m.	Peoria Peoria Heights	n/a	n/a	n/a	n/a	
7/2/1985	6:45 p.m.	Peoria	51 kts	n/a	n/a	n/a	winds blew down tree limbs
7/2/1985	8:45 p.m.	Hanna City Peoria Peoria Heights Bartonville	55 kts	n/a	n/a	n/a	winds caused widespread minor damage to trees, telephone and electric utilities
7/31/1986	1:25 a.m.	Peoria	n/a	n/a	n/a	n/a	widespread tree damage
5/20/1987	5:30 p.m.	Chillicothe	n/a	n/a	n/a	n/a	winds downed several trees
5/21/1987	9:15 p.m.	Chillicothe Peoria	57 kts	n/a	n/a	n/a	winds downed trees
5/8/1988	4:30 p.m.	Peoria Peoria Airport	n/a	n/a	n/a	n/a	the office building of WXCL lost part of its roof
10/17/1988	7:45 a.m.	Peoria	55 kts	n/a	n/a	n/a	- some homes were damaged by fallen trees in the north part of the City - many utility lines in the area were blown down
4/26/1989	6:42 p.m.	Peoria	60 kts	n/a	n/a	n/a	- winds knocked down some trees and power lines - 5,000 utility customers were without power for a time
3/27/1991	3:16 p.m.	Peoria Airport Peoria Bartonville	50 kts	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 6 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
3/27/1991	4:51 p.m.	Peoria Airport Peoria Bartonville	59 kts	n/a	n/a	n/a	
5/31/1991	6:05 p.m.	Peoria	52 kts	n/a	n/a	n/a	
5/31/1991	6:10 p.m.	Chillicothe	n/a	n/a	n/a	$2,500	winds downed power lines
9/9/1991	7:09 p.m.	Peoria	64 kts	n/a	n/a	n/a	
5/4/1992	1:24 p.m.	Peoria	53 kts	n/a	n/a	$250	
7/2/1992	12:53 p.m.	Peoria	61 kts	n/a	n/a	$2,500,000	*Event Description Provided Below*
- winds caused widespread damage to structures and trees - trees and power lines were downed near Koerner Road - large trees were downed on Adams Street - a tree was blown onto a home on Wilcox Street							
7/2/1992	1:08 p.m.	Peoria	n/a	n/a	n/a	n/a	
7/2/1992	1:16 p.m.	Chillicothe	n/a	n/a	n/a	n/a	winds and falling trees demolished a home at 3rd & Sycamore Street
9/7/1992	9:17p.m.	Peoria	n/a	n/a	n/a	n/a	trees were blown down near the Bradley University Campus
9/7/1992	9:20 p.m.	Peoria	n/a	n/a	n/a	n/a	trees were blown down in the East Bluff area
9/9/1992	4:20 p.m.	Peoria	51 kts	n/a	n/a	n/a	
8/15/1993	7:05 p.m.	Chillicothe	n/a	n/a	n/a	$5,000	winds blew down large trees and power lines
8/23/1993	3:45 p.m.	Peoria	n/a	n/a	n/a	$50	tree limbs were blown down
5/24/1994	5:20 p.m.	Peoria	n/a	n/a	n/a	n/a	large tree branches were snapped by high winds
Subtotal:				**0**	**0**	**$2,507,800**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 7 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
7/20/1994	5:22 p.m.	Bartonville	n/a	n/a	n/a	$50	a tree was blown over in the Lake Camelot subdivision
7/20/1994	5:25 p.m.	Peoria	n/a	n/a	n/a	$50	a flag pole was blown over near Weaver Farms
7/20/1994	5:30 p.m.	Peoria	n/a	n/a	n/a	$5,000	- winds blew down numerous trees, some across roads and on cars - power lines were knocked down
7/20/1994	5:35 p.m.	Peoria	n/a	n/a	n/a	$50	a 2-foot diameter tree was blown down across Knoxville Ave. near the American Red Cross office
7/20/1994	5:39 p.m.	Peoria	n/a	1	0	$5,000	the brick façade of a building collapsed, injuring one person in a car
5/9/1995	5:25 p.m.	Bartonville	n/a	n/a	n/a	n/a	winds blew down numerous large tree branches
6/21/1995	5:30 p.m.	Chillicothe	52 kts	n/a	n/a	n/a	numerous trees and power lines were downed
3/25/1996	4:00 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	n/a	n/a	n/a	n/a	- winds blew down numerous power lines and caused minor damage across the County *rain could not be documented with this event*
6/23/1996	3:30 p.m.	Peoria	n/a	n/a	n/a	n/a	winds blew down a large tree
7/24/1996	11:45 a.m.	Chillicothe Peoria Peoria Heights	n/a	n/a	n/a	n/a	*Chillicothe/Peoria* - winds blew down numerous large trees, tree limbs and power lines *Peoria* - a tree fell onto the historic Scottish Rite Cathedral causing minor damage
Subtotal:				**1**	**0**	**$10,100**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 8 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
10/29/1996	4:42 p.m.	Peoria Heights	n/a	n/a	n/a	n/a	winds blew down a large tree causing minor damage to a home
10/30/1996	1:00 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	57 kts	n/a	n/a	n/a	winds blew down trees, tree limbs and power lines *__Peoria__* - 2 bus stop benches were blown over *__Peoria Heights__* - a tree fell onto an unoccupied car causing major damage *rain could not be documented with this event*
4/5/1997	3:30 p.m.	Peoria Peoria Heights Chillicothe	n/a	n/a	n/a	$3,000	- numerous trees, tree limbs and power lines were blown down - a wall on a boat warehouse was blown out and a garage door was buckled in - a tree fell onto a house causing minor roof damage
4/6/1997	9:15 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines *rain could not be documented with this event*
4/30/1997	2:00 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	61 kts	n/a	n/a	n/a	- hundreds of power lines were blown down across the area - numerous trees and tree limbs were blown down - widespread structural damage was reported *rain could not be documented with this event*
Subtotal:				**0**	**0**	**$3,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 9 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
8/3/1997	4:55 p.m.	Peoria	n/a	n/a	n/a	n/a	winds blew down several large trees, numerous tree limbs and some power lines
9/16/1997	9:30 p.m.	Peoria	n/a	n/a	n/a	n/a	winds blew down numerous large tree limbs and a few power lines
9/29/1997	10:00 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down *Chillicothe* a large tree fell down causing considerable damage to a garage and nearby shed *rain could not be documented with this event*
3/27/1998	6:43 p.m.	Hanna City Peoria	54 kts	n/a	n/a	n/a	numerous trees, tree limbs, power poles and power lines were blown down *Peoria* - a 200-foot by 75-foot section of the post office garage roof was blown off and curled into a ball - winds caused the second story of an abandoned business to collapse
6/14/1998	7:15 a.m.	Peoria	n/a	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines
6/14/1998	6:27 p.m.	Peoria	n/a	n/a	n/a	n/a	winds blew down a couple of trees, both of which fell onto several homes causing minor damage
6/18/1998	5:42 p.m.	Peoria	52 kts	n/a	n/a	n/a	- winds blew down numerous trees, tree limbs and power lines - some of the trees fell onto homes causing structural damage
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 10 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/29/1998	3:14 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	57 kts	n/a	n/a	n/a	*Event Description Provided Below*
- winds blew down or uprooted trees, tree limbs, power poles and power lines - many trees fell onto structures causing damage ranging from torn gutters to major roof and structural damage - vehicles sustained damage from fallen trees and numerous outbuildings and shed were either damage or destroyed							
11/10/1998	5:30 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	n/a	n/a	n/a	n/a	winds downed power lines and tree limbs and blew over trees *rain could not be documented with this event*
6/1/1999	6:00 p.m.	Peoria	n/a	n/a	n/a	n/a	- a large tree was blown over onto a house causing minor damage - several power lines were blown down
6/4/1999	3:09 p.m.	Peoria	n/a	n/a	n/a	n/a	- numerous trees and tree limbs were blown down - some caused minor damage to a few homes, mainly to porches and roofs
7/23/1999	6:30 p.m.	Peoria	n/a	n/a	n/a	n/a	- winds blew down numerous trees - one tree crushed a fence - another tree broke a street light - several power lines were knocked down by fallen trees
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 11 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
5/18/2000	4:26 p.m.	Peoria Peoria Heights	n/a	n/a	n/a	n/a	numerous large tree limbs were blown down
6/23/2000	3:50 p.m.	Peoria Heights	n/a	n/a	n/a	n/a	several 18-inch diameter trees were blown down
6/23/2000	4:25 p.m.	Peoria	n/a	n/a	n/a	n/a	many trees were damaged by winds throughout the City
5/22/2001	12:38 p.m.	Peoria	52 kts	n/a	n/a	n/a	shingles were blown off the roof of a restaurant
6/14/2001	5:45 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	51 kts	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down *Peoria* - the top 40 feet of a 120-foot communications tower was blown down - the section of tower caused roof damage to the building it was next to before landing on the road below
8/9/2001	7:00 p.m.	Bartonville Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	n/a	several tree limbs and power lines were blown down
8/22/2001	5:45 p.m.	Peoria	55 kts	n/a	n/a	n/a	trees and power lines were blown down
8/30/2001	7:20 p.m.	Peoria	50 kts	n/a	n/a	n/a	an 8 to 9 inch diameter branch was blown down blocking an alley
7/26/2002	4:05 p.m.	Peoria	50 kts	n/a	n/a	n/a	- winds blew over a small metal shed - several large tree limbs were blown down
2/11/2003	6:15 p.m.	Peoria	50 kts	n/a	n/a	n/a	several trees and large power poles were blown down on the west and south sides of the City
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 12 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
5/9/2003	10:05 p.m.	Peoria Airport Peoria Bartonville	57 kts	n/a	n/a	n/a	
6/25/2003	6:00 p.m.	Hanna City Bartonville Peoria Peoria Heights	61 kts	n/a	n/a	n/a	winds blew down numerous trees, tree limbs and power lines *Peoria* several unoccupied cars were destroyed due to fallen trees
6/28/2003	3:04 p.m.	Peoria	52 kts	n/a	n/a	n/a	
7/8/2003	2:20 p.m.	Peoria	65 kts	n/a	n/a	n/a	numerous trees, tree limbs and power lines were blown down
7/21/2003	12:30 a.m.	Bartonville Peoria Chillicothe	60 kts	n/a	n/a	n/a	- winds caused damage to trees and power lines - some of the fallen trees landed on a couple of homes causing minor roof damage
11/12/2003	3:00 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	n/a	n/a	n/a	n/a	winds downed numerous power lines, power poles, trees and tree limbs *rain could not be documented with this event*
3/5/2004	9:10 a.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	50 kts	n/a	n/a	n/a	winds downed trees, tree limbs, power lines, power poles and signs, some of which caused minor structural damage *rain could not be documented with this event*
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 13 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
5/18/2004	3:50 p.m.	Peoria	60 kts	n/a	n/a	n/a	numerous trees and power lines were blown down throughout the City
5/30/2004	8:39 a.m.	Chillicothe	55 kts	n/a	n/a	n/a	- winds blew an aluminum shed and a plastic storage shed into a nearby field - numerous tree limbs were blown down
5/30/2004	4:30 p.m.	Peoria	52 kts	n/a	n/a	n/a	
7/11/2004	3:11 p.m.	Peoria	52 kts	n/a	n/a	n/a	several trees and power lines were blown down
5/19/2005	5:00 p.m.	Peoria	55 kts	n/a	n/a	n/a	numerous trees and power lines were blown down
6/8/2005	2:00 p.m.	Peoria	50 kts	1	0	n/a	- a roofer was blown off a roof and injured - a large tree limb was blown down onto a van
7/26/2005	3:25 p.m.	Peoria	50 kts	n/a	n/a	n/a	numerous large tree branches were blown down
9/19/2005	2:20 p.m.	Peoria	50 kts	n/a	n/a	n/a	several large tree limbs were blown down on the Bradley University campus
4/13/2006	9:40 p.m.	Peoria	52 kts	n/a	n/a	n/a	- a billboard was blown down - wind blew down numerous trees and power lines
4/13/2006	10:13 p.m.	Peoria	60 kts	n/a	n/a	n/a	numerous trees, power poles and power lines were blown down
4/16/2006	2:09 p.m.	Peoria	50 kts	n/a	n/a	n/a	numerous tree limbs, 2 to 4 inches in diameter, were blown down
5/17/2006	4:41 p.m.	Peoria	50 kts	n/a	n/a	n/a	a tree was blown down
5/24/2006	2:30 p.m.	Hanna City	50 kts	n/a	n/a	n/a	numerous large tree limbs were blown down
7/19/2006	2:45 p.m.	Chillicothe Peoria Heights Peoria	56 kts	n/a	n/a	n/a	numerous trees and tree limbs were blown down
Subtotal:				**1**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 14 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/21/2007	8:55 p.m.	Peoria	50 kts	n/a	n/a	n/a	a 12-inch diameter tree was blown down as well as a few other smaller trees
6/13/2008	1:20 a.m.	Peoria Heights	50 kts	n/a	n/a	$15,000	numerous tree limbs were blown down
6/15/2008	2:08 p.m.	Peoria	52 kts	n/a	n/a	$2,000	a large tree was uprooted near the intersection of US Rte. 150 and IL Rte. 6
6/15/2008	2:15 p.m.	Bartonville	61 kts	n/a	n/a	$20,000	- several trees and power lines were blown down
7/21/2008	4:30 a.m.	Peoria	52 kts	n/a	n/a	$2,000	an 18-inch diameter tree limb was blown down at Bradley University
7/21/2008	5:55 a.m.	Peoria Heights Chillicothe	52 kts	n/a	n/a	$45,000	*Peoria Heights* - numerous trees and tree branches were blown down *Chillicothe* - a tree was blown over onto a house and 2 cars - numerous tree limbs were downed throughout the City
7/29/2008	5:20 p.m.	Peoria	52 kts	n/a	n/a	n/a	winds split a 10-inch diameter tree
8/5/2008	3:48 a.m.	Peoria	61 kts	n/a	n/a	$25,000	numerous trees were blown down around the City
8/5/2008	3:50 a.m.	Peoria Heights	61 kts	n/a	n/a	$2,000	winds split a 36-inch diameter tree
8/5/2008	3:55 a.m.	Bartonville	61 kts	n/a	n/a	$1,000	an aluminum flag pole was snapped
9/12/2008	9:40 p.m.	Peoria	52 kts	n/a	n/a	$5,000	a tree was blown down onto a house
3/8/2009	12:50 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	50 kts	n/a	n/a	n/a	*rain could not be documented with this event*
Subtotal:				**0**	**0**	**$117,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 15 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
3/8/2009	1:20 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	$25,000	*Peoria* - numerous power lines were knocked down - a transformer was blown *rain could not be documented with this event*
3/24/2009	3:30 p.m.	Hanna City Bartonville Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	$4,000	*rain could not be documented with this event*
6/18/2009	3:50 a.m.	Peoria	61 kts	n/a	n/a	$15,000	large tree branches were blown down
6/18/2009	3:52 a.m.	Peoria	61 kts	n/a	n/a	$100,000	- multiple power outages were reported - winds snapped a 14-inch tree at US Rte. 150 & IL Rte. 6 - numerous other trees were blown down
6/19/2008	9:13 a.m.	Peoria	52 kts	n/a	n/a	n/a	several tree limbs were blown down
6/19/2009	2:40 p.m.	Chillicothe	52 kts	n/a	n/a	$10,000	numerous large tree branches were blown down
7/24/2009	9:20 p.m.	Peoria	52 kts	n/a	n/a	$5,000	winds blew down 8-inch diameter tree branches US Rte. 150 & IL Rte. 29
7/24/2009	9:30 p.m.	Peoria	52 kts	n/a	n/a	$25,000	several 6-inch diameter tree branches were blown down
8/19/2009	2:19 p.m.	Peoria	52 kts	n/a	n/a	$2,000	winds blew down a 9-inch diameter tree onto Grandview Drive
Subtotal:				**0**	**0**	**$186,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 16 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/12/2010	1:00 p.m.	Chillicothe	52 kts	n/a	n/a	$10,000	winds blew down power lines
6/12/2010	1:02 p.m.	Peoria Airport Bartonville Peoria	52 kts	n/a	n/a	$75,000	*Peoria Airport area* - numerous tree limbs and power lines were blown down - siding and shingles were stripped off several houses east of the Airport
6/18/2010	8:25 p.m.	Hanna City Peoria	52 kts	n/a	n/a	$15,000	numerous tree limbs were blown down
6/23/2010	5:40 p.m.	Peoria	52 kts	n/a	n/a	$65,000	- a fire truck was struck by a falling tree - numerous large tree branches were blown down
7/28/2010	4:20 p.m.	Peoria Heights	52 kts	n/a	n/a	$30,000	several 5-inch diameter tree branches were blown down
5/25/2011	4:52 p.m.	Peoria	52 kts	n/a	n/a	n/a	numerous trees and power lines were blown down
5/25/2011	4:55 p.m.	Peoria	52 kts	n/a	n/a	n/a	winds blew down a 10-inch diameter tree across a road
5/29/2011	10:55 a.m.	Peoria	52 kts	n/a	n/a	$60,000	numerous tree limbs were blown onto power lines throughout the City
8/8/2011	5:15 p.m.	Peoria	56 kts	n/a	n/a	$75,000	numerous trees were damaged and power lines were blown down
6/16/2012	7:00 p.m.	Peoria	52 kts	n/a	n/a	n/a	several power lines were blown down
5/20/2013	6:55 p.m.	Peoria	52 kts	n/a	n/a	$9,000	- winds blew an 18-inch diameter tree onto a house - several 8-inch diameter tree branches were broken off and landed on a roof
Subtotal:				**0**	**0**	**$339,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 17 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/23/2013	3:15 p.m.	Peoria	52 kts	n/a	n/a	$3,000	- a 12-inch diameter tree limb was blown down onto the road, blocking traffic on Glenwood & Columbia Terrace - winds snapped off an 18-inch diameter trees about 15 feet above the ground near the intersection of University & Gale
6/23/2013	3:20 p.m.	Peoria	52 kts	n/a	n/a	$4,000	- a 3-foot diameter tree was blown down in Laura Bradley Park - a 2-foot diameter tree was snapped at the base on West Ayers Avenue - a 10-inch diameter tree was blown down onto the 700 block of West Main Street
6/24/2013	3:56 p.m.	Peoria	52 kts	n/a	n/a	$1,000	winds blew down a six to eight-inch diameter tree limb onto Grand Boulevard north of War Memorial Drive
6/24/2013	4:00 p.m.	Chillicothe	52 kts	n/a	n/a	$20,000	- a 70-foot tall tree was blown down onto a car - numerous tree branches were knocked down
6/22/2014	4:45 p.m.	Peoria	52 kts	n/a	n/a	$20,000	several trees were snapped or uprooted in the Lynnhurst Subdivision
6/30/2014	8:32 p.m.	Peoria	52 kts	n/a	n/a	$5,000	wind blew down 4 eight to ten-inch diameter trees
9/9/2014	2:48 a.m.	Chillicothe	61 kts	n/a	n/a	n/a	several trees were blown down, including one that damaged a car and part of a house
4/9/2015	6:40 p.m.	Peoria	52 kts	n/a	n/a	n/a	a plastic panel was blown down
Subtotal:				**0**	**0**	**$53,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 18 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/7/2015	3:00 p.m.	Peoria Peoria Heights	70 kts	n/a	n/a	$200,000	numerous trees and limbs were blown down *Peoria* several trees up to two feet in diameter were blown into power lines ½ mile north of US Rte. 150 & Knoxville Avenue
6/7/2015	3:02 p.m.	Peoria	70 kts	n/a	n/a	n/a	a tree was blown down near Lake & University
6/7/2015	3:27 p.m.	Peoria	70 kts	n/a	n/a	n/a	winds snapped off a 10 to 11-inch diameter tree
6/15/2015	6:35 p.m.	Peoria	52 kts	n/a	n/a	$7,000	wind blew a tree onto a shed
6/20/2015	8:25 p.m.	Peoria	52 kts	n/a	n/a	$3,000	tree limbs were blown onto power lines at IL Rte. 40 and US Rte. 150 and at IL Rte. 40 and Glenn Avenue
11/11/2015	7:40 p.m.	Bartonville	52 kts	n/a	n/a	$4,000	- winds blew down a 2-foot diameter tree - power outages were reported
11/11/2015	7:35 p.m.	Peoria Peoria Heights	52 kts	n/a	n/a	n/a	*Peoria Heights* gutters were blown off the south side of a house
3/15/2016	7:15 p.m.	Peoria Heights	61 kts	n/a	n/a	$80,000	several trees and power lines were blown down
7/13/2016	3:45 p.m.	Peoria	61 kts	n/a	n/a	$50,000	numerous tree limbs were blown down
8/24/2016	11:20 p.m.	Peoria Airport Bartonville Peoria	52 kts	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$344,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 37
(Sheet 19 of 19)
Severe Storms – Thunderstorms with Damaging Winds
1953 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Knots)	Injuries	Fatalities	Property Damage	Description
6/14/2017	2:38 p.m.	Peoria Heights	52 kts	n/a	n/a	n/a	a large tree was snapped off at the base on Grandview Drive
6/14/2017	2:43 p.m.	Peoria Peoria Heights Chillicothe	52 kts	n/a	n/a	$90,000	*Peoria* numerous 10-inch diameter tree limbs were blown down on Westport Road *Peoria Heights* numerous tree limbs and power lines were blown down *Chillicothe* an 8-inch diameter tree branch was blown down
6/17/2017	7:22 p.m.	Peoria Heights	70 kts	n/a	n/a	n/a	numerous trees were blown down
6/19/2017	5:28 p.m.	Bartonville	61 kts	n/a	n/a	$60,000	numerous large trees and power lines were blown down
7/10/2017	5:00 a.m.	Peoria	52 kts	n/a	n/a	n/a	a few 6 to 8-inch diameter tree branches were blown down
10/14/2017	6:12 p.m.	Chillicothe	61 kts	n/a	n/a	n/a	a 12-inch diameter tree branch was blown down
Subtotal:				**0**	**0**	**$150,000**	
GRAND TOTAL:				**11**	**0**	**$5,205,900**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Sources: Peoria Emergency Services and Disaster Agency, City of Peoria Hazard Vulnerability Analysis.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Participating Peoria County Jurisdictions

Figure 38
(Sheet 1 of 4)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Description
6/4/1960	7:00 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
8/14/1971	2:50 p.m.	Hanna City	1.75 in.	n/a	n/a	n/a	
6/14/1974	6:10 p.m.	Peoria Airport Peoria Bartonville	1.00 in.	n/a	n/a	n/a	
7/10/1974	10:15 p.m.	Chillicothe	1.75 in.	n/a	n/a	n/a	
5/5/1977	6:03 p.m.	Peoria Airport Peoria Bartonville	1.50 in.	n/a	n/a	n/a	
6/2/1980	8:55 a.m.	Peoria	2.75 in.	n/a	n/a	n/a	
4/10/1981	11:06 a.m.	Peoria	1.75 in.	n/a	n/a	n/a	
4/10/1981	2:09 p.m.	Peoria Airport Bartonville	2.75 in.	n/a	n/a	n/a	hail lasted 14 minutes and damaged many parked cars
5/26/1982	4:23 p.m.	Chillicothe	1.00 in.	n/a	n/a	n/a	
11/1/1982	12:05 p.m.	Peoria	1.75 in.	n/a	n/a	n/a	
7/2/1985	6:30 p.m.	Peoria	1.75 in.	n/a	n/a	n/a	many vehicles were dented in the northeast part of the City at Galena Rd.
8/29/1990	12:22 a.m.	Peoria	1.75 in.	n/a	n/a	n/a	
8/24/1997	2:10 p.m.	Peoria	1.75 in.	n/a	n/a	n/a	
4/7/1998	2:41 p.m.	Hanna City	1.25 in.	n/a	n/a	n/a	
8/4/1998	4:34 p.m.	Peoria Peoria Heights	1.00 in.	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 38
(Sheet 2 of 4)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Description
4/20/2000	5:06 a.m.	Bartonville	1.00 in.	n/a	n/a	n/a	
6/23/2000	3:30 p.m.	Peoria	1.75 in.	n/a	n/a	n/a	
6/4/2002	4:09 p.m.	Bartonville	2.00 in.	n/a	n/a	n/a	
7/26/2002	3:45 a.m.	Peoria	2.00 in.	n/a	n/a	n/a	
7/8/2003	2:25 p.m.	Hanna City	1.50 in.	n/a	n/a	n/a	
7/17/2003	10:45 a.m.	Peoria	1.00 in.	n/a	n/a	n/a	
3/30/2005	2:29 p.m.	Peoria Airport Bartonville	1.00 in.	n/a	n/a	n/a	
3/30/2005	2:36 p.m.	Bartonville	1.00 in.	n/a	n/a	n/a	
3/30/2005	2:45 p.m.	Bartonville	1.50 in.	n/a	n/a	n/a	
9/19/2005	2:45 p.m.	Bartonville	1.00 in.	n/a	n/a	n/a	
4/13/2006	10:13 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
4/13/2006	10:55 p.m.	Chillicothe	2.00 in.	n/a	n/a	n/a	
4/13/2006	11:20 p.m.	Chillicothe	1.75 in.	n/a	n/a	n/a	
5/24/2006	2:52 p.m.	Peoria	1.25 in.	n/a	n/a	n/a	
5/13/2008	4:45 p.m.	Peoria Airport Bartonville Peoria Peoria Heights	1.00 in.	n/a	n/a	n/a	
3/8/2009	5:48 a.m.	Bartonville	1.00 in.	n/a	n/a	n/a	
6/1/2009	5:05 p.m.	Chillicothe	1.00 in.	n/a	n/a	n/a	
6/1/2009	5:10 p.m.	Chillicothe	1.25 in.	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 38
(Sheet 3 of 4)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Description
6/19/2009	9:08 a.m.	Peoria	1.00 in.	n/a	n/a	n/a	
6/19/2009	1:56 p.m.	Peoria Airport Bartonville	1.75 in.	n/a	n/a	n/a	
6/19/2009	2:07 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
5/22/2011	5:16 p.m.	Hanna City	1.00 in.	n/a	n/a	n/a	
8/13/2011	1:03 p.m.	Bartonville	1.00 in.	n/a	n/a	n/a	
6/23/2013	2:45 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
4/3/2014	1:46 a.m.	Peoria	1.00 in.	n/a	n/a	n/a	
4/8/2015	3:22 a.m.	Hanna City	1.00 in.	n/a	n/a	n/a	
4/9/2015	12:22 p.m.	Peoria	1.25 in.	n/a	n/a	n/a	
3/15/2016	6:58 p.m.	Hanna City	1.00 in.	n/a	n/a	n/a	
3/15/2016	7:00 p.m.	Peoria	1.50 in.	n/a	n/a	n/a	
3/15/2016	7:05 p.m.	Peoria	1.75 in.	n/a	n/a	n/a	
3/15/2016	7:07 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
11/2/2016	3:05 p.m.	Hanna City	1.25 in.	n/a	n/a	$500,000	numerous vehicles sustained hail damage
11/2/2016	3:19 p.m.	Peoria Airport Bartonville	1.00 in.	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$500,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 38
(Sheet 4 of 4)
Severe Storms – Hail Events
1960 – 2017

Date(s)	Start Time	Location(s)*	Magnitude (Diameter)	Injuries	Fatalities	Property Damage	Description
2/28/2017	5:15 p.m.	Chillicothe	1.00 in.	n/a	n/a	n/a	
4/10/2017	2:25 p.m.	Hanna City	2.50 in.	n/a	n/a	$900,000	a MAC member from Hanna City identified $900,000 in damages sustained by roofs and cars within the Village
4/10/2017	2:30 p.m.	Peoria Airport Bartonville	1.50 in.	n/a	n/a	n/a	
4/10/2017	2:39 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
5/17/2017	11:38 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
5/17/2017	11:45 p.m.	Peoria	1.00 in.	n/a	n/a	n/a	
Subtotal:				**0**	**0**	**$900,000**	
GRAND TOTAL:				**0**	**0**	**$1,400,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Sources: Peoria Emergency Services and Disaster Agency, City of Peoria Hazard Vulnerability Analysis.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tri-County Mitigation Action Committee member responses to the Natural Hazard Events Questionnaire.

Participating Peoria County Jurisdictions

Figure 39

(Sheet 1 of 2)

Severe Storms – Lightning Events

1955 – 2017

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damage	Description
9/14/1955	n/a	Peoria	1	0	$10,700	- lightning caused 21 separate fires, mostly to homes and the Spaulding Institute - most of the City was without power - 350 telephones were out
6/4/1960	n/a	Peoria	n/a	n/a	$7,000	lightning set fire to an apartment house roof
8/18/1960	n/a	Peoria	n/a	n/a	n/a	lightning struck two homes and utility lines, leaving the City without power for 3 hours
7/18/1967	n/a	Peoria	1	0	$100,000	lightning started fires destroying 3 buildings and threatening Allied Chemical
5/4/1977	n/a	Peoria	n/a	n/a	n/a	lightning hit the roof of the Children's Home creating a 2-foot hole
9/19/1986	n/a	Peoria	n/a	n/a	n/a	lightning started a house fire
7/7/2008	4:05 a.m.	Peoria	0	0	$15,000	lightning struck an apartment complex near Bradley University setting fire to a third-floor apartment ceiling, the attic and roof
8/13/2008	6:23 p.m.	Peoria	0	0	$45,000	lightning struck two houses in the same neighborhood setting both on fire - one house had minor damage to the roof and siding - the other house lost its entire roof
Subtotal:			**2**	**0**	**$177,700**	

Participating Peoria County Jurisdictions

Figure 39
(Sheet 2 of 2)
Severe Storms – Lightning Events
1955 – 2017

Date(s)	Start Time	Location(s)	Injuries	Fatalities	Property Damage	Description
6/20/2011	4:30 a.m.	Peoria	0	0	$10,000	lightning struck a two-story house starting a fire on the upper floor
8/18/2015	4:30 p.m.	Bartonville	n/a	n/a	$10,000	a lightning strike caused a mobile home to catch fire
5/26/2017	1:15 p.m.	Chillicothe	2	0	n/a	lightning struck an outdoor music festival injuring two people
Subtotal:			**2**	**0**	**$20,000**	
GRAND TOTAL:			**4**	**0**	**$197,700**	

Sources: Peoria Emergency Services and Disaster Agency, City of Peoria Hazard Vulnerability Analysis.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

3.2 SEVERE WINTER STORMS & EXTREME COLD

HAZARD IDENTIFICATION

What is the definition of a severe winter storm?

A severe winter storm can range from moderate snow over a few hours to significant accumulations of sleet and/or ice to blizzard conditions with blinding, wind-driven snow that last several days. The amount of snow or ice, air temperature, wind speed and event duration all influence the severity and type of severe winter storm that results. In general, there are three types of severe winter storms: blizzards, heavy snow storms and ice storms. The following provides a brief description of each type as defined by the National Weather Service (NWS).

- **Blizzards.** Blizzards are characterized by strong winds of at least 35 miles per hour and are accompanied by considerable falling and/or blowing snow that reduces visibility to ¼ mile or less. Blizzards are the most dangerous of all winter storms.
- **Heavy Snow Storms.** Heavy snow storms are generally defined as producing snowfall accumulations of four inches or more in 12 hours or less or six inches or more in 24 hours or less.
- **Ice Storms.** An ice storm occurs when substantial accumulations of ice, generally ¼ inch or more, build up on the ground, trees and utility lines as a result of freezing rain.

While extreme cold (i.e., dangerously low temperatures and wind chill values) often accompanies or is left in the wake of a severe winter storm, the NWS does not use it to define a severe winter storm. However, a discussion of extreme cold is included in this section since it has the ability to cause property damage, injuries and even fatalities (whether or not it is accompanied by freezing rain, ice or snow).

What is snow?

Snow is precipitation in the form of ice crystals. These ice crystals are formed directly from the freezing of water vapor in wintertime clouds. As the ice crystals fall toward the ground, they cling to each other creating snowflakes. Snow will only fall if the temperature remains at or below 32°F from the cloud base to the ground.

What is sleet?

Sleet is precipitation in the form of ice pellets. These ice pellets are composed of frozen or partially frozen rain drops or refrozen partially melted snowflakes. Sleet typically forms in winter storms when snowflakes partially melt while falling through a thin layer of warm air. The partially melted snowflakes then refreeze and form ice pellets as they fall through the colder air mass closer to the ground. Sleet usually bounces after hitting the ground or other hard surfaces and does not stick to objects.

What is freezing rain?

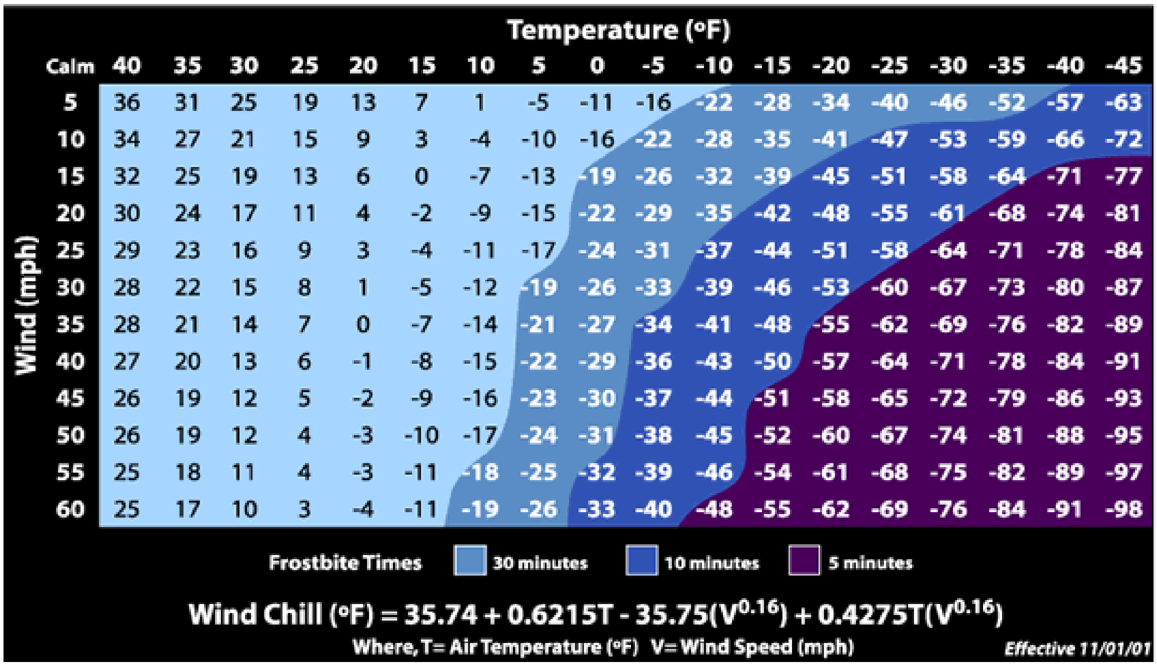
Freezing rain is precipitation that falls in the form of a liquid (i.e., rain drops), but freezes into a glaze of ice upon contact with the ground or other hard surfaces. This occurs when snowflakes descend into a warmer layer of air and melt completely. When the rain drops that result from this melting fall through another thin layer of freezing air just above the surface they become "supercooled", but they do not have time to refreeze before reaching the ground. However, because the rain drops are "supercooled", they instantly refreeze upon contact with anything that is at or below 32°F (i.e., the ground, trees, utility lines, etc.).

What is wind chill?

Wind chill, or wind chill factor, is a measure of the rate of heat loss from exposed skin resulting from the combined effects of wind and temperature. As the wind increases, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The unit of measurement used to describe the wind chill factor is known as the wind chill temperature. The wind chill temperature is calculated using a formula. **Figure 47** identifies the formula and calculates the wind chill temperatures for certain air temperatures and wind speeds.

Figure 47
Wind Chill Chart



Temperature (°F)

Wind (mph)

Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times ▨ 30 minutes ▨ 10 minutes ▨ 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Source: NOAA, National Weather Service.

As an example, if the air temperature is 5°F and the wind speed is 20 miles per hour, then the wind chill temperature would be -15°F. The wind chill temperature is only defined for air temperatures at or below 50°F and wind speeds above three miles per hour. In addition, the wind chill temperature does not take into consideration the effects of bright sunlight which may increase the wind chill temperature by 10°F to 18°F.

Use of the current Wind Chill Temperature (WCT) index was implemented by the NWS on November 1, 2001. The new WCT index was designed to more accurately calculate how cold air feels on human skin. The new index uses advances in science, technology and computer modeling to provide an accurate, understandable and useful formula for calculating the dangers from winter winds and freezing temperatures. The former index was based on research done in 1945 by Antarctic researchers Siple and Passel.

Exposure to extreme wind chills can be life threatening. As wind chills edge toward -19°F and below, there is an increased likelihood that exposure will lead to individuals developing cold-related illnesses.

What cold-related illnesses are associated with severe winter storms?

Frostbite and hypothermia are both cold-related illnesses that can result when individuals are exposed to dangerously low temperatures and wind chills that can accompany severe winter storms. The following provides a brief description of the symptoms associated with each.

- **Frostbite.** During exposure to extremely cold weather the body reduces circulation to the extremities (i.e., feet, hands, nose, cheeks, ears, etc.) in order to maintain its core temperature. If the extremities are exposed, then this reduction in circulation coupled with the cold temperatures can cause the tissue to freeze.

  Frostbite is characterized by a loss of feeling and a white or pale appearance. At a wind chill of -19°F, exposed skin can freeze in as little as 30 minutes. Seek medical attention immediately if frostbite is suspected. It can permanently damage tissue and in severe cases can lead to amputation.

- **Hypothermia.** Hypothermia occurs when the body's temperature begins to fall because it is losing heat faster than it can produce it. If an individual's body temperature falls below 95°F, then hypothermia has set in and immediate medical attention should be sought.

  Hypothermia is characterized by uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion. Left untreated, hypothermia will lead to death. Hypothermia occurs most commonly at very cold temperatures, but can occur at cool temperatures (above 40°F) if an individual isn't properly clothed or becomes chilled.

Are alerts issued for severe winter storms?

Yes. The NWS Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***winter storm watches*** and ***warning****s* for Peoria, Tazewell and Woodford Counties depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** The following watches are issued when an event is likely to occur within the next 12 to 48 hours.
  - **Winter Storm Watch**. A winter storm watch is issued when conditions are favorable for the development of a hazardous winter weather event which has the potential to threaten life or property.

  - **Blizzard Watch**. A blizzard watch is issued when conditions are favorable for the development of blizzard conditions:
    - sustained winds or frequent gust of 35 mph or higher and
    - reduced visibility of ¼ mile or less.
- **Advisories.** Winter advisories are issued for winter weather events that will cause significant inconvenience especially to motorist, but should not be life-threatening if caution is exercised. The following advisories will be issued when an event is occurring, is imminent or has a high probability of occurring.
  - **Freezing Rain Advisory.** A freezing rain advisory is issued when ice accumulations of less than ¼ inches are expected to inconvenience pedestrian and motorists within the next 24 hours.
  - **Winter Weather Advisory.** A winter weather advisory is issued for one or more of the following:
    - snow accumulations of 3.0 to 5.0 inches in 12 hours or less;
    - sleet accumulations up to ¼ inches;
    - blowing and/or drifting snow; or
    - freezing rain in combination with sleet and/or snow.
  - **Wind Chill Advisory.** A wind chill advisory is issued when the wind chill values are expected to reach -15°F and -24°F.
- **Warnings.** The following winter weather warnings are issued when severe winter weather conditions are imminent. Individuals are advised to avoid travel and stay indoors.
  - **Blizzard Warning.** A blizzard warning is issued when sustained winds or frequent gusts greater than or equal to 35 mph accompanied by falling and/or blowing, frequently reducing visibility to less than ¼ mile for three hours or more.
  - **Ice Storm Warning.** An ice storm warning is issued when freezing rain is expected to produce ice accumulations of ¼ inch or greater, or cause significant disruptions to travel or utilities.
  - **Winter Storm Warning.** A winter storm warning is issued when there is one or more of the following present:
    - heavy snow accumulations of 6.0 inches or greater in 12 hours, or a prolonged snowfall of 8.0 inches or greater in 24 hours; or
    - heavy sleet accumulations of ½ inch or greater.
  - **Wind Chill Warning.** A wind chill warning is issued when wind chill values are expected to be -25°F or below.

3.2.1 TAZEWELL COUNTY

HAZARD PROFILE

The following identifies past occurrences of severe winter storms and extreme cold; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe winter storms and extreme cold occurred previously? What is the extent of these previous severe winter storms and extreme cold events?

Severe Winter Storm Fast Facts – Occurrences

Number of Severe Winter Storm Events Reported (1950 – 2017): ***112***

Number of Extreme Cold Events Reported (1996 – 2017): ***7***

Maximum 24-Hour Snow Accumulation: ***16.0 inches (January 1 & 2, 1999 at Morton)***

Most Likely Month for Severe Winter Storms to Occur: ***January***

Most Likely Time for Severe Winter Storms to Occur: ***Early Morning***

Most Likely Month for Extreme Cold Events to Occur: ***January***

Figures 48 and **49**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) and extreme cold events recorded in Tazewell County.

Severe Winter Storms

NOAA's Storm Events Database, NWS's COOP Data and MAC member records were used to document 112 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Tazewell County between 1950 and 2017. Of the 112 recorded occurrences there were:

- ❖ 85 heavy snow storms or blizzards;
- ❖ 17 combination events (freezing rain, sleet, ice and/or snow); and
- ❖ 10 ice storms.

Figure 50 charts the reported occurrences of severe winter storms by month. Of the 112 events, 84 (75%) took place in December, January and February. Of these 84 events, 35 (42%) occurred during January, making this the peak month for severe winter storms. There were three events that spanned two months; however, for illustration purposes only the month when the event started is graphed.

Figure 51 charts the reported occurrences of severe winter storms by hour. Of the 112 occurrences, start times were unavailable for four events. Of the remaining 108 severe winter storm events with recorded times, 66% began during the a.m. hours, with 39 (36%) beginning between 3 a.m. and 9 a.m.

According to the NWS's COOP Data logs, the maximum 24-hour snow accumulation total recorded in Tazewell County is 16.0 inches, which occurred on January 1 and 2, 1999 at Morton.

Figure 50
Graph: Severe Winter Storms by Month Tazewell County: 1950 – 2017

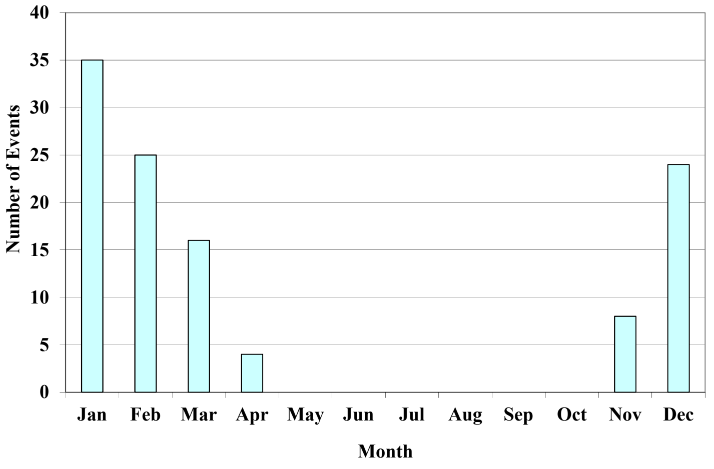
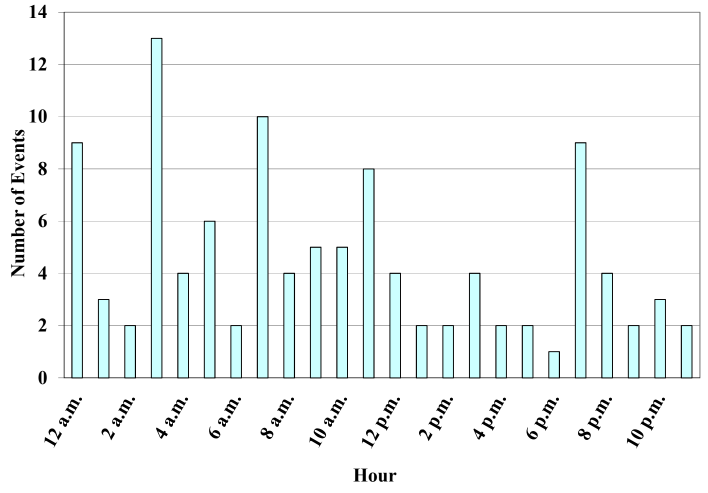


Figure 51
Graph: Severe Winter Storms by Hour Tazewell County: 1950 – 2017



<u>*Extreme Cold Events*</u>

While extreme cold events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database has only seven recorded occurrences of extreme cold (dangerously low temperatures and wind chill values) in Tazewell County between 1996 and 2017. These represent the ***reported occurrences*** of extreme cold. The NWS acknowledges that extreme cold events are not well recorded. Only those events with impacts are reported. As a result, extreme cold events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

Six of the seven events (86%) took place in January, making this the peak month for extreme cold events. The remaining event took place in February. Approximately 83% of all the extreme cold events with recorded times began during the a.m. hours.

According to the Midwestern Regional Climate Center station information and confirmed by staff at the NWS Weather Forecast Office in Lincoln, temperature records either were not kept or are not available from any of the weather recording stations or networks in Tazewell County, with the exception of the COOP Observation Station east of South Pekin. Temperature data was recorded at this station from December, 2003 through July, 2005. During this period, ***the coldest temperature recorded at the South Pekin location was -11°F***.

What locations are affected by severe winter storms and extreme cold?

Severe winter storms and extreme cold events affect the entire County. All communities in Tazewell County have been affected by severe winter storms and extreme cold events. Severe winter storms and extreme cold events generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies Tazewell County's hazard rating for severe winter storms as "high."

Do any of the participating municipalities have designated warming centers?

Yes. Two of the five participating municipalities have designated warming centers. A "designated" warming center is identified as any facility that has been *formally* identified by the municipality (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents of the jurisdiction during extreme cold events. **Figure 52** identifies the location of each warming center by jurisdiction. At this time Morton, Tremont and Washington do not have any warming centers designated within their municipalities.

Figure 52
Designated Warming Centers by Participating Municipality – Tazewell County

Name/Address	Name/Address
East Peoria	*Pekin*
Festival of Lights Building, 2200 E. Washington St.	City Hall, 111 N. Capitol St.

In addition to those designated warming centers identified by the participating municipalities, the Illinois Department of Human Services offices located in Pekin also serve as warming centers.

What is the probability of future severe winter storms occurring?

Severe Winter Storms

Tazewell County has had 112 verified occurrences of severe winter storms between 1950 and 2017. With 112 occurrences over the past 68 years, Tazewell County should expect at least one severe winter storm each year. There were 35 years over the past 68 years where two or more severe winter storms occurred. This indicates the probability that more than one severe winter storm may occur during any given year within the County is 51%.

Extreme Cold Events

Given the limited amount of data available for extreme cold events, it is difficult to establish a precise probability; however, Tazewell County should expect to experience additional extreme cold events in the future.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe winter storms and extreme cold.

Are the participating jurisdictions vulnerable to severe winter storms and extreme cold?

Yes. All of Tazewell County, including the participating municipalities, is vulnerable to the dangers presented by severe winter storms and extreme cold. Severe winter storms are among the more frequently occurring natural hazards in Illinois. Since 2008, Tazewell County has experienced 23 severe winter storms and four extreme cold events.

Severe winter storms have immobilized portions of the County, blocking roads; downing power lines, trees and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the County and municipalities must budget for snow removal and de-icing of roads and bridges as well as for roadway repairs.

What impacts resulted from the recorded severe winter storms and extreme cold?

The following summarize the impacts of severe winter storms and extreme cold events recorded in Tazewell County.

Severe Winter Storms

Data obtained from NOAA's Storm Events Database indicates that between 1950 and 2017, three of the 112 severe winter storms caused $1.85 million in property damages. Property damage information was either unavailable or none was recorded for the remaining 109 reported occurrences.

In comparison, the State of Illinois has averaged an estimated $102 million annually in property damage losses from severe winter storms since 1950, ranking severe winter storms second only to flooding in terms of economic loss. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas, with rural areas being particularly vulnerable.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts
- ❖ Total Property Damage: ***$1,850,000***
- ❖ Infrastructure/Critical Facilities Damage*: ***n/a***
- ❖ Injuries: ***3***
- ❖ Fatalities: ***3***

Extreme Cold Impacts
- ❖ Total Property Damage: ***n/a***
- ❖ Infrastructure/Critical Facilities Damage*: ***n/a***
- ❖ Injuries: ***n/a***
- ❖ Fatalities: ***n/a***

Severe Winter Storm Risk/Vulnerability to:
- ❖ Public Health & Safety: ***Low to Medium***
- ❖ Buildings/Infrastructure/Critical Facilities: ***Medium***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

NOAA's Storm Events Database documented three injuries and three fatalities as a result of four separate severe winter storms. Detailed information on the injuries and fatalities sustained were only available for three of the events. The following provides a brief description of each event.

- During the November 24, 2004 winter storm, an individual died as the result of a traffic accident.
- An individual was killed when they lost control of their vehicle and slid into an oncoming semi during the January 20, 2010 ice storm. An injury was reported as a result of this event but detailed information was unavailable.
- During the January 12, 2012 winter storm, a 62-year old man died of cardiac arrest at his home in Morton after shoveling snow.

Extreme Cold

Damage information was either unavailable or none was recorded for any of the seven reported extreme cold events between 1996 and 2017. No injuries or fatalities were reported as a result of any of the recorded extreme cold events either.

What other impacts can result from severe winter storms?

In Tazewell County, vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icy road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that treacherous road conditions caused by snow/slush and ice were present for 6.4% to 16.1% of all crashes recorded annually in the County. **Figure 53** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Figure 53
Severe Winter Weather Crash Data – Tazewell County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2011	2,507	169	45	0
2012	2,502	161	33	0
2013	2,559	232	58	1
2014	2,567	413	92	0
2015	2,499	253	58	0
Total:	**12,634**	**1,228**	**286**	**1**

Source: Illinois Department of Transportation.

Persons who are outdoors during and immediately following severe winter storms and extreme cold events can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Over-exertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

What is the level of risk/vulnerability to public health and safety from severe winter storms and extreme cold?

While severe winter storms and extreme cold occur regularly in Tazewell County, the number of injuries and fatalities is relatively low. Taking into consideration the potential for hazardous driving conditions; snow-removal related injuries; and power outages that could leave individuals vulnerable to hypothermia, the risk to public health and safety from severe winter storms is seen as low to medium.

Are existing buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in Tazewell County and the participating municipalities are vulnerable to damage from severe winter storms and extreme cold. The following summarize the vulnerabilities by severe winter storms and extreme cold events.

Based on the frequency with which severe winter storms and extreme cold events have occurred in Tazewell County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is medium.

Winter Storm

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare, but can occur particularly to flat rooftops. Information gathered from Tazewell County residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the County. Snow and ice accumulations on lines often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

Tony O’Neal, Ameren Illinois Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of severe winter storms from 2010 to 2017. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in the Tri-County area and is summarized in **Figure 54**.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

Figure 54
Ameren Illinois – Regional Power Outages Experienced in Tazewell County as a Result of Severe Winter Storm Events: 2010 – 2017

Event Date	Event Type	Customers without Power	Duration of Outage	Wires Downed	Poles Replaced	Individual Service Lines Damaged	Tree Orders*	Responding Personnel
1/20/2010 thru 1/21/2010	Ice Storm	50,000	3 days	157	27	13	7	488
1/11/2011	Heavy Snow	110,000	5 days	33	20	9	23	n/a
2/1/2011 thru 2/2/2011	Blizzard	14,000	3 days	1,494	104	470	718	1,144
12/20/2012	Blizzard	78,000	2 days	826	150	191	499	1,803
2/17/2014	Winter Storm	48,827	1.5 days	433	31	151	184	3,252
12/28/2015	Ice Storm	192,000	3.5 day	1,087	446	882	939	1,526

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

When transportation is disrupted, schools close, emergency and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the County and municipalities for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms.

<u>*Extreme Cold*</u>

Extreme cold events can also have a detrimental impact on buildings, infrastructure and critical facilities. Pipes and water mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Are future buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes and No. All of the participating jurisdictions have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe winter storms and extreme cold. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Rural areas of Tazewell County have experienced extended periods without power due to severe winter storms. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms and extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms and extreme cold events. With only three of the 119 recorded events listing property damage numbers for severe winter storms and extreme cold, there is no way to accurately estimate future potential dollar losses. Since all existing structures within Tazewell County are vulnerable to damage, it is likely that there will be future dollar losses from severe winter storms and extreme cold.

Tazewell County

Figure 48
(Sheet 1 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/8/1951	2:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
11/6/1951	6:00 a.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
3/3/1954	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/21/1959 thru 1/22/1959	n/a	Heavy Snow	10.2 in.					COOP	n/a	n/a	n/a	
2/20/1960 thru 2/21/1960	3:30 p.m.	Heavy Snow	5.6 in.					COOP	n/a	n/a	n/a	
3/15/1960 thru 3/16/1960	9:00 p.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
2/2/1961 thru 2/3/1961	3:30 p.m.	Heavy Snow	5.1 in.					COOP	n/a	n/a	n/a	
1/5/1962 thru 1/6/1962	11:00 a.m.	Winter Storm	5.0 in.		X	X		COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 2 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/14/1962	10:30 a.m.	Heavy Snow	5.1 in.					COOP	n/a	n/a	n/a	
2/23/1963	9:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
1/12/1964	2:00 a.m.	Winter Storm	5.0 in.				X	COOP	n/a	n/a	n/a	drifting with some roads blocked
12/2/1964	11:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
2/23/1965 thru 2/24/1965	5:00 p.m.	Winter Storm	5.0 in.				X	COOP	n/a	n/a	n/a	highways slick; drifting blocked highways
3/3/1965 thru 3/4/1965	10:00 p.m.	Heavy Snow	6.2 in.					COOP	n/a	n/a	n/a	
3/23/1965	12:00 a.m.	Winter Storm	4.0 in.	X	X	X		COOP	n/a	n/a	n/a	highways slick
1/26/1967 thru 1/27/1967	3:00 a.m.	Winter Storm	12.0 in.			X	X	COOP	n/a	n/a	n/a	roads blocked
12/6/1969 thru 12/7/1969	8:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 3 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/8/1970 thru 2/9/1970	7:30 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
3/25/1970	8:30 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
1/3/1971	4:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
3/29/1972	12:00 a.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
12/18/1973 thru 12/19/1973	7:00 a.m.	Heavy Snow	11.5 in.					COOP	n/a	n/a	n/a	
11/13/1974	9:30 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/1/1974	1:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
12/18/1974	7:00 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
11/26/1975	8:00 a.m.	Heavy Snow	7.5 in.					COOP	n/a	n/a	n/a	blowing snow
1/13/1976	9:00 a.m.	Heavy Snow	5.5 in.					COOP	n/a	n/a	n/a	
11/27/1977	12:30 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
2/13/1978	3:00 a.m.	Heavy Snow	6.5 in.					COOP	n/a	n/a	n/a	drifting snow, roads closed
12/7/1978	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/1/1979	3:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/13/1979	12:30 a.m.	Heavy Snow	12.5 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 4 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/9/1979	5:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
4/14/1980	1:00 a.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
11/27/1980	3:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/6/1981	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/10/1981	12:00 a.m.	Winter Storm	9.0 in.	X				COOP	n/a	n/a	n/a	
12/16/1981	12:00 p.m.	Heavy Snow	5.6 in.					COOP	n/a	n/a	n/a	
12/27/1981 thru 12/28/1981	11:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/31/1982	4:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
3/3/1982 thru 3/4/1982	7:00 p.m.	Winter Storm	4.0 in.	X	X	X		COOP	n/a	n/a	n/a	
4/5/1982	10:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
4/8/1982	7:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
3/20/1983	3:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
12/21/1983	10:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/10/1985	6:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/6/1986	7:00 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 5 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/20/1986 thru 2/21/1986	7:30 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/23/1986	8:30 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/9/1987	9:30 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
1/19/1987	3:00 a.m.	Heavy Snow	10.0 in.					COOP	n/a	n/a	n/a	
12/14/1987 thru 12/15/1987	8:00 p.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
2/10/1988 thru 2/11/1988	9:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
2/5/1989	7:00 a.m.	Heavy Snow	6.5 in.					COOP	n/a	n/a	n/a	
1/13/1992	4:00 p.m.	Heavy Snow	5.5 in.					COOP	n/a	n/a	n/a	
1/15/1992	7:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/15/1993 thru 2/16/1993	7:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/25/1994	5:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 6 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/8/1995 thru 12/9/1995	7:00 a.m.	Winter Storm	1-5 in.				20-30 mph	SED	n/a	n/a	n/a	*Event Description Provided Below*
- considerable blowing & drifting snow, especially in open spaces - brisk winds & temperatures near zero created wind chills as low as -45°F												
12/18/1995 thru 12/19/1995	7:00 p.m.	Heavy Snow	1-6 in.	X			20-30 mph	SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous accidents were reported - numerous power lines knocked down due to freezing rain & strong winds - considerable blowing & drifting of snow closed some roads												
1/4/1996	3:00 a.m.	Winter Storm	2-7 in.					SED	n/a	n/a	n/a	numerous minor accidents were reported across the area
1/18/1996 thru 1/19/1996	10:00 a.m.	Winter Storm	X		X		25-35 mph	SED	n/a	n/a	n/a	- numerous power outages & minor accidents - gusty winds created wind chills near -40°F
1/15/1997 thru 1/17/1997	3:00 a.m.	Winter Storm	2.5 in.				20-30 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- after the snow stopped the winds picked up causing near whiteout conditions - strong winds & cold temperatures caused wind chill readings to dip well below -40°F - numerous accidents were reported												
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records
COOP	NWS COOP Observation Station Records
SED	NOAA's Storm Events Database

Tazewell County

Figure 48
(Sheet 7 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/24/1997	7:00 a.m.	Winter Storm	1 in.	X		X		COOP SED	n/a	n/a	n/a	numerous accidents were reported
1/26/1997 thru 1/27/1997	5:00 a.m.	Winter Storm	6.0 in.					COOP SED	n/a	n/a	n/a	numerous accidents were reported
4/10/1997 thru 4/11/1997	11:00 a.m.	Heavy Snow	7.0 in.					COOP SED	2	n/a	n/a	*Event Description Provided Below*
- numerous trees, tree branches & power lines collapsed due to the weight of the heavy, wet snow with some causing damage to vehicles & homes - numerous accidents occurred throughout the area with a few minor injuries reported												
1/14/1998	6:00 a.m.	Winter Storm	X	X	X	X		SED	n/a	n/a	n/a	several traffic accidents were reported across the area
3/8/1998 thru 3/9/1998	10:00 p.m.	Winter Storm	3.4 in.				50 mph	COOP SED	n/a	n/a	n/a	- numerous traffic accidents were reported with dozens of minor injuries - gusty winds created near white-out conditions
Subtotal:									**2**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 8 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/1/1999 thru 1/3/1999	12:00 p.m.	Heavy Snow	16.0 in.					COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- after the snowfall winds increased from the northwest and temperatures dropped, causing dangerous wind chills and treacherous driving conditions with extensive blowing and drifting snow - the weight of the heavy snow caused many roofs and porches to collapse - many locations sustained temporary or extended power outages *Pekin* - a storage building roof collapsed												
3/8/1999 thru 3/9/1999	12:00 p.m.	Heavy Snow	9.0 in.					SED	n/a	n/a	n/a	dozens of accidents occurred throughout the area with numerous minor injuries
1/19/2000	11:30 a.m.	Winter Storm	4.1 in.			X		COOP	n/a	n/a	n/a	
2/17/2000	11:00 p.m.	Ice Storm			≤0.5 in.			SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous reports of downed power lines & tree limbs - extended power outage & traffic accidents were reported												
12/11/2000	3:00 a.m.	Winter Storm	8.0 in.	X		X	25-35 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- northwest winds produced considerable blowing & drifting snow along with wind chills of -30°F to -40°F - numerous minor vehicle accidents were reported												
1/25/2001	5:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 9 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/13/2001	3:00 a.m.	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
1/30/2002 thru 1/31/2002	10:00 a.m.	Ice Storm		X	≤0.75 in.	X		COOP SED	n/a	n/a	n/a	some tree damage & power outages
3/25/2002	5:00 a.m.	Winter Storm	2-4 in.				X	SED	n/a	n/a	n/a	significant blowing & drifting snow created near whiteout conditions
12/24/2002	n/a	Heavy Snow	4.2 in.					COOP	n/a	n/a	n/a	
2/14/2003 thru 2/15/2003	7:00 p.m.	Winter Storm	6.3 in.			X	30-50 mph	COOP SED	n/a	n/a	n/a	winds caused major blowing & drifting of snow, with drifts as high as 3 to 5 feet
3/15/2004	10:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
11/24/2004	3:00 p.m.	Winter Storm	7.4 in.				20-30 mph	COOP SED	n/a	1	n/a	*Event Description Provided Below*
- sustained winds with gust of 40 to 50 mph caused considerable blowing & drifting - the high winds & weight of the wet snow downed numerous trees & power lines - traffic accidents resulted in numerous injuries - one fatality was reported as the result of a traffic accident												
1/5/2005 thru 1/6/2005	1:00 p.m.	Ice Storm		X	≤0.5 in.	X		COOP SED	n/a	n/a	n/a	numerous reports of downed trees & power lines as well as traffic accidents
Subtotal:									**0**	**1**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 10 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/21/2006	12:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
11/30/2006 thru 12/1/2006	7:30 a.m.	Winter Storm	12.0 in.	X	X	X		COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- ***This event was part of a state-declared disaster*** - considerable tree & power line damage was caused by ice and heavy snow - the power was not restored across some locales for several days - snow- & ice-covered roads resulted in numerous vehicular accidents												
1/12/2007 thru 1/13/2007	3:00 p.m.	Ice Storm			≤0.5 in.			COOP SED	n/a	n/a	n/a	- modest tree limb & power line damage was reported - numerous vehicle accidents occurred
2/13/2007	1:00 a.m.	Blizzard	8.0 in.				35-45 mph	COOP SED	n/a	n/a	n/a	many locations reported snow drifts of 3 to 6 feet, prompting the closure of several area roads
2/24/2007	11:00 a.m.	Ice Storm		X	X	X		COOP SED	n/a	n/a	n/a	
12/1/2007	9:00 a.m.	Ice Storm		X	0.25 in.			COOP SED	n/a	n/a	n/a	numerous power outages & minor vehicle accidents occurred
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 11 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/8/2007 thru 12/9/2007	2:00 p.m.	Ice Storm		X	0.5 in.			COOP SED	n/a	n/a	n/a	- tree & power line damage occurred - many vehicle accidents were reported
1/31/2008 thru 2/1/2008	2:00 p.m.	Heavy Snow	10.5 in.					COOP SED	n/a	n/a	n/a	
11/30/2008 thru 12/1/2008	12:00 a.m.	Heavy Snow	7.7 in.					COOP SED	n/a	2	n/a	*Event Description Provided Below*
- two people were killed in a car accident near Tremont due to snow/ice covered roads - gusty northwesterly winds caused considerable blowing & drifting												
12/18/2008 thru 12/19/2008	8:00 p.m.	Ice Storm			≤0.75 in.			SED	n/a	n/a	$250,000	
1/13/2009	11:00 a.m.	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
3/28/2009	12:00 p.m.	Heavy Snow	5.7 in.					COOP	n/a	n/a	n/a	
1/6/2010 thru 1/7/2010	7:30 p.m.	Winter Storm	5.9 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly wind created considerable blowing & drifting across the area
Subtotal:									**0**	**0**	**$250,000**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 12 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/20/2010 thru 1/21/2010	7:00 a.m.	Ice Storm		X	0.25 in.		30 mph	AMRN COOP SED	1	1	n/a	*Event Description Provided Below*
<u>*Ameren (regional information, including Tazewell County)*</u> - 50,000 customers were without power for up to 3 days - 157 wires downed - 27 poles replaced - 13 service lines to individual customers damaged - 7 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 488 Ameren personnel responded to the event - numerous traffic accidents were reported - one individual was killed when they lost control of their vehicle and slid into an oncoming semi												
12/12/2010 thru 12/13/2010	7:00 a.m.	Blizzard	2.7 in.				35 mph	COOP SED	n/a	n/a	n/a	- strong northwesterly winds gusting over 50 mph at times created white-out conditions - wind chill values plunged well below zero
12/24/2010 thru 12/25/2010	11:00 a.m.	Heavy Snow	5.4 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported on Christmas Eve
Subtotal:									**1**	**1**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 13 of 16)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>1/11/2011</td><td>7:00 a.m.</td><td>Heavy Snow</td><td>4.3 in.</td><td></td><td></td><td></td><td></td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8"><u><i>Ameren (regional information, including Tazewell County)</i></u>
- 110,000 customers were without power for up to 5 days
- 33 wires downed
- 20 poles replaced</td><td colspan="5">- 23 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 9 service lines to individual customers damaged</td></tr>
<tr><td>2/1/2011
thru
2/2/2011</td><td>11:00 a.m.</td><td>Blizzard</td><td>13.6 in.</td><td>X</td><td></td><td>X</td><td>50-60 mph</td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>$400,000</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8">- <i>This event was part of a federally-declared disaster (Declaration #1960)</i>
- event created nearly impossible travel conditions at times and resulted in multiple accidents & injuries across the region
- numerous county highways & several interstates were closed including I-74 & I-155
- all schools were closed for at least 3 days
- tree limbs were blown down & several homes lost shingles</td><td colspan="5"><u><i>Ameren (regional information, including Tazewell County)</i></u>
- 14,000 customers were without power for up to 3 days
- 1,494 wires downed
- 104 poles replaced
- 470 service lines to individual customers damaged
- 718 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 1,144 Ameren personnel responded to the event</td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$400,000</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 14 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/12/2012 thru 1/13/2012	3:00 a.m.	Winter Storm	5.0 in.					COOP SED	n/a	1	n/a	- numerous traffic accidents occurred - a 62-year-old man died of cardiac arrest at his home in Morton after shoveling snow
12/20/2012	1:30 p.m.	Blizzard	2.5 in.				50 mph	AMRN COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
Ameren (regional information, including Tazewell County) - 78,000 customers were without power for 2 days - 826 wires downed - 150 poles replaced - 191 service lines to individual customers damaged - 499 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,803 Ameren personnel responded to the event - numerous traffic accidents were reported across the county - several accidents were reported on I-155 southeast of Delavan												
3/24/2013	4:00 a.m.	Heavy Snow	10.7 in.					COOP SED	n/a	n/a	n/a	- many area schools & businesses were closed - conditions led to numerous traffic accidents
Subtotal:									**0**	**1**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 48
(Sheet 15 of 16)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>12/13/2013 thru 12/14/2013</td><td>5:00 p.m.</td><td>Heavy Snow</td><td>8.8 in.</td><td></td><td></td><td></td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous traffic accidents were reported</td></tr>
<tr><td>12/21/2013 thru 12/22/2013</td><td>8:00 p.m.</td><td>Ice Storm</td><td></td><td>≤0.25 in.</td><td></td><td></td><td></td><td>SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td>1/5/2014</td><td>3:00 a.m.</td><td>Heavy Snow</td><td>9.4 in.</td><td></td><td></td><td></td><td>X</td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13">- significant blowing & drifting caused numerous road closures and traffic accidents across the County
- many schools, businesses & churches were closed</td></tr>
<tr><td>2/1/2014</td><td>3:00 a.m.</td><td>Winter Storm</td><td>5.8 in.</td><td>X</td><td>0.2 in.</td><td>X</td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous traffic accidents were reported</td></tr>
<tr><td>2/17/2014</td><td>8:00 a.m.</td><td>Winter Storm</td><td>3.4 in.</td><td>X</td><td>X</td><td>X</td><td></td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13"><i><u>Ameren (regional information, including Tazewell County)</u></i>
- 48,827 customers were without power for up to 5 days
- 433 wires downed
- 31 poles replaced
- 184 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 151 service lines to individual customers damaged
- 3,252 Ameren personnel responded to the event</td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$0</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records
COOP	NWS COOP Observation Station Records
SED	NOAA's Storm Events Database

Tazewell County

Figure 48
(Sheet 16 of 16)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/5/2015	4:00 p.m.	Heavy Snow	5.3 in.					COOP	n/a	n/a	n/a	
2/1/2015	4:00 a.m.	Heavy Snow	6.3 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
12/28/2015	5:30 a.m.	Ice Storm			≤0.25 in.		45-55 mph	COOP SED	n/a	n/a	$1,200,000	*Event Description Provided Below*
- ice combined with wind gusts caused extensive damage to trees, power poles & power lines - several homes were damaged by falling trees and tree branches								*Ameren (regional information, including Tazewell County)* - 192,000 customers were without power for up to 3.5 days - 1,087 wires downed - 445 poles replaced - 882 service lines to individual customers damaged - 939 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,526 Ameren personnel responded to the event				
3/13/2017	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$1,200,000**	
GRAND TOTAL:									**3**	**3**	**$1,850,000**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Sources: Tony O'Neal, Emergency Response Specialist – Illinois Crisis Management, Ameren Illinois.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Tazewell County

Figure 49
Extreme Cold Events
1996 – 2017

Date(s)	Start Time	Event Type	Magnitude (Temperature °F)			Data Source[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
			Low (Min)	High (Max)	Wind Chill (Max)					
2/2/1996 thru 2/4/1996	12:00 a.m.	Extreme Cold	n/a	n/a	n/a	SED	n/a	n/a	n/a	many people experienced problems with frozen pipes and vehicles
1/16/1997 thru 1/17/1997	n/a	Wind Chill	n/a	n/a	-40°F	SED	n/a	n/a	n/a	temperatures fell below zero across the entire area
1/5/1999	5:00 a.m.	Extreme Cold	n/a	n/a	n/a	SED	n/a	n/a	n/a	bitterly cold morning temperatures were recorded across the region
1/15/2009 thru 1/16/2009	12:00 a.m.	Extreme Cold/ Wind Chill	-25°F	n/a	-35°F	SED	n/a	n/a	n/a	
1/6/2014 thru 1/7/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-20°F	n/a	-45°F	SED	n/a	n/a	n/a	- schools & numerous businesses closed for the day - warming centers activated
1/27/2014 thru 1/28/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-12°F	n/a	-30°F	SED	n/a	n/a	n/a	
1/7/2015 thru 1/8/2015	8:00 p.m.	Wind Chill	n/a	n/a	-30°F	SED	n/a	n/a	n/a	
GRAND TOTAL							**0**	**0**	**$0**	

[1] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center.

Source: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Acronyms:

COOP	NWS COOP Observation Station Records	SED	NOAA's Storm Events Database
MRCC	Midwestern Regional Climate Center		

3.2.2 WOODFORD COUNTY

HAZARD PROFILE

The following identifies past occurrences of severe winter storms and extreme cold; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe winter storms and extreme cold occurred previously? What is the extent of these previous severe winter storms and extreme cold events?

Figures 55 and **56**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) and extreme cold events recorded in Woodford County.

Severe Winter Storm Fast Facts – Occurrences

Number of Severe Winter Storm Events Reported (1950 – 2017): ***132***

Number of Extreme Cold Events Reported (1996 – 2017): ***7***

Maximum 24-Hour Snow Accumulation: ***14.5 inches (February 1 & 2, 2011 at Germantown Hills)***

Coldest Temperature Recorded in the County: ***-36°F (January 5, 1999 near Congerville)***

Most Likely Month for Severe Winter Storms to Occur: ***December***

Most Likely Time for Severe Winter Storms to Occur: ***Late Evening/Early Morning***

Most Likely Month for Extreme Cold Events to Occur: ***January***

Severe Winter Storms

NOAA's Storm Events Database, NWS's COOP Data and MAC member records were used to document 132 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in Woodford County between 1950 and 2017. Of the 132 recorded occurrences there were:

- 102 heavy snow storms or blizzards;
- 24 combination events (freezing rain, sleet, ice and/or snow); and
- 6 ice storms.

Figure 57 charts the reported occurrences of severe winter storms by month. Of the 132 events, 105 (79.5%) took place in December, January and February. Of these 105 events, 40 (38%) occurred during December, making this the peak month for severe winter storms. There were four events that spanned two months; however, for illustration purposes only the month when the event started is graphed.

Figure 58 charts the reported occurrences of severe winter storms by hour. Of the 132 occurrences, start times were unavailable for 23 events. Of the remaining 109 severe winter storm events with recorded times, 58% began during the a.m. hours, with 36 (33%) beginning between 7 p.m. and 1 a.m.

According to the NWS's COOP Data logs, the maximum 24-hour snow accumulation total recorded in Woodford County is 14.5 inches, which occurred on February 1 and 2, 2011 at Germantown Hills.

Figure 57
Graph: Severe Winter Storms by Month Woodford County: 1950 – 2017

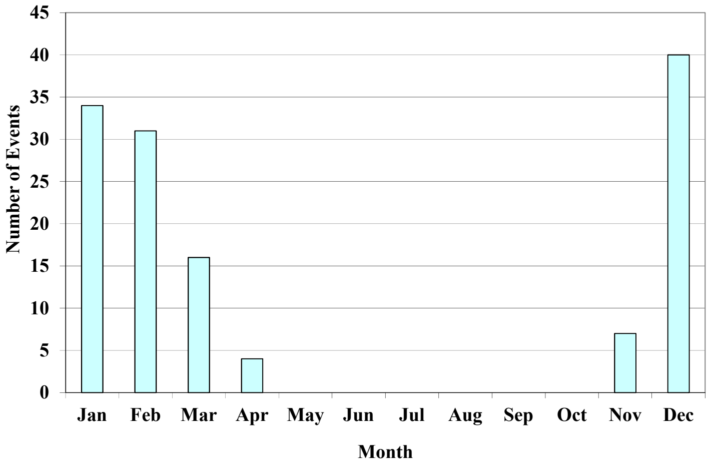
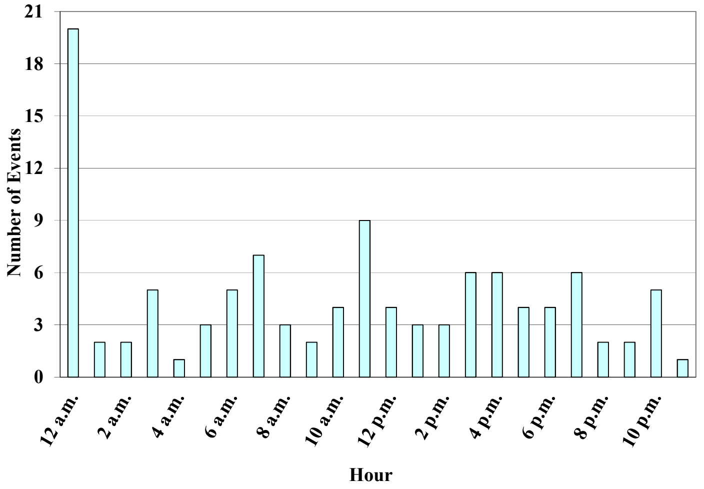


Figure 58
Graph: Severe Winter Storms by Hour Woodford County: 1950 – 2017



Extreme Cold Events

While extreme cold events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database has only seven recorded occurrences of extreme cold (dangerously low temperatures and wind chill values) in Woodford County between 1996 and 2017. These represent the ***reported occurrences*** of extreme cold. The NWS acknowledges that extreme cold events are not well recorded. Only those events with impacts are reported. As a result, extreme cold events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

Six of the seven events (86%) took place in January, making this the peak month for extreme cold events. The remaining event took place in February. Approximately 83% of all the extreme cold events with recorded times began during the a.m. hours.

According to the Midwestern Regional Climate Center, continuous temperature records for Woodford County have been kept from 1896 to present by the NWS COOP Observer Station at Minonk and from 1996 to present by the COOP Observer Station northwest of Congerville. Based on the available records, the coldest temperature recorded in Woodford County was -36°F near Congerville on January 5, 1999. **Figure 59** lists the coldest days recorded at the Minonk observation station.

Figure 59
Coldest Days Recorded in Minonk

	Date	Temperature		Date	Temperature
1	02/13/1905	-28°F	5	01/17/1977	-24°F
2	01/20/1985	-25°F	6	12/28/1924	-24°F
3	01/21/1984	-25°F	7	01/15/1927	-23°F
4	01/11/1982	-25°F	8	02/09/1899	-23°F

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by severe winter storms and extreme cold?

Severe winter storms and extreme cold events affect the entire County. All communities in Woodford County have been affected by severe winter storms and extreme cold events. Severe winter storms and extreme cold events generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies Woodford County's hazard rating for severe winter storms as "high."

Do any of the participating municipalities have designated warming centers?

Yes. One of the three participating municipalities has designated warming centers. A "designated" warming center is identified as any facility that has been *formally* identified by the municipality (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents of the jurisdiction during extreme cold events. Eureka designates centers as needed and indicated their locations vary due to event needs. There are no State of Illinois-designated warming centers in Woodford County.

What is the probability of future severe winter storms occurring?

Severe Winter Storms

Woodford County has had 132 verified occurrences of severe winter storms between 1950 and 2017. With 132 occurrences over the past 68 years, Woodford County should expect approximately two severe winter storm each year. There were 35 years over the past 68 years where two or more severe winter storms occurred. This indicates the probability that more than one severe winter storm may occur during any given year within the County is 51%.

Extreme Cold Events

Given the limited amount of data available for extreme cold events, it is difficult to establish a precise probability; however, Woodford County should expect to experience additional extreme cold events in the future.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe winter storms and extreme cold.

Are the participating jurisdictions vulnerable to severe winter storms and extreme cold?

Yes. All of Woodford County, including the participating municipalities, is vulnerable to the dangers presented by severe winter storms and extreme cold. Severe winter storms are among the more frequently occurring natural hazards in Illinois. Since 2008, Woodford County has experienced 29 severe winter storms and four extreme cold events.

Severe winter storms have immobilized portions of the County, blocking roads; downing power lines, trees and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the County and municipalities must budget for snow removal and de-icing of roads and bridges as well as for roadway repairs.

What impacts resulted from the recorded severe winter storms and extreme cold?

The following summarize the impacts of severe winter storms and extreme cold events recorded in Woodford County.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts
- Total Property Damage: ***$1,730,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***2***
- Fatalities: ***1***

Extreme Cold Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Severe Winter Storm Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

Severe Winter Storms

Data obtained from NOAA's Storm Events Database indicates that between 1950 and 2017, five of the 132 severe winter storms caused $1.73 million in property damages. Property damage information was either unavailable or none was recorded for the remaining 127 reported occurrences.

In comparison, the State of Illinois has averaged an estimated $102 million annually in property damage losses from severe winter storms since 1950, ranking severe winter storms second only to flooding in terms of economic loss. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas, with rural areas being particularly vulnerable.

NOAA's Storm Events Database documented two injuries and one fatality as a result of three separate severe winter storms. Detailed information on the injuries and fatality sustained were only available for one of the events. During the April 6, 2009 winter storm, a woman was killed near Low Point when she lost control of her car on a slushy road.

Extreme Cold

Damage information was either unavailable or none was recorded for any of the seven reported extreme cold events between 1996 and 2017. No injuries or fatalities were reported as a result of any of the recorded extreme cold events either.

What other impacts can result from severe winter storms?

In Woodford County, vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icy road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that treacherous road conditions caused by snow/slush and ice were present for 11.6% to 19.0% of all crashes recorded annually in the County. **Figure 60** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Figure 60
Severe Winter Weather Crash Data – Woodford County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2011	465	54	26	0
2012	447	64	14	0
2013	501	95	16	1
2014	525	87	24	1
2015	467	79	25	0
Total:	**2,405**	**379**	**105**	**2**

Source: Illinois Department of Transportation.

Persons who are outdoors during and immediately following severe winter storms and extreme cold events can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Over-exertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

What is the level of risk/vulnerability to public health and safety from severe winter storms and extreme cold?

While severe winter storms and extreme cold occur regularly in Woodford County, the number of injuries and fatalities is low. Even taking into consideration the potential for hazardous driving conditions; snow-removal related injuries; and power outages that could leave individuals vulnerable to hypothermia, the risk to public health and safety from severe winter storms is seen as low.

Are existing buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in Woodford County and the participating municipalities are vulnerable to damage from severe winter storms and extreme cold. The following summarize the vulnerabilities by severe winter storms and extreme cold events.

Based on the frequency with which severe winter storms and extreme cold events have occurred in Woodford County; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is medium.

Winter Storm

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare, but can occur particularly to flat rooftops. Information gathered from Woodford County residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the County. Snow and ice accumulations on lines often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

Tony O'Neal, Ameren Illinois Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of severe winter storms from 2010 to 2017. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Woodford County and is summarized in **Figure 61**.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

When transportation is disrupted, schools close, emergency and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the County and municipalities for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms.

Figure 61
Ameren Illinois – Regional Power Outages Experienced in Woodford County as a Result of Severe Winter Storm Events: 2010 – 2017

Event Date	Event Type	Customers without Power	Duration of Outage	Wires Downed	Poles Replaced	Individual Service Lines Damaged	Tree Orders*	Responding Personnel
1/20/2010 thru 1/21/2010	Ice Storm	50,000	3 days	157	27	13	7	488
2/1/2011 thru 2/2/2011	Blizzard	14,000	3 days	1,494	104	470	718	1,144
12/20/2012	Blizzard	78,000	2 days	826	150	191	499	1,803
12/28/2015	Ice Storm	192,000	3.5 day	1,087	446	882	939	1,526

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

Extreme Cold

Extreme cold events can also have a detrimental impact on buildings, infrastructure and critical facilities. Pipes and water mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Are future buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes and No. While Eureka and Roanoke have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe winter storms and extreme cold, the County and Germantown Hills do not. In addition, infrastructure such as new communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Rural areas of Woodford County have experienced extended periods without power due to severe winter storms. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms and extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms and extreme cold events. With only five of the 139 recorded events listing property damage numbers for severe winter storms and extreme cold, there is no way to accurately estimate future potential dollar losses. Since all existing structures within Woodford County are vulnerable to damage, it is likely that there will be future dollar losses from severe winter storms and extreme cold.

Woodford County

Figure 55
(Sheet 1 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/22/1950	n/a	Heavy Snow	4.9 in.					COOP	n/a	n/a	n/a	
2/24/1950 thru 2/25/1950	n/a	Heavy Snow	8.2 in.					COOP	n/a	n/a	n/a	
12/6/1950 thru 12/7/1950	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/14/1950	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
12/17/1950 thru 12/18/1950	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1950 thru 12/22/1950	n/a	Winter Storm	4.0 in.				X	COOP	n/a	n/a	n/a	drifting snow, highways blocked
2/14/1952	n/a	Winter Storm	7.0 in.			X		COOP	n/a	n/a	n/a	blowing snow, roads blocked
1/2/1953	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1953	3:00 p.m.	Winter Storm	4.5 in.				X	COOP	n/a	n/a	n/a	considerable drifting, roads blocked for a short time
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 2 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/7/1956 thru 12/8/1956	6:00 p.m.	Heavy Snow	6.5 in.		X			COOP	n/a	n/a	n/a	
12/27/1956	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/10/1957	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
3/25/1957	3:30 a.m.	Winter Storm	4.0 in.				X	COOP	n/a	n/a	n/a	blowing and drifting
12/31/1958	2:30 a.m.	Heavy Snow	5.8 in.					COOP	n/a	n/a	n/a	
1/21/1958	12:30 a.m.	Winter Storm	6.0 in.			X		COOP	n/a	n/a	n/a	
12/31/1958 thru 1/1/1959	n/a	Winter Storm	4.0 in.		X	X		COOP	n/a	n/a	n/a	
1/20/1959 thru 1/21/1959	12:00 a.m.	Winter Storm	8.0 in.			X	X	COOP	n/a	n/a	n/a	- drifting snow; all roads closed on 21st & 22nd - much damage to utilities because of ice
11/12/1959	9:00 a.m.	Winter Storm	7.2 in.		X	X		COOP	n/a	n/a	n/a	
2/20/1960 thru 2/21/1960	2:00 p.m.	Heavy Snow	6.1 in.					COOP	n/a	n/a	n/a	-
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 3 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/15/1960 thru 3/16/1960	10:30 p.m.	Heavy Snow	9.5 in.					COOP	n/a	n/a	n/a	
2/3/1961	12:00 a.m.	Heavy Snow	4.1 in.					COOP	n/a	n/a	n/a	
12/23/1961	12:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
2/20/1962 thru 2/21/1962	10:00 p.m.	Winter Storm	4.1 in.			X		COOP	n/a	n/a	n/a	
2/12/1964 thru 2/13/1964	12:00 p.m.	Heavy Snow	6.9 in.					COOP	n/a	n/a	n/a	
2/23/1965 thru 2/24/1965	1:00 p.m.	Heavy Snow	6.6 in.					COOP	n/a	n/a	n/a	
3/3/965 thru 3/5/1965	10:30 p.m.	Heavy Snow	9.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 4 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/26/1967 thru 1/27/1967	2:00 a.m.	Winter Storm	12.8 in.				X	COOP	n/a	n/a	n/a	strong winds – drifting
12/7/1969	12:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
12/23/1969	12:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	some roads were blocked
3/25/1970	10:00 a.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
3/28/1970	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/3/1971	1:00 a.m.	Winter Storm	4.0 in.			X		COOP	n/a	n/a	n/a	
3/29/1972	3:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/18/1973 thru 12/19/1973	8:00 p.m.	Winter Storm	8.0 in.				X	COOP	n/a	n/a	n/a	
1/8/1974 thru 1/9/1974	7:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
11/27/1975	n/a	Winter Storm	6.3 in.				X	COOP	n/a	n/a	n/a	blowing snow
12/6/1976	7:00 a.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 5 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/9/1977 thru 1/10/1977	7:00 p.m.	Heavy Snow	4.3 in.					COOP	n/a	n/a	n/a	
12/5/1977	6:00 a.m.	Heavy Snow	5.8 in.					COOP	n/a	n/a	n/a	
12/8/1977	8:00 a.m.	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
2/13/1978	6:00 a.m.	Heavy Snow	5.3 in.					COOP	n/a	n/a	n/a	
12/31/1978	12:00 a.m.	Winter Storm	6.5 in.	X	X		X	COOP	n/a	n/a	n/a	
1/12/1979 thru 1/14/1979	12:00 a.m.	Heavy Snow	16.8 in.					COOP	n/a	n/a	n/a	
1/22/1979 thru 1/23/1979	4:00 p.m.	Heavy Snow	5.3 in.					COOP	n/a	n/a	n/a	
3/13/1980	4:00 a.m.	Heavy Snow	4.8 in.					COOP	n/a	n/a	n/a	
12/2/1981	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
12/16/1981 thru 12/17/1981	5:00 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
2/1/1982	12:00 a.m.	Winter Storm	7.0 in.				X	COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 6 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/5/1982	6:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/8/1982 thru 2/9/1982	7:00 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
4/6/1982	10:00 a.m.	Winter Storm	6.0 in.		X			COOP	n/a	n/a	n/a	
4/9/1982	11:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
3/21/1983	9:00 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/13/1983 thru 12/14/1983	4:30 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/21/1983	12:00 p.m.	Winter Storm	4.5 in.		X			COOP	n/a	n/a	n/a	
1/29/1984 thru 1/30/1984	4:00 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/28/1984	12:00 a.m.	Winter Storm	6.0 in.				X	COOP	n/a	n/a	n/a	
1/10/1985	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/10/1985 thru 2/11/1985	4:00 p.m.	Winter Storm	4.0 in.		X			COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 7 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/7/1986	12:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
1/10/1987	11:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
1/17/1987 thru 1/18/1987	3:00 p.m.	Heavy Snow	6.1 in.					COOP	n/a	n/a	n/a	
1/18/1987 thru 1/19/1987	10:30 p.m.	Heavy Snow	5.4 in.					COOP	n/a	n/a	n/a	
12/14/1987 thru 12/15/1987	6:30 p.m.	Blizzard	7.0 in.		X		50 mph	COOP	n/a	n/a	n/a	
2/11/1988	12:00 a.m.	Heavy Snow	8.0in.					COOP	n/a	n/a	n/a	
12/27/1988 thru 12/28/1988	7:30 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
2/4/1989 thru 2/5/1989	2:00 p.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
12/11/1989	1:00 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 8 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/5/1991	12:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
3/13/1991 thru 3/14/1991	12:00 a.m.	Winter Storm	10.0 in.			X		COOP	n/a	n/a	n/a	
1/9/1993 thru 1/10/1993	5:00 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
2/15/1993 thru 2/16/1993	6:30 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
2/22/1994 thru 2/23/1994	4:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/26/1994	7:30 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
12/18/1995 thru 12/19/1995	7:00 p.m.	Heavy Snow	1-6 in.	X			20-30 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous accidents were reported - numerous power lines knocked down due to freezing rain & strong winds - considerable blowing & drifting of snow closed some roads												
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 9 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/18/1996 thru 1/19/1996	10:00 a.m.	Winter Storm	X		X		25-35 mph	SED	n/a	n/a	n/a	- numerous power outages & minor accidents - gusty winds created wind chills near -40°F
1/8/1997 thru 1/9/1997	9:00 p.m.	Heavy Snow	6.0 in.					COOP SED	1	n/a	n/a	numerous accidents were reported
1/15/1997 thru 1/17/1997	3:00 a.m.	Winter Storm	5.0 in.				20-30 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- after the snow stopped the winds picked up causing near whiteout conditions - strong winds & cold temperatures caused wind chill readings to dip well below -40°F - numerous accidents were reported												
1/24/1997	7:00 a.m.	Winter Storm	2.0 in.	X		X		COOP SED	n/a	n/a	n/a	numerous accidents were reported
2/21/1997 thru 2/22/1997	11:30 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**1**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 10 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	**Start Time**	**Event Type**	**Magnitude (Maximum)**					**Data Source[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Description**
			Snow	**Freezing Rain[1]**	**Ice[1]**	**Sleet[1]**	**Strong Winds[1]**					
4/10/1997 thru 4/11/1997	11:00 a.m.	Heavy Snow	11.0 in.					COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous trees, tree branches & power lines collapsed due to the weight of the heavy, wet snow with some causing damage to vehicles & homes - numerous accidents occurred throughout the area with a few minor injuries reported												
12/9/1997 thru 12/10/1997	3:00 p.m.	Heavy Snow	5.5 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
3/8/1998 thru 3/9/1998	10:00 p.m.	Winter Storm	4.0 in.				50 mph	COOP SED	n/a	n/a	n/a	- numerous traffic accidents were reported with dozens of minor injuries - gusty winds created near white-out conditions
1/1/1999 thru 1/3/1999	12:00 p.m.	Heavy Snow	15.0 in.					COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- after the snowfall winds increased from the northwest and temperatures dropped, causing dangerous wind chills and treacherous driving conditions with extensive blowing and drifting snow - the weight of the heavy snow caused many roofs and porches to collapse - many locations sustained temporary or extended power outages												
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 11 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/8/1999 thru 3/9/1999	12:00 p.m.	Heavy Snow	7.5 in.					COOP SED	n/a	n/a	n/a	dozens of accidents occurred throughout the area with numerous minor injuries
1/19/2000	10:00 a.m.	Winter Storm	7.5 in.				X	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- blowing & drifting snow was reported - storm caused numerous road closures as well as accidents												
1/30/2000	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/17/2000	11:00 p.m.	Ice Storm			≤0.5 in.			SED	1	n/a	n/a	*Event Description Provided Below*
- numerous reports of downed power lines & tree limbs - extended power outage & traffic accidents were reported - one traffic accident, attributed to an icy road, resulted in one serious injury												
12/11/2000	12:00 a.m.	Winter Storm	7.0 in.	X		X	25-35 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- northwest winds produced considerable blowing & drifting snow along with wind chills of -30°F to -40°F - numerous minor vehicle accidents were reported												
12/29/2000	n/a	Heavy Snow	5.2 in.					COOP	n/a	n/a	n/a	
Subtotal:									**1**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 12 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/30/2002 thru 1/31/2002	11:30 a.m.	Ice Storm	1.0 in.	X	≤1.0 in.	X		COOP SED	n/a	n/a	n/a	several trees & power lines were downed from ice accumulations with outages lasting several hours to a couple days
3/1/2002 thru 3/2/2002	5:00 p.m.	Heavy Snow	7.4 in.				40 mph	COOP SED	n/a	n/a	n/a	- significant blowing & drifting snow - numerous traffic accidents reported
3/25/2002	5:00 a.m.	Winter Storm	4.5 in.				X	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous accidents occurred as a result of the snow-covered roads & decreased visibility - significant blowing & drifting snow created near whiteout conditions												
12/24/2002	n/a	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/14/2003 thru 2/15/2003	7:00 p.m.	Winter Storm	10.0. in.		X	X	30-50 mph	COOP SED	n/a	n/a	n/a	winds caused major blowing & drifting of snow, with drifts as high as 3 to 5 feet
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 13 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
11/24/2004	3:00 p.m.	Winter Storm	5.7 in.				20-30 mph	COOP SED	n/a	1	n/a	*Event Description Provided Below*
- sustained winds with gusts of 40 to 50 mph caused considerable blowing & drifting - the high winds & weight of the wet snow downed numerous trees & power lines - traffic accidents resulted in numerous injuries - one fatality was reported as the result of a traffic accident												
1/5/2005 thru 1/6/2005	1:00 p.m.	Ice Storm	2.0 in.		≤0.5 in.			COOP SED	n/a	n/a	n/a	numerous reports of downed trees & power lines as well as traffic accidents
12/9/2005	n/a	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
11/30/2006 thru 12/1/2006	7:30 a.m.	Winter Storm	7.0 in.	X	X	X		COOP SED	n/a	n/a	$500,000	*Event Description Provided Below*
- ***This event was part of a federally-declared disaster (Declaration #1681)*** - considerable tree & power line damage was caused by ice and heavy snow - the power was not restored across some locales for several days - snow- & ice-covered roads resulted in numerous vehicular accidents												
2/6/2007	6:00 a.m.	Heavy Snow	4.7 in.					COOP	n/a	n/a	n/a	
2/13/2007	1:00 a.m.	Blizzard	9.0 in.				35-45 mph	COOP SED	n/a	n/a	n/a	many locations reported snow drifts of 3 to 6 feet, prompting the closure of several area roads
2/24/2007	10:00 a.m.	Ice Storm		X	X	X		COOP SED	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$500,000**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 14 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/1/2007	9:30 a.m.	Ice Storm		X	0.25 in.			COOP SED	n/a	n/a	n/a	numerous power outages & minor vehicle accidents occurred
1/1/2008	6:00 a.m.	Heavy Snow	5.9 in.					COOP	n/a	n/a	n/a	
1/31/2008 thru 2/1/2008	3:00 p.m.	Heavy Snow	8.7 in.					COOP SED	n/a	n/a	n/a	
11/30/2008 thru 12/1/2008	12:00 a.m.	Heavy Snow	7.3 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly winds caused considerable blowing & drifting
12/18/2008 thru 12/19/2008	8:30 p.m.	Ice Storm			≤0.75 in.			SED	n/a	n/a	$400,000	
1/13/2009	11:00 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
3/29/2009	n/a	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
4/6/2009	8:50 a.m.	Winter Storm	3.0 in.					COOP SED	n/a	1	n/a	a woman was killed near Low Point when she lost control of her car on a slushy road
Subtotal:									**0**	**1**	**$400,000**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 15 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/26/2009 thru 12/27/2009	8:00 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
1/6/2010 thru 1/7/2010	7:30 p.m.	Winter Storm	7.0 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly wind created considerable blowing & drifting across the area
1/20/2010 thru 1/21/2010	7:00 a.m.	Ice Storm		X	0.25 in.		X	AMRN COOP SED	n/a	n/a	$100,000	*Event Description Provided Below*
Ameren (regional information, including Woodford County) - 50,000 customers were without power for up to 3 days - 157 wires downed - 27 poles replaced - 13 service lines to individual customers damaged - 7 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 488 Ameren personnel responded to the event - numerous traffic accidents were reported - the thick ice, combined with gusty winds, caused damage to tree limbs & power lines - in Woodford County, power was out for about 12 hours for nearly 10,000 customers												
2/8/2010 thru 2/9/2010	2:00 p.m.	Winter Storm	5.0 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly winds caused considerable blowing & drifting
Subtotal:									**0**	**0**	**$100,000**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 16 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
11/24/2010	5:00 a.m.	Winter Storm		X	<0.25 in.	X		COOP SED	n/a	n/a	n/a	multiple accidents occurred on I-39 near El Paso due to icy road conditions
12/3/2010 thru 12/4/2010	6:00 p.m.	Heavy Snow	8.6 in.					COOP SED	n/a	n/a	n/a	
12/12/2010 thru 12/13/2010	7:00 a.m.	Blizzard	3.2 in.				35 mph	COOP SED	n/a	n/a	n/a	- strong northwesterly winds gusting over 50 mph at times created white-out conditions - wind chill values plunged well below zero
12/24/2010 thru 12/25/2010	11:00 a.m.	Heavy Snow	6.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported on Christmas Eve
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 17 of 20)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>2/1/2011 thru 2/2/2011</td><td>11:30 a.m.</td><td>Blizzard</td><td>17.0 in.</td><td>X</td><td></td><td>X</td><td>50-60 mph</td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>$200,000</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8">- <i>This event was part of a federally-declared disaster (Declaration #1960)</i>
- event created nearly impossible travel conditions at times and resulted in multiple accidents & injuries across the region
- numerous county highways were closed
- all schools were closed for at least 3 days
- power was lost the Eureka water well, causing a loss of water service to the City for more than 24 hours</td><td colspan="5"><i>Ameren (regional information, including Woodford County)</i>
- 14,000 customers were without power for up to 3 days
- 1,494 wires downed
- 104 poles replaced
- 470 service lines to individual customers damaged
- 718 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 1,144 Ameren personnel responded to the event</td></tr>
<tr><td>1/12/2012 thru 1/13/2012</td><td>n/a</td><td>Heavy Snow</td><td>5.0 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$200,000</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 18 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	**Start Time**	**Event Type**	**Magnitude (Maximum)**					**Data Source[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Description**
			Snow	**Freezing Rain[1]**	**Ice[1]**	**Sleet[1]**	**Strong Winds[1]**					
12/20/2012	3:00 p.m.	Blizzard	2.7 in.				50 mph	AMRN COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
Ameren (regional information, including Woodford County) - 78,000 customers were without power for 2 days - 826 wires downed - 150 poles replaced - 191 service lines to individual customers damaged - 499 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,803 Ameren personnel responded to the event - numerous traffic accidents were reported across the county												
3/24/2013	n/a	Heavy Snow	6.2 in.					COOP	n/a	n/a	n/a	
12/13/2013 thru 12/14/2013	5:00 p.m.	Winter Storm	7.6 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
1/5/2014	12:00 a.m.	Heavy Snow	8.2 in.				X	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- significant blowing & drifting caused numerous road closures and traffic accidents across the County - many schools, businesses & churches were closed												
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 19 of 20)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/1/2014	3:00 a.m.	Heavy Snow	6.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
2/14/2014	n/a	Heavy Snow	4.9 in.					COOP	n/a	n/a	n/a	
1/5/2015 thru 1/6/2015	4:15 p.m.	Heavy Snow	5.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
2/1/2015 thru 2/2/2015	3:00 a.m.	Heavy Snow	9.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
11/21/2015 thru 11/22/2015	n/a	Heavy Snow	5.7 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 55
(Sheet 20 of 20)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>12/28/2015</td><td>5:00 a.m.</td><td>Ice Storm</td><td>2.5 in.</td><td>X</td><td>≤0.3 in.</td><td></td><td>40-50 mph</td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>$530,000</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8">- ice combined with wind gusts caused extensive damage to trees, power poles & power lines
- several homes were damaged by falling trees and tree branches
- about 20,000 individuals lost power for up to 4 days in the County
- Committee member from Eureka College identified $80,000 in damages and indicated that the College had no power for 3 days, several trees were downed and the fire alarm systems were offline</td><td colspan="5"><i><u>Ameren (regional information, including Woodford County)</u></i>
- 192,000 customers were without power for up to 3.5 days
- 1,087 wires downed
- 445 poles replaced
- 882 service lines to individual customers damaged
- 939 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 1,526 Ameren personnel responded to the event</td></tr>
<tr><td>12/5/2016</td><td>n/a</td><td>Heavy Snow</td><td>4.5 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td>3/13/2017</td><td>n/a</td><td>Heavy Snow</td><td>4.0 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$530,000</td><td></td></tr>
<tr><td colspan="9">GRAND TOTAL:</td><td>2</td><td>1</td><td>$1,730,000</td><td></td></tr>
</table>

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tony O’Neal, Emergency Response Specialist – Illinois Crisis Management, Ameren Illinois.
Tri-County MAC member responses to Natural Hazard Events Questionnaire.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Woodford County

Figure 56
Extreme Cold Events
1996 – 2017

Date(s)	Start Time	Event Type	Magnitude (Temperature °F)			Data Source[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
			Low (Min)	High (Max)	Wind Chill (Max)					
2/2/1996 thru 2/4/1996	12:00 a.m.	Extreme Cold	-20°F	1°F	n/a	COOP SED	n/a	n/a	n/a	many people experienced problems with frozen pipes and vehicles
1/16/1997 thru 1/17/1997	n/a	Wind Chill	-16°F	n/a	-40°F	COOP SED	n/a	n/a	n/a	temperatures fell below zero across the entire area
1/5/1999	5:00 a.m.	Extreme Cold	-36°F	n/a	n/a	COOP SED	n/a	n/a	n/a	***a new state record low temperature was set at Congerville***
1/15/2009 thru 1/16/2009	12:00 a.m.	Extreme Cold/ Wind Chill	-22°F	-5°F	-35°F	COOP SED	n/a	n/a	n/a	
1/6/2014 thru 1/7/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-17°F	-4°F	-45°F	COOP SED	n/a	n/a	n/a	- schools & numerous businesses closed for the day - warming centers activated
1/27/2014 thru 1/28/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-10°F	n/a	-30°F	SED	n/a	n/a	n/a	
1/7/2015 thru 1/8/2015	8:00 p.m.	Wind Chill	-11°F	6°F	-30°F	COOP SED	n/a	n/a	n/a	
GRAND TOTAL							**0**	**0**	**$0**	

[1] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center.

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.

Acronyms:

COOP	NWS COOP Observation Station Records	SED	NOAA's Storm Events Database
MRCC	Midwestern Regional Climate Center		

3.2.3 PARTICIPATING PEORIA COUNTY JURISDICTIONS

HAZARD PROFILE

The following identifies past occurrences of severe winter storms and extreme cold; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When have severe winter storms and extreme cold occurred previously? What is the extent of these previous severe winter storms and extreme cold events?

Figures 62 and **63**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of severe winter storms (snow & ice) and extreme cold events recorded in the participating Peoria County jurisdictions.

Severe Winter Storm Fast Facts – Occurrences

Number of Severe Winter Storm Events Reported (1950 – 2017): ***104***

Number of Extreme Cold Events Reported (1996 – 2017): ***9***

Maximum 24-Hour Snow Accumulation: ***12.2 inches***
(January 12 &13, 1979 at Peoria International Airport)

Coldest Temperature Recorded in the County: ***-26°F***
(February 13, 1905 at Peoria International Airport)

Most Likely Month for Severe Winter Storms to Occur: ***January***

Most Likely Time for Severe Winter Storms to Occur: ***Morning***

Most Likely Month for Extreme Cold Events to Occur: ***January***

Severe Winter Storms

NOAA's Storm Events Database, NWS's COOP Data and MAC member records were used to document 104 reported occurrences of severe winter storms (snow, ice and/or a combination of both) in the participating Peoria County jurisdictions between 1950 and 2017. Of the 104 recorded occurrences there were:

- 84 heavy snow storms or blizzards;
- 13 combination events (freezing rain, sleet, ice and/or snow); and
- 7 ice storms.

Figure 64 charts the reported occurrences of severe winter storms by month. Of the 104 events, 96 (92%) took place in December, January, February and March. Of these 96 events, 29 (30%) occurred during January, making this the peak month for severe winter storms. There was one event that spanned two months; however, for illustration purposes only the month when the event started is graphed.

Figure 65 charts the reported occurrences of severe winter storms by hour. Of the 104 occurrences, start times were unavailable for 13 events. Of the remaining 91 severe winter storm events with recorded times, 57% began during the a.m. hours, with 32 (33%) beginning between 7 a.m. and 1 p.m.

According to the NWS's COOP Data logs, the maximum 24-hour snow accumulation total recorded in the participating jurisdictions is 12.2 inches, which occurred on January 12 and 13, 1979 at the Peoria International Airport.

Figure 64
Graph: Severe Winter Storms by Month Participating Peoria County Jurisdictions: 1950 – 2017

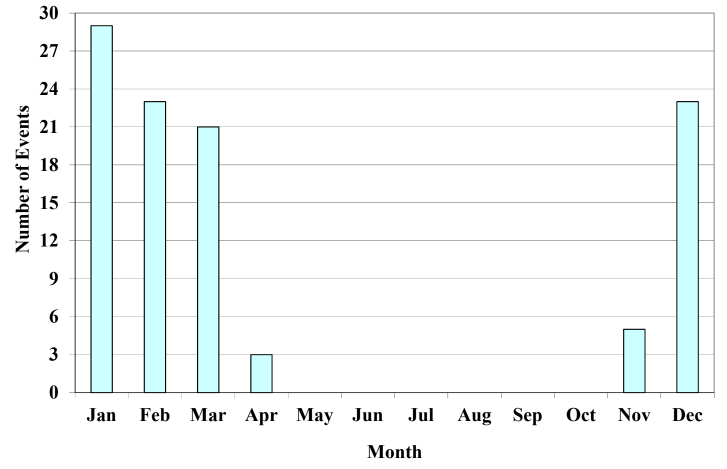
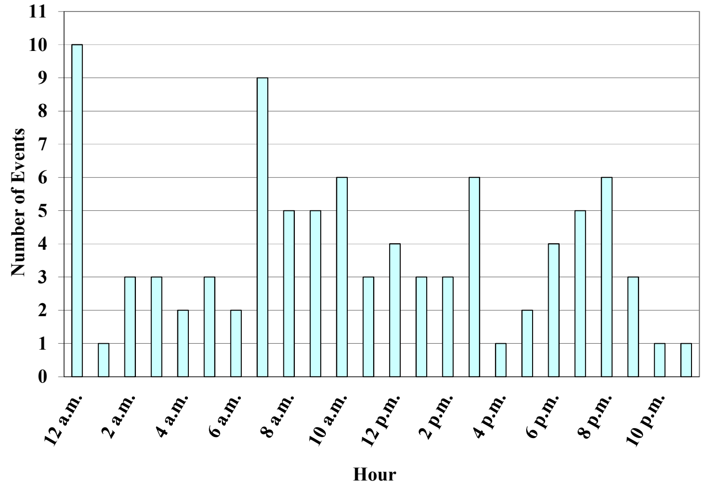


Figure 65
Graph: Severe Winter Storms by Hour Participating Peoria County Jurisdictions: 1950 – 2017



Extreme Cold Events

While extreme cold events occur on a fairly regular basis across central Illinois, NOAA's Storm Events Database has only nine recorded occurrences of extreme cold (dangerously low temperatures and wind chill values) in the participating Peoria County jurisdictions between 1996 and 2017. These represent the ***reported occurrences*** of extreme cold. The NWS acknowledges that extreme cold events are not well recorded. Only those events with impacts are reported. As a result, extreme cold events often go unreported and therefore, more events have almost certainly occurred than are documented in this section.

Six of the nine events (67%) took place in January, making this the peak month for extreme cold events. Approximately 88% of all the extreme cold events with recorded times began during the a.m. hours.

According to the Midwestern Regional Climate Center, continuous temperature records have been kept from 1914 to present by the NWS COOP Observer Station at the Peoria International Airport. Based on the available records, the coldest temperature recorded at the Airport was -26°F on February 13, 1905. **Figure 66** lists the coldest days recorded at the Airport observation station.

Figure 66
Coldest Days Recorded at the Peoria International Airport

	Date	Temperature		Date	Temperature
1	02/13/1905	-26°F	5	12/23/1989	-22°F
2	01/17/1977	-25°F	6	01/20/1985	-22°F
3	12/28/1924	-24°F	7	01/15/1979	-22°F
4	12/22/1989	-23°F	8	02/09/1899	-22°F

Source: Midwest Regional Climate Center cli-MATE

What locations are affected by severe winter storms and extreme cold?

Severe winter storms and extreme cold events affect the entire County, including the participating jurisdictions. All of the participating jurisdictions have been affected by severe winter storms and extreme cold events. Severe winter storms and extreme cold events generally extend across the entire County and affect multiple locations. The *2013 Illinois Natural Hazard Mitigation Plan* prepared by IEMA classifies Peoria County's hazard rating for severe winter storms as "high."

What is the probability of future severe winter storms occurring?

Severe Winter Storms

The participating Peoria County jurisdictions have had 104 verified occurrences of severe winter storms between 1950 and 2017. With 104 occurrences over the past 68 years, the participating jurisdictions should expect at least one severe winter storm each year. There were 27 years over the past 68 years where two or more severe winter storms occurred. This indicates the probability that more than one severe winter storm may occur during any given year within the participating jurisdictions is 40%.

Extreme Cold Events

Given the limited amount of data available for extreme cold events, it is difficult to establish a precise probability; however, the participating jurisdictions should expect to experience additional extreme cold events in the future.

Do any of the participating jurisdictions have designated warming centers?

Yes. One of the six participating jurisdictions has designated warming centers. A "designated" warming center is identified as any facility that has been *formally* identified by the jurisdiction (through emergency planning, resolution, Memorandum of Agreement, etc.) as a location available for use by residents during excessive heat events. The City of Peoria has designated the Police Station Lobby at 600 SW Adams Street as a designated warming center along with fire stations at various locations as available. At this time Bartonville, Chillicothe, Hanna City, Peoria Heights and the GPSD do not have any warming centers designated within their jurisdictions.

In addition to those designated warming centers identified by the participating jurisdictions, the Illinois Department of Human Services office located in Peoria also serves as warming center.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from severe winter storms and extreme cold.

Are the participating jurisdictions vulnerable to severe winter storms and extreme cold?

Yes. All of participating jurisdictions are vulnerable to the dangers presented by severe winter storms and extreme cold. Severe winter storms are among the more frequently occurring natural hazards in Illinois. Since 2008, the participating jurisdictions has experienced 23 severe winter storms and six extreme cold events.

Severe winter storms have immobilized portions of the participating jurisdictions, blocking roads; downing power lines, trees and branches; causing power outages and property damage; and contributing to vehicle accidents. In addition, the jurisdictions must budget for snow removal and de-icing of roads and bridges as well as for roadway repairs.

What impacts resulted from the recorded severe winter storms and extreme cold?

The following summarize the impacts of severe winter storms and extreme cold events recorded in participating Peoria County jurisdictions.

Severe Winter Storms

Data obtained from NOAA's Storm Events Database indicates that between 1950 and 2017, three of the 104 severe winter storms caused $2.95 million in property damages. Property damage information was either unavailable or none was recorded for the remaining 101 reported occurrences.

In comparison, the State of Illinois has averaged an estimated $102 million annually in property damage losses from severe winter storms since 1950, ranking severe winter storms second only to flooding in terms of economic loss. While behind floods in terms of the amount of property damage caused, severe winter storms have a greater ability to immobilize larger areas.

NOAA's Storm Events Database documented four injuries as a result of one severe winter storm. During the November 30, 2006 winter storm, four individuals were injured at a nursing home in Peoria when a portion of the roof collapsed under the weight of the snow.

Extreme Cold

Damage information was either unavailable or none was recorded for any of the nine reported extreme cold events between 1996 and 2017. NOAA's Storm Events Database documented four fatalities as the result of three separate extreme cold events. The following provides a brief description of each event.

- During the February 2, 1996 extreme cold event a 79-year old woman froze to death on her front porch in Peoria when she mistakenly thought she was locked out of her home.
- A Peoria man died of hypothermia after he was found lying on a sidewalk during the December 18, 2016 extreme cold event.
- During the December 20, 2017 extreme cold event an 86-year old woman fell outside of her home in Peoria and died of hypothermia.

Severe Winter Storms & Extreme Cold Events
Fast Facts – Impacts/Risk

Severe Winter Storm (Snow & Ice) Impacts
- Total Property Damage: ***$2,950,000***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***4***
- Fatalities: ***0***

Extreme Cold Impacts
- Total Property Damage: ***n/a***
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***3***

Severe Winter Storm Risk/Vulnerability to:
- Public Health & Safety: ***Low***
- Buildings/Infrastructure/Critical Facilities: ***Medium***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

What other impacts can result from severe winter storms?

In Peoria County (including the participating jurisdictions), vehicle accidents are the largest risk to health and safety from severe winter storms. Hazardous driving conditions (i.e., reduced visibility, icy road conditions, strong winds, etc.) contribute to the increase in accidents that result in injuries and fatalities. A majority of all severe winter storm injuries result from vehicle accidents.

Traffic accident data assembled by the Illinois Department of Transportation from 2011 through 2015 indicates that treacherous road conditions caused by snow/slush and ice were present for 6.0% to 15.1% of all crashes recorded annually in Peoria County. **Figure 67** provides a breakdown by year of the number of crashes and corresponding injuries and fatalities that occurred when treacherous road conditions caused by snow and ice were present.

Figure 67
Severe Winter Weather Crash Data – Peoria County

Year	Total # of Crashes	Presence of Treacherous Road Conditions caused by Snow/slush and Ice		
		# of Crashes	# of Injuries	# of Fatalities
2011	4,896	363	86	0
2012	4,789	287	67	1
2013	4,438	355	85	2
2014	4,538	684	111	0
2015	4,454	470	119	1
Total:	**23,115**	**2,159**	**468**	**4**

Source: Illinois Department of Transportation.

Persons who are outdoors during and immediately following severe winter storms and extreme cold events can experience other health and safety problems. Frostbite to hands, feet, ears and nose and hypothermia are common injuries. Treacherous walking conditions also lead to falls which can result in serious injuries, including fractures and broken bones, especially in the elderly. Over-exertion from shoveling driveways and walks can lead to life-threatening conditions such as heart attacks in middle-aged and older adults who are susceptible.

Are existing buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes. All existing buildings, infrastructure and critical facilities located in the participating jurisdictions are vulnerable to damage from severe winter storms and extreme cold. The following summarize the vulnerabilities by severe winter storms and extreme cold events.

Based on the frequency with which severe winter storms and extreme cold events have occurred in the participating jurisdictions; the damages described; the amount of property damage previously reported; and the potential for disruptions to power distribution and communication; the risk or vulnerability to buildings, infrastructure and critical facilities from severe winter storms is medium.

Winter Storm

Structural damage to buildings caused by severe winter storms (snow and ice) is very rare, but can occur particularly to flat rooftops. Information gathered from residents indicates that snow and ice accumulations on communication and power lines as well as key roads presents the greatest vulnerability to infrastructure and critical facilities within the participating jurisdictions. Snow and ice accumulations on lines often lead to disruptions in communications and create power outages. Depending on the damage, it can take anywhere from several hours to several days to restore service.

Tony O'Neal, Ameren Illinois Emergency Response Specialist – Illinois Crisis Management, served on the MAC and was able to provide the Committee with information on the impacts and damages sustained by Ameren as the result of severe winter storms from 2010 to 2017. This information, while regional in nature, helps quantify the damages sustained by critical infrastructure in Peoria County (including the participating jurisdictions) and is summarized in **Figure 68**.

The GPSD is fortunate to have permanent emergency backup generators or dual power feeds at its main wastewater treatment facility and 12 of its 19 lift stations that allow the District to maintain continuity of operations during extended power outages. The remaining seven lift stations are smaller in nature and the District has portable generators that can be deployed to these location if needed. As a result, the GPSD's system has built-in resilience. Based on the backup systems in place, the District does not currently see the need to bury powerlines to any of its existing critical facilities.

In addition to affecting communication and power lines, snow and ice accumulations on state and local roads hampers travel and can cause dangerous driving conditions. Blowing and drifting snow can lead to road closures and increases the risk of automobile accidents. Even small accumulations of ice can be extremely dangerous to motorists since bridges and overpasses freeze before other surfaces.

Figure 68
Ameren Illinois – Regional Power Outages Experienced in Peoria County as a Result of Severe Winter Storm Events: 2010 – 2017

Event Date	Event Type	Customers without Power	Duration of Outage	Wires Downed	Poles Replaced	Individual Service Lines Damaged	Tree Orders*	Responding Personnel
1/11/2011	Heavy Snow	110,000	5 days	33	20	9	23	n/a
2/1/2011 thru 2/2/2011	Blizzard	14,000	3 days	1,494	104	470	718	1,144
12/20/2012	Blizzard	78,000	2 days	826	150	191	499	1,803
2/17/2014	Winter Storm	48,827	1.5 days	433	31	151	184	3,252
12/28/2015	Ice Storm	192,000	3.5 day	1,087	446	882	939	1,526

* Tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed.

When transportation is disrupted, schools close, emergency and medical services are delayed, some businesses close and government services can be affected. When a severe winter storm hits there is also an increase in cost to the participating jurisdictions for snow removal and de-icing. Road resurfacing and pothole repairs are additional costs incurred each year as a result of severe winter storms.

Extreme Cold

Extreme cold events can also have a detrimental impact on buildings, infrastructure and critical facilities. Pipes and water mains are especially susceptible to freezing during extreme cold events. This freezing can lead to cracks or ruptures in the pipes in buildings as well as in buried service lines and mains. As a result, flooding can occur as well as disruptions in service. Since most buried service lines and water mains are located under local streets and roads, fixing a break requires portions of the street or road to be blocked off, excavated and eventually repaired. These activities can be costly and must be carried out under less than ideal working conditions.

Are future buildings, infrastructure and critical facilities vulnerable to severe winter storms and extreme cold?

Yes and No. All of the participating jurisdictions have building codes in place that will likely help lessen the vulnerability of new buildings and critical facilities to damage from severe winter storms and extreme cold. However, infrastructure such as new communication and power lines will continue to be vulnerable to severe winter storms, especially to ice accumulations, as long as they are located above ground. Steps to bury all new lines would eliminate the vulnerability, but this action would be cost prohibitive in most areas. In terms of new roads and bridges, there is very little that can be done to reduce or eliminate their vulnerability to severe winter storms.

What are the potential dollar losses to vulnerable structures from severe winter storms and extreme cold?

Unlike other natural hazards, such as tornadoes, there are no standard loss estimation models or methodologies for severe winter storms and extreme cold events. With only three of the 113 recorded events listing property damage numbers for severe winter storms and extreme cold, there is no way to accurately estimate future potential dollar losses. Since all existing structures within participating jurisdictions are vulnerable to damage, it is likely that there will be future dollar losses from severe winter storms and extreme cold.

Participating Peoria County Jurisdictions

Figure 62
(Sheet 1 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/24/1950 thru 2/25/1950	n/a	Heavy Snow	8.2 in.					COOP	n/a	n/a	n/a	
3/10/1951 thru 3/11/1951	2:30 p.m.	Heavy Snow	5.0 in.			X		COOP	n/a	n/a	n/a	
11/6/1951 thru 11/7/1951	3:14 a.m.	Heavy Snow	7.6 in.					COOP	n/a	n/a	n/a	
12/14/1951	12:30 a.m.	Heavy Snow	7.2 in.					COOP	n/a	n/a	n/a	
12/17/1951 thru 12/18/1951	12:30 a.m.	Heavy Snow	4.8 in.					COOP	n/a	n/a	n/a	
2/13/1952 thru 2/14/1952	7:30 p.m.	Heavy Snow	5.3 in.			X		COOP	n/a	n/a	n/a	
3/3/1952 thru 3/4/1952	8:00 p.m.	Heavy Snow	6.0 in.			X		COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 2 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/2/1954	10:38 a.m.	Heavy Snow	4.3 in.					COOP	n/a	n/a	n/a	
12/29/1954	7:12 a.m.	Heavy Snow	5.1 in.					COOP	n/a	n/a	n/a	
3/22/1955	7:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
3/14/1956	12:10 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
12/8/1956 thru 12/9/1956	4:14 a.m.	Heavy Snow	6.8 in.					COOP	n/a	n/a	n/a	
1/9/1957 thru 1/10/1957	3:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
3/24/1957 thru 3/26/1957	7:24 a.m.	Heavy Snow	8.2 in.					COOP	n/a	n/a	n/a	
12/30/1957 thru 12/31/1957	12:00 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
1/20/1958 thru 1/22/1958	2:20 a.m.	Heavy Snow	9.4 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 3 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/20/1959	8:10 a.m.	Heavy Snow	10.0 in.					COOP	n/a	n/a	n/a	
3/15/1960 thru 3/16/1960	8:50 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/2/1961	3:15 p.m.	Heavy Snow	5.1 in.					COOP	n/a	n/a	n/a	
1/6/1962 thru 1/7/1962	9:15 p.m.	Heavy Snow	5.1 in.					COOP	n/a	n/a	n/a	
2/20/1962 thru 2/21/1962	9:30 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
1/11/1964 thru 1/12/1964	6:15 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
12/2/1964 thru 12/3/1964	9:45 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 4 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/27/1966 thru 12/28/1966	8:00 p.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
1/26/1967 thru 1/27/1967	2:35 a.m.	Heavy Snow	11.0 in.					COOP	n/a	n/a	n/a	
3/25/1970 thru 3/26/1970	8:24 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
3/29/1972	n/a	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
12/18/1973 thru 12/19/1973	n/a	Heavy Snow	11.0 in.					COOP	n/a	n/a	n/a	
1/8/1974 thru 1/9/1974	8:30 p.m.	Heavy Snow	4.3 in.					COOP	n/a	n/a	n/a	
2/8/1975	6:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
11/26/1975	8:30 a.m.	Heavy Snow	6.8 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 5 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/30/1978 thru 12/31/1978	11:30 a.m.	Heavy Snow	7.2 in.					COOP	n/a	n/a	n/a	
1/12/1979 thru 1/13/1979	12:00 a.m.	Winter Storm	13.0 in.		X			COOP	n/a	n/a	n/a	
1/23/1979 thru 1/24/1979	3:00 p.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
3/9/1979	n/a	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
4/14/1980	12:30 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/10/1981 thru 211/1981	12:30 a.m.	Heavy Snow	7.3 in.					COOP	n/a	n/a	n/a	
2/5/1982	12:30 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
2/18/1982	9:00 a.m.	Heavy Snow	4.0 in.					COOP	n/a	n/a	n/a	
4/8/1982	7:00 a.m.	Heavy Snow	5.9 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 6 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
3/20/1983 thru 3/21/1983	n/a	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
1/29/1984 thru 1/30/1984	2:30 p.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
2/10/1985 thru 2/11/1985	6:00 p.m.	Heavy Snow	4.2 in.					COOP	n/a	n/a	n/a	
2/6/1986 thru 2/7/1986	9:30 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
1/4/1987 thru 1/5/1987	10:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/14/1987 thru 12/15/1987	7:00 p.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 7 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	**Start Time**	**Event Type**	**Magnitude (Maximum)**					**Data Source**[2]	**Injuries**	**Fatalities**	**Property Damages**	**Description**
			Snow	**Freezing Rain**[1]	**Ice**[1]	**Sleet**[1]	**Strong Winds**[1]					
2/10/1988 thru 2/11/1988	8:30 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
1/25/1990	12:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
2/14/1990 thru 2/15/1990	8:00 a.m.	Ice Storm			X	X		COOP	n/a	n/a	n/a	
1/4/1991 thru 1/5/1991	10:30 a.m.	Heavy Snow	6.0 in.					COOP	n/a	n/a	n/a	
3/12/1991 thru 3/13/1991	7:30 a.m.	Heavy Snow	7.0 in.					COOP	n/a	n/a	n/a	
12/2/1991 thru 12/3/1991	9:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
12/9/1992 thru 12/10/1992	3:00 p.m.	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 8 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/22/1994 thru 2/24/1994	6:00 p.m.	Heavy Snow	8.0 in.					COOP	n/a	n/a	n/a	
12/18/1995 thru 12/19/1995	7:00 p.m.	Winter Storm	1-6 in.	X	X		20-30 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous accidents were reported - numerous power lines knocked down due to freezing rain & strong winds - considerable blowing & drifting of snow closed some roads												
1/18/1996 thru 1/19/1996	10:00 a.m.	Winter Storm	X		X		25-35 mph	SED	n/a	n/a	n/a	- numerous power outages & minor accidents - gusty winds created wind chills near -40°F
1/8/1997 thru 1/9/1997	9:00 p.m.	Heavy Snow	5.3 in.					COOP SED	1	n/a	n/a	numerous accidents were reported
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 9 of 19)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>1/15/1997
thru
1/17/1997</td><td>3:00 a.m.</td><td>Winter Storm</td><td>6.0 in.</td><td></td><td></td><td></td><td>20-30 mph</td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13">- after the snow stopped the winds picked up causing near whiteout conditions
- strong winds & cold temperatures caused wind chill readings to dip well below -40°F
- numerous accidents were reported</td></tr>
<tr><td>1/24/1997</td><td>7:00 a.m.</td><td>Winter Storm</td><td>1.8 in.</td><td>X</td><td></td><td>X</td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous accidents were reported</td></tr>
<tr><td>1/26/1997
thru
1/27/1997</td><td>5:00 a.m.</td><td>Winter Storm</td><td>4.6 in.</td><td></td><td></td><td></td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous accidents were reported</td></tr>
<tr><td>4/10/1997
thru
4/11/1997</td><td>11:00 a.m.</td><td>Heavy Snow</td><td>11.5 in.</td><td></td><td></td><td></td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13">- numerous trees, tree branches & power lines collapsed due to the weight of the heavy, wet snow with some causing damage to vehicles & homes
- numerous accidents occurred throughout the area with a few minor injuries reported</td></tr>
<tr><td>12/9/1997
thru
12/10/1997</td><td>3:00 p.m.</td><td>Heavy Snow</td><td>5.7 in.</td><td></td><td></td><td></td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous traffic accidents were reported</td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$0</td><td></td></tr>
</table>

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 10 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/14/1998	6:00 a.m.	Winter Storm	2.0 in.	X	X	X		COOP SED	n/a	n/a	n/a	several traffic accidents were reported across the area
3/8/1998 thru 3/9/1998	10:00 p.m.	Winter Storm	5.7 in.				50 mph	COOP SED	n/a	n/a	n/a	- numerous traffic accidents were reported with dozens of minor injuries - gusty winds created near white-out conditions
1/1/1999 thru 1/3/1999	12:00 p.m.	Heavy Snow	12.0 in.					COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- after the snowfall winds increased from the northwest and temperatures dropped, causing dangerous wind chills and treacherous driving conditions with extensive blowing and drifting snow - the weight of the heavy snow caused many roofs and porches to collapse - many locations sustained temporary or extended power outages												
3/8/1999 thru 3/9/1999	12:00 p.m.	Heavy Snow	7.5 in.					SED	n/a	n/a	n/a	dozens of accidents occurred throughout the area with numerous minor injuries
1/19/2000	10:00 a.m.	Winter Storm	4.2 in.					COOP SED	n/a	n/a	n/a	- blowing & drifting snow - numerous road closures as well as accidents
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 11 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
2/17/2000 thru 2/18/2000	11:00 p.m.	Ice Storm			≤0.5 in.			SED	n/a	n/a	n/a	*Event Description Provided Below*
- numerous reports of downed power lines & tree limbs - extended power outage & traffic accidents were reported												
12/11/2000	1:00 a.m.	Winter Storm	8.0 in.	X		X	25-35 mph	SED	n/a	n/a	n/a	*Event Description Provided Below*
- Peoria set a new daily snowfall record, nearly doubling the previous record of 4.4 inches set in 1932 - numerous minor vehicle accidents were reported - northwest winds produced considerable blowing & drifting snow along with wind chills of -30°F to -40°F												
1/30/2002 thru 1/31/2002	7:00 p.m.	Winter Storm	6.0 in.		≤0.5 in.			COOP SED	n/a	n/a	n/a	several trees & power lines were downed from ice accumulations with outages lasting several hours to a couple days
3/1/2002 thru 3/2/2002	5:00 p.m.	Heavy Snow	4.5 in.				40 mph	COOP SED	n/a	n/a	n/a	- significant blowing & drifting snow - numerous traffic accidents reported
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 12 of 19)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>3/25/2002</td><td>5:00 a.m.</td><td>Winter Storm</td><td>2.5 in.</td><td></td><td></td><td></td><td>X</td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="7">- numerous accidents occurred as a result of the snow-covered roads & decreased visibility</td><td colspan="6">- significant blowing & drifting snow created near whiteout conditions</td></tr>
<tr><td>11/24/2004</td><td>3:00 p.m.</td><td>Winter Storm</td><td>5.0 in.</td><td></td><td></td><td></td><td>20-30 mph</td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="7">- sustained winds with gusts of 40 to 50 mph caused considerable blowing & drifting
- the high winds & weight of the wet snow downed numerous trees & power lines</td><td colspan="6">- traffic accidents resulted in numerous injuries</td></tr>
<tr><td>1/5/2005 thru 1/6/2005</td><td>1:00 p.m.</td><td>Ice Storm</td><td></td><td>X</td><td>≤0.5 in.</td><td></td><td></td><td>SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous reports of downed trees & power lines as well as traffic accidents</td></tr>
<tr><td>3/21/2006</td><td>n/a</td><td>Heavy Snow</td><td>5.3 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td>11/30/2006 thru 12/1/2006</td><td>4:00 a.m.</td><td>Winter Storm</td><td>11.0 in.</td><td>X</td><td>X</td><td>X</td><td></td><td>COOP
SED</td><td>4</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="7">- <i>This event was part of a state-declared disaster</i>
- considerable tree & power line damage was caused by ice and heavy snow
- the power was not restored across some locales for several days</td><td colspan="6">- snow- & ice-covered roads resulted in numerous vehicular accidents
- 4 individuals were injured at a nursing home in Peoria when a portion of the roof collapsed under the weight of the snow</td></tr>
<tr><td colspan="9">Subtotal:</td><td>4</td><td>n/a</td><td>$0</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 13 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	**Start Time**	**Event Type**	**Magnitude (Maximum)**					**Data Source[2]**	**Injuries**	**Fatalities**	**Property Damages**	**Description**
			Snow	**Freezing Rain[1]**	**Ice[1]**	**Sleet[1]**	**Strong Winds[1]**					
1/12/2007 thru 1/13/2007	2:30 p.m.	Ice Storm		X	0.25 in.			COOP SED	n/a	n/a	n/a	- modest tree limb & power line damage was reported - numerous vehicle accidents occurred
2/6/2007	n/a	Heavy Snow	4.5 in.					COOP	n/a	n/a	n/a	
2/13/2007	12:00 a.m.	Blizzard	8.0 in.				35-45 mph	COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
- significant blowing & drifting occurred - many locations reported snow drifts of 3 to 6 feet, prompting the closure of several area roads												
2/24/2007	11:00 a.m.	Ice Storm		X	X	X		SED	n/a	n/a	n/a	
12/1/2007	9:00 a.m.	Ice Storm		X	0.25 in.	X		COOP SED	n/a	n/a	n/a	numerous power outages & minor vehicle accidents occurred
12/18/2008 thru 12/19/2008	8:00 p.m.	Ice Storm			≤0.6 in.			SED	n/a	n/a	$500,000	widespread tree damage & power outages reported
3/29/2009	12:00 a.m.	Heavy Snow	5.0 in.					COOP	n/a	n/a	n/a	
Subtotal:									**0**	**0**	**$500,000**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 14 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/25/2009 thru 12/27/2009	6:00 p.m.	Heavy Snow	10.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
1/6/2010 thru 1/7/2010	7:00 p.m.	Winter Storm	7.2 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly wind created considerable blowing & drifting across the area
2/8/2010 thru 2/9/2010	1:00 p.m.	Winter Storm	6.3 in.				X	COOP SED	n/a	n/a	n/a	gusty northwesterly winds caused considerable blowing & drifting
2/21/2010 thru 2/22/2010	7:00 a.m.	Winter Storm	5.0 in.					COOP SED	n/a	n/a	n/a	
12/12/2010 thru 12/13/2010	7:00 a.m.	Blizzard	0.6 in.				35 mph	SED	n/a	n/a	n/a	- strong northwesterly winds gusting over 50 mph at times created white-out conditions - wind chill values plunged well below zero
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 15 of 19)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>12/24/2010 thru 12/25/2010</td><td>10:30 a.m.</td><td>Heavy Snow</td><td>5.7 in.</td><td></td><td></td><td></td><td></td><td>COOP
SED</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous traffic accidents were reported on Christmas Eve</td></tr>
<tr><td>1/11/2011 thru 1/12/2011</td><td>n/a</td><td>Heavy Snow</td><td>5.8 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13"><i><u>Ameren (regional information, including Tazewell County)</u></i>
- 110,000 customers were without power for up to 5 days
- 33 wires downed
- 20 poles replaced
- 23 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 9 service lines to individual customers damaged</td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$0</td><td></td></tr>
</table>

[1] An “X” in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service’s (NWS’s) COOP Observation Station records as well as other officially-designated sources identified in NOAA’s Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA’s Storm Events Database
COOP	NWS COOP Observation Station Records		

Figure 62
(Sheet 16 of 19)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>2/1/2011 thru 2/2/2011</td><td>12:00 p.m.</td><td>Blizzard</td><td>10.2 in.</td><td>X</td><td></td><td>X</td><td>45-55 mph</td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>$750,000</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="13">- <i>This event was part of a federally-declared disaster (Declaration #1960)</i>
- event created nearly impossible travel conditions at times and resulted in multiple accidents & injuries across the region
- numerous county highways & several interstates were closed including I-74
- all schools were closed for at least 3 days
- thundersnow was reported on the 1st
<u><i>Ameren (regional information, including Peoria County)</i></u>
- 14,000 customers were without power for up to 3 days
- 1,494 wires downed
- 104 poles replaced
- 470 service lines to individual customers damaged
- 718 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 1,144 Ameren personnel responded to the event</td></tr>
<tr><td>1/12/2012 thru 1/13/2012</td><td>n/a</td><td>Heavy Snow</td><td>5.2 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$750,000</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 17 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
12/20/2012	1:00 p.m.	Blizzard	2.5 in.				50 mph	AMRN COOP SED	n/a	n/a	n/a	*Event Description Provided Below*
Ameren (regional information, including Peoria County) - 78,000 customers were without power for 2 days - 826 wires downed - 150 poles replaced - 191 service lines to individual customers damaged - 499 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 1,803 Ameren personnel responded to the event - numerous traffic accidents were reported across the county - several large, mainly-dead trees were blown down around Peoria												
3/5/2013	n/a	Heavy Snow	5.2 in.					COOP	n/a	n/a	n/a	
3/24/2013	n/a	Heavy Snow	4.6 in.					COOP	n/a	n/a	n/a	
12/13/2013 thru 12/14/2013	5:00 p.m.	Winter Storm	6.8 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents were reported
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 18 of 19)
Severe Winter Storm Events
1950 – 2017

Date(s)	Start Time	Event Type	Magnitude (Maximum)					Data Source[2]	Injuries	Fatalities	Property Damages	Description
			Snow	Freezing Rain[1]	Ice[1]	Sleet[1]	Strong Winds[1]					
1/4/2014 thru 1/5/2014	8:00 p.m.	Heavy Snow	6.5 in.				X	SED	n/a	n/a	n/a	*Event Description Provided Below*
- significant blowing & drifting caused numerous road closures and traffic accidents across the County - many schools, businesses & churches were closed												
2/1/2014	3:00 a.m.	Heavy Snow	7.1 in.					SED	n/a	n/a	n/a	numerous traffic accidents were reported
2/17/2014	7:30 a.m.	Heavy Snow	3.2 in.			≤0.5 in.		COOP	n/a	n/a	n/a	*Event Description Provided Below*
- numerous traffic accidents were reported *Ameren (regional information, including Tazewell County)* - 48,827 customers were without power for up to 5 days - 433 wires downed - 31 poles replaced - 184 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed - 151 service lines to individual customers damaged - 3,252 Ameren personnel responded to the event												
1/5/2015 thru 1/6/2015	4:00 p.m.	Heavy Snow	6.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
2/1/2015	2:00 a.m.	Heavy Snow	7.0 in.					COOP SED	n/a	n/a	n/a	numerous traffic accidents occurred
Subtotal:									**0**	**0**	**$0**	

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 62
(Sheet 19 of 19)
Severe Winter Storm Events
1950 – 2017

<table>
<tr><th rowspan="2">Date(s)</th><th rowspan="2">Start Time</th><th rowspan="2">Event Type</th><th colspan="5">Magnitude (Maximum)</th><th rowspan="2">Data Source[2]</th><th rowspan="2">Injuries</th><th rowspan="2">Fatalities</th><th rowspan="2">Property Damages</th><th rowspan="2">Description</th></tr>
<tr><th>Snow</th><th>Freezing Rain[1]</th><th>Ice[1]</th><th>Sleet[1]</th><th>Strong Winds[1]</th></tr>
<tr><td>11/21/2015 thru 11/22/2015</td><td>n/a</td><td>Heavy Snow</td><td>5.0 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td>12/28/2015</td><td>5:00 a.m.</td><td>Ice Storm</td><td>2.5 in.</td><td>X</td><td>≤0.5 in.</td><td></td><td>45-55 mph</td><td>AMRN
COOP
SED</td><td>n/a</td><td>n/a</td><td>$1,700,000</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8">- ice combined with wind gusts caused extensive damage to trees, power poles & power lines
- several homes were damaged by falling trees and tree branches
- about 75,000 individuals lost power for up to 3 days in the County
- numerous businesses were closed in Peoria due to power outages
- Peoria OEM Coordinator indicated there were downed power lines & trees and flooded basements due to power outages in the City</td><td colspan="5"><i><u>Ameren (regional information, including Peoria County)</u></i>
- 192,000 customers were without power for up to 3.5 days
- 1,087 wires downed
- 445 poles replaced
- 882 service lines to individual customers damaged
- 939 tree orders received for trees/tree limbs that either fell on a line and caused an outage or were on a line and had to be removed
- 1,526 Ameren personnel responded to the event</td></tr>
<tr><td>3/13/2017</td><td>n/a</td><td>Heavy Snow</td><td>4.1 in.</td><td></td><td></td><td></td><td></td><td>COOP</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td colspan="9">Subtotal:</td><td>0</td><td>0</td><td>$1,700,000</td><td></td></tr>
<tr><td colspan="9">GRAND TOTAL:</td><td>4</td><td>0</td><td>$2,950,000</td><td></td></tr>
</table>

[1] An "X" in the freezing rain, ice, sleet and/or strong winds columns indicates the presences of that particular type of weather condition during a severe winter storm event.

[2] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and weather records from Ameren.

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tony O'Neal, Emergency Response Specialist – Illinois Crisis Management, Ameren Illinois.
Tri-County MAC member responses to Natural Hazard Events Questionnaire.

Acronyms:

AMRN	Ameren Illinois Weather Records	SED	NOAA's Storm Events Database
COOP	NWS COOP Observation Station Records		

Participating Peoria County Jurisdictions

Figure 63
(Sheet 1 of 2)
Extreme Cold Events
1996 – 2017

Date(s)	Start Time	Event Type	Magnitude (Temperature °F)			Data Source[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
			Low (Min)	High (Max)	Wind Chill (Max)					
2/2/1996 thru 2/4/1996	12:00 a.m.	Extreme Cold	-19°F	0°F	n/a	SED	n/a	1	n/a	*Event Description Provided Below*
- new record low temperature set at Peoria on the 3rd - new record high temperature was also set at Peoria when the temperature never went above zero on the 2nd and 3rd - many people experienced problems with frozen pipes and vehicles - a 79-year-old woman froze to death on her front porch in Peoria when she mistakenly thought she was locked out of her home										
1/16/1997 thru 1/17/1997	n/a	Wind Chill	-10°F	11°F	-40°F	MRCC SED	n/a	n/a	n/a	temperatures fell below zero across the entire area
1/5/1999	5:00 a.m.	Extreme Cold	-19°F	n/a	n/a	SED	n/a	n/a	n/a	bitterly cold morning temperatures were recorded across the region
1/15/2009 thru 1/16/2009	12:00 a.m.	Extreme Cold/ Wind Chill	-21°F	11°F	-35°F	MRCC SED	n/a	n/a	n/a	
1/6/2014 thru 1/7/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-14°F	11°F	-45°F	MRCC SED	n/a	n/a	n/a	- schools & numerous businesses closed for the day - warming centers activated
Subtotal:							**0**	**1**	**$0**	

---

[1] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center.

Acronyms:

COOP	NWS COOP Observation Station Records	SED	NOAA's Storm Events Database
MRCC	Midwestern Regional Climate Center		

Participating Peoria County Jurisdictions

Figure 63
(Sheet 2 of 2)
Extreme Cold Events
1996 – 2017

Date(s)	Start Time	Event Type	Magnitude (Temperature °F)			Data Source[1]	Injuries	Fatalities	Property Damages	Impacts/Event Description
			Low (Min)	High (Max)	Wind Chill (Max)					
1/27/2014 thru 1/28/2014	12:00 a.m.	Extreme Cold/ Wind Chill	-5°F	13°F	-30°F	MRCC SED	n/a	n/a	n/a	
1/7/2015 thru 1/8/2015	8:00 p.m.	Wind Chill	-8°F	25°F	-30°F	MRCC SED	n/a	n/a	n/a	
12/18/2016 thru 12/19/2016	12:00 a.m.	Wind Chill	-6°F	17°F	-20°F	MRCC SED	n/a	1	n/a	a Peoria man died of hypothermia on the 18th after he was found lying on a sidewalk
12/30/2017 thru 12/31/2017	6:00 a.m.	Extreme Cold/ Wind Chill	-16°F	7°F	-15°F	MRCC SED	n/a	1	n/a	an 86-year old woman fell outside of her home and died of hypothermia in Peoria on the 30th
Subtotal:							**0**	**2**	**$0**	
GRAND TOTAL							**0**	**3**	**$0**	

[1] Observation Location information obtained from National Weather Service's (NWS's) COOP Observation Station records as well as other officially-designated sources identified in NOAA's Storm Events Database and the Midwestern Regional Climate Center.

Sources: Midwestern Regional Climate Center, MRCC Application Tools Environment, cli-MATE Database.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

Acronyms:

COOP	NWS COOP Observation Station Records	SED	NOAA's Storm Events Database
MRCC	Midwestern Regional Climate Center		

3.3 FLOODS

HAZARD IDENTIFICATION

What is the definition of a flood?

The Federal Emergency Management Agency (FEMA) defines a "flood" as a general or temporary condition where two or more acres of normally dry land or two or more properties are inundated by:

- overflow of inland or tidal waters;
- unusual and rapid accumulation or runoff of surface waters from any source;
- mudflows; or
- a sudden collapse or subsidence of shoreline land.

The severity of a flooding event is determined by a combination of topography and physiography, ground cover, precipitation and weather patterns and recent soil moisture conditions. On average, flooding causes more than $5 billion in damages each year in the United States. Floods cause utility damage and outages, infrastructure damage (both to transportation and communication systems), structural damage to buildings, crop loss, decreased land values and impede travel.

What types of flooding occur in Tri-County area?

There are two main types of flooding that affect the Tri-County area: general flooding and flash flooding. General flooding can be broken down into two categories: riverine flooding and shallow flooding. The following provides a brief description of each type.

General Flooding – Riverine Flooding

Riverine flooding occurs when the water in a river or stream gradually rises and overflows its banks. This type of flooding affects low lying areas near rivers, streams, lakes and reservoirs and generally occurs when:

- persistent storm systems enter the area and remain for extended periods of time,
- winter and spring rains combine with melting snow to fill river basins with more water than the river or stream can handle,
- ice jams create natural dams which block normal water flow, and
- torrential rains from tropical systems make landfall.

General Flooding – Shallow Flooding

Shallow flooding occurs in flat areas where there are no clearly defined channels (i.e., rivers and streams) and water cannot easily drain away. There two main types of shallow flooding: sheet flow and ponding. If the surface runoff cannot find a channel, it may flow out over a large area at a somewhat uniform depth in what's called sheet flow. In other cases, the runoff may collect in depressions and low-lying areas where it cannot drain out, creating a ponding effect. Ponding floodwaters do not move or flow away, they remain in the temporary ponds until the water can infiltrate the soil, evaporate or are pumped out.

Flash Floods

Flash flooding occurs when there is a rapid rise of water along a stream or low-lying area. This type of flooding generally occurs within six hours of a significant rain event and is usually produced when heavy localized precipitation falls over an area in a short amount of time. Considered the most dangerous type of flood event, flash floods happen quickly with little or no warning. Typically, there is no time for the excess water to soak into the ground nor are the storm sewers able to handle the sheer volume of water. As a result, streams overflow their banks and low-lying (such as underpasses, basements etc.) areas can rapidly fill with water.

Flash floods are very strong and can tear out trees, destroy buildings and bridges and scour out new channels. Flash flood-producing rains can also weaken soil and trigger debris flows that damage homes, roads and property. A vehicle caught in swiftly moving water can be swept away in a matter of seconds. Twelve inches of water can float a car or small SUV and 18 inches of water can carry away large vehicles.

What is a base flood?

A base flood refers to any flood having a 1% chance of occurring in any given year. It is also known as the 100-year flood or the one percent annual chance flood. The base flood is the national standard used by the National Flood Insurance Program (NFIP) and the State of Illinois for the purposes of requiring the purchase of flood insurance and regulating new development.

Many individuals misinterpret the term “100-year flood”. This term is used to describe the risk of future flooding; it does not mean that it will occur once every 100 years. Statistically speaking, a 100-year flood has a 1/100 (1%) chance of occurring in any given year. In reality, a 100-year flood could occur two times in the same year or two years in a row, especially if there are other contributing factors such as unusual changes in weather conditions, stream channelization or changes in land use (i.e., open space land developed for housing or paved parking lots). It is also possible not to have a 100-year flood event over the course of 100 years.

While the base flood is the standard most commonly used for floodplain management and regulatory purposes in the United States, the 500-year flood is the national standard for protecting critical facilities, such as hospitals and power plants. A 500-year flood has a 1/500 (0.2%) chance of occurring in any given year.

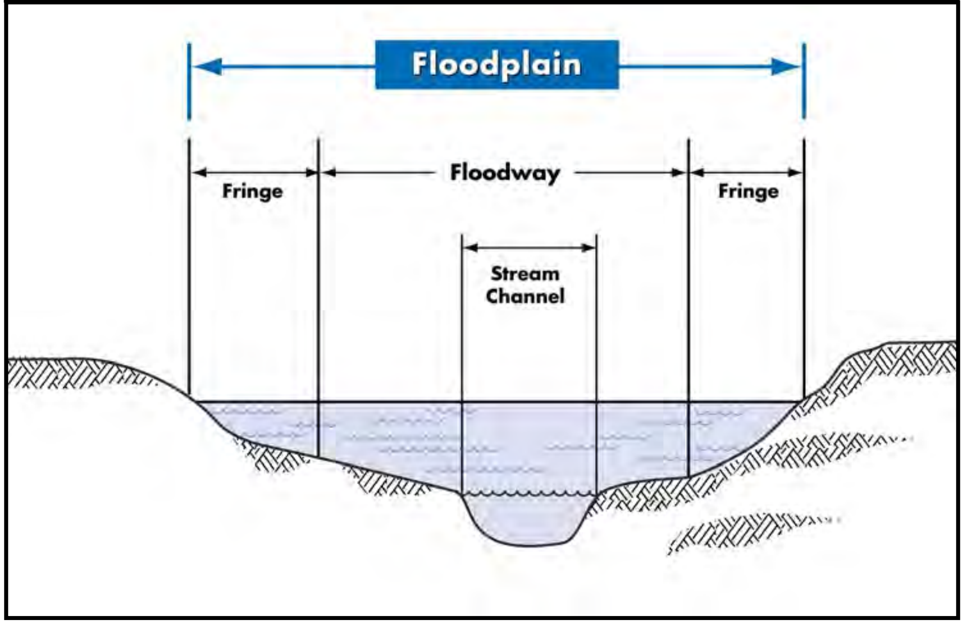
What is a floodplain?

The general definition of a floodplain is any land area susceptible to being inundated or flooded by water from any source (i.e., river, stream, lake, estuary, etc.). This general definition differs slightly from the regulatory definition of a floodplain.

A regulatory or base floodplain is defined as the land area that is covered by the floodwaters of the base flood. This land area is subject to a 1% chance of flooding in any given year. The base floodplain is also known as the 100-year floodplain or a Special Flood Hazard Area (SFHA). It is this second definition that is generally most familiar to people and the one that is used by the NFIP and the State of Illinois.

A base floodplain is divided into two parts: the floodway and the flood fringe. **Figure 69** illustrates the various components of a base floodplain.

Figure 69
Floodplain Illustration



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

The floodway is the channel of a river or stream and the adjacent floodplain that is required to store and convey the base flood without increasing the water surface elevation. Typically, the floodway is the most hazardous portion of the floodplain because it carries the bulk of the base flood downstream and is usually the area where water is deepest and is moving the fastest. Floodplain regulations prohibit construction within the floodway that results in an increase in the floodwater's depth and velocity.

The flood fringe is the remaining area of the base floodplain, outside of the floodway, that is subject to shallow inundation and low velocity flows. In general, the flood fringe plays a relatively insignificant role in storing and discharging floodwaters. The flood fringe can be quite wide on large streams and quite small or nonexistent on small streams. Development within the flood fringe is typically allowed via permit if it will not significantly increase the floodwater's depth or velocity and the development is elevated above or otherwise protected to the base flood elevation.

What is a Special Flood Hazard Area?

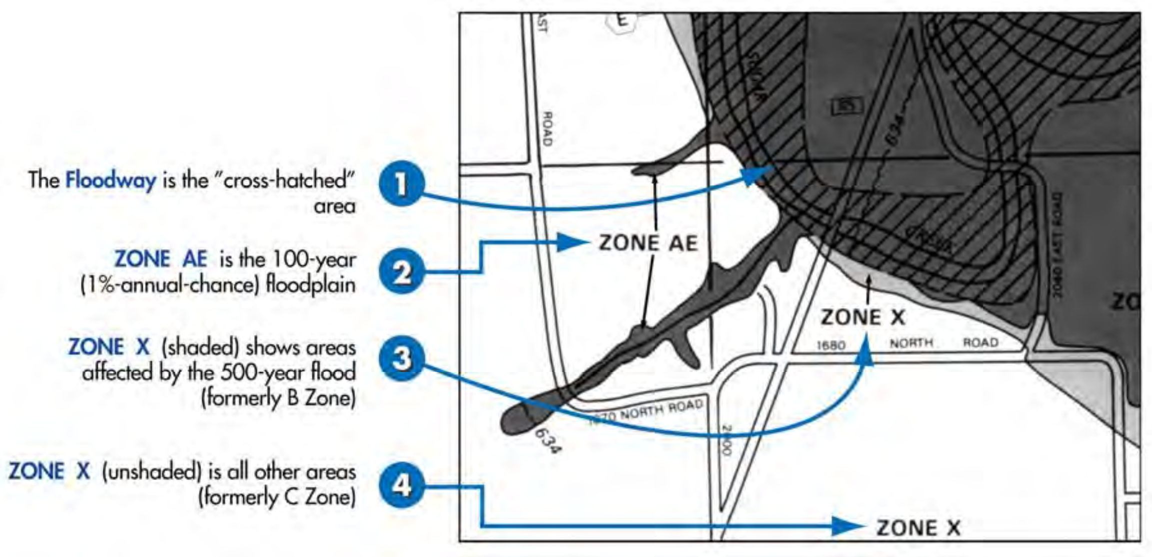
A Special Flood Hazard Area (SFHA) is the base floodplain. As discussed previously, this is the land area that is covered by the floodwaters of the base flood and has a 1% chance of flooding in any given year. The term SFHA is most commonly used when referring to the based floodplain on the Flood Insurance Rate Maps (FIRM) produced by FEMA. The SFHA is the area where floodplain regulations must be enforced by a community as a condition of participation in the

NFIP and the area where mandatory flood insurance purchase requirements apply. SFHA are delineated on the FIRMs and may be designated as Zones A, AE, A1-30, AO, AH, AR, and A99 depending on the amount of flood data available, the severity of the flood hazard or the age of the flood map.

What are Flood Insurance Rate Maps?

Flood Insurance Rate Maps (FIRMs) are maps that identify both the SFHA and the risk premium zones applicable to a community. These maps are produced by FEMA in association with the NFIP for floodplain management and insurance purposes. Digital versions of these maps are referred to as DFIRMs. **Figure 70** shows an example of a FIRM.

Figure 70
Example of a Flood Insurance Rate Map (FIRM)



Source: Illinois Department of Natural Resources, Quick Guide to Floodplain Management.

A FIRM will generally show a community's base flood elevations, flood zones and floodplain boundaries. The information presented on a FIRM is based on historic, meteorological, hydrologic and hydraulic data as well as open-space conditions, flood-control projects and development. ***These maps only define flooding that occurs when a creek or river becomes overwhelmed. They do not define overland flooding that occurs when an area receives extraordinarily intense rainfall and storm sewers and roadside ditches are unable to handle the surface runoff.***

What are flood zones?

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk and type of flooding. These zones are depicted on a community's FIRM. The following provides a brief description of each flood zone.

- **Zone A.** Zone A, also known as the Special Flood Hazard Area (SFHA) or base floodplain, is defined as the floodplain area that has a 1% chance of flooding in any given year. There are multiple Zone A designations, including Zones A, AO, AH, A1-30, AE, AR or A99. Land areas located within Zone A are at a high risk for flooding.

  During a 30-year period, the length of many mortgages, there is at least a 1 in 4 chance that a base flood will occur in a SFHA. All home and business owners in SFHAs with mortgages from federally regulated or insured lenders are required to purchase flood insurance.
- **Zone X (shaded).** Zone X (shaded), formerly known as Zone B, is defined as the floodplain area between the limits of the base flood (Zone A) and the 500-year flood. Land areas located within Zone X (shaded) are affected by the 500-year flood and are considered at a moderate risk for flooding.

  Zone X (shaded) is also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, shallow flooding areas with average depths of less than one foot or drainage areas less than one square mile. While flood insurance is not federally required in Zone X (shaded), it is recommended for all property owners and renters.
- **Zone X (unshaded).** Zone X (unshaded), formerly known as Zone C, is defined as all other land areas outside of Zone A and Zone X (shaded). Land areas located in Zone X (unshaded) are considered to have a low or minimal risk of flooding. While flood insurance is not federally required in Zone X (unshaded), it is recommended for all property owners and renters.

What is a Repetitive Loss Structure or Property?

FEMA defines a "repetitive loss structure" as a National Flood Insurance Program-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. These structures/properties account for approximately one-fourth of all National Flood Insurance Program (NFIP) insurance claim payments since 1978.

Currently, repetitive loss properties make up 1.3% of all policies, but are expected to account for 15% to 20% of future losses. These structures not only increase the NFIP's annual losses, they drain funds needed to prepare for catastrophic events. As a result, FEMA and the NFIP are working with states and local governments to mitigate these properties.

What is floodplain management?

Floodplain management is the administration of an overall community program of corrective and preventative measures to reduce flood damage. These measures take a variety of forms and generally include zoning, subdivision or building requirements, special-purpose floodplain ordinances, flood control projects, education and planning. Where floodplain development is permitted, floodplain management provides a framework that minimizes the risk to life and property from floods by maintaining a floodplain's natural function. Floodplain management is a key component of the National Flood Insurance Program.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) is a federal program, administered by FEMA, that:

- mitigates future flood losses nationwide through community-enforced building and zoning ordinances; and
- provides access to affordable, federally-backed insurance protection against losses from flooding to property owners in participating communities.

It is designed to provide an insurance alternative to disaster assistance to meet escalating costs of repairing damage to buildings and their contents due to flooding. The U.S. Congress established the NFIP on August 1, 1968 with the passage of the National Flood Insurance Act of 1968. This Program has been broadened and modified several times over the years, most recently with the passage of the Flood Insurance Reform Act of 2004.

Prior to the creation of the NFIP, the national response to flood disasters was generally limited to constructing flood-control projects such as dams, levees, sea-walls, etc. and providing disaster relief to flood victims. While flood-control projects were able to initially reduce losses, their gains were offset by unwise and uncontrolled development practices within floodplains. In light of the continued increase in flood losses and the escalating costs of disaster relief to taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for protection.

Participation in the NFIP is voluntary and based on an agreement between local communities and the federal government. If a community agrees to adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in a SFHA (base floodplain), then the government will make flood insurance available within the community as a financial protection against flood losses.

If a community chooses not to participate in the NFIP or a participating community decides not to adopt new floodplain management regulations or amend its existing regulations to reference new flood hazard data provided by FEMA, then the following sanctions will apply.

- Property owners will not be able to purchase NFIP flood insurance policies and existing policies will not be renewed.
- Federal disaster assistance will not be provided to repair or reconstruct insurable buildings located in identified flood hazard areas for presidentially-declared disasters that occur as a result of flooding.
- Federal mortgage insurance and loan guarantees, such as those written by the Federal Housing Administration and the Department of Veteran Affairs, will not be provided for acquisition or construction purposes within an identified flood hazard area. Federally-insured or regulated lending institutions, such as banks and credit unions, are allowed to make conventional loans for insurable buildings in identified flood hazard areas of non-participating communities. However, the lender must notify applicants that

the property is in an identified flood hazard area and that it is not eligible for federal disaster assistance.

- Federal grants or loans for development will not be available in identified flood hazard areas under programs administered by federal agencies such as the Environmental Protection Agency, Small Business Administration and the Department of Housing and Urban Development.

What is the NFIP's Community Rating System?

The NFIP's Community Rating System (CRS) is a voluntary program developed by FEMA to provide incentives (in the form of flood insurance premium discounts) for NFIP participating communities that have gone beyond the minimum NFIP floodplain management requirements to develop extra measures to provide protection from flooding. CRS discounts on flood insurance premiums range from 5% up to 45%. Those discounts provide an incentive for new flood protection activities that can help save lives and property in the event of a flood.

Are alerts issued for flooding?

Yes. The National Weather Service Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***flood watches*** and ***warnings*** for Peoria, Tazewell and Woodford Counties depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watches.** A flood watch is issued when flooding or flash flooding is possible. It does not mean that flooding is imminent, just that individuals need to be alert and prepared.
- **Warnings.** Warnings indicate imminent danger to life and property for those who are in the area of the flooding.
  - **Flood Warning**. A flood warning is issued when flooding is occurring or will occur soon and is expected to last for several days or weeks.
  - **Flash Flood Warning.** A flash flood warning is issued when flash flooding is occurring or is imminent.

3.3.1 TAZEWELL COUNTY

HAZARD PROFILE

The following identifies past occurrences of floods; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When has flooding occurred previously? What is the extent of these previous floods?

Figures 71 and **72**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in Tazewell County. The flood events are separated into two categories: general floods (riverine and shallow/overland) and flash floods.

General Floods

NOAA's Storm Events Database, NOAA's Storm Data Publications and the U.S. Army Corps of Engineers' river gauge data have documented 24 occurrences of general flooding in Tazewell County between 1950 and 2017. Included in the 24 general flood events are seven events that contributed to six separate federally-declared disasters for Tazewell County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Flood Fast Facts – Occurrences

Number of General Floods Reported (1950 – 2017): ***24***

Number of Flash Floods Reported (1990 – 2017): ***30***

Most Likely Month for General Floods to Occur: ***April***

Most Likely Month for Flash Floods to Occur: ***June***

Most Likely Time for Flash Floods to Occur: ***Afternoon***

Number of Federal Disaster Declarations Related to General and Flash Flooding: ***7***

Based on historical gauge data, the record setting Illinois River flood in this area occurred on April 23, 2013 when the Illinois River crested at 29.32 feet at Peoria. The second and third highest crest at this location occurred in 1943 and 1979 respectively.

Flash Floods

NOAA's Storm Events Database and NOAA's Storm Data Publications documented 30 reported occurrences of flash flooding in Tazewell County between 1990 and 2017. Included in the 30 flash flood events are four events that contributed to two separate federally-declared disasters in Tazewell County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Figure 73 charts the reported occurrences of flooding by month. Of the 24 general flood events, 19 (79%) began in February, March, April and May making this the peak period for general floods in Tazewell County. Of the 19 events, six (31.5%) began in April making this the peak month for general flooding. There were 20 events that spanned two or more months; however, for illustration purposes only the month the event started in is graphed.

In comparison, 21 of the 30 flash flood events (70%) took place between May and June making this the peak period for flash floods. Of the 21 events, 12 (57%) occurred in June making this the peak month for flash flooding.

Figure 74 charts the reported occurrences of flash flood events by hour. Approximately 63% of the 30 flash flood events began during the p.m. hours, with 14 of the events (47%) taking place between 3:00 p.m. and 9:00 p.m. In comparison 67% of general flood events with recorded times began during the p.m. hours.

What locations are affected by floods?

While specific locations are affected by general flooding, most areas of the County can be impacted by overland and flash flooding because of the topography and seasonally high-water table of the area. Nine percent of the area in Tazewell County is designated as being within the base floodplain and susceptible to riverine floods. The *2013 Illinois Natural Hazard Mitigation Plan* classifies Tazewell County's hazard rating for floods as "high."

Figure 73
Graph: Flood Events by Month Tazewell County

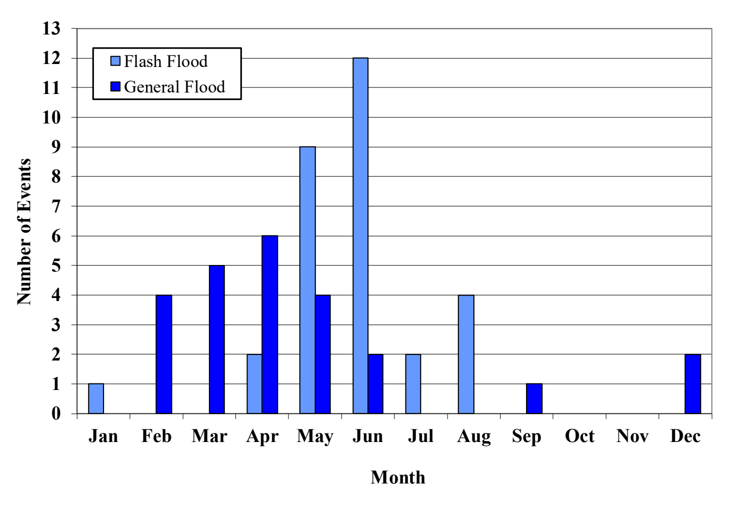


Figure 74
Graph: Flash Flood Events by Hour Tazewell County

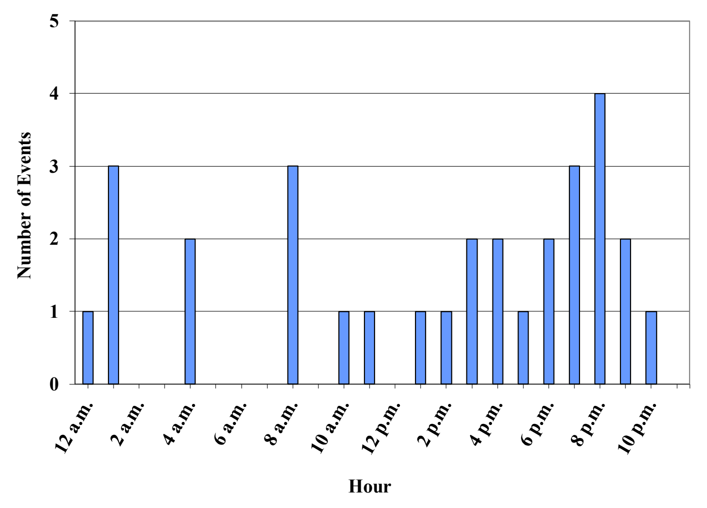


Figure 75 identifies the floodplains in Tazewell County as well as the participating jurisdictions. This map is based on the Tazewell County DFIRMs that became effective in February 17, 2017. **Appendix J** contains maps identifying the floodplains located in the participating municipalities. While a large portion of the area prone to riverine flooding is in unincorporated portions of the County, Pekin, East Peoria, Morton, Pekin and Washington are also susceptible to riverine flooding because of their proximity to floodplains.

Figure 75
Floodplain Areas in Tazewell County

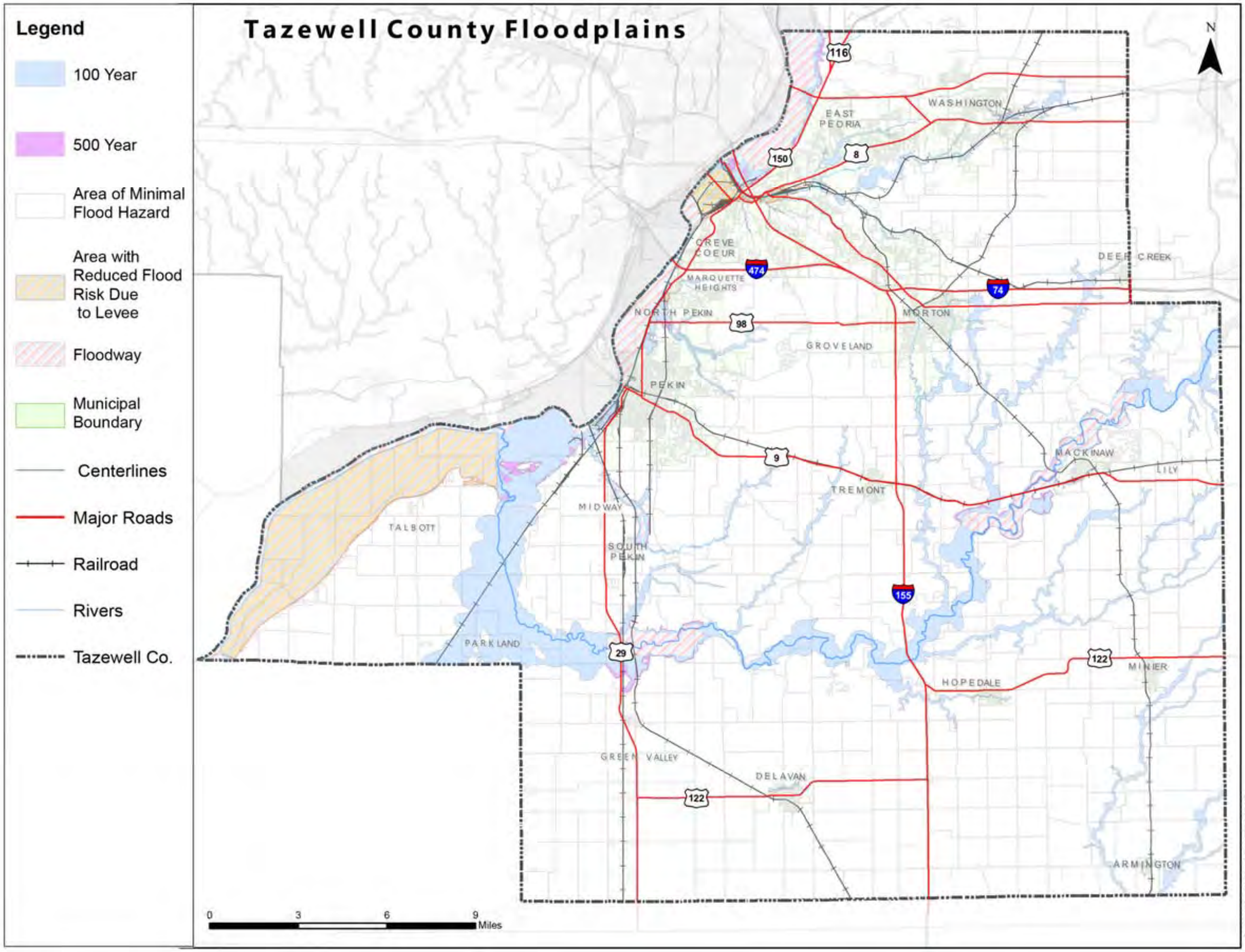


Figure 76 identifies the bodies of water within or immediately adjacent to participating jurisdictions that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas located within a participating jurisdiction (as identified on the DFIRMs) are identified in bold.

Figure 76
Bodies of Water Subject to Flooding – Tazewell County

Participating Jurisdiction	**Water Bodies**
East Peoria	**Ackerman Creek, Cole Creek, Dempsey Creek, Farm Creek, Farm Creek Diversion Channel, Fond Du Lac Creek, Illinois River, Kerfoot Creek, Peoria Lake, School Creek, Tributary No. 3**
Morton	**Ackerman Creek, Bull Run Creek, Prairie Creek, Tributary Bull Run Creek**
Pekin	**Illinois River, Lick Creek, Pekin Lake, Tributary Lick Creek, Worley Lake**
Tremont	---
Washington	**Farm Creek, Tributary Farm Creek, Tributary No. 1, Tributary No. 1A, Tributary No. 2, Tributary No.3**
Unincorporated Tazewell County	**Ackerman Creek, Alloway Creek**, Breedlove Ditch, Brock Lake, **Bull Run Creek, Cole Creek**, Crane Creek, Day Ditch, **Deer Creek, Dempsey Creek, Dillon Creek**, Dry Creek, **Farm Creek Diversion Channel, Farm Creek, Fond Du Lac Creek, Funks Branch**, Heritage Lake, Hickory Grove Ditch, **Hollands Creek, Illinois River, Indian Creek, Kerfoot Creek, Little Lick Creek, Little Mackinaw River, Lost Creek, Mackinaw River**, Main Ditch, Main Ditch, **Middle Fork Sugar Creek**, Minier Lake, **Mud River**, Northern Oaks Lake, **Pekin Lake, Peoria Lake**, Powerton Lake, **Prairie Creek, Rock Creek, Sargent Slough, School Creek**, Spring Creek, Spring Lake Canal, Spring Lake, **Ten Mile Creek, Tributary Bull Run Creek, Tributary Indian Creek, Tributary Lick Creek, Tributary Mackinaw River, Tributary Middle Fork Sugar Creek, Tributary No. 1, Tributary No. 2, Tributary No.3**, Tributary Walnut Creek, **Tributary West Fork Sugar Creek, Upper Peoria** Lake, Walnut Creek, **West Fork Sugar Creek**, West Lake, **Whitten Branch, Willow Creek**

Source: FEMA DFIRMs

Municipal and County officials have reported overland flood issues outside of the base floodplain in most of the participating municipalities and many unincorporated portions of the County. This overland flooding is known to impair travel.

What jurisdictions within the County take part in the NFIP?

Participating Jurisdictions

All of the participating jurisdictions take part in the NFIP. **Figure 77** provides information about each jurisdiction's participation in the NFIP, including the date each participant joined, the date of their most recent FIRM, their status in the Community Rating System and the year of their most recently adopted floodplain zoning ordinance.

Non-Participating Jurisdictions

Figure 78 provides information on those incorporated municipalities within the County that chose not to participate in the planning process but also take part in the NFIP. Green Valley and South Pekin have no identified flood hazard boundaries within their corporate limits and are not required to participate.

Figure 77
Participating Jurisdictions’ NFIP Status – Tazewell County

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Tazewell County	08/01/1980	02/17/2017	No	2017
East Peoria	12/04/1979	02/17/2017	No	2017
Morton	09/02/1988	02/17/2017	No	2017
Pekin	06/04/1980	02/17/2017	No	2016
Tremont	11/27/2017	02/17/2017	No	2017
Washington	02/05/2017	02/17/2017	No	2016

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.
MAC member responses to List of Existing Planning Documents Questionnaire.

Figure 78
Non-Participating Jurisdictions’ NFIP Status – Tazewell County

Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation	Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation
Armington	07/03/1985	02/17/2017	No	Mackinaw	07/03/2017	02/17/2017	No
Creve Coeur	07/23/1981	02/17/2017	No	Marquette Heights	07/03/1985	02/17/2017	No
Deer Creek	07/03/1985	02/17/2017	No	Minier	11/05/1986	02/17/2017	No
Delavan	05/28/2002	02/17/2017	No	North Pekin	06/04/1980	02/17/2017	No
Hopedale	07/18/1985	02/17/2017	No				

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.

Jurisdictions that participate in the NFIP are expected to adopt and enforce floodplain management regulations. In Tazewell County, all the NFIP participating jurisdictions have adopted the State of Illinois model floodplain ordinance. This ordinance goes above and beyond NFIP minimum standards and has much more restrictive floodway regulations. As a result, all of the NFIP participating jurisdictions are in compliance with NFIP requirements.

Participating jurisdictions will continue to comply with the NFIP through the implementation of mitigation projects and activities that enforce this ordinance to reduce future flood risks to new construction within SFHAs. At this time no new construction is planned within the base floodplain. Continued compliance with NFIP requirements for those jurisdictions that participated in the Plan update are addressed in the Mitigation Action Tables found in Section 4.7.

What is the probability of future flood events occurring?

General Floods

Tazewell County has had 24 verified occurrences of general flooding between 1950 and 2017. With 24 occurrences over the past 68 years, the probability or likelihood of a general flood event occurring in Tazewell County in any given year is 35%. However, gaps in the flood data between 1950 and 1995 cause a distortion in this probability. If only the events recorded in NOAA’s Storm Events Database and supplemented by U.S. Army Corps of Engineer river gauge data are analyzed, then there have been 11 verified occurrences of general flooding between 1995 and 2017. With 11 events in 23 years, the probability of a general flood event occurring in any given year goes up to 48%. There was three years over the past 23 years where two or more general flood events occurred. This indicates that the probability or likelihood that more than one general flood event may occur during any given year within the County 13%.

Flash Floods

There have been 30 verified flash flood events between 1990 and 2017. With 30 occurrences over the past 28 years, Tazewell County should expect at least one flash flood event each year. There were 10 years over the past 28 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 36%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from floods.

Several factors including topography, precipitation and an abundance of rivers and streams make Illinois especially vulnerable to flooding. According to the Illinois State Water Survey's Climate Atlas of Illinois, since the 1940s Illinois climate records have shown an increase in heavy precipitation which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?

Yes. Tazewell County and the participating municipalities are vulnerable to the dangers presented by flooding. Precipitation levels and topography are factors that cumulatively make virtually the entire County susceptible to some form of flooding. Flooding occurs along the floodplains of all the streams within the County as well as outside of the floodplains in low-lying areas where drainage problems occur. Since 2008, Tazewell County has experienced eight general floods and 18 flash flood events.

Figure 79 details the number of *recorded* flash flood events by participating jurisdiction. All of the general flood events impacted either the entire County or a large portion of it and were not location specific.

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

Figure 79
Verified Flash Flood Events by Participating Jurisdiction – Tazewell County

Participating Municipality	Number	Year
East Peoria	2	2004, 2016
Morton	3	1990, 2004, 2016
Pekin	3	1990, 2001, 2004
Tremont	---	
Washington	2	2002, 2016
countywide	7	1990, 1990, 1993, 1993, 2001, 2008, 2015
western portion of the County	4	2010, 2010, 2013, 2017
northern portion of the County	4	2010, 2013, 2013, 2017
northeastern portion of the County	1	2011
eastern portion of the County	4	2011, 2013, 2013, 2016
southern portion of the County	4	2013, 2015,2015, 2016
southwestern portion of the County	2	2011, 2015
central portion of the County	1	2015

As described in Section 1.3 Land Use and Development Trends, substantial changes in land use (from forested, open and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No substantial increases in residential or commercial/industrial developments are expected within the next five years.

What impacts resulted from the recorded floods?

Floods as a whole have caused a *minimum* of $54.7 million in property damages and $8 million in crop damages. The following provides a breakdown by category.

In comparison, the State of Illinois averages an estimated $257 million annually in property damage losses and four fatalities per year, making flooding the single most financially damaging natural hazard in Illinois.

General Floods

Data obtained from NOAA's Storm Events Database and NOAA's Storm Data Publications indicates that between 1950 and 2017, four of the 24 general flood events caused approximately $25.5 million in property damages and $8.25 million in crop damages. Included in the totals are $2.5 million in property damages and $250,000 in crop damages

Flood Fast Facts – Impacts/Risk

General Flood Impacts
- Total Property Damage: ***$25,581,000***[^]
- Infrastructure/Critical Facilities Damage[*]: ***n/a***
- Total Crop Damage: ***$8,250,000***[^]
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flash Flood Impacts
- Total Property Damage: ***$31,640,000***
- Infrastructure/Critical Facilities Damage[*]: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flood Risk/Vulnerability to:
- Public Health & Safety – General Flooding: ***Low***
- Public Health & Safety – Flash Flooding: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

^ Includes $2.5 million in property damages and $250,000 in crop damages sustained as a result of the 1974 flood event and represents losses incurred by Tazewell, Woodford & Peoria counties. A breakdown by county was not available.

sustained as a result of the 1974 flood event and represents losses sustained in Tazewell, Woodford and Peoria counties. A breakdown by county was unavailable. Damage information was either unavailable or none was recorded for the remaining 20 reported occurrences.

No injuries or fatalities were reported as a result of any of the recorded events.

Flash Floods

Data obtained from NOAA's Storm Events Database and NOAA's Storm Data Publications indicates that between 1990 and 2017, three of the 30 flash flood events caused approximately $31.6 million in property damages. Damage information was either unavailable or none was recorded for the remaining 27 reported occurrences.

No injuries or fatalities were reported as a result of any of the recorded events.

What impacts have resulted from historic floods?

Historic flood events documented in the City of Peoria's 1983 Hazard Vulnerability Analysis and contained in the 2010 Plan indicate that flooding occurred in Tazewell County in 1933, 1943 and 1944. **Appendix K** details the impacts associated with these historic floods.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly and those with specific allergies.

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in a foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Infrastructure and critical facilities are also vulnerable to flooding. Roadways, culverts and bridges can be weakened by floodwaters and have been known to collapse under the weight of a vehicle. Buried power and communication lines are also vulnerable to flooding. Water can infiltrate lines and cause disruptions in power and communication.

What is the level of vulnerability to public health and safety from floods?

While both general and flash floods occur on a fairly regular basis within the County, the number of injuries and fatalities is very low. In terms of the risk or vulnerability to public health and safety from *general floods*, the risk is seen as low. However, over half of the recorded flood events were the result of flash flooding. Since there is very little warning associated with flash flooding the risk to public health and safety from *flash floods* is elevated to medium.

Are there any repetitive loss structures within Tazewell County?

Yes. According to information obtained from IEMA, there is one repetitive loss structure located in North Pekin and five severe repetitive loss structures located in East Peoria, North Pekin and unincorporated Tazewell County. As described previously, FEMA defines a "repetitive loss structure" as an NFIP-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. A "severe repetitive loss structure" as defined by FEMA is an NFIP-insured structure that has received four or more flood insurance claim payments of more than $5,000 each or two flood insurance claim payments that exceed the fair market value of the insured structure on the day before each loss.

Figure 80 identifies the repetitive flood loss structures by participating jurisdiction and provides the total flood insurance claim payments. The exact location and/or address of the insured structures are not included in this Plan to protect the owners' privacy. According to IEMA, there have been 34 flood insurance claim payments totaling $665,622.56 for the six repetitive flood loss structures.

Figure 80
Repetitive Flood Loss Structures – Tazewell County

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Repetitive Loss Properties						
North Pekin	single family	1	2	$208,532.92	$3,971.64	$212,504.56
Severe Repetitive Loss Properties						
East Peoria	single family	1	7	$115,913.43	$209.00	$116,122.43
North Pekin	single family	1	9	$64,799.47	$18,084.75	$82,884.22
Unincorp. Tazewell County	single family	2	10	$119,931.10	$66,742.03	$186,673.13
	non-residential	1	6	$51,707.22	$15,731.00	$67,438.22
Total:		**6**	**34**	**$560,884.14**	**$104,738.42**	**$665,622.56**

Source: Illinois Emergency Management Agency

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?

Yes. **Figure 81** identifies the number of existing residential structures by participating jurisdiction located within the base floodplain, levee-protected floodplain and 500-year floodplain. These counts were prepared by Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant using the effective DFIRMs.

Aside from key roads and bridges and buried power and communication lines, East Peoria, Morton, Pekin and Washington have specific infrastructure/critical facilities located within or adjacent to a floodplain. The following provides a description of each.

Figure 81
Existing *Residential Structures* Located within a Floodplain of a Participating Municipality – Tazewell County

Participating Jurisdiction	**Number of Residential Structures**		
	Base/500-Year Floodplain	**Levee-Protected Floodplain**	**Total**
East Peoria	67	645	712
Morton	20	0	20
Pekin	110	81	191
Tremont	0	0	0
Washington	167	0	167
Unincorp. Tazewell County	126	219	345

Source: FEMA DFIRMs

- *East Peoria*: The City's wastewater treatment plant #3 is located in the base floodplain of the Illinois River. The City Hall, Central House fire station, police department, and wastewater treatment plant #1 are protected from the 1% annual chance flood of the Illinois River by a levee system that has been provisionally accredited while drinking water wells #8 and Catherine, Central Junior High School and part of the East Peoria Community High School are also protected from the 1% annual chance flood of Farm Creek by a provisionally-accredited levee system. While protected, overtopping or failure of any levee system is possible, leaving these critical facilities with a moderate flood risk according to FEMA. The Oakwood drinking water treatment plant is located adjacent to the floodway of Fondulac Creek while the Meadow drinking water treatment plant is located adjacent to the floodway of Dempsey Creek.
- *Morton*: The Village's wastewater treatment plant #2 is located adjacent to the Prairie Creek floodway and the base floodplain of Bull Run Creek. Wastewater treatment plant #3 is located adjacent to the base floodplain of Ackerman Creek.
- *Pekin*: The City's wastewater treatment plant is located in the base floodplain of the Illinois River.
- *Washington*: The City's drinking water treatment plant #1 and Jefferson maintenance shop are both located in the base floodplain/500-year floodplain of Farm Creek while the police station is partially located in the 500-year floodplain of Farm Creek. Both sewer treatment plant # 1 and #2 are located adjacent to the base floodplain of Farm Creek while water tower #1 is located adjacent to the 500-year floodplain of Farm Creek.

While nine percent of the land area in Tazewell County lies within the base floodplain and is susceptible to riverine flooding, topography makes almost the entire County 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 a floodplain and are not easily identifiable.

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be medium to high based on: (a) the frequency and severity of recorded flood events within the County; (b) the County's proximity to the Illinois River; (c) the fact that most of the County is vulnerable to flash flooding; and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of a floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?

The answer to this question depends on the type of flooding being discussed.

Riverine Flooding

In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions is low as long as the existing floodplain ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

Flash Flooding

In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable *residential structures* located within the *participating municipalities* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Tazewell County.

The purpose of providing an estimate is to help residents and municipal officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a ***general idea of the magnitude of the potential damage*** that could occur from a flood event in each of the municipalities.

Assumptions

To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Assumption #1

A riverine flood event will impact vulnerable residential structures within each municipality.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. While flash flooding has occurred more frequently and has caused more recorded flood damages in the County than riverine flooding, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the floodplain of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Assumption #2

All base floodplains within a municipality will flood and experience the same degree of flooding.

Scope of the Flood Event. To establish the number of vulnerable residential structures (potentially-damaged housing units), the scope of the riverine flood event within each municipality must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along the floodplains for each river, stream and creek.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river, stream or creek. However, for this scenario, it was decided that:

- ❖ all rivers, streams and creeks with floodplains would overflow their banks, and
- ❖ the floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

These assumptions result in the following conditions for each participating municipality:

- ➢ *Tremont*: No rivers, streams or creeks are located within or adjacent to the village boundaries and therefore no residential flooding would occur;
- ➢ *East Peoria*: The Illinois River, Farm Creek, Farm Creek Diversion Channel, Fondulac Creek, School Creek, Dempsey Creek, Tributary No. 3, Cole Creek, Kerfoot Creek, Ackerman Creek and their tributaries would overflow their banks and flood portions of the City;
- ➢ *Morton*: Prairie Creek, Bull Run Creek, Ackerman Creek and their tributaries would overflow their banks and flood portions of the Village;

- *Pekin*: The Illinois River, Lick Creek and their tributaries would overflow their banks and flood portions of the City; and
- *Washington*: Farm Creek, Tributary No. 1, Tributary 1A, Tributary No. 2, Tributary No. 3 and their tributaries would overflow their banks and flood portions of the City.

Assumption #3

The number of existing residential structures located within the base floodplain(s) in each municipality will be used to determine the number of potentially-damaged housing units.

Number of Potentially-Damaged Housing Units. Since this scenario assumes that all the floodplains within a municipality will experience the same degree of flooding, the number of existing residential structures located within the floodplain(s) of each municipality can be used to determine the number of potentially-damaged housing units. **Figure 81** identifies the total number of existing residential structures located within the floodplains(s) of each municipality. These counts were prepared by the Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant.

While accredited and provisionally-accredited levees provide protection from the 1% annual chance flood (100-year flood) and reduce the risk of flooding, they cannot eliminate all flood risk. There is always the chance a flood will overtop or breach a levee allowing floodwaters to inundate the protected areas behind. As a result, it was decided that those structures located in the levee-protected floodplains would be included in the number of potentially-damaged housing units.

Assumption #4

The average market value for a residential structure in each municipality will be used to determine the value of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units. Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically, when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the averaged assessed value and multiplying that number by three (the assessed value of a structure in Tazewell County is approximately one-third of the market value). **Figure 82** provides a sample calculation. The total assessed value is based on 2016 tax assessment information provided by the Tazewell County Assessment Office. **Figure 83** provides the average assess value and average market value for each participating municipality.

Figure 82
Sample Calculation of Average Assessed Value & Average Market Value – East Peoria

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction÷ Total Housing Units in the Jurisdiction = Average Assessed Value

East Peoria: $307,711,479 ÷ 10,590 housing units = $29,056.79688

Average Market Value

Average Assessed Value x 3 = Average Market Value
(Rounded to the Nearest Dollar)

East Peoria: $29,056.79688 x 3 = $87,170.39065
($87,170)

Figure 83
Average Market Value of Housing Units by Participating Municipality – Tazewell County

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2016)	Total Housing Units (2010)	Average Assessed Value (Raw)	Average Market Value (Raw)	Average Market Value (Rounded)
East Peoria	$307,711,479	10,590	$29,056.79688	$87,170.39064	$87,170
Morton	$345,125,877	6,973	$49,494.60447	$148,483.81341	$148,484
Pekin	$318,602,708	14,714	$21,653.03167	$64,959.09501	$64,959
Tremont	$34,645,060	942	$36,778.19533	$110,334.58599	$110,335
Washington	$289,130,261	6,189	$46,716.79771	$140,150.39313	$140,150
Unincorp. County	$408,622,464	10,285	$39,729.94302	$119,189.82906	$119,190
County	$1,866,670,119	57,516	$32,454.79726	$97,364.39178	$97,364

Source: Tazewell County Assessments Office.

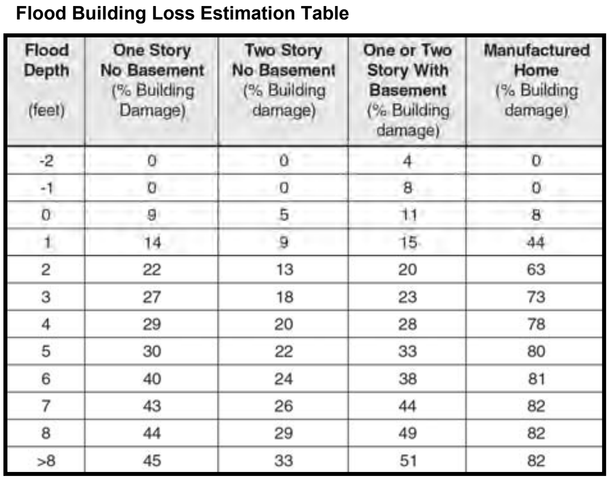
Assumption #5

The potentially-damaged housing units are one or two-story homes with basements and the flood depth is two foot.
Structural Damage = 20%
Content Damage = 30%

Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one-story home without a basement, one or two-story home with a basement, etc.) and (b) the flood depth. **Figure 84** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

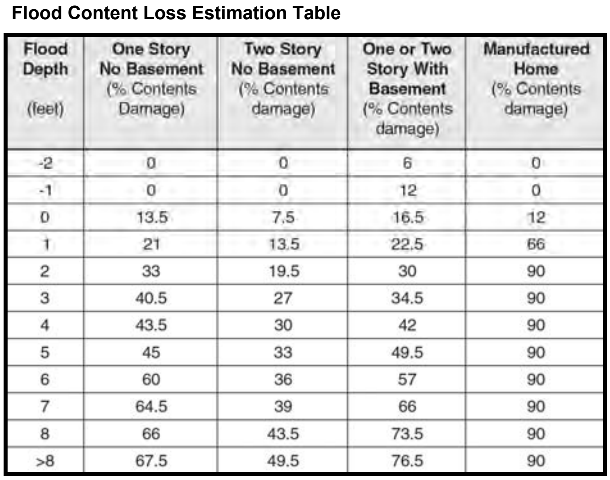
For this scenario it is assumed that the potentially-damaged housing units are one or two-story homes with basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the ***structure*** is estimated to be 20% and the expected percent damage sustained by the structure's ***contents*** is estimated to be 30%.

Figure 84
FEMA Flood Loss Estimation Tables



Flood Building Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Building Damage)	Two Story No Basement (% Building damage)	One or Two Story With Basement (% Building damage)	Manufactured Home (% Building damage)
-2	0	0	4	0
-1	0	0	8	0
0	9	5	11	8
1	14	9	15	44
2	22	13	20	63
3	27	18	23	73
4	29	20	28	78
5	30	22	33	80
6	40	24	38	81
7	43	26	44	82
8	44	29	49	82
>8	45	33	51	82



Flood Content Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Contents Damage)	Two Story No Basement (% Contents damage)	One or Two Story With Basement (% Contents damage)	Manufactured Home (% Contents damage)
-2	0	0	6	0
-1	0	0	12	0
0	13.5	7.5	16.5	12
1	21	13.5	22.5	66
2	33	19.5	30	90
3	40.5	27	34.5	90
4	43.5	30	42	90
5	45	33	49.5	90
6	60	36	57	90
7	64.5	39	66	90
8	66	43.5	73.5	90
>8	67.5	49.5	76.5	90

Source: FEMA, Understanding Your Risks: Identifying Hazards and Estimating Losses

Potential Dollar Losses

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage (20%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 85** provides a sample calculation.

Figure 85
Structure: Potential Dollar Loss Sample Calculation – East Peoria

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage =
Average Structural Damage per Housing Unit
East Peoria: $87,170 x 20% = $17,434.00 per housing unit

Average Structural Damage x Number of Potentially-Damaged Housing
Units within the Jurisdiction = *Structure* Potential Dollar Losses
(Rounded to the Nearest Dollar)

East Peoria: $17,434.00 per housing unit x 692 housing unit = $12,064,328.00
($12,064,328)

Next the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage (30%) to get the average content damage per unit. Then take the average content damage per unit and multiply that by the number of potentially-damaged housing units. **Figure 86** provides a sample calculation.

Figure 86
Content: **Potential Dollar Loss Sample Calculation – East Peoria**

½ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage = Average Content Damage per Housing Unit

East Peoria: ½ ($87,170) x 30% = $13,075.50 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses
(Rounded to the Nearest Dollar)

East Peoria: $13,075.50 per housing unit x 692 housing unit = $9,048,246.00
($9,048,246)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure 87** provides a breakdown of the total potential dollar losses by municipality.

Figure 87
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Participating Municipality – Tazewell County

Participating Jurisdiction	Average Market Value (2016)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
East Peoria	$87,170	712	$12,413,008	$9,309,756	$21,722,764
Morton	$148,484	20	$593,936	$445,452	$1,039,388
Pekin	$64,959	191	$2,481,434	$1,861,075	$4,342,509
Tremont	$110,335	0	$ 0	$ 0	$ 0
Washington	$140,150	167	$4,681,010	$3,510,758	$8,191,768

This assessment illustrates the <u>*potential residential dollar losses*</u> that should be considered when municipalities are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences within the participating municipalities would be expected to ***range from $1 million to $21.7 million***. Tremont does not have any residences considered vulnerable to riverine flooding in this scenario.

Vulnerability of Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. ***As a result, the cumulative monetary impacts to businesses and infrastructure can far exceed the cumulative monetary impacts to residences***. While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

In terms of specific infrastructure vulnerability, the following are located within a ***base floodplain***:

- *East Peoria*: wastewater treatment plant #3;
- *Pekin*: wastewater treatment plant; and
- *Washington*: drinking water treatment plant #1 and Jefferson Street maintenance shop.

No other above-ground infrastructure within the participating jurisdictions, other than key roads and bridges, were identified as being vulnerable to riverine flooding.

Considerations

While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions have been made aware through the planning process of the impacts that can result from flash flood events. Tazewell County has experienced multiple events over the last 20 to 30 years as have adjoining and nearby counties. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

Tazewell County

Figure 71
(Sheet 1 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
4/6/1950 thru 5/13/1950	n/a	Illinois River	western portion of the county	25.0 feet 4/29/1950	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3/15/1962 thru 4/14/1962	n/a	Illinois River	western portion of the county	23.7 feet 3/26/1962	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
4/23/1970 thru 6/27/1970	n/a	Illinois River	western portion of the county	25.9 feet 5/19/1970	n/a	n/a	n/a	n/a	n/a	n/a	n/a	heavy rain fell over much of central Illinois for 3 to 8 consecutive days washing out crops and causing extreme soil erosion & ponding
3/14/1973 thru 5/19/1973	n/a	Illinois River	western portion of the county	24.4 feet 4/25/1973	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #373)***
Subtotal:								**0**	**0**	**0**	**0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 2 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
5/19/1974 thru 7/8/1974	n/a	Illinois River area rivers, streams & creeks	countywide	22.2 feet 6/26/1974	n/a	n/a	n/a	n/a	n/a	$2,500,000[§]	$250,000[§]	***this event was part of a federally-declared disaster (Declaration #438)***
2/25/1976 thru 3/23/1976	n/a	Illinois River	western portion of the county	23.6 feet 3/9/1976	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3/7/1979 thru 5/17/1979	n/a	Illinois River area rivers, streams & creeks	countywide	28.7 feet 3/23/1979 3rd highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #583)***
5/28/1980 thru 6/5/1980	n/a	area rivers, streams & creeks	countywide	n/a	n/a	n/a	n/a	n/a	n/a	n/a	$8,000,000	*Event Description Provided Below*
- ***this event was part of a state-declared disaster*** - 14 inches of rain fell in a week flooding farm fields, buildings & roads - at the north end of the County 20 square miles of land (approx. 12,800 acres) was under water and caused extensive damage to crops and buildings												
Subtotal:								**0**	**0**	**$2,500,000[§]**	**$8,250,000[§]**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

[§] The property damage total of $2.5 million and the crop damage total of $250,000 for the 1974 flood event represent losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Tazewell County

Figure 71
(Sheet 3 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
2/24/1982 thru 5/2/1982	n/a	Illinois River	western portion of the county	27.1 feet 3/23/1982 7th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
12/5/1982 thru 1/7/1983	n/a	Illinois River Mackinaw River area rivers, streams & creeks	countywide	27.4 feet 12/9/1982 6th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #674)*** the Mackinaw River overflowed flooding about 40,000 acres of land and damaging homes at Mackinaw Valley Park
4/3/1983 thru 5/22/1983	n/a	Illinois River area rivers, streams & creeks	countywide	25.7 feet 4/17/1983	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	**0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 4 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
2/26/1985 thru 4/15/1985	n/a	Illinois River Mackinaw River area rivers, streams & creeks	countywide	28.4 feet 3/7/1985 4th highest crest on record	n/a	n/a	n/a	n/a	n/a	$1,381,000	n/a	***this event was part of a federally-declared disaster (Declaration #735)***
3/24/1993 thru 5/10/1993	n/a	Illinois River	western portion of the county	23.16 feet 4/24/1993	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
5/14/1995 thru 6/15/1995	n/a	Illinois River area rivers, streams & creeks	countywide	24.91 feet 6/2/1995	n/a	n/a	n/a	n/a	n/a	n/a	n/a	numerous homes were damaged or destroyed by flooding along the Illinois River
2/21/1997 thru 3/6/1997	6:00 p.m.	Illinois River	western portion of the county	26.85 feet 3/3/1997 10th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$1,381,000**	**0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria’s Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 5 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
5/14/2002 thru 5/27/2002	11:00 p.m.	Illinois River Mackinaw River	countywide	25.25 feet 5/18/2002	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
9/16/2008 thru 10/5/2008	n/a	Illinois River	western portion of the county	26.99 feet 9/20/2008 9th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3/2/2009 thru 6/6/2009	n/a	Illinois River	western portion of the county	27.92 feet 3/14/2009 5th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	**0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 6 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
4/18/2013 thru 4/22/2013	9:00 a.m.	area rivers, streams & creeks	western & northern portion of the county	n/a	See Event Description	See Event Description	See Event Description	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - very heavy rainfall produced 3 to 5 inches of rain causing both flash flooding & general flooding - nearly every road in the flooded area was impassable, including parts of Interstate 74 - most of the creeks and streams stayed in flood and most roads remained closed until the afternoon of the 22nd												
4/19/2013 thru 5/8/2013	10:00 a.m.	Illinois River	western portion of the county	29.32 feet 4/23/2013 highest crest - flood of record at this gauge	several (See Event Description)	several (See Event Description)	n/a	n/a	n/a	$21,700,000	n/a	*Event Description Provided Below*
this event was part of a federally-declared disaster (Declaration #4116) several homes and businesses along the Illinois River suffered damage due to record river levels												
6/15/2015 thru 7/31/2015	n/a	Illinois River	western portion of the county	27.06 feet 7/1/2015 8th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$21,700,000**	**0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 7 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
12/27/2015 thru 1/20/2016	n/a	Illinois River	western portion of the county	26.46 feet 1/3/2016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
4/29/2017 thru 4/30/2017	10:45 p.m.	area rivers, streams & creeks	western portion of the county	n/a	n/a	n/a	numerous streets, roads & highways	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- heavy rainfall of 2.5 to 4 inches in a two-hour period during the evening on already saturated ground caused both flash flooding & general flooding - numerous streets in Pekin and East Peoria were impassable as well as numerous rural roads and highways in the county, including parts of IL Route 29 from Green Valley to South Pekin - an additional 0.5 to 1 inch during the early morning hours of the 30th kept many roads flooded - flood waters subsided by early afternoon on the 30th												
Subtotal:								**0**	**0**	**$0**	**0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Tazewell County

Figure 71
(Sheet 8 of 8)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
6/17/2017 thru 6/18/2017	10:45 p.m.	area rivers, streams & creeks	northern portion of the county	n/a	n/a	n/a	numerous streets, roads & highways	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- torrential rainfall of 2 to 3 inches in 90 minutes caused both flash flooding & general flooding - some streets in Washington were flooded - US Route 24 from Washington to the County Line was impassable as well as portions of Dee-Mac Road - additional rainfall during the late evening/early morning hours kept many roads flooded - flood waters subsided by daybreak on the 18th												
Subtotal:								**0**	**0**	**$0**	**0**	
GRAND TOTAL								**0**	**0**	**$25,581,000§**	**$8,250,000§**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

§ The property damage total includes $2.5 million and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Weather Service, River Observations, North Central River Forecast Center, Illinois River at Peoria.
United States Army Corps of Engineers, RiverGages.com, Data Mining.

Tazewell County

Figure 72
(Sheet 1 of 5)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
6/8/1990	1:00 a.m.	Morton Pekin	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #871)***
6/20/1990	4:00 a.m.	countywide	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #871)***
6/29/1990	8:30 a.m.	countywide	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #871)***
8/15/1993	8:45 p.m.	countywide	n/a	n/a	n/a	n/a	numerous road and basements were flooded
8/23/1993	5:45 p.m.	countywide	n/a	n/a	n/a	n/a	street flooding occurred
5/18/2001	12:40 a.m.	countywide	n/a	n/a	n/a	n/a	- numerous reports of flooded roads with the most extensive flooding occurring in Pekin, Delavan & Tremont *<u>Tremont</u>* - IL Rte. 9 was covered with flowing floodwaters
6/6/2001	1:58 a.m.	Pekin	n/a	n/a	n/a	n/a	- flooding closed several roads/bridges that crossed a local drainage ditch - a few adjacent city roads were also closed
5/11/2002	11:00 a.m.	Washington	n/a	n/a	n/a	n/a	several roads and basements in the Deer Ridge Subdivision were flooded
7/9/2003	8:10 a.m.	Green Valley⮝	n/a	n/a	n/a	n/a	many streets and roads were flooded around the Green Valley area
5/18/2004	4:20 p.m.	East Peoria	n/a	n/a	n/a	n/a	- very heavy rainfall caused street flooding - one motorist was stranded on Washington St. with water up to the door of their car
5/30/2004	3:27 p.m.	Morton Pekin	n/a	n/a	n/a	n/a	numerous streets were flooded
1/12/2005 thru 1/13/2005	9:30 p.m.	Minier⮝	n/a	n/a	n/a	n/a	Stringtown Road was closed west of the Village due to water flowing over the road
5/30/2008	2:10 p.m.	countywide	n/a	n/a	n/a	n/a	heavy rains caused flooding across many roads in the County
Subtotal:			**0**	**0**	**$0**	**$0**	

⮝ Flash flood event verified in the vicinity of this location(s).

Tazewell County

Figure 72
(Sheet 2 of 5)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
5/25/2010	1:00 p.m.	western portion of the county	n/a	n/a	n/a	n/a	- many area roads were closed and vehicles stranded due to flowing water 6 to 12 inches deep *Delavan area* - hardest hit area was along Springfield Rd. from the intersection of Muller Rd. to near Delavan *Tremont* - most of the streets in the Village were flooded
6/23/2010	6:30 p.m.	western & northern portions of the county	n/a	n/a	n/a	n/a	- many rural roads were impassable as well as portions of IL Rte. 9 & IL Rte. 29 *Pekin/East Peoria/Morton* - many streets were flooded, causing vehicles to become stranded
5/13/2011	7:00 p.m.	eastern portion of the county	n/a	n/a	n/a	n/a	- many streets, rural roads and creeks were flooded - the most affected areas extended from Washington to east of Morton, through Mackinaw to just north of Hopedale
6/15/2011	1:00 a.m.	southwestern portion of the county	n/a	n/a	n/a	n/a	numerous rural roads were impassable
6/21/2011 thru 6/22/2011	7:15 p.m.	northeastern portion of the county	n/a	n/a	n/a	n/a	several rural roads were impassable
Subtotal:			**0**	**0**	**$0**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Tazewell County

Figure 72
(Sheet 3 of 5)
Flash Flood Events
1990 – 2017

<table>
<tr><th>Date(s)</th><th>Start Time</th><th>Location(s) Impacted</th><th>Injuries</th><th>Fatalities</th><th>Property Damages</th><th>Crop Damages</th><th>Magnitude/Description</th></tr>
<tr><td>4/17/2013 thru 4/18/2013</td><td>9:15 p.m.</td><td>western & northern portions of the county</td><td>n/a</td><td>n/a</td><td>$31,400,000</td><td>n/a</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="8">- <i>this event was part of a federally-declared disaster (Declaration #4116)</i>
- very heavy rainfall of 3 to 5 inches resulted in damage to thousands of homes and businesses in the county, which included the cities of East Peoria, Pekin, Washington & Morton
- every creek & stream in the western & northern part of the county was flooded
- nearly every road in the flooded area was impassable, including parts of Interstate 74 which had to be closed
- numerous water rescues were made
- mudslides were also reported on the bluffs along the Illinois River which did damage to a gas station & covered US Rte. 150 with several inches of mud</td></tr>
<tr><td>5/30/2013 thru 5/31/2013</td><td>8:00 p.m.</td><td>eastern portion of the county</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>- many rural roads were flooded
- greatest impact was from Hopedale to Minier</td></tr>
<tr><td>5/31/2013</td><td>3:40 p.m.</td><td>southern & eastern portions of the county</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>numerous roads were flooded and one vehicle rescue was made</td></tr>
<tr><td>6/24/2013</td><td>4:30 a.m.</td><td>northern portion of the county</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>the main impact was the flooding of several rural roads north of US Rte. 24</td></tr>
<tr><td>6/7/2015 thru 6/8/2015</td><td>8:00 p.m.</td><td>countywide</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td><i><u>Pekin & East Peoria</u></i>
- many streets were impassable with water a foot deep in some spots
<i><u>Tazewell/Logan County Line area</u></i>
- biggest impacts were in the southern part of the County where the water was 3 to 4 feet deep
- at least 2 water rescues had to be made for stranded motorists</td></tr>
<tr><td colspan="3">Subtotal:</td><td>0</td><td>0</td><td>$31,400,000</td><td>$0</td><td></td></tr>
</table>

^ Flash flood event verified in the vicinity of this location(s).

Tazewell County

Figure 72
(Sheet 4 of 5)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
6/26/2015	10:15 a.m.	southern portion of the county	n/a	n/a	n/a	n/a	numerous rural roads were impassable from south of Pekin through Hopedale and Delavan to the Spring Lake area
6/28/2015	7:15 p.m.	southwestern portion of the county	n/a	n/a	n/a	n/a	rural roads were flooded in the Spring Lake area and near the Mason/Tazewell County line south of Parkland
7/16/2015 thru 7/17/2015	10:30 p.m.	central and southern portions of the county	n/a	n/a	n/a	n/a	- parts of Interstate 155 from mile post 15 to 22 were impassable - numerous rural roads were closed from South Pekin to Hopedale to Armington - flooding of these roads hampered rescue efforts in the immediate aftermath of the EF 2 tornado that hit Delavan
8/12/2016	4:00 p.m.	southern & eastern portions of the county	n/a	n/a	$240,000	n/a	- numerous roads were flooded including parts of Interstate 155 two to four miles north of the Tazewell/Logan County Line - cars which hydroplaned on the water-covered roads slid into ditches along the interstate - Parts of IL Rte. 122 were also impassable from Delavan through Hopedale to Minier
8/30/2016	8:30 a.m.	East Peoria Morton Washington	n/a	n/a	n/a	n/a	- numerous streets were flooded - several roads were closed for a short period of time - cars became stalled in the high water
Subtotal:			**0**	**0**	**$240,000**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Tazewell County

Figure 72
(Sheet 5 of 5)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
4/29/2017	6:30 p.m.	western portion of the county	n/a	n/a	n/a	n/a	- numerous rural roads and highways, including parts of IL Rte. 29 from Green Valley to South Pekin were impassable *Pekin & East Peoria* - numerous streets were impassable
6/17/2017	8:30 p.m.	northern portion of the county	n/a	n/a	n/a	n/a	- parts of US Rte. 24 were impassable from Washington to the Tazewell/Woodford County Line - most of Dee-Mac Rd. was also flooded *Washington* - some streets were flooded
Subtotal:			**0**	**0**	**$0**	**$0**	
GRAND TOTAL:			**0**	**0**	**$31,640,000**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

3.3.2 WOODFORD COUNTY

HAZARD PROFILE

The following identifies past occurrences of floods; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When has flooding occurred previously? What is the extent of these previous floods?

Figures 88 and **89**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in Woodford County. The flood events are separated into two categories: general floods (riverine and shallow/overland) and flash floods.

Flood Fast Facts – Occurrences

Number of General Floods Reported (1950 – 2017): ***27***

Number of Flash Floods Reported (1990 – 2017): ***28***

Most Likely Month for General Floods to Occur: ***March/April/May***

Most Likely Month for Flash Floods to Occur: ***June***

Most Likely Time for Flash Floods to Occur: ***Evening***

Number of Federal Disaster Declarations Related to General and Flash Flooding: ***6***

General Floods

NOAA's Storm Events Database, NOAA's Storm Data Publications, the U.S. Army Corps of Engineers' river gauge data and information included in the 2010 Plan have documented 27 occurrences of general flooding Woodford County between 1950 and 2017. Included in the 27 general flood events are six events that contributed to five separate federally-declared disasters for Woodford County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Based on historical gauge data, the record setting Illinois River flood in this area occurred on April 23, 2013 when the Illinois River crested at 29.32 feet at Peoria. The second and third highest crest at this location occurred in 1943 and 1979 respectively.

Flash Floods

NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan documented 28 reported occurrences of flash flooding in Woodford County between 1990 and 2017. Included in the 28 flash flood events are five events that contributed to two separate federally-declared disasters in Woodford County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Figure 90 charts the reported occurrences of flooding by month. Of the 27 general flood events, 18 (67%) began in March, April and May making this the peak period for general floods in Woodford County. The 18 events were split equally between March, April and May (six events each) making them all peak months for general flooding. There were 20 events that spanned two or more months; however, for illustration purposes only the month the event started in is graphed.

In comparison, 17 of the 28 flash flood events (61%) took place between May and June making this the peak period for flash floods. Of the 17 events, 11 (65%) occurred in June making this the peak month for flash flooding.

Figure 90
Graph: Flood Events by Month Woodford County

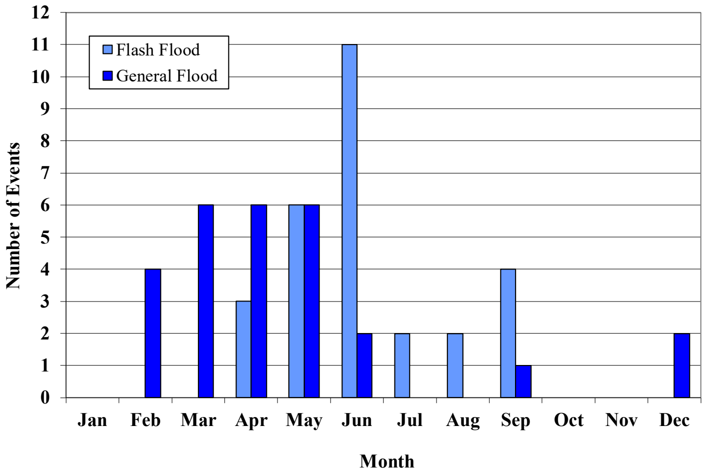
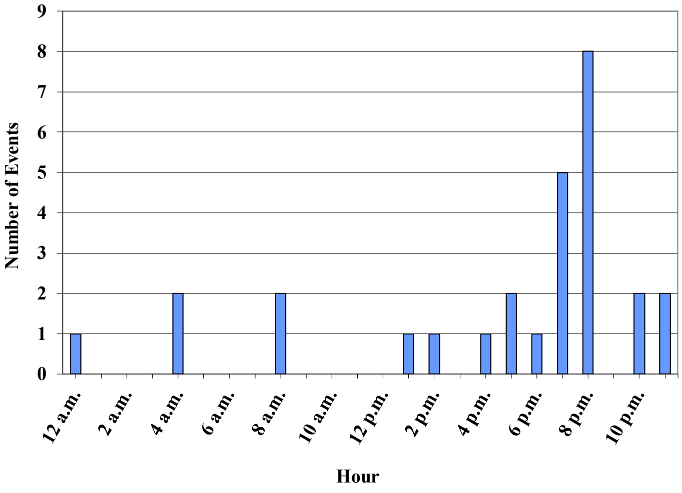


Figure 91 charts the reported occurrences of flash flood events by hour. Approximately 82% of the 28 flash flood events began during the p.m. hours, with 17 of the events (61%) taking place between 4:00 p.m. and 9:00 p.m. In comparison 55% of general flood events with recorded times began during the p.m. hours.

Figure 91
Graph: Flash Flood Events by Hour Woodford County



What locations are affected by floods?

While specific locations are affected by general flooding, most areas of the County can be impacted by overland and flash flooding because of the topography and seasonally high-water table of the area. In Woodford County 6.8% of the area is designated as being within the base floodplain and susceptible to riverine floods. The *2013 Illinois Natural Hazard Mitigation Plan* classifies Woodford County's hazard rating for floods as "elevated."

Figure 92 identifies the floodplains in Woodford County as well as the participating jurisdictions. This map is based on the Woodford County DFIRMs that became effective in September 17, 2010. **Appendix J** contains maps identifying the floodplains located in the participating municipalities. While a large portion of the area prone to riverine flooding is in unincorporated portions of the County, Eureka and Roanoke are also susceptible to riverine flooding because of their proximity to floodplains.

Figure 93 identifies the bodies of water within or immediately adjacent to participating jurisdictions that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas located within a participating jurisdiction (as identified on the DFIRMs) are identified in bold.

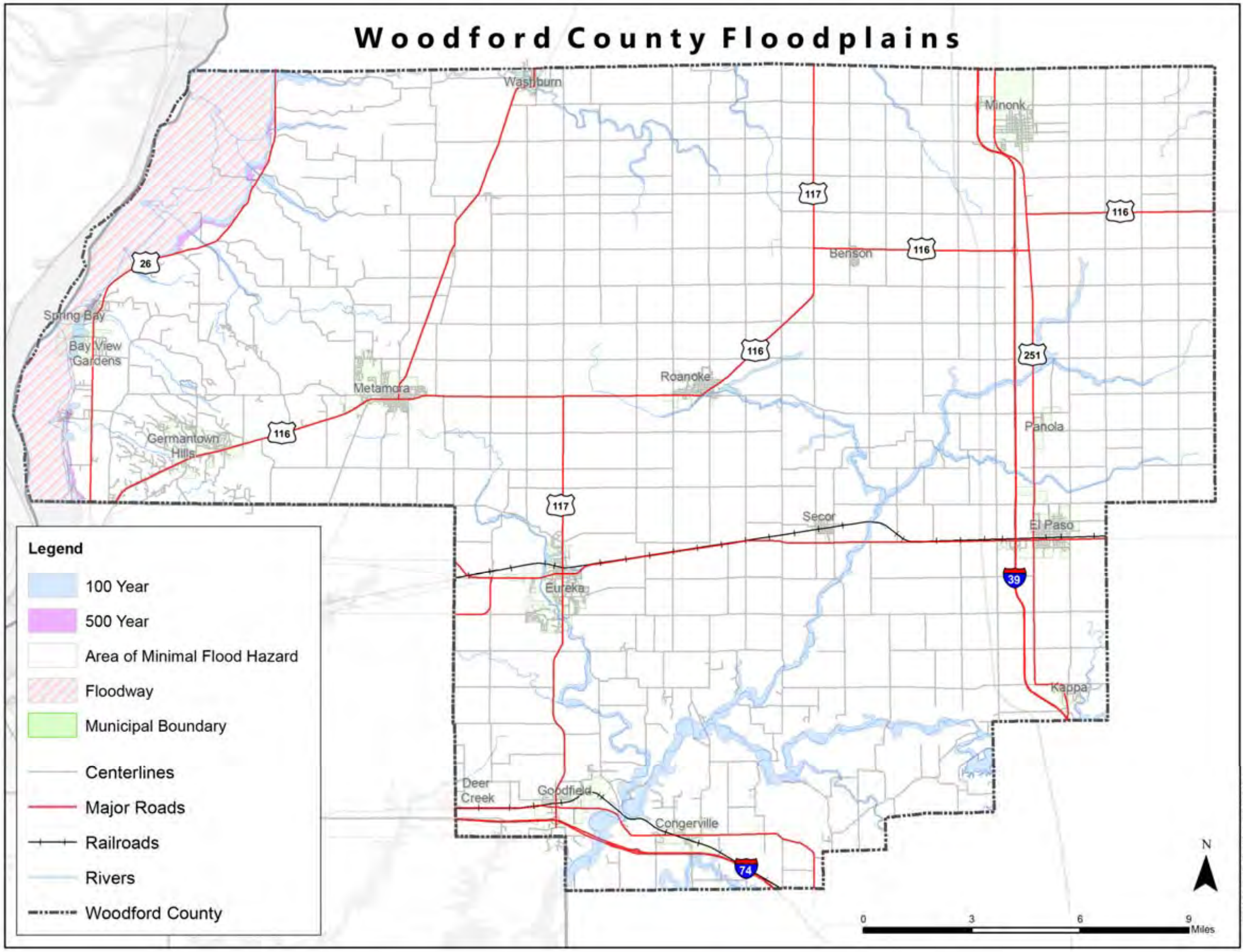
Figure 93
Bodies of Water Subject to Flooding – Woodford County

Participating Jurisdiction	Water Bodies
Eureka	Eureka Lake, **Tributary Walnut Creek, Walnut Creek**
Germantown Hills	Unnamed Tributary, White Oaks Lake
Roanoke	**Tributary West Branch Panther Creek, West Branch Panther Creek**
Unincorporated Woodford County	**Alloway Creek**, Barwell Lake, **Blalock Creek, Blue Creek, Burkett Hollow**, Coon Creek, Crow Creek, **Derman Creek**, Diamond Creek, **Douglas Lake, Dry Creek, East Branch Panther Creek, Evergreen Lake,** Funks Run, **Goose Lake, Hallenback Creek, Illinois River**, Izaak Walton Lake, Lake Sante Fe, **Little Panther Creek, Mackinaw River, Mill Creek, Mole Creek, Mud Creek**, Mundinger Creek, **Olive Branch, Panther Creek, Partridge Creek**, Red River, Rich Lake, **Richland Creek, Rock Creek**, Short Point Creek, **Six Mile Creek, Snag Creek, Snake Creek, South Branch Crow Creek, Ten Mile Creek**, Tributary Diamond Creek, Tributary East Branch Panther Creek, Tributary Long Point Creek, Tributary Mole Creek, **Tributary Panther Creek, Tributary Rock Creek, Tributary Walnut Creek**, Tributary West Branch Panther Creek, Tributary Wolf Creek, **Vincent Run, Walnut Creek, West Branch Panther Creek,** Wolf Creek, **Wolf Creek**

Source: FEMA DFIRMs

Municipal and County officials have reported overland flood issues outside of the base floodplain in most of the participating municipalities and many unincorporated portions of the County. This overland flooding is known to impair travel.

Figure 92
Floodplain Areas in Woodford County



What jurisdictions within the County take part in the NFIP?

Participating Jurisdictions

Woodford County, Eureka and Roanoke all take part in the NFIP. **Figure 94** provides information about each jurisdiction's participation in the NFIP, including the date each participant joined, the date of their most recent FIRM, their status in the Community Rating System and the year of their most recently adopted floodplain zoning ordinance. Germantown Hills has no identified flood hazard boundaries within its corporate limits and is not required to participate.

Non-Participating Jurisdictions

Figure 95 provides information on those incorporated municipalities within the County that chose not to participate in the planning process but also take part in the NFIP. Benson, El Paso, Goodfield, Metamora, Minonk, Panola and Secor have no identified flood hazard boundaries within their corporate limits and are not required to participate.

Figure 94
Participating Jurisdictions' NFIP Status – Woodford County

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Woodford County	02/01/1984	09/17/2010	No	2010
Eureka	07/18/1985	09/17/2010	No	2009
Germantown Hills	---	NSFHA	No	---
Roanoke	09/04/1987	09/17/2010	No	2016

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.
MAC member responses to List of Existing Planning Documents Questionnaire.

Figure 95
Non-Participating Jurisdictions' NFIP Status – Woodford County

Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation	Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation
Bay View Gardens	09/17/2011	09/17/2010	No	Spring Bay	06/04/1980	09/17/2010	No
Congerville	01/07/2011	09/17/2010	No	Washburn	07/02/1987	11/04/2010	No
Kappa	04/30/2014	09/17/2010	No				

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.

Jurisdictions that participate in the NFIP are expected to adopt and enforce floodplain management regulations. In Woodford County, all the NFIP participating jurisdictions have adopted the State of Illinois model floodplain ordinance. This ordinance goes above and beyond NFIP minimum standards and has much more restrictive floodway regulations. As a result, all of the NFIP participating jurisdictions are in compliance with NFIP requirements.

Participating jurisdictions will continue to comply with the NFIP through the implementation of mitigation projects and activities that enforce this ordinance to reduce future flood risks to new construction within SFHAs. At this time no new construction is planned within the base floodplain. Continued compliance with NFIP requirements for those jurisdictions that participated in the Plan update are addressed in the Mitigation Action Tables found in Section 4.7.

What is the probability of future flood events occurring?

General Floods

Woodford County has had 27 verified occurrences of general flooding between 1950 and 2017. With 27 occurrences over the past 68 years, the probability or likelihood of a general flood event occurring in Woodford County in any given year is 40%. However, gaps in the flood data between 1950 and 1995 cause a distortion in this probability. If only the events recorded in NOAA's Storm Events Database and supplemented by U.S. Army Corps of Engineer river gauge data are analyzed, then there have been 14 verified occurrences of general flooding between 1995 and 2017. With 14 events in 23 years, the probability of a general flood event occurring in any given year goes up to 61%. There was five years over the past 23 years where two or more general flood events occurred. This indicates that the probability or likelihood that more than one general flood event may occur during any given year within the County 22%.

Flash Floods

There have been 28 verified flash flood events between 1990 and 2017. With 28 occurrences over the past 28 years, Woodford County should expect at least one flash flood event each year. There were 9 years over the past 28 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 32%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from floods.

Several factors including topography, precipitation and an abundance of rivers and streams make Illinois especially vulnerable to flooding. According to the Illinois State Water Survey's Climate Atlas of Illinois, since the 1940s Illinois climate records have shown an increase in heavy precipitation which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?

Yes. Woodford County and the participating municipalities are vulnerable to the dangers presented by flooding. Precipitation levels and topography are factors that cumulatively make virtually the entire County susceptible to some form of flooding. Flooding occurs along the floodplains of all the streams within the County as well as outside of the floodplains in low-lying areas where drainage problems occur. Since 2008, Woodford County has experienced 10 general floods and 20 flash flood events.

Figure 96 details the number of *recorded* flash flood events by participating jurisdiction. Twenty-six of the 27 general flood events impacted either the entire County or a large portion of it and were not location specific. The remaining general flood event took place in Roanoke.

Figure 96
Verified Flash Flood Events by Participating Jurisdiction – Woodford County

Participating Municipality	Number	Year
Eureka	---	
Germantown Hills	1	2008
Roanoke	2	2008, 2008
countywide	6	1990, 1990, 1993, 1993, 2002, 2003
western portion of the County	5	2010, 2013, 2013, 2015, 2017
northern portion of the County	2	2013, 2015
northeastern portion of the County	4	2010, 2011, 2013, 2013
eastern portion of the County	2	2009, 2015
southern portion of the County	2	2013, 2017
southeastern portion of the County	1	2014
central portion of the County	4	2010, 2011, 2013, 2015

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

As described in Section 1.3 Land Use and Development Trends, substantial changes in land use (from forested, open and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No substantial increases in residential or commercial/industrial developments are expected within the next five years.

What impacts resulted from the recorded floods?

Floods as a whole have caused a *minimum* of $36.9 million in property damages. The following provides a breakdown by category.

Flood Fast Facts – Impacts/Risk

General Flood Impacts

- Total Property Damage: ***$18,320,000***[^]
- Infrastructure/Critical Facilities Damage[*]: ***n/a***
- Total Crop Damage: ***$250,000***[^]
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flash Flood Impacts

- Total Property Damage: ***$21,155,000***
- Infrastructure/Critical Facilities Damage[*]: ***n/a***
- Total Crop Damage: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***n/a***

Flood Risk/Vulnerability to:

- Public Health & Safety – General Flooding: ***Low***
- Public Health & Safety – Flash Flooding: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

[*] Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

[^] Includes $2.5 million in property damages and $250,000 in crop damages sustained as a result of the 1974 flood event and represents losses incurred by Tazewell, Woodford & Peoria counties. A breakdown by county was not available.

In comparison, the State of Illinois averages an estimated $257 million annually in property damage losses and four fatalities per year, making flooding the single most financially damaging natural hazard in Illinois.

General Floods

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1950 and 2017, four of the 27 general flood events caused approximately $18.3 million in property damages and $250,000 in crop damages. Included in the totals are $2.5 million in property damages and $250,000 in crop damages sustained as a result of the 1974 flood event and represents losses sustained in Woodford, Woodford and Peoria counties. A breakdown by county was unavailable. Damage information was either unavailable or none was recorded for the remaining 23 reported occurrences.

No injuries or fatalities were reported as a result of any of the recorded events.

Flash Floods

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1990 and 2017, six of the 28 flash flood events caused approximately $21.1 million in property damages. Damage information was either unavailable or none was recorded for the remaining 21 reported occurrences.

No injuries or fatalities were reported as a result of any of the recorded events.

What impacts have resulted from historic floods?

Historic flood events documented in the City of Peoria's 1983 Hazard Vulnerability Analysis and contained in the 2010 Plan indicate that flooding occurred in Woodford County in 1933, 1943 and 1944. **Appendix K** details the impacts associated with these historic floods.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly and those with specific allergies.

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in a foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Infrastructure and critical facilities are also vulnerable to flooding. Roadways, culverts and bridges can be weakened by floodwaters and have been known to collapse under the weight of a vehicle. Buried power and communication lines are also vulnerable to flooding. Water can infiltrate lines and cause disruptions in power and communication.

What is the level of vulnerability to public health and safety from floods?

While both general and flash floods occur on a fairly regular basis within the County, the number of injuries and fatalities is very low. In terms of the risk or vulnerability to public health and safety from *general floods*, the risk is seen as low. However, over half of the recorded flood events were the result of flash flooding. Since there is very little warning associated with flash flooding the risk to public health and safety from *flash floods* is elevated to medium.

Are there any repetitive loss structures within Woodford County?

Yes. According to information obtained from IEMA, there are two repetitive loss structure located in unincorporated Woodford County and eleven severe repetitive loss structures located in Spring Bay and unincorporated Woodford County. As described previously, FEMA defines a "repetitive loss structure" as an NFIP-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. A "severe repetitive loss structure" as defined by FEMA is an NFIP-insured structure that has received four or more flood insurance claim payments of more than $5,000 each or two flood insurance claim payments that exceed the fair market value of the insured structure on the day before each loss.

Figure 97 identifies the repetitive flood loss structures by participating jurisdiction and provides the total flood insurance claim payments. The exact location and/or address of the insured structures are not included in this Plan to protect the owners' privacy. According to IEMA, there have been 66 flood insurance claim payments totaling $1.5 million for the 13 repetitive flood loss structures.

Figure 97
Repetitive Flood Loss Structures – Woodford County

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Repetitive Loss Properties						
Unincorporated Woodford County	single family	2	4	$143,523.56	$1,430.00	$144,953.56
Severe Repetitive Loss Properties						
Spring Bay	single family	1	6	$95,214.73	$0.00	$95,214.73
Unincorporated Woodford County	single family	10	56	$1,176,996.72	$93,810.68	$1,270,807.40
Total:		**13**	**66**	**$1,415,735.01**	**$95,240.68**	**$1,510,975.69**

Source: Illinois Emergency Management Agency

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?
Yes. **Figure 98** identifies the number of existing residential structures by participating jurisdiction located within a base or 500-year floodplain. These counts were prepared by Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant using the effective DFIRMs.

Figure 98
Existing *Residential Structures* Located within a Floodplain of a Participating Municipality – Woodford County

Participating Jurisdiction	Number of Residential Structures	Participating Jurisdiction	Number of Residential Structures
Eureka	12	Roanoke	11
Germantown Hills	0	Unincorp. Woodford County	213

Source: FEMA DFIRMs

Aside from key roads and bridges and buried power and communication lines, Eureka and Roanoke both have specific infrastructure/critical facilities located within or adjacent to a floodplain. The following provides a description of each.

- *Eureka*: A majority of the City's wastewater treatment plant and part of the City's drinking water facility are located in the Walnut Creek base floodplain while Eureka Middle School is located adjacent to the Walnut Creek base floodplain.
- *Roanoke*: The village hall/ambulance building is located in the West Branch Panther Creek base floodplain.

The original water treatment plant for Roanoke was located in the base floodplain of West Branch Panther Creek. However, in 2018 the Village constructed a new treatment plant outside of any floodplains.

While approximately seven percent of the land area in Woodford County lies within the base floodplain and is susceptible to riverine flooding, topography makes almost the entire County 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 a floodplain and are not easily identifiable.

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be medium to high based on: (a) the frequency and severity of recorded flood events within the County; (b) the County's proximity to the Illinois River; (c) the fact that most of the County is vulnerable to flash flooding; and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of a floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?
The answer to this question depends on the type of flooding being discussed.

Riverine Flooding
In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions is low as long as the existing floodplain

ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

Flash Flooding

In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable *residential structures* located within the *participating municipalities* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in Woodford County.

The purpose of providing an estimate is to help residents and municipal officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a ***general idea of the magnitude of the potential damage*** that could occur from a flood event in each of the municipalities.

Assumptions

To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Assumption #1

A riverine flood event will impact vulnerable residential structures within each municipality.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. While flash flooding has occurred more frequently and has caused more recorded flood damages in the County than riverine flooding, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the floodplain of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Assumption #2

All base floodplains within a municipality will flood and experience the same degree of flooding.

Scope of the Flood Event. To establish the number of vulnerable residential structures (potentially-damaged housing units), the scope of the riverine flood event within each municipality must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along the floodplains for each river, stream and creek.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river, stream or creek. However, for this scenario, it was decided that:

- ❖ all rivers, streams and creeks with floodplains would overflow their banks, and
- ❖ the floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

These assumptions result in the following conditions for each participating municipality:

- ➢ *Germantown Hills*: No rivers, streams or creeks are located within or adjacent to the village boundaries and therefore no residential flooding would occur;
- ➢ *Eureka*: Walnut Creek and its tributaries would overflow their banks and flood portions of the City.;
- ➢ *Roanoke*: West Branch Panther Creek and its tributaries would overflow their banks and flood portions of the Village.

Assumption #3

The number of existing residential structures located within the base floodplain(s) in each municipality will be used to determine the number of potentially-damaged housing units.

Number of Potentially-Damaged Housing Units. Since this scenario assumes that all the floodplains within a municipality will experience the same degree of flooding, the number of existing residential structures located within the floodplain(s) of each municipality can be used to determine the number of potentially-damaged housing units. **Figure 98** identifies the total number of existing residential structures located within the floodplains(s) of each municipality. These counts were prepared by the Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant.

Assumption #4

The average market value for a residential structure in each municipality will be used to determine the value of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units. Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically, when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the averaged assessed value and multiplying that number by three (the assessed value of a structure in Woodford County is approximately one-third of the market value). **Figure 99** provides a sample calculation. The total assessed value is based on 2016 tax assessment information provided by the Woodford County Supervisor of Assessments. **Figure 100** provides the average assess value and average market value for each participating municipality.

Figure 99
Sample Calculation of Average Assessed Value & Average Market Value - Eureka

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction÷ Total Housing Units in the Jurisdiction = Average Assessed Value

Eureka: $58,089,549 ÷ 2,023 housing units = $28,714.55709

Average Market Value

Average Assessed Value x 3 = Average Market Value
(Rounded to the Nearest Dollar)

Eureka: $28,714.55709 x 3 = $86,143.67128
($86,144)

Figure 100
Average Market Value of Housing Units by Participating Municipality – Woodford County

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2016)	Total Housing Units (2010)	Average Assessed Value (Raw)	Average Market Value (Raw)	Average Market Value (Rounded)
Eureka	$58,089,549	2,023	$28,714.55709	$86,143.67127	$86,144
Germantown Hills	$81,900,782	1,218	$67,242.02135	$201,726.06405	$201,726
Roanoke	$22,289,797	867	$25,709.10842	$77,127.32526	$77,127

Source: Woodford County Supervisor of Assessments.

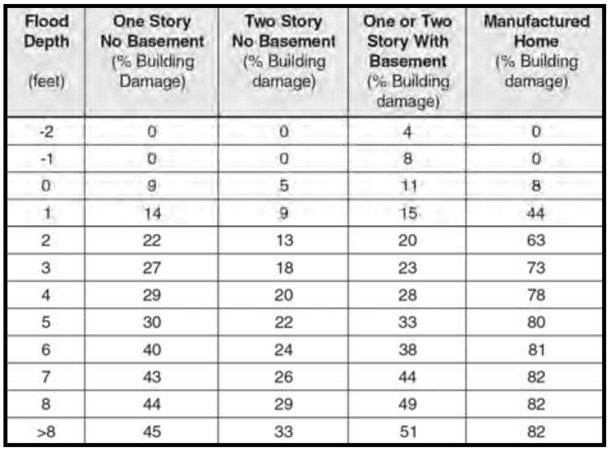
Assumption #5

The potentially-damaged housing units are one or two-story homes with basements and the flood depth is two foot.
Structural Damage = 20%
Content Damage = 30%

Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one-story home without a basement, one or two-story home with a basement, etc.) and (b) the flood depth. **Figure 101** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

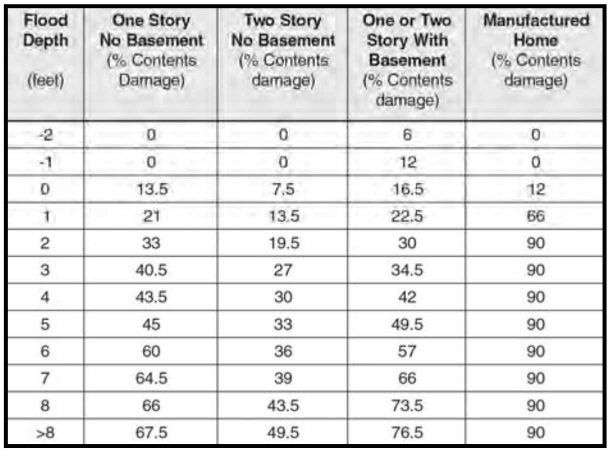
Figure 101
FEMA Flood Loss Estimation Tables

Flood Building Loss Estimation Table



Flood Depth (feet)	One Story No Basement (% Building Damage)	Two Story No Basement (% Building damage)	One or Two Story With Basement (% Building damage)	Manufactured Home (% Building damage)
-2	0	0	4	0
-1	0	0	8	0
0	9	5	11	8
1	14	9	15	44
2	22	13	20	63
3	27	18	23	73
4	29	20	28	78
5	30	22	33	80
6	40	24	38	81
7	43	26	44	82
8	44	29	49	82
>8	45	33	51	82

Flood Content Loss Estimation Table



Flood Depth (feet)	One Story No Basement (% Contents Damage)	Two Story No Basement (% Contents damage)	One or Two Story With Basement (% Contents damage)	Manufactured Home (% Contents damage)
-2	0	0	6	0
-1	0	0	12	0
0	13.5	7.5	16.5	12
1	21	13.5	22.5	66
2	33	19.5	30	90
3	40.5	27	34.5	90
4	43.5	30	42	90
5	45	33	49.5	90
6	60	36	57	90
7	64.5	39	66	90
8	66	43.5	73.5	90
>8	67.5	49.5	76.5	90

Source: FEMA, Understanding Your Risks: Identifying Hazards and Estimating Losses

For this scenario it is assumed that the potentially-damaged housing units are one or two-story homes with basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the ***structure*** is estimated to be 20% and the expected percent damage sustained by the structure's ***contents*** is estimated to be 30%.

Potential Dollar Losses

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage (20%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 102** provides a sample calculation.

Figure 102
Structure: **Potential Dollar Loss Sample Calculation - Eureka**

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage =
Average Structural Damage per Housing Unit
Eureka: $86,144 x 20% = $17,228.80 per housing unit

Average Structural Damage x Number of Potentially-Damaged Housing
Units within the Jurisdiction = *Structure* Potential Dollar Losses
(Rounded to the Nearest Dollar)

Eureka: $17,228.80 per housing unit x 12 housing unit = $206,745.60
($206,746)

Next the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage (30%) to get the average content damage per unit. Then take the average content damage per unit and multiply that by the number of potentially-damaged housing units. **Figure 103** provides a sample calculation.

Figure 103
Content **– Potential Dollar Loss Sample Calculation - Eureka**

½ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage =
Average Content Damage per Housing Unit
Eureka: ½ ($86,144) x 30% = $12,921.60 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing
Units within the Jurisdiction = *Content* Potential Dollar Losses
(Rounded to the Nearest Dollar)

Eureka: $12,921.60 per housing unit x 12 housing unit = $155,059.20
($155,059)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure 104** provides a breakdown of the total potential dollar losses by municipality.

This assessment illustrates the *potential residential dollar losses* that should be considered when municipalities are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences within Eureka and Roanoke would be expected to ***range from $297,000 to $361,800***. Germantown Hills does not have any residences considered vulnerable to riverine flooding in this scenario.

Figure 104
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Participating Municipality – Woodford County

Participating Jurisdiction	Average Market Value (2016)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Eureka	$86,144	12	$206,746	$155,059	$361,805
Germantown Hills	$201,726	0	$ 0	$ 0	$ 0
Roanoke	$77,127	11	$169,679	$127,260	$296,939

Vulnerability of Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. ***As a result, the cumulative monetary impacts to businesses and infrastructure can far exceed the cumulative monetary impacts to residences***. While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

In terms of specific infrastructure vulnerability, Eureka's wastewater treatment plant and drinking water facility are partially located in the ***base floodplain*** of Walnut Creek.
In terms of specific infrastructure vulnerability, the following are located within a ***base floodplain***:

- *Eureka*: wastewater treatment and drinking water facility; and
- *Roanoke*: village hall/ambulance building.

It should be noted that in 2018 Roanoke constructed a new water treatment plant located outside of any floodplains. No other above-ground infrastructure within the participating jurisdictions, other than key roads and bridges, were identified as being vulnerable to riverine flooding.

Considerations

While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions have been made aware through the planning process of the impacts that can result from flash flood events. Woodford County has experienced multiple events over the last 20 to 30 years as have adjoining and nearby counties. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

Woodford County

Figure 88
(Sheet 1 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
4/6/1950 thru 5/13/1950	n/a	Illinois River	western portion of the county	25.0 feet 4/29/1950	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3/15/1962 thru 4/14/1962	n/a	Illinois River	western portion of the county	23.7 feet 3/26/1962	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
4/23/1970 thru 6/27/1970	n/a	Illinois River	western portion of the county	25.9 feet 5/19/1970	n/a	n/a	n/a	n/a	n/a	n/a	n/a	heavy rain fell over much of central Illinois for 3 to 8 consecutive days washing out crops and causing extreme soil erosion & ponding
3/14/1973 thru 5/19/1973	n/a	Illinois River	western portion of the county	24.4 feet 4/25/1973	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	**$0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 2 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
5/19/1974 thru 7/8/1974	n/a	Illinois River area rivers, streams & creeks	countywide	22.2 feet 6/26/1974	n/a	n/a	n/a	n/a	n/a	$143,000 $2,500,000[§]	$250,000[§]	*Event Description Provided Below*
this event was part of a federally-declared disaster (Declaration #438)							2 bridges in Woodford County were damaged beyond repair and had to be replaced					
2/25/1976 thru 3/23/1976	n/a	Illinois River	western portion of the county	23.6 feet 3/9/1976	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
3/7/1979 thru 5/17/1979	n/a	Illinois River area rivers, streams & creeks	countywide	28.7 feet 3/23/1979 3rd highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #583)***
5/28/1980 thru 6/5/1980	n/a	area rivers, streams & creeks	countywide	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- 14 inches of rain fell in a week flooding farm fields, buildings & roads - on a farm near Eureka about 300 pigs had to swim to safety							- many bridges and road were washed out in the County					
Subtotal:								**0**	**0**	**$2,823,000[§]**	**$250,000[§]**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

[§] The property damage total of $2.5 million and the crop damage total of $250,000 for the 1974 flood event represent losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Woodford County

Figure 88
(Sheet 3 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
2/24/1982 thru 5/2/1982	n/a	Illinois River	western portion of the county	27.1 feet 3/23/1982 7th highest crest on record	67	n/a	n/a	n/a	n/a	$180,000	n/a	
12/5/1982 thru 1/7/1983	n/a	Illinois River Mackinaw River area rivers, streams & creeks	countywide	27.4 feet 12/9/1982 6th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #674)***
4/3/1983 thru 5/22/1983	n/a	Illinois River area rivers, streams & creeks	countywide	25.7 feet 4/17/1983	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	**$0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 4 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
2/26/1985 thru 4/15/1985	n/a	Illinois River Mackinaw River area rivers, streams & creeks	countywide	28.4 feet 3/7/1985 4th highest crest on record	600+	100+	roads closed	n/a	n/a	$1,297,000	n/a	***this event was part of a federally-declared disaster (Declaration #735)***
3/24/1993 thru 5/10/1993	n/a	Illinois River	western portion of the county	23.16 feet 4/24/1993	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
5/14/1995 thru 6/15/1995	n/a	Illinois River area rivers, streams & creeks	countywide	24.91 feet 6/2/1995	n/a	n/a	n/a	n/a	n/a	n/a	n/a	numerous homes were damaged or destroyed by flooding ***along the Illinois River***
2/21/1997 thru 3/6/1997	6:00 p.m.	Illinois River	western portion of the county	26.85 feet 3/3/1997 10th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	several homes just south of Spring Bay were flooded
Subtotal:								**0**	**0**	**$1,297,000**	**$0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 5 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
5/11/2002 thru 5/13/2002	9:00 p.m.	area rivers, streams & creeks	countywide	n/a	2	n/a	n/a	n/a	n/a	n/a	n/a	- runoff caused flood problems countywide, especially in the Eureka & Roanoke areas - 2 families were evacuated from their homes due to rising waters
5/14/2002 thru 5/27/2002	11:00 p.m.	Illinois River Mackinaw River	countywide	25.25 feet 5/18/2002	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
9/16/2008 thru 10/5/2008	n/a	Illinois River	western portion of the county	26.99 feet 9/20/2008 9th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #1800)***
3/2/2009 thru 6/6/2009	n/a	Illinois River	western & northern portion of the county	27.92 feet 3/14/2009 5th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	**$0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 6 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
3/10/2009	12:00 a.m.	area rivers, streams & creeks	Roanoke	n/a	n/a	n/a	several streets covered with water	n/a	n/a	n/a	n/a	
4/18/2013 thru 4/19/2013	9:00 a.m.	area rivers, streams & creeks	northwest & western portions of the county	n/a	n/a	n/a	See Event Description	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - very heavy rainfall produced up to 8 inches of rain causing both flash flooding & general flooding - nearly every road in the flooded area was impassable - most of the creeks and streams stayed in flood and most roads remained closed until the 19th												
Subtotal:								**0**	**0**	**$0**	**$0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 7 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
4/19/2013 thru 5/8/2013	10:00 a.m.	Illinois River	western portion of the county	29.32 feet 4/23/2013 highest crest - flood of record at this gauge	276 (See Event Description)	2 (See Event Description)	fire station, numerous roads (See Event Description)	n/a	n/a	$14,200,000	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - 276 homes, 2 businesses, a fire station and numerous roads along the Illinois River in Spring Bay and Bay View Gardens were inundated and suffered damage due to record river levels - The Woodford County EMA Director identified $500,000 in damages to homes and businesses as a result of the flooding												
5/27/2013	6:30 a.m.	area rivers, streams & creeks	northeast portion of the county	n/a	n/a	n/a	numerous roads	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- torrential rainfall produced 2.5 to 4 inches of rain causing flash flooding and general flooding of streets in Minonk, parts of Interstate 39 and numerous rural roads - most roads were impassable and closed through the morning with flooding subsiding by early afternoon												
6/15/2015 thru 7/31/2015	n/a	Illinois River	western portion of the county	27.06 feet 7/1/2015 8th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$14,200,000**	**$0**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 8 of 9)
General Flood Events
1950 – 2017

Date(s)	**Start Time**	**Body of Water**	**Location(s) Impacted**	**Magnitude**				**Injuries**	**Fatalities**	**Property Damages**	**Crop Damages**	**Description**
				Flood Crest Illinois River Peoria[1]	**Impacted**							
					Homes	**Business**	**Infra-structure**					
12/27/2015 thru 1/20/2016	n/a	Illinois River	western portion of the county	26.46 feet 1/3/2016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
4/29/2017 thru 4/30/2017	10:45 p.m.	area rivers, streams & creeks	western portion of the county	n/a	n/a	n/a	numerous streets, roads & highways	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- heavy rainfall of 2.75 to 4 inches in a two-hour period during the evening on already saturated ground caused both flash flooding & general flooding - streets in Germantown Hills, Metamora & Roanoke were impassable as well as numerous rural roads and highways in the county, including parts of IL Route 89 southwest of Washburn which was closed due to high water and flood debris - an additional 0.5 to 1 inch during the early morning hours of the 30th kept many roads flooded - flood waters subsided by early afternoon on the 30th												
Subtotal:								**0**	**0**	**$0**	**0**	

---

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Woodford County

Figure 88
(Sheet 9 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted	Magnitude				Injuries	Fatalities	Property Damages	Crop Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted							
					Homes	Business	Infra-structure					
6/17/2017 thru 6/18/2017	10:45 p.m.	area rivers, streams & creeks	southern portion of the county	n/a	n/a	n/a	numerous streets, roads & highways	n/a	n/a	n/a	n/a	*Event Description Provided Below*
- torrential rainfall of 3 to 5 inches fell within a 90-minute period causing both flash flooding & general flooding - most county highways were impassable - additional rainfall during the late evening/early morning hours kept many roads flooded - flood waters subsided by daybreak on the 18th												
Subtotal:								**0**	**0**	**$0**	**0**	
GRAND TOTAL								**0**	**0**	**$18,320,000[§]**	**$250,000[§]**	

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

[§] The property damage total includes $2.5 million and the crop damage total includes $250,000 from the 1974 flood event and represents losses sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county was not available.

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Weather Service, River Observations, North Central River Forecast Center, Illinois River at Peoria.
Tri-County Mitigation Action Committee member responses to the Natural Hazard Events Questionnaire.
United States Army Corps of Engineers, RiverGages.com, Data Mining.
Woodford County Hazard Identification and Risk Assessment Packet.

Woodford County

Figure 89
(Sheet 1 of 4)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
6/20/1990	4:00 a.m.	countywide	n/a	n/a	n/a	n/a	
6/29/1990	8:30 a.m.	countywide	n/a	n/a	n/a	n/a	
8/15/1993	8:45 p.m.	countywide	n/a	n/a	n/a	n/a	numerous road and basements were flooded
8/23/1993	5:45 p.m.	countywide	n/a	n/a	n/a	n/a	street flooding occurred
7/21/2001	8:32 a.m.	Low Point Cazenovia	n/a	n/a	n/a	n/a	- a section of IL Rte. 89 from Cazenovia to Low Point was flooded
5/11/2002	8:00 p.m.	countywide	n/a	n/a	n/a	n/a	numerous roads were flooded and several creeks went out of their banks
6/26/2002	12:30 a.m.	Minonk	n/a	n/a	n/a	n/a	numerous streets and basements were flooded
7/9/2003 thru 7/10/2003	11:00 p.m.	countywide	n/a	n/a	n/a	n/a	many streets and roads were flooded
9/13/2008	5:43 p.m.	Roanoke^	n/a	n/a	n/a	n/a	- ***this event was part of a federally-declared disaster (Declaration #1800)*** - County Highway 13 one mile south of the Village was closed due to high water
9/13/2008	8:00 p.m.	Spring Bay	n/a	n/a	$90,000	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #1800)*** - several homes flooded, prompting boat evacuations - Funks Run Creek overflowed its banks and flooded streets in the Village near Mill Point Park - some small levees along the creek also gave way, aggravating the flooding in that area							
9/13/2008	8:00 p.m.	Roanoke	n/a	n/a	$55,000	n/a	- *Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #1800)*** - Panther Creek rose out of its banks and flooded Main St. and Mill St. - 1.5 feet of water came into the American Legion - numerous other homes and businesses had water in their basements							
9/13/2008	8:26 p.m.	Germantown Hills Metamora	n/a	n/a	n/a	n/a	- ***this event was part of a federally-declared disaster (Declaration #1800)*** - numerous roads had water flowing across them
5/13/2009 thru 5/14/2009	11:00 p.m.	eastern portion of the county	n/a	n/a	n/a	n/a	most roads in the eastern part of the County were flooded
Subtotal:			**0**	**0**	**$145,000**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Woodford County

Figure 89
(Sheet 2 of 4)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
5/25/2010	1:00 p.m.	northeast portion of the county	n/a	n/a	n/a	n/a	- most rural roads were inundated, particularly near Minonk and north of Benson, including IL Rte. 117
6/23/2010	6:45 p.m.	western & central portions of the county	n/a	n/a	n/a	n/a	- many rural roads were impassable, including portions of IL Rte. 116 & IL Rte. 117 *Metamora/Eureka/Roanoke* - many streets were flooded
6/21/2011 thru 6/22/2011	7:15 p.m.	central portion of the county	n/a	n/a	n/a	n/a	- several rural roads were impassable during the late evening *Eureka/Roanoke* - significant street flooding was reported, including parts of IL Rte. 117 & US Rte. 24 in Eureka & IL Rte. 116 in Roanoke
6/22/2011	8:00 p.m.	northeastern portion of the county	n/a	n/a	n/a	n/a	- nearly all rural roads were impassable - parts of Interstate 39 between Minonk & El Paso had standing water
4/17/2013 thru 4/18/2013	7:15 p.m.	northeastern & central portions of the county	n/a	n/a	$13,000,000	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - every road from the central to northeast part of the County was impassable *Minonk area* - roads near Minonk were flooded with more than a foot of flowing water *Eureka/Roanoke/Metamora* - hundreds of homes and businesses in Roanoke, Eureka and Metamora were flooded - several water rescues had to be made							
Subtotal:			**0**	**0**	**$13,000,000**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Woodford County

Figure 89
(Sheet 3 of 4)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
4/17/2013 thru 4/18/2013	10:00 p.m.	western portion of the county	n/a	n/a	$5,000,000	n/a	- ***this event was part of a federally-declared disaster (Declaration #4116)*** - hundreds of homes were damaged in northwest & western parts of the County - all roads were impassable - water rescues were made
5/26/2013 thru 5/27/2013	10:30 p.m.	northern and northeastern portion of the county	n/a	n/a	n/a	n/a	- numerous rural roads and parts of Interstate 39 were impacted by flooding with most roads impassable and closed through the night *Minonk* - streets were flooded
5/31/2013	4:00 p.m.	southern portion of the county	n/a	n/a	n/a	n/a	numerous rural roads were inundated and impassable as a result of the flash flooding
6/24/2013	4:00 a.m.	western portion of the county	n/a	n/a	$3,000,000	n/a	- several state highways were impassable, including IL Routes 26, 89 & 116 *Spring Bay/Germantown Hills* - streets and houses were flooded
5/11/2014	7:00 p.m.	southeastern portion of the county	n/a	n/a	n/a	n/a	- IL Rte. 251 and County Road 9 west of Kappa were inundated with water 12 to 18 inches deep - roads were closed for nearly 3 hours
6/7/2015	8:00 p.m.	western portion of the county	n/a	n/a	n/a	n/a	- secondary roads from Low Point to Benson and near Bay View Gardens were impassable - parts of IL Route 26 were also flooded
6/10/2015 thru 6/11/2015	7:30 p.m.	northern portion of the county	n/a	n/a	n/a	n/a	- IL Route 89 from Low Point through Washburn to the Tazewell/Marshall County Line were closed due to high water - most rural roads in the northern part of the County were impassable
Subtotal:			**0**	**0**	**$8,000,000**	**$0**	

^ Flash flood event verified in the vicinity of this location(s).

Woodford County

Figure 89
(Sheet 4 of 4)
Flash Flood Events
1990 – 2017

Date(s)	Start Time	Location(s) Impacted	Injuries	Fatalities	Property Damages	Crop Damages	Magnitude/Description
6/18/2015	2:30 p.m.	central & eastern portions of the county	n/a	n/a	$10,000	n/a	- many rural roads were impassable - a section of railroad track of the Toledo, Peoria & Western Railway east of Eureka was washed out
4/29/2017	7:15 p.m.	western portion of the county	n/a	n/a	n/a	n/a	- numerous rural roads were impassable *Germantown Hills/Roanoke/Metamora* - streets were impassable *Washburn area* - IL Route 89 south of the Village was closed due to high water and flood debris
6/17/2017	8:40 p.m.	southern portion of the county	n/a	n/a	n/a	n/a	most county highways were impassable
Subtotal:			**0**	**0**	**$10,000**	**$0**	
GRAND TOTAL:			**0**	**0**	**$21,155,000**	**$0**	

⅄ Flash flood event verified in the vicinity of this location(s).

Sources: NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.

3.3.3 PARTICIPATING PEORIA COUNTY JURISDICTIONS

HAZARD PROFILE

The following identifies past occurrences of floods; details the severity or extent of each event (if known); identifies the locations potentially affected; and estimates the likelihood of future occurrences.

When has flooding occurred previously? What is the extent of these previous floods?

Figures 105 and **106**, located at the end of this subsection, summarize the previous occurrences as well as the extent or magnitude of flood events recorded in the participating Peoria County jurisdictions. The flood events are separated into two categories: general floods (riverine and shallow/overland) and flash floods.

Flood Fast Facts – Occurrences

Number of General Floods Reported (1950 – 2017): ***29***
Number of Flash Floods Reported (1960 – 2017): ***21***
Most Likely Month for General Floods to Occur: ***March***
Most Likely Month for Flash Floods to Occur: ***June***
Most Likely Time for Flash Floods to Occur: ***Evening***
Number of Federal Disaster Declarations Related to General and Flash Flooding: ***7***

General Floods

NOAA's Storm Events Database, NOAA's Storm Data Publications, the U.S. Army Corps of Engineers' river gauge data and information included in the 2010 Plan have documented 29 occurrences of general flooding in the participating Peoria County jurisdictions between 1950 and 2017. Included in the 29 general flood events are seven events that contributed to six separate federally-declared disasters for Peoria County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Based on historical gauge data, the record setting Illinois River flood in this area occurred on April 23, 2013 when the Illinois River crested at 29.32 feet at Peoria. The second and third highest crest at this location occurred in 1943 and 1979 respectively.

Flash Floods

NOAA's Storm Events Database, NOAA's Storm Data Publications and information included in the 2010 Plan documented 21 reported occurrences of flash flooding in the participating Peoria County jurisdictions between 1960 and 2017. Included in the 21 flash flood events are two events that contributed to two separate federally-declared disasters in Peoria County. One declared disaster, Declaration #4116, included both general and flash flooding events.

Figure 107 charts the reported occurrences of flooding by month. Of the 29 general flood events, 16 (55%) began in March, April and May making this the peak period for general floods in the participating Peoria County jurisdictions. Of the 16 events, six (37.5%) began in March making this the peak month for general flooding. There were 20 events that spanned two or more months; however, for illustration purposes only the month the event started in is graphed.

In comparison, 14 of the 21 flash flood events (67%) took place April, May and June making this the peak period for flash floods. Of the 14 events, nine (64%) occurred in June making this the peak month for flash flooding.

Figure 107
Graph: Flood Events by Month
Participating Peoria County Jurisdictions

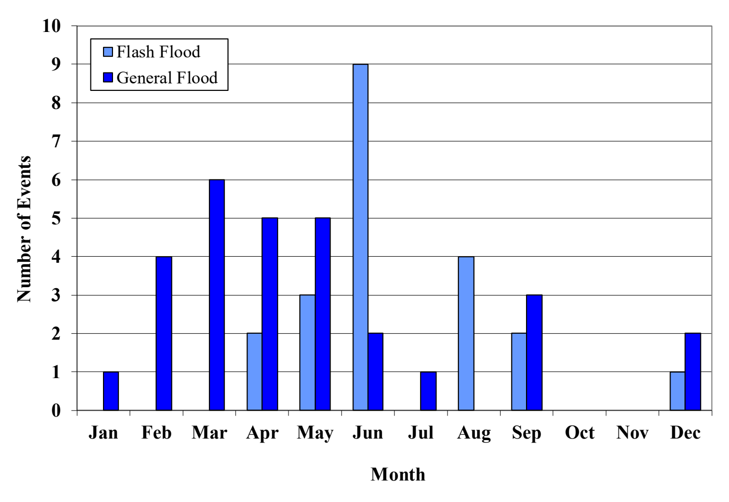
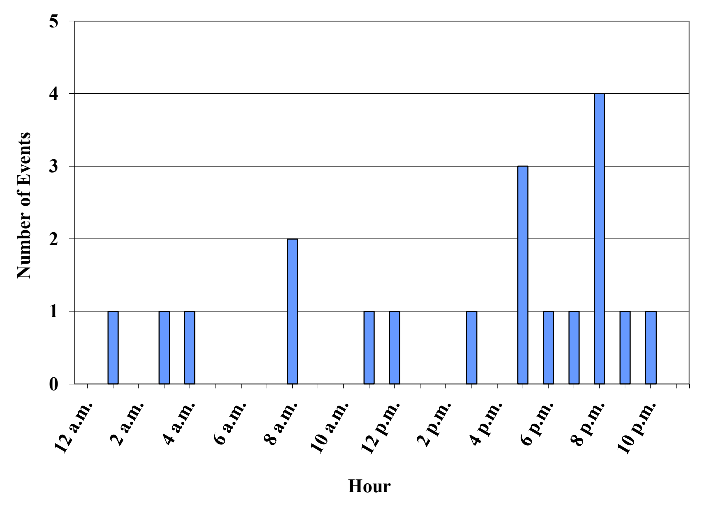


Figure 108 charts the reported occurrences of flash flood events by hour. Of the 21 occurrences, start times were unavailable for two events. Of the remaining 19 flash flood events with recorded times, approximately 68% occurred during the p.m. hours, with 11 of the events (52%) taking place between 5:00 p.m. and 11:00 p.m. In comparison 60% of general flood events with recorded times began during the p.m. hours.

Figure 108
Flash Flood Events by Hour
Participating Peoria County Jurisdictions



What locations are affected by floods?

While only Bartonville, Chillicothe, Peoria, Peoria Heights and the GPSD are affected by general flooding, all of the participating Peoria County jurisdictions can be impacted by overland and flash flooding because of the topography and seasonally high water table of the area. In Peoria County 8.5% of the area in the County is designated as being within the base floodplain and susceptible to riverine floods (a breakdown by jurisdiction was not available.) The *2013 Illinois Natural Hazard Mitigation Plan* classifies Peoria County's hazard rating for floods as "high."

Figure 109 identifies the floodplains in Peoria County, including the participating jurisdictions. This map is based on the available FIRMs that became effective between 1977 and 1983. A FIRM has not yet been developed for Hanna City. **Appendix J** contains the FIRMs for the participating municipalities. Bartonville, Chillicothe, Peoria (including the GPSD) and Peoria Heights are susceptible to riverine flooding because of their proximity to floodplains.

Figure 110 identifies the bodies of water within or immediately adjacent to participating municipalities that are known to cause flooding or have the potential to flood. Water bodies with Special Flood Hazard Areas located within a participating jurisdiction (as identified on the DFIRMs) are identified in bold.

Figure 110
Bodies of Water Subject to Flooding – Participating Peoria County Municipalities

Participating Jurisdiction	Water Bodies
Bartonville	**Illinois River, Kickapoo Creek, LaMarsh Creek Tributary, Unnamed Tributary B, Unnamed Tributary Kickapoo Creek**
Chillicothe	**Illinois River**
Hanna City	Johnson Run
Peoria	**Big Hollow Creek, Boyd's Hollow Creek, Dry Run Creek, East Peoria Dry Run Creek, Illinois River, Kickapoo Creek, North Fork Tributary Big Hollow Creek, Poppet Hollow Creek, Tributary Big Hollow Creek**
Peoria Heights	**Illinois River**

Source: FEMA DFIRMs

Local officials have reported overland flood issues outside of the base floodplain in most of the participating jurisdictions. This overland flooding is known to impair travel.

What jurisdictions take part in the NFIP?

Participating Jurisdictions

Bartonville, Chillicothe, Peoria and Peoria Heights all take part in the NFIP. **Figure 111** provides information about each jurisdiction's participation in the NFIP, including the date each participant joined, the date of their most recent FIRM, their status in the Community Rating System and the year of their most recently adopted floodplain zoning ordinance. Hanna City has no identified flood hazard boundaries within its corporate limits and is not required to participate. The GPSD and its critical structures are covered under the NFIP through the participation of Bartonville, Peoria, Peoria Heights and Peoria County.

Figure 109
Floodplain Areas in Peoria County

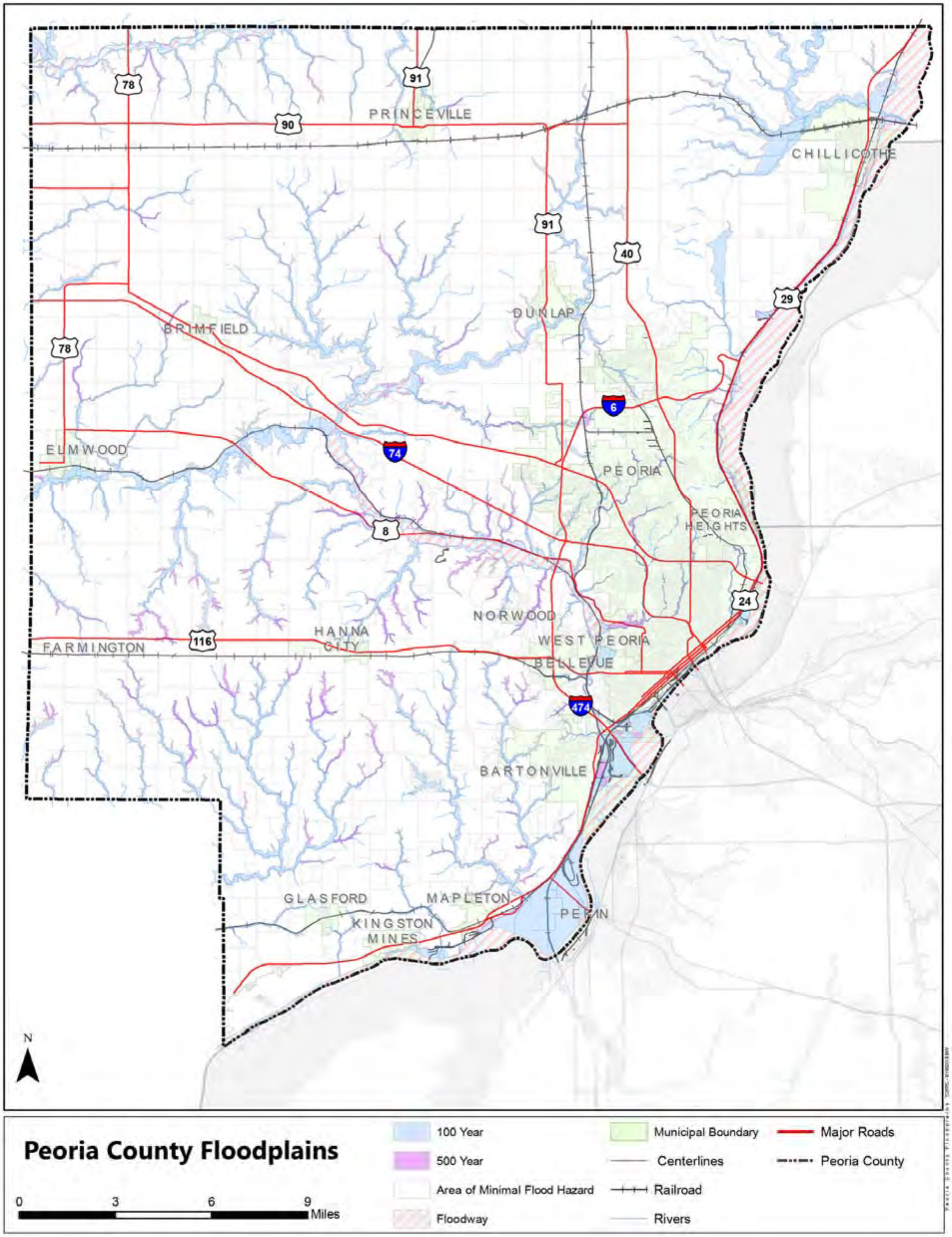


Figure 111
Participating Peoria County Jurisdictions' NFIP Status

Participating Jurisdictions	Participation Date	Current Effective FIRM Date	CRS Participation	Most Recently Adopted Floodplain Zoning Ordinance
Bartonville	03/16/1981	11/02/1983	No	2000
Chillicothe	02/02/1977	02/02/1977	No	1977
Hanna City	---	n/a	No	---
Peoria	02/01/1980	02/01/1980	No	1995
Peoria Heights	11/01/1979	11/01/1979 02/17/2017	No	2017

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.
MAC member responses to List of Existing Planning Documents Questionnaire.

<u>Non-Participating Jurisdictions</u>

Figure 112 provides information on Peoria County and those incorporated municipalities within the County that chose not to participate in the planning process but also take part in the NFIP. Maps have not yet been developed for Bellevue, Brimfield, Elmwood, Glasford, Norwood or Princeville. As a result, they have no identified flood hazard boundaries within their corporate limits and are not required to participate.

At this time Mapleton is not a participant in the NFIP. Since the current effective FIRM identifies Special Flood Hazard Areas within Mapleton's corporate limits, it is presently sanctioned by the Program.

Figure 112
Non-Participating Jurisdictions' NFIP Status – Peoria County

Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation	Jurisdiction	Participation Date	Current Effective FIRM Date	CRS Participation
Peoria County	02/15/1980	06/01/1983	Yes	Kingston Mines	11/16/1983	11/16/1983	No
Dunlap	03/18/1993	n/a	No	West Peoria	09/29/1994	06/01/1983	No

Sources: FEMA, Community Status Book.
FEMA, National Flood Insurance Program Flood Insurance Manual.

Jurisdictions that participate in the NFIP are expected to adopt and enforce floodplain management regulations. With the exception of Chillicothe and possibly Kingston Mines, all of the NFIP participating jurisdictions have adopted the State of Illinois model floodplain ordinance. This ordinance goes above and beyond NFIP minimum standards and has much more restrictive floodway regulations. Chillicothe and Kingston Mines both have floodplain ordinances in place and will most likely adopt the model ordinance when the updated FIRMs become available. As a result, all of the NFIP participating jurisdictions are considered in compliance with NFIP requirements.

Participating jurisdictions will continue to comply with the NFIP through the implementation of mitigation projects and activities that enforce this ordinance to reduce future flood risks to new construction within SFHAs. At this time no new construction is planned within the base floodplain. Continued compliance with NFIP requirements for those jurisdictions that participated in the Plan update are addressed in the Mitigation Action Tables found in Section 4.7.

What is the probability of future flood events occurring?

General Floods

Twenty-two of the 29 general flood events that took place between 1950 and 2017 impacted those participating jurisdictions located adjacent to the Illinois River (Bartonville, Chillicothe, Peoria, Peoria Heights & the GPSD). With 22 occurrences over the past 68 years, the probability or likelihood of a general flood event occurring in these jurisdictions in any given year is 32%. However, gaps in the data between 1950 and 1995 have the potential to cause a distortion in this probability. If only the events recorded in NOAA's Storm Events Database and supplemented by U.S. Army Corps of Engineer river gauge data are analyzed, then nine of the ten verified occurrences of general flooding between 1995 and 2017 impacted the participating jurisdictions located adjacent to the Illinois River. With nine events in 23 years, the probability of a general flood event occurring in any given year goes up slightly to 39%. There were two years over the past 23 years where two or more general flood events occurred. This indicates that the probability or likelihood that more than one general flood event may occur during any given year within the jurisdictions adjacent to Illinois River is 8%.

Given the fact that there are no major rivers, streams or creeks located within or adjacent to Hanna City and only one of the general flood events indicated that it impacted the Village, it is difficult to specifically establish the probability of general flood events occurring in any given year; however, it is estimated to be relatively low.

Flash Floods

There have been 21 verified flash flood events between 1960 and 2017. With 21 occurrences over the past 68 years, the probability or likelihood of a flash flood event occurring in any of the participating Peoria County jurisdictions in any given year is 31%. However, gaps in the data between 1960 and 2002 cause a distortion in this probability. If only the events recorded in NOAA's Storm Events Database are analyzed, then there have been 15 verified occurrences of flash flooding between 2002 and 2017. With 15 events in 16 years, the probability of a flash flood event occurring in any given year goes up to 94%. There were five years over the past 16 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 participating jurisdictions is approximately 56%.

HAZARD VULNERABILITY

The following describes the vulnerability to participating jurisdictions, identifies the impacts on public health and property (if known) and estimates the potential impacts on public health and safety as well as buildings, infrastructure and critical facilities from floods.

Several factors including topography, precipitation and an abundance of rivers and streams make Illinois especially vulnerable to flooding. According to the Illinois State Water Survey's Climate Atlas of Illinois, since the 1940s Illinois climate records have shown an increase in heavy precipitation which has led to increased flood peaks on Illinois rivers.

Are the participating jurisdictions vulnerable to flooding?
Yes. The participating Peoria County jurisdictions are vulnerable to the dangers presented by flooding. Precipitation levels and topography are factors that cumulatively make virtually all the participating jurisdictions susceptible to some form of flooding. Flooding occurs along the floodplains of all the streams within the jurisdictions as well as outside of the floodplains in low-lying areas where drainage problems occur. **Figure 113** details the number of *recorded* general and flash flood events by participating municipality. Since 2008, the participating jurisdictions have experienced seven general floods and 12 flash flood events.

Figure 113
Verified Flood Events by Participating Peoria County Jurisdictions

Participating Municipality	Number of Events	
	General Floods	Flash Floods
Bartonville[1]	23	11
Chillicothe	23	11
Hanna City	1	8
Peoria[2]	28	20
Peoria Heights[2]	21	9

[1] Partially located within the GPSD service area
[2] Located within the GPSD service area

Discussions with the GPSD's Director of Planning and Construction indicates that the District views flooding from a levee overtopping event at its main wastewater treatment facility as its greatest vulnerability. While the existing levee has withstood every flood event that has occurred to date, there is the potential that in coming years the levee will be insufficient to protect the facility. A major flood event of at least 30.6 feet would cause water to overtop the levee and incapacitate the wastewater treatment facility. The record setting Illinois River flood at Peoria crested at 29.32 feet on April 23, 2013 which is just 1.28 feet below the levee's overtopping point. Service disruptions from a levee overtopping flood event would lead to service disruptions for thousands of individuals as well as several major employers including two of the region's major healthcare organizations.

Vulnerability to flooding can change depending on several factors, including land use. As land used primarily for agricultural and open space purposes is converted for residential and commercial/industrial uses, the number of buildings and impervious surfaces (i.e., parking lots, roads, sidewalks, etc.) increases. As the number of buildings and impervious surfaces increases, so too does the potential for flash flooding. Rather than infiltrating the ground slowly, rain and snowmelt that falls on impervious surfaces runs off and fills ditches and storm drains quickly creating drainage problems and flooding.

As described in Section 1.3 Land Use and Development Trends, substantial changes in land use (from forested, open and agricultural land to residential, commercial and industrial) are not anticipated within the County in the immediate future. No substantial increases in residential or commercial/industrial developments are expected within the next five years.

What impacts resulted from the recorded floods?

Floods as a whole have caused a *minimum* of $4.7 million in property damages, two injuries and four fatalities. The following provides a breakdown by category.

In comparison, the State of Illinois averages an estimated $257 million annually in property damage losses and four fatalities per year, making flooding the single most financially damaging natural hazard in Illinois.

General Floods

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1950 and 2017, seven of the 29 general flood events caused approximately $34 million in property damages. Included in the property damage total is $29.4 million sustained as a result of the 1985 and 2013 flood events and represents losses sustained by Peoria County as a whole (including the participating jurisdictions.) A breakdown by municipality was unavailable. Damage information was either unavailable or none was recorded for the remaining 22 reported occurrences.

NOAA's Storm Events Database documented one fatality as a result of the April, 2013 general flood event. A man drowned on May 4, 2013 when he drove his vehicle into floodwaters northeast of downtown Peoria.

Flash Floods

Data obtained from NOAA's Storm Events Database, NOAA's Storm Data Publications and the 2010 Plan indicates that between 1960 and 2017, three of the 21 flash flood events caused $130,025,000 in property damages. Included in the property damage total is $130 million sustained as a result of the April and June, 2013 flood events and represents losses sustained by Peoria County as a whole (including the participating jurisdictions.) A breakdown by municipality was unavailable. Damage information was either unavailable or none was recorded for the remaining 18 reported occurrences.

Flood Fast Facts – Impacts/Risk

General Flood Impacts
- Total Property Damage: ***$34,070,000***^
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***n/a***
- Fatalities: ***1***

Flash Flood Impacts
- Total Property Damage: ***$130,025,000***†
- Infrastructure/Critical Facilities Damage*: ***n/a***
- Injuries: ***2***
- Fatalities: ***3***

Flood Risk/Vulnerability to:
- Public Health & Safety – General Flooding: ***Low***
- Public Health & Safety – Flash Flooding: ***Medium***
- Buildings/Infrastructure/Critical Facilities: ***Medium/High***

* Infrastructure/Critical Facilities Damage totals are included in the Total Property Damage amounts.

^ Includes $29.4 million in property damages sustained as a result of two separate flood events and represents losses incurred by all of Peoria County (including the participating municipalities.) A breakdown by municipality was not available.

† Includes $130 million in property damages sustained as a result of two separate flood events and represents losses incurred by all of Peoria County (including the participating municipalities.) A breakdown by municipality was not available.

NOAA's Storm Events Database, NOAA's Storm Data Publications and information from the 2010 Plan documented two injuries and three fatalities as the result of two separate flash flood events. The following provides a brief description of each.

- On August 18, 1960 flash flooding claimed the lives of three children in Peoria. Two children drowned while playing in Kickapoo Creek and the other child drowned after being pulled 575 feet down a drainage conduit.
- Two individuals were injured on April 17, 2013 when two houses collapsed into basement.

What impacts have resulted from historic floods?

Historic flood events documented in the City of Peoria's 1983 Hazard Vulnerability Analysis and contained in the 2010 Plan indicate that flooding occurred in one or more of the participating jurisdictions in 1933, 1935, 1938, 1943 and 1944. Several of these events involved flooding along the Illinois River. **Appendix K** details the impacts associated with these historic floods.

What other impacts can result from flooding?

One of the primary threats from flooding is drowning. Nearly half of all flash flood fatalities occur in vehicles as they are swept downstream. Most of these fatalities take place when people drive into flooded roadway dips and low drainage areas. It only takes two feet of water to carry away most vehicles.

Floodwaters also pose biological and chemical risks to public health. Flooding can force untreated sewage to mix with floodwaters. The polluted floodwaters then transport the biological contaminants into buildings and basements and onto streets and public areas. If left untreated, the floodwaters can serve as breeding grounds for bacteria and other disease-causing agents. Even if floodwaters are not contaminated with biological material, basements and buildings that are not properly cleaned can grow mold and mildew, which can pose a health hazard, especially for small children, the elderly and those with specific allergies.

Flooding can also cause chemical contaminants such as gasoline and oil to enter the floodwaters if underground storage tanks or pipelines crack and begin leaking during a flood event. Depending on the time of year, floodwaters also may carry away agricultural chemicals that have been applied to farm fields.

Structural damage, such as cracks forming in a foundation, can also result from flooding. In most cases, however, the structural damage sustained during a flood occurs to the flooring, drywall and wood framing. In addition to structural damage, a flood can also cause serious damage to a building's content.

Infrastructure and critical facilities are also vulnerable to flooding. Roadways, culverts and bridges can be weakened by floodwaters and have been known to collapse under the weight of a vehicle. Buried power and communication lines are also vulnerable to flooding. Water can infiltrate lines and cause disruptions in power and communication.

What is the level of vulnerability to public health and safety from floods?

While both general and flash floods occur on a fairly regular basis within the participating jurisdictions, the number of injuries and fatalities is very ***low***. In terms of the risk or vulnerability to public health and safety from *<u>general floods</u>*, the risk is seen as low. However, nearly half of the recorded flood events were the result of flash flooding. Since there is very little warning associated with flash flooding the risk to public health and safety from *flash floods* is elevated to ***medium***.

Are there any repetitive loss structures within the participating jurisdictions?

Yes. According to information obtained from IEMA, there are four repetitive loss structure located in Chillicothe, Peoria and Peoria Heights and 15 severe repetitive loss structures located in Chillicothe, Peoria and Peoria Heights. As described previously, FEMA defines a "repetitive loss structure" as an NFIP-insured structure that has received two or more flood insurance claim payments of more than $1,000 each within any 10-year period since 1978. A "severe repetitive loss structure" as defined by FEMA is an NFIP-insured structure that has received four or more flood insurance claim payments of more than $5,000 each or two flood insurance claim payments that exceed the fair market value of the insured structure on the day before each loss.

Figure 114 identifies the repetitive flood loss structures by participating jurisdiction and provides the total flood insurance claim payments. The exact location and/or address of the insured structures are not included in this Plan to protect the owners' privacy. According to IEMA, there have been 148 flood insurance claim payments totaling $2.3 million for the 19 repetitive flood loss structures.

Figure 114
Repetitive Flood Loss Structures by Participating Peoria County Municipalities

Participating Jurisdiction	Structure Type	Number of Structures	Number of Claim Payments	Flood Insurance Claim Payments		Total Flood Insurance Claim Payments
				Structure	Content	
Repetitive Loss Properties						
Chillicothe	single family	1	2	$98,926.07	$28,873.31	$127,799.38
Peoria	single family	2	4	$75,071.67	$2,308.25	$77,379.92
Peoria Heights	non-resident	1	2	$44,908.61	$0.00	$44,908.61
Subtotal:		**4**	**8**	**$218,906.35**	**$31,181.56**	**$250,087.91**
Severe Repetitive Loss Properties						
Chillicothe	single family	2	11	$85,141.75	$6,198.53	$91,340.28
Peoria	single family	4	25	$364,441.85	$21,471.23	$385,913.08
	non-resident	1	7	$49,420.07	$19,650.38	$69,070.45
Peoria Heights	single family	6	66	$764,096.64	$62,574.56	$826,671.20
	non-resident	2	31	$635,869.24	$108,320.18	$744,189.42
Subtotal:		**15**	**140**	**$1,898,969.55**	**$218,214.88**	**$2,117,184.43**
Total:		**19**	**148**	**$2,117,875.90**	**$249,396.44**	**$2,367,272.34**

Source: Illinois Emergency Management Agency

Are there any repetitive loss structures within the non-participating jurisdictions?

Yes. According to information obtained from IEMA, there are 42 repetitive/severe repetitive loss structures located in West Peoria and unincorporated Peoria County that have had 190 flood insurance claim payments totaling approximately $4.39 million. The following provides a description by type.

- There are two repetitive loss structures located in unincorporated Peoria County (one single family home and one condo unit) that have had five flood insurance claim payments totaling $260,593.72.
- There are 39 severe repetitive loss structures located in West Peoria (two non-residences) and unincorporated Peoria County (34 single family homes, two non-residences and one multi-family home) that have had 185 flood insurance claim payments totaling $4,129,303.84,

Are existing buildings, infrastructure and critical facilities vulnerable to flooding?

Yes. **Figure 115** identifies the number of existing residential structures by participating jurisdiction located within a base or 500-year floodplain. These counts were prepared by Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant using the effective DFIRMs.

Figure 115
Existing *Residential Structures* Located within a Floodplain of Participating Peoria County Municipalities

Participating Jurisdiction	Number of Residential Structures	Participating Jurisdiction	Number of Residential Structures
Bartonville[1]	85	Peoria[2]	560
Chillicothe	38	Peoria Heights[2]	24
Hanna City	0		

[1] Partially located within the GPSD service area

[2] Located within the GPSD service area

Source: FEMA DFIRMs

Aside from key roads and bridges and buried power and communication lines, Peoria and the GPSD are the only participating jurisdictions that have specific infrastructure/critical facilities located within or adjacent to a floodplain. While not participants, the Greater Chillicothe Sanitary District is located within a floodplain as well as one of Illinois American Water's drinking water well fields, both of which serve participating jurisdictions. The following provides a description of each.

- *Peoria*: The Peoria Fire Training Academy is partially located in the base floodplain/500-year floodplain of the Illinois River while Firehouse 17 is located adjacent to the 500-year floodplain of the Illinois River. The Peoria Public Works building is located adjacent to the base floodplain of Dry Run Creek.
- *GPSD*: The GPSD's wastewater treatment facility, which serves Peoria, Peoria Heights, Bartonville and several other communities, is located in the base floodplain of the Illinois River. While the facility is protected by a levee, the levee is not currently certified or accredited by FEMA. The District conducted a flood hazard mitigation and levee certification study several years ago that made a number of key recommendations that have become part of a long-term plan to increase the resilience of the wastewater treatment facility. FEMA issued a Conditional Letter of Map Revision (CLOMR) to the GPSD in August 2015 based on the analysis, recommendations and plan for addressing known issues and meeting the factors of safety required for levee certification. The District is currently

seeking funding to implement upgrades to the levee system that will allow the District to meet the certification and accreditation requirements and receive a Letter of Map Revisions (LOMR) from FEMA. These upgrades involve adding height to the existing levee to meet minimum freeboard requirements, seepage layers and interior drainage improvements for slope stability factors of safety, removeable flood barriers at the entrance drives and several flow control structures to regulate inflow and hydrostatic pressures in the soils around the facility.

The District also has at least five lift stations located in the SFHA or 500-year floodplain of the Illinois River or a tributary of Kickapoo Creek.

- *Greater Chillicothe Sanitary District*: The Greater Chillicothe Sanitary District's sewage treatment plant, which serves Chillicothe and surrounding areas, is located in the base floodplain of the Illinois River.
- *Illinois American Water*: Illinois American Water Company's Peoria drinking water facility and one of its three well fields, which serves Peoria and the surrounding area, are located in the base floodplain of the Illinois River.

While a small portion of the land area within the participating jurisdictions lies within a floodplain and is susceptible to riverine flooding, topography makes almost all of the land area in the participating jurisdictions 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 a floodplain and are not easily identifiable.

The risk or vulnerability of existing buildings, infrastructure and critical facilities to all forms of flooding is considered to be medium to high based on: (a) the frequency and severity of recorded flood events; (b) the proximity to the Illinois River and its tributaries; (c) the fact that most of the participating jurisdictions are vulnerable to flash flooding; and (d) a majority of the buildings, infrastructure and critical facilities that may be impacted are located outside of a floodplain.

Are future buildings, infrastructure and critical facilities vulnerable to flooding?

The answer to this question depends on the type of flooding being discussed.

Riverine Flooding
In terms of riverine flooding, the vulnerability of future buildings, infrastructure and critical facilities located within NFIP-participating jurisdictions is low as long as the existing floodplain ordinances are enforced. Enforcement of the floodplain ordinance is the mechanism that ensures that new structures either are not built in flood-prone areas or are elevated or protected to the base flood elevation.

Flash Flooding
In terms of flash flooding, all future buildings, infrastructure and critical facilities are still vulnerable depending on the amount of precipitation that is received, the topography and any land use changes undertaken within the participating jurisdictions.

What are the potential dollar losses to vulnerable structures from flooding?

An estimate of the potential dollar losses to vulnerable *residential structures* located within the *participating municipalities* can be calculated if several assumptions are made. These assumptions represent a probable scenario based on the reported occurrences of flooding in the participating jurisdictions.

The purpose of providing an estimate is to help residents and municipal officials make informed decisions about how they can better protect themselves and their communities. These estimates are meant to provide a ***general idea of the magnitude of the potential damage*** that could occur from a flood event in each of the municipalities.

Assumptions
To calculate the overall potential dollar losses to vulnerable residential structures from a flood, a set of decisions/assumptions must be made regarding:

- type of flood event;
- scope of the flood event;
- number of potentially-damaged housing units;
- value of the potentially-damaged housing units; and
- percent damage sustained by the potentially-damaged housing units (i.e., damage scenario.)

The following provides a detailed discussion of each decision/assumption.

Assumption #1

A riverine flood event will impact vulnerable residential structures within each municipality.

Type of Flood Event. The first step towards calculating the potential dollar losses to vulnerable residential structures is to determine the type of flood event that will be used for this scenario. While flash flooding has occurred more frequently and has caused more recorded flood damages in the participating municipalities than riverine flooding, identifying residential structures vulnerable to flash flooding is problematic because most are located outside of the floodplain and the number of structures impacted can change with each event depending on the amount of precipitation received, the topography and the land use of the area.

Therefore, a riverine flood event will be used since it is (a) relatively easy to identify vulnerable residential structures within each municipality (i.e., those structures located within the floodplain of any river, stream or creek); and (b) the number of structures impacted is generally the same from event to event.

Assumption #2

All base floodplains within a municipality will flood and experience the same degree of flooding.

Scope of the Flood Event. To establish the number of vulnerable residential structures (potentially-damaged housing units), the scope of the riverine flood event within each municipality must first be determined. In this scenario, the scope refers to the number of rivers, streams and creeks that overflow their banks and the degree of flooding experienced along the floodplains for each river, stream and creek.

Generally speaking, a riverine flood event only affects one or two rivers or streams at a time depending on the cause of the event (i.e., precipitation, snow melt, ice jam, etc.) and usually does not produce the same degree of flooding along the entire length of the river, stream or creek. However, for this scenario, it was decided that:

- all rivers, streams and creeks with floodplains would overflow their banks, and
- the floodplains of each river, stream and/or creek located within the corporate limits of each municipality would experience the same degree of flooding.

These assumptions result in the following conditions for each participating municipality:

- *Hanna City*: No rivers, streams or creeks are located within or adjacent to the village boundaries and therefore no residential flooding would occur;
- *Bartonville*: The Illinois River, Kickapoo Creek, LaMarsh Creek Tributary, Unnamed Tributary B and an Unnamed Tributary Kickapoo Creek would overflow their banks and flood portions of the Village;
- *Chillicothe*: The Illinois River would overflow its banks and flood the eastern edge of the City;
- *Peoria*: The Illinois River, Kickapoo Creek, Dry Run Creek, East Branch Dry Run Creek, Big Hollow Creek, North Fork Tributary Big Hollow Creek, Tributary Big Hollow Creek, Boyds Hollow Creek and Poppet Hollow Creek would overflow their banks and flood portions of the City; and
- *Peoria Heights*: The Illinois River would overflow its banks and flood the eastern edge of the Village.

Assumption #3

The number of existing residential structures located within the base floodplain(s) in each municipality will be used to determine the number of potentially-damaged housing units.

Number of Potentially-Damaged Housing Units. Since this scenario assumes that all the floodplains within a municipality will experience the same degree of flooding, the number of existing residential structures located within the floodplain(s) of each municipality can be used to determine the number of potentially-damaged housing units. **Figure 115** identifies the total number of existing residential structures located within the floodplains(s) of each municipality. These counts were prepared by the Tri-County Regional Planning Commission's GIS staff in consultation with the Consultant.

Assumption #4

The average market value for a residential structure in each municipality will be used to determine the value of potentially-damaged housing units.

Value of Potentially-Damaged Housing Units. Now that the number of potentially-damaged housing units has been determined, the monetary value of the units must be calculated. Typically, when damage estimates are prepared after a natural disaster such as a flood, they are based on the market value of the structure. Since it would be impractical to determine the individual market value of each potentially-damaged housing unit, the average market value for a residential structure in each municipality will be used.

To determine the average market value, the average assessed value must first be calculated. The average assessed value is determined by taking the total assessed value of residential buildings within a jurisdiction and dividing that number by the total number of housing units within the jurisdiction. The average market value is then determined by taking the averaged assessed value and multiplying that number by three (the assessed value of a structure in the participating Peoria County municipalities is approximately one-third of the market value). **Figure 116** provides a sample calculation. The total assessed value is based on 2016 tax assessment information provided by the Peoria County Supervisor of Assessments. **Figure 117** provides the average assess value and average market value for each participating municipality.

Figure 116
Sample Calculation of Average Assessed Value & Average Market Value - Bartonville

Average Assessed Value

Total Assessed Value of Residential Buildings in the Jurisdiction÷ Total Housing Units in the Jurisdiction = Average Assessed Value

Bartonville: $71,993,160 ÷ 2,812 housing units = $25,602.11949

Average Market Value

Average Assessed Value x 3 = Average Market Value
(Rounded to the Nearest Dollar)

Bartonville: $25,602.11949 x 3 = $76,806.35846
($76,806)

Figure 117
Average Market Value of Housing Units by Participating Peoria County Municipality

Participating Jurisdiction	Total Assessed Value of Residential Buildings (2016)	Total Housing Units (2010)	Average Assessed Value (Raw)	Average Market Value (Raw)	Average Market Value (Rounded)
Bartonville[1]	$71,993,160	2,812	$25,602.11949	$76,806.35847	$76,806
Chillicothe	$75,928,298	2,719	$27,925.08202	$83,775.24606	$83,775
Hanna City	$15,185,830	584	$26,003.13356	$78,009.40068	$78,009
Peoria[2]	$1,372,986,619	52,621	$26,091.99025	$78,275.97075	$78,276
Peoria Heights[2]	$72,652,006	3,093	$23,489.17103	$70,467.51309	$70,468

[1] Partially located within the GPSD service area
[2] Located within the GPSD service area

Source: Peoria County Supervisor of Assessments.

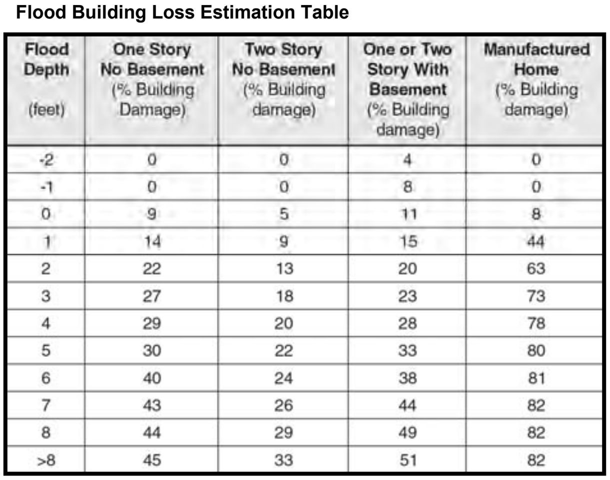
Damage Scenario. The final decision that must be made to calculate potential dollar losses is to determine the percent damage sustained by the structure and the structure's contents during the flood event. In order to determine the percent damage using FEMA's flood loss estimation

Assumption #5

The potentially-damaged housing units are one or two-story homes with basements and the flood depth is two foot.
Structural Damage = 20%
Content Damage = 30%

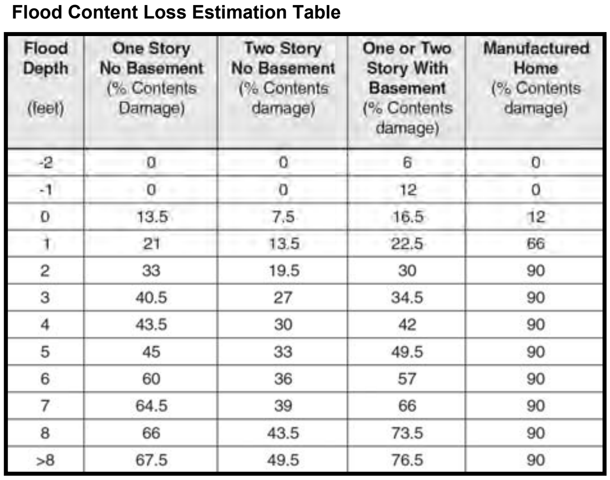
tables, assumptions must be made regarding (a) the type of residential structure flooded (i.e., manufactured home, one-story home without a basement, one or two-story home with a basement, etc.) and (b) the flood depth. **Figure 118** calculates the percent loss to a structure and its contents for different scenarios based on flood depth and structure type.

Figure 118
FEMA Flood Loss Estimation Tables



Flood Building Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Building Damage)	Two Story No Basement (% Building damage)	One or Two Story With Basement (% Building damage)	Manufactured Home (% Building damage)
-2	0	0	4	0
-1	0	0	8	0
0	9	5	11	8
1	14	9	15	44
2	22	13	20	63
3	27	18	23	73
4	29	20	28	78
5	30	22	33	80
6	40	24	38	81
7	43	26	44	82
8	44	29	49	82
>8	45	33	51	82



Flood Content Loss Estimation Table

Flood Depth (feet)	One Story No Basement (% Contents Damage)	Two Story No Basement (% Contents damage)	One or Two Story With Basement (% Contents damage)	Manufactured Home (% Contents damage)
-2	0	0	6	0
-1	0	0	12	0
0	13.5	7.5	16.5	12
1	21	13.5	22.5	66
2	33	19.5	30	90
3	40.5	27	34.5	90
4	43.5	30	42	90
5	45	33	49.5	90
6	60	36	57	90
7	64.5	39	66	90
8	66	43.5	73.5	90
>8	67.5	49.5	76.5	90

Source: FEMA, Understanding Your Risks: Identifying Hazards and Estimating Losses

For this scenario it is assumed that the potentially-damaged housing units are one or two-story homes with basements and the flood depth is two feet. With these assumptions the expected percent damage sustained by the ***structure*** is estimated to be 20% and the expected percent damage sustained by the structure's ***contents*** is estimated to be 30%.

Potential Dollar Losses

Now that all of the decisions/assumptions have been made, the potential dollar losses can be calculated. First the potential dollar losses to the ***structure*** of the potentially-damaged housing units must be determined. This is done by taking the average market value for a residential structure and multiplying that by the percent damage (20%) to get the average structural damage per unit. Next the average structural damage per unit is multiplied by the number of potentially-damaged housing units. **Figure 119** provides a sample calculation.

Next the potential dollar losses to the ***content*** of the potentially-damaged housing units must be determined. Based on FEMA guidance, the value of a residential housing unit's content is approximately 50% of its market value. Therefore, start by taking one-half the average market value for a residential structure and multiply that by the percent damage (30%) to get the average content damage per unit. Then take the average content damage per unit and multiply that by the number of potentially-damaged housing units. **Figure 120** provides a sample calculation.

Figure 119
Structure: Potential Dollar Loss Sample Calculation – Bartonville

Average Market Value of a Housing Unit with the Jurisdiction x Percent Damage = Average Structural Damage per Housing Unit

Bartonville: $76,806 x 20% = $15,361.20 per housing unit

Average Structural Damage x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Structure* Potential Dollar Losses (Rounded to the Nearest Dollar)

Bartonville: $15,361.20 per housing unit x 85 housing unit = $1,305,702.00
($1,305,702)

Figure 120
Content – Potential Dollar Loss Sample Calculation - Bartonville

½ (Average Market Value of a Housing Unit with the Jurisdiction) x Percent Damage = Average Content Damage per Housing Unit

Bartonville: ½ ($76,806) x 30% = $11,520.90 per housing unit

Average Content Damage per Housing Unit x Number of Potentially-Damaged Housing Units within the Jurisdiction = *Content* Potential Dollar Losses (Rounded to the Nearest Dollar)

Bartonville: $11,520.90 per housing unit x 85 housing unit = $979,276.50
($979,277)

Finally, the ***total potential dollar losses*** may be calculated by adding together the potential dollar losses to the structure and the content. **Figure 121** provides a breakdown of the total potential dollar losses by municipality.

Figure 121
Estimated Potential Dollar Losses to Potentially-Damaged Housing Units from a Riverine Flood Event by Participating Peoria County Municipality

Participating Jurisdiction	Average Market Value (2016)	Potentially-Damaged Housing Units	Potential Dollar Losses		Total Potential Dollar Losses (Rounded to the Nearest Dollar)
			Structure	Content	
Bartonville[1]	$76,806	85	$1,305,702	$979,277	$2,284,979
Chillicothe	$83,775	38	$636,690	$477,518	$1,114,208
Hanna City	$78,009	0	$ 0	$ 0	$ 0
Peoria[2]	$78,276	560	$8,766,912	$6,575,184	$15,342,096
Peoria Heights[2]	$70,468	24	$338,246	$253,685	$591,931

[1] Partially located within the GPSD service area
[2] Located within the GPSD service area

This assessment illustrates the *potential residential dollar losses* that should be considered when municipalities are deciding which mitigation projects to pursue. Potential dollar losses caused by riverine flooding to vulnerable residences within the participating municipalities would be expected to ***range from $591,931 to $15.3 million***. Hanna City does not have any residences considered vulnerable to riverine flooding in this scenario.

Vulnerability of Infrastructure/Critical Facilities

The calculations presented above are meant to provide the reader with a sense of the scope or magnitude of a large riverine flood event in dollars. These calculations do not include the physical damages sustained by businesses or other infrastructure and critical facilities.

In terms of businesses, the impacts from a flood event can be physical and/or monetary. Monetary impacts can include loss of sales revenue either through temporary closure or loss of critical services (i.e., power, drinking water and sewer). Depending on the magnitude of the flood event, the damage sustained by infrastructure and critical facilities can be extensive in nature and expensive to repair. ***As a result, the cumulative monetary impacts to businesses and infrastructure can far exceed the cumulative monetary impacts to residences***. While average dollar amounts cannot be supplied for these items at this time, they should be taken into account when discussing the overall impacts that a large-scale riverine flood event could have on the participating jurisdictions.

In terms of specific infrastructure vulnerability, the following are located within a ***base floodplain***:

- GPSD’s wastewater treatment facility;
- Greater Chillicothe Sanitary District; and
- Illinois American Water Company.

No other above-ground infrastructure within the participating jurisdictions, other than key roads and bridges, were identified as being vulnerable to riverine flooding.

Considerations

While the potential dollar loss scenario was only for a riverine flood event, the participating jurisdictions have been made aware through the planning process of the impacts that can result from flash flood events. The participating Peoria County jurisdictions have experienced multiple events over the last 20 to 30 years as have adjoining and nearby counties. These events illustrate the need for officials to consider the overall monetary impacts of all forms of flooding on their communities. All participants should carefully consider the types of activities and projects that can be taken to minimize their vulnerability.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 3 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infrastructure				
5/19/1974 thru 7/8/1974	n/a	Illinois River Kickapoo Creek area rivers, streams & creek	Bartonville Chillicothe Peoria Peoria Heights	22.2 feet 6/26/1974	n/a	n/a	n/a	n/a	n/a	$0	- ***this event was part of a federally-declared disaster (Declaration #438)*** - property damages of $2.5 million were sustained in Peoria, Tazewell and Woodford counties. A detailed breakdown by county/municipality was not available
2/25/1976 thru 3/23/1976	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	23.6 feet 3/9/1976	n/a	n/a	n/a	n/a	n/a	n/a	<u>*Peoria*</u> 4,00-5,000 sandbags were given out
Subtotal:								**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 4 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infra-structure				
3/7/1979 thru 5/17/1979	n/a	Illinois River Kickapoo Creek area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	28.7 feet 3/23/1979 3rd highest crest on record	n/a	Bemis Bag Co. & Keystone closed; animal shelter evacuated (Peoria)	Coast Guard closed the Illinois River; multiple roads closed including Franklin St. bridge (Peoria)	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #583)***
5/28/1980 thru 6/5/1980	n/a	area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	n/a	n/a	n/a	See Event Description	n/a	n/a	$200,000 (Peoria)	*Event Description Provided Below*
- ***this event was part of a state-declared disaster*** - 14 inches of rain fell in a week flooding buildings & roads *Peoria* - Franklin Street bridge was closed and many streets were flooded - the Hospital lost power briefly											
2/24/1982 thru 5/2/1982	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	27.1 feet 3/23/1982 7th highest crest on record	50 (Peoria)	n/a	n/a	n/a	n/a	$60,000 (Peoria)	*Peoria* 7,400 sandbags were given out
Subtotal:								**0**	**0**	**$260,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 5 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infra-structure				
5/26/1982	n/a	area rivers, streams & creeks	Chillicothe	n/a	n/a	n/a	streets flooded	n/a	n/a	n/a	
12/5/1982 thru 1/7/1983	n/a	Illinois River area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	27.4 feet 12/9/1982 6th highest crest on record	n/a	animal shelter & river station closed (Peoria)	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #674)*** <u>Peoria</u> 30,000 sandbags were given out
4/3/1983 thru 5/22/1983	n/a	Illinois River area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	25.7 feet 4/17/1983	n/a	n/a	n/a	n/a	n/a	n/a	
2/26/1985 thru 4/15/1985	n/a	Illinois River area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	28.4 feet 3/7/1985 4th highest crest on record	n/a	n/a	n/a	n/a	n/a	$1,400,000†	***this event was part of a federally-declared disaster (Declaration #735)***
Subtotal:								**0**	**0**	**$1,400,000†**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

† The property damage total of $1.4 million for the 1985 flood event represent losses sustained in Peoria County (including the participating municipalities). A detailed breakdown by municipality was not available.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 6 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infra-structure				
9/19/1986	n/a	n/a	Peoria	n/a	many basements flooded	n/a	many streets flooded	n/a	n/a	n/a	
3/24/1993 thru 5/10/1993	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	23.16 feet 4/24/1993	n/a	n/a	n/a	n/a	n/a	n/a	
5/14/1995 thru 6/15/1995	n/a	Illinois River area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	24.91 feet 6/2/1995	n/a	n/a	n/a	n/a	n/a	n/a	
2/21/1997 thru 3/6/1997	6:00 p.m.	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	26.85 feet 3/3/1997 10th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	*Peoria* some homes immediately adjacent to the river experienced minor property damage
5/14/2002 thru 5/27/2002	11:00 p.m.	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	25.25 feet 5/18/2002	n/a	n/a	n/a	n/a	n/a	n/a	
Subtotal:								**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 7 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infra-structure				
9/16/2008 thru 10/5/2008	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	26.99 feet 9/20/2008 9th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	***this event was part of a federally-declared disaster (Declaration #1800)***
3/2/2009 thru 6/6/2009	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	27.92 feet 3/14/2009 5th highest crest on record	n/a	n/a	n/a	n/a	n/a	n/a	
4/18/2013 thru 4/19/2013	9:00 a.m.	area rivers, streams & creeks	Bartonville Chillicothe Peoria Peoria Heights	n/a	n/a	n/a	See Event Description	n/a	n/a	n/a	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - torrential rainfall of 4 to 8 inches caused both flash flooding & general flooding - nearly every road was impassable, including part of Interstate 74 which had to be closed - most of the creeks and streams stayed in flood and most roads remained closed until the afternoon of the 22nd											
Subtotal:								**0**	**0**	**$0**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 8 of 9)
General Flood Events
1950 – 2017

<table>
<tr><th rowspan="3">Date(s)</th><th rowspan="3">Start Time</th><th rowspan="3">Body of Water</th><th rowspan="3">Location(s) Impacted</th><th colspan="4">Magnitude</th><th rowspan="3">Injuries</th><th rowspan="3">Fatalities</th><th rowspan="3">Property Damages</th><th rowspan="3">Description</th></tr>
<tr><th rowspan="2">Flood Crest Illinois River Peoria[1]</th><th colspan="3">Impacted</th></tr>
<tr><th>Homes</th><th>Business</th><th>Infra-structure</th></tr>
<tr><td>4/19/2013
thru
5/8/2013</td><td>10:00 a.m.</td><td>Illinois River</td><td>Chillicothe
Peoria
GPSD</td><td>29.32 feet
4/23/2013
highest crest - flood of record at this gauge</td><td>numerous (See Event Description)</td><td>several (See Event Description)</td><td>n/a</td><td>n/a</td><td>1</td><td>$28,000,000‡</td><td><i>Event Description Provided Below</i></td></tr>
<tr><td colspan="12">- <i>this event was part of a federally-declared disaster (Declaration #4116)</i>
<u>Chillicothe</u>
- numerous homes along the Illinois River in Chillicothe suffered damage due to record river levels
<u>Peoria</u>
- several businesses along the Illinois River in downtown Peoria were also damaged
- on May 4th a man drowned when he drove his vehicle into floodwaters northeast of downtown
- According to the MAC member representing the GPSD, the levee protected the treatment plant and very little damage occurred</td></tr>
<tr><td>6/15/2015
thru
7/31/2015</td><td>n/a</td><td>Illinois River</td><td>Bartonville
Chillicothe
Peoria
Peoria Heights</td><td>27.06 feet
7/1/2015
8th highest crest on record</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td>n/a</td><td></td></tr>
<tr><td colspan="8">Subtotal:</td><td>0</td><td>1</td><td>$28,000,000‡</td><td></td></tr>
</table>

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

‡ The property damage total of $28 million for the 2013 flood event represent losses sustained in Peoria County (including the participating municipalities). A detailed breakdown by municipality was not available.

Participating Peoria County Jurisdictions

Figure 105
(Sheet 9 of 9)
General Flood Events
1950 – 2017

Date(s)	Start Time	Body of Water	Location(s) Impacted*	Magnitude				Injuries	Fatalities	Property Damages	Description
				Flood Crest Illinois River Peoria[1]	Impacted						
					Homes	Business	Infra-structure				
12/27/2015 thru 1/20/2016	n/a	Illinois River	Bartonville Chillicothe Peoria Peoria Heights	26.46 feet 1/3/2016	n/a	n/a	n/a	n/a	n/a	n/a	n/a
6/17/2017 thru 6/18/2017	10:45 p.m.	area rivers, streams & creeks	Chillicothe Peoria	n/a	n/a	n/a	numerous streets	n/a	n/a	n/a	- torrential rainfall of 2 to 3 inches fell within a 90-minute period causing both flash flooding & general flooding - numerous streets on the northwest side of Peoria and in Chillicothe were flooded - additional rainfall during the late evening/early morning hours kept many roads flooded - flood waters subsided by daybreak on the 18th
Subtotal:								**0**	**0**	**$0**	
GRAND TOTAL								**0**	**1**	**$34,070,000[§]**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[1] Flood stage at the Peoria gauge location is 18.0 feet, moderate flood stage is 22.0 feet and major flood stage is 28.0 feet. At 18.0 feet flooding of unprotected bottomlands not protected by levees occurs; at 22.7 feet flooding begins to low lying areas in Peoria Heights & Peoria's Riverfront Park; at 24.0 feet water begins covering streets in East Peoria; at 25.0 feet damage begins at Pekin sewage treatment plant and minor property damage occurs in Peoria by the River; at 28.0 feet water entire length of Lake Street in Spring Bay is inundated; and at 30.6 feet water overtops the levee at the Peoria Sanitary District Levee.

[§] The property damage total includes $1.4 million from the 1985 flood event and $28 million from the 2013 flood event that represent losses sustained in Peoria County (including the participating municipalities). A detailed breakdown by municipality was not available.

Sources: Peoria Emergency Services and Disaster Agency, City of Peoria Hazard Vulnerability Analysis.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Cooperative Observation Forms.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
NOAA, National Weather Service, River Observations, North Central River Forecast Center, Illinois River at Peoria.
Tri-County Mitigation Action Committee member responses to the Natural Hazard Events Questionnaire.
United States Army Corps of Engineers, RiverGages.com, Data Mining.

Participating Peoria County Jurisdictions

Figure 106
(Sheet 1 of 3)
Flash Flood Events
1960 – 2017

Date(s)	Start Time	Location(s) Impacted*	Injuries	Fatalities	Property Damages	Magnitude/Description
8/18/1960	n/a	Peoria	0	3	$25,000	- heavy rains flooded sewers, basements and streets - a child was drowned when pulled 575 feet down a drainage conduit - 2 children drowned playing in the flooded Kickapoo Creek
8/24/1982	11:00 a.m.	Peoria	n/a	n/a	n/a	intersections were flooded
6/20/1990	4:00 a.m.	all participating municipalities	n/a	n/a	n/a	
6/29/1990	8:30 a.m.	all participating municipalities	n/a	n/a	n/a	
8/15/1993	8:45 p.m.	all participating municipalities	n/a	n/a	n/a	numerous road and basements were flooded
8/23/1993	5:45 p.m.	all participating municipalities	n/a	n/a	n/a	street flooding occurred
5/11/2002	12:00 p.m.	all municipalities	n/a	n/a	n/a	
5/18/2004	3:35 p.m.	Bartonville Peoria	n/a	n/a	n/a	- numerous roads became flooded including IL Rte. 116 - several people drove into floodwaters in Peoria and had to be rescued
5/30/2004	8:30 a.m.	Peoria	n/a	n/a	n/a	several roads flooded
9/12/2008	10:00 p.m.	Peoria	n/a	n/a	n/a	- numerous streets had water flowing over them - many basements were flooded across the City
Subtotal:			**0**	**3**	**$25,000**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

Participating Peoria County Jurisdictions

Figure 106
(Sheet 2 of 3)
Flash Flood Events
1960 – 2017

Date(s)	Start Time	Location(s) Impacted[*]	Injuries	Fatalities	Property Damages	Magnitude/Description
9/13/2008	6:00 p.m.	Peoria	n/a	n/a	n/a	- ***this event was part of a federally-declared disaster (Declaration #1800)*** - Interstate 74 near the North University Street exit was flooded and a vehicle became stranded in the high water - The MAC member from the GPSD indicated that the heavy rainfall caused manholes to overflow, damaged manholes and led to backups on private property
6/23/2010	5:45 p.m.	all participating municipalities	n/a	n/a	n/a	*Peoria* many streets in Peoria were flooded which caused vehicles to become stranded and forced up manhole covers
6/15/2011	1:00 a.m.	Bartonville Chillicothe Peoria Peoria Heights	n/a	n/a	n/a	*Peoria* many streets in the City were flooded
4/17/2013 thru 4/18/2013	9:15 p.m.	all participating municipalities	2 (Peoria)	n/a	$100,000,000[†]	*Event Description Provided Below*
- ***this event was part of a federally-declared disaster (Declaration #4116)*** - torrential rainfall of 4 to 8 inches resulted in damage to thousands of houses and businesses in Peoria County (including the participating municipalities) - nearly every road was impassable, including parts of Interstate 74 which had to be closed - numerous water rescues were made - mudslides were reported along the eastern bluffs of the Illinois River *Peoria* - two houses collapsed into the basements injuring 2 individuals						
6/24/2013	3:15 a.m.	Chillicothe Peoria	n/a	n/a	$30,000,000[†]	- multiple roads were closed, including IL Routes 6, 29 and 40 - motorists were stranded by the high water - homes were flooded
Subtotal:			**2**	**0**	**$130,000,000[†]**	

[*] Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

[†] The property damage total of $100 million for the April, 2013 flood event and $30 million for the June, 2013 flood event represent losses sustained in Peoria County (including the participating municipalities). A detailed breakdown by municipality was not available.

Participating Peoria County Jurisdictions

Figure 106
(Sheet 3 of 3)
Flash Flood Events
1960 – 2017

Date(s)	Start Time	Location(s) Impacted*	Injuries	Fatalities	Property Damages	Magnitude/Description
6/7/2014 thru 6/8/2014	8:30 p.m.	Hanna City Peoria	n/a	n/a	n/a	*Hanna City* - sections of IL Rte. 116 were closed *Peoria* - roads in the northern suburbs of the City, toward Alta and Dunlap were impassable
6/7/2015	7:30 p.m.	Bartonville Peoria	n/a	n/a	n/a	*Bartonville* - US Rte. 24 was impassable and most secondary roads were inundated *Peoria* - many streets were impassable on the south side of the City
6/10/2015 thru 6/11/2015	8:00 p.m.	Chillicothe	n/a	n/a	n/a	streets were flooded
12/27/2015	n/a	Bartonville Peoria Peoria Heights	n/a	n/a	n/a	The MAC member from the GPSD indicated that the treatment plant experienced record flows and that private property owners within the District suffered sewer backups in their basements and basement flooding from storm water
4/29/2017	5:45 p.m.	Peoria	n/a	n/a	n/a	- numerous streets in the City were impassable - IL Rte. 29 north of the McClugage Bridge was closed for 1 mile due to a mudslide
6/17/2017	8:15 p.m.	Chillicothe Peoria	n/a	n/a	n/a	numerous streets were flooded on the northwest side of Peoria and in Chillicothe
Subtotal:			**0**	**0**	**$0**	
GRAND TOTAL:			**2**	**3**	**$130,025,000†**	

* Unless otherwise noted, the GPSD service area is included as part of any location listing for Peoria and Peoria Heights.

† The property damage total included $100 million from the April, 2013 flood event and $30 million from the June, 2013 flood event that represent losses sustained in Peoria County (including the participating municipalities). A detailed breakdown by municipality was not available.

Sources: Peoria Emergency Services and Disaster Agency, City of Peoria Hazard Vulnerability Analysis.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Data.
NOAA, National Environmental Satellite, Data & Information Service, National Centers for Environmental Information, Storm Events Database.
Tri-County Mitigation Action Committee member responses to the Natural Hazard Events Questionnaire.

3.4 TORNADOES

HAZARD IDENTIFICATION

What is the definition of a tornado?

A tornado is a violently rotating column of air, usually characterized by a twisting, funnel-shaped cloud that extends from the cloud formation of a thunderstorm to the ground. The strongest tornadoes have rotating wind speeds of more than 200 miles per hour and can create damage paths in excess of one mile wide and 50 miles long.

Not all tornadoes have a visible funnel cloud. Some may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. Generally, tornadoes move from southwest to northeast, but they have been known to travel in any direction, even backtracking. The average forward speed of a tornado is 30 mile per hour, but this may vary from nearly stationary to 70 miles per hour.

About 1,200 tornadoes hit the United States yearly. On average, 49 tornadoes occur each year in Illinois. The destruction caused by a tornado may range from light to catastrophic depending on the intensity, size and duration of the storm. Tornadoes cause crop and property damage, power outages, environmental degradation, injuries and fatalities. Tornadoes are known to blow off roofs, move cars and tractor trailers and demolish homes. Typically, tornadoes cause the greatest damage to structures of light construction, such as residential homes. On average, tornadoes cause 60 to 65 facilities and 1,500 injuries in the United States annually.

How are tornadoes rated?

Originally tornadoes were rated using the Fujita Scale (F-Scale), which related the degree of damage caused by a tornado to the intensity of the tornado's wind speed. The Scale identified six categories of damage, F0 through F5. **Figure 122** gives a brief description of each category.

Use of the original Fujita Scale was discontinued on February 1, 2007 in favor of the Enhanced Fujita Scale. The original scale had several flaws including basing a tornado's intensity and damages on wind speeds that were never scientifically tested and proven. It also did not take into consideration that a multitude of factors (i.e. structure construction, wind direction and duration, flying debris, etc.) affect the damage caused by a tornado. In addition, the process of rating the damage itself was based on the judgment of the damage assessor. In many cases, meteorologists and engineers highly experienced in damage survey techniques often came up with different F-scale ratings for the same damage.

The Enhanced Fujita Scale (EF-Scale) was created to remedy the flaws in the original scale. It continues to use the F0 through F5 categories, but it classifies the level of damage (one through eight) as calibrated by engineers and meteorologists to 28 different types of damage indicators (mainly various building types, towers/poles and trees.) The wind speeds assigned to each category are estimates, not measurements, based on the damage assessment. **Figure 122** identifies the Enhanced Fujita Scale.

Figure 122
Fujita & Enhanced Fujita Tornado Measurement Scales

F-Scale		EF-Scale		Description
Category	**Wind Speed (mph)**	**Category**	**Wind Speed (mph)**	
F0	40 – 72	EF0	65 – 85	Light damage – some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; damage to sign boards
F1	73 – 112	EF1	86 – 110	Moderate damage – peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads
F2	113 – 157	EF2	111 – 135	Considerable damage – roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground
F3	158 – 207	EF3	136 – 165	Severe damage – roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown
F4	208 – 260	EF4	166 – 200	Devastating damage – well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated
F5	261 – 318	EF5	Over 200	Incredible damage – strong frame houses lifted off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 yards; trees debarked; incredible phenomena will occur

Source: National Oceanic and Atmospheric Administration, Storm Prediction Center.

The idea behind the EF-Scale is that a tornado scale needs to take into account the typical strengths and weaknesses of different types of construction, instead of applying a "one size fits all" approach. This is due to the fact that the same wind speed can cause different degrees of damage to different kinds of structures. In a real-life application, the degree of damage to each of the 28 indicators can be mapped together to create a comprehensive damage analysis. As with the original scale, the EF-Scale rates the tornado as a whole based on the most intense damage within the tornado's path.

While the EF-Scale is currently in use, ***the historical data presented in this report is based on the original F-Scale***. None of the tornadoes rated before February 1, 2007 will be re-evaluated using the EF-Scale.

Are alerts issued for tornadoes?

Yes. The National Weather Service Weather Forecast Office in Lincoln, Illinois is responsible for issuing ***tornado watches*** and ***warnings*** for Peoria, Tazewell and Woodford Counties depending on the weather conditions. The following provides a brief description of each type of alert.

- **Watch.** A tornado watch is issued when tornadoes are possible in the area. It does not mean that a tornado is imminent, just that individuals need to be alert and prepared.
- **Warning.** A tornado warning is issued when a tornado has been spotted or indicated by radar. Warnings indicate imminent danger to life and property for those who are in the path of the tornado. Individuals should see shelter immediately.