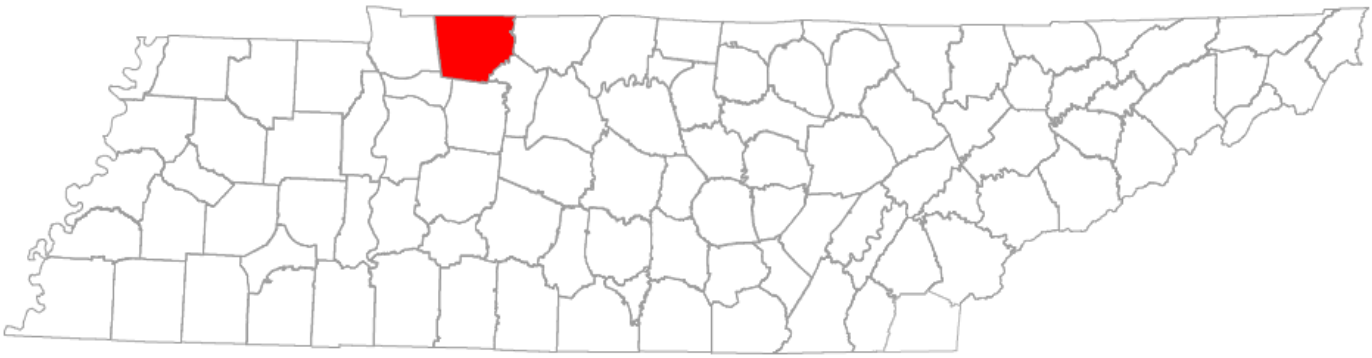
2025 Montgomery County Multi-Jurisdictional Hazard Mitigation Plan



Montgomery County
City of Clarksville
Clarksville-Montgomery County School System

Prepared by:

Montgomery County Emergency Management Agency

Executive Summary

Over the past two decades, hazard mitigation has gained increased national attention due to the large number of natural disasters that have occurred throughout the U.S. and the rapid rise in costs associated with those disaster recoveries. It has become apparent that money spent mitigating potential impacts of a disaster event can result in substantial savings of life and property. With these benefit-cost ratios extremely advantageous, the Disaster Mitigation Act of 2000 was developed as U.S. Federal legislation reinforcing the importance of pre-disaster mitigation planning by calling for local governments to develop mitigation plans *(44 CFR 201)*.

A local hazard mitigation plan aims to identify the community's notable risks and specific vulnerabilities and then to create/implement corresponding mitigation projects to address those areas of concern. This methodology helps reduce human, environmental, and economic costs from natural and man-made hazards through the creation of long-term mitigation initiatives.

The advantages of developing a local hazard mitigation plan are numerous and include improved post-disaster decision-making, education on mitigation approaches, and an organizational method for prioritizing mitigation projects. Communities with a mitigation plan receive larger amounts of Federal and State funding opportunities to be used on mitigation projects and can receive these funds faster than communities without a plan.

This 2025 update of the Montgomery County Hazard Mitigation Plan addresses Building Resilient Communities and Infrastructure (BRIC), Flood Mitigation Assistance (FMA), and Hazard Mitigation Grant Program (HMGP) requirements. Each jurisdiction within the county participated in the preparation of the update, including:

- Montgomery County
- City of Clarksville
- Clarksville-Montgomery County School System

In reference to federal code title *44 CFR 201*, the plan is required to be submitted to both TEMA (State) and FEMA (Federal) for review to be approved. When the plan is deemed "approval pending adoption" by FEMA *(44 CFR 201.6(c)5)*, each of the participating jurisdictions will adopt the plan through a local resolution.

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Chapter 1. The Planning Process

1.1 Purpose and Need, Authority and Statement of Problem

1.1.1 Purpose and Need

FEMA defines "hazard mitigation" as any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event. Hazard mitigation planning is the process through which hazards are identified, likely impacts determined, mitigation goals set, and appropriate mitigation strategies defined, prioritized, and implemented. The Hazard Mitigation Plan aims to identify, assess, and mitigate risk to better protect the people and property of Montgomery County from the effects of natural and man-made hazards. This Plan documents the hazard mitigation planning process and identifies relevant hazards, vulnerabilities, and strategies the County and incorporated jurisdictions will use to decrease vulnerability and increase resiliency and sustainability. This Plan demonstrates the participating communities' commitment to reducing risks from identified hazards and serves as a tool to help decision-makers direct mitigation activities and resources.

1.1.2 Authority

This Montgomery County Multi-Jurisdictional Hazard Mitigation Plan has been adopted by Montgomery County and all participating jurisdictions in accordance with the authority granted to local communities by the State of Tennessee. This Plan was updated per state and federal rules and regulations governing local hazard mitigation plans. The Plan shall be reviewed annually and go through a complete update process every five years to remain eligible for hazard mitigation grants. The following legislation was used for guidance:

- Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at 44 CFR 201.6 and 201.7 dated October 2011.
- Tennessee Code Annotated
  - **T.C.A. 58-2-106(b)(16)**
  - **T.C.A. 58-2-106(b)(1)**
  - **T.C.A. 58-2-103(a)(5)**

1.1.3 Statement of Problem

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. Unfortunately, this only partially reflects the cost of disasters because additional expenses incurred by insurance companies and non-governmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be reduced or even eliminated.

The Montgomery County Multi-Jurisdictional Hazard Mitigation Plan was created and approved by FEMA in 2010 Per federal requirements stated in *44 CFR 201*, all local hazard mitigation plans are required to go through a FEMA approval process every five years to remain eligible for hazard mitigation grants. This plan will be re-evaluated and updated every five years to ensure local governments are continuing to assess the hazards and risks within their communities. This plan update has been prepared to meet requirements set forth by FEMA and the Tennessee Emergency Management Agency (TEMA) to ensure Montgomery County is

eligible for funding and technical assistance from state and federal hazard mitigation programs. All communities are welcome to address man-made hazards and risks in their hazard mitigation plan. However, it's important to note that the State and Federal governments only evaluate and approve based on natural hazards only as per federal code title 44 CFR 201.

1.2 Methodology, Update Process, and Participation Summary

This Montgomery County Multi-Jurisdictional Hazard Mitigation Plan was developed with the input of a Hazard Mitigation Planning Committee (HMPC). The Committee included representatives of Montgomery County, City of Clarksville, Long-Term Recovery Group (LTRG), NGO's, Faith Based Organizations, VOAD, and Clarksville-Montgomery County School System (CMCSS).

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. This plan identifies activities that can be undertaken by both the public and the private sectors to reduce risk to safety, health, and property caused by natural and man-made hazards.

1.2.1 Local Government Participation

The planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC.
- Detail where within the planning area the risk differs from that facing the entire area.
- Identify potential mitigation actions; and
- Formally adopt the plan.

For the HMPC, "participation" meant the following:

- Providing facilities for meetings.
- Attending and participating in the HMPC meetings.
- Collecting and providing other requested data (as available).
- Identifying mitigation actions for the plan.
- Reviewing and providing comments on plan drafts.
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan.
- Coordinating, and participating in the public input process.
- Coordinating the formal adoption of the plan by the appropriate governing body.

The HMPC met all the above-stated participation requirements. Montgomery County and all its incorporated jurisdictions participated in the 2025 Plan update, as well as reviewed and provided timely comments on all draft components of the Plan. A summary of past and current community participation is shown below in *Table 1*. All participants were invited to this committee via email by the Montgomery County Emergency Management Agency (MCEMA). Those who did not originally respond were reached out to via phone or email by the Montgomery County Emergency Management Agency.

Table 1 Multi-Jurisdictional HMPC Participation

Jurisdiction	2020 Participation	2025 Participation
Montgomery County	X	X
City of Clarksville	X	X
Clarksville-Montgomery County School System	X	X

The HMPC for the 2025 plan update included key community representatives. *Table 2* details the HMPC members, meeting dates, associated FEMA Lifeline, and committee member attendance. FEMA Lifelines are fundamental way for a community to recover, however, all participants might not be associated with a FEMA Lifeline. If they are not associated with a FEMA Lifeline, then they will be indicated as not applicable (NA).

The Montgomery County Emergency Management Agency invited individuals who represented regional and local agencies that have authority in regulating county/city development, individuals that represent vulnerable populations, as well as those that are responsible for responding to the identified hazards of prime concern. These partners include jurisdictional police, fire, public works, and health departments, community representatives, nonprofit organizations, local floodplain administration, the county/city school board, elected officials, and electric utility companies. All committee members provided key information to recognize and mitigate hazards of prime community concern. A more detailed summary of HMPC meeting dates, members seeking approval and FEMA lifeline association follows in *Table 2*. Meeting sign-in sheets are included in Appendix A.

Table 2 HMPC Members

Name	Title	Organization/ Jurisdiction	Meeting Dates	
			DATE	DATE
Bronson Gibbs	Risk Manager	Clarksville Gas & Water	09 January 2025	
Chris Cowan	Engineering Manager	Clarksville Street Department	09 January 2025	
Carlye Sommers	Grants	Clarksville Gas & Water	09 January 2025	
Chris Lambert	Water/Wastewater Operations Manager	Clarksville Gas & Water	09 January 2025	
Chris Proctor	Chief	Montgomery County Emergency Medical Services	09 January 2025	
Jennifer Letourneau	Director	Clarksville Parks & Recreation	09 January 2025	
Daniel Lane	CPT	Clarksville Police Department	09 January 2025	
Doug Catellier	Project Manager	APSU GIS Center	09 January 2025	

Emily Bowers	Safety and Health	CMCSS	09 January 2025	
Fred Gilman	EOC Coordinator	Coast Guard Auxiliary	09 January 2025	
Heather Tyndall	Health and Safety Coordinator	Montgomery County Risk Management	09 January 2025	
James Halford	Chief of Staff	City of Clarksville	09 January 2025	
Jeff Bryant	Supervisor	Montgomery County Highway Department	09 January 2025	
Jennifer Hood	Director	Montgomery County Risk Management	09 January 2025	
John Doss	Storm Water Coordinator	Montgomery County Building and Codes	09 January 2025	
Lauren Winters	Grants	City of Clarksville	09 January 2025	
Lee Harrell	Chief of Staff	Montgomery County Government	09 January 2025	
Mike Wilson	Director	APSU GIS Center	09 January 2025	
Norm Brumblay	Chief Operations Officer	CMCSS	09 January 2025	
Brandon McCurdy	Chief of Special Operations	Clarksville Fire and Rescue	09 January 2025	
Richard Teasley	Assistant Supervisor	Montgomery County Highway Department	09 January 2025	
Rod Streeter	Building Commissioner	Montgomery County Building and Codes	09 January 2025	
Scott Audet	Transportation Supervisor	Clarksville Transit System	09 January 2025	
Shannon Ball	TEMA	State Hazard Mitigation Officer	09 January 2025	
Tom Heath		Clarksville Gas & Water	09 January 2025	
Tommy Butler	Safety and Health	CMCSS	09 January 2025	
Ann Waddle	Executive Director	Irene Center for Hope/LTRG	09 January 2025	
Bishop Richard Woodson	Senior Pastor	Living Word International Ministries /LTRG	09 January 2025	
Candise Hendricks	Montgomery County	Grants Analyst	09 January 2025	
CC Wheeler	Executive Director	Montgomery County Veterans	09 January 2025	

		Coalition/LTRG		
David Crockarell	Chief of Police	Clarksville Police Department	09 January 2025	
David Smith	Director	Clarksville Street Department	09 January 2025	
Derek Johnson	Liaison	Mosaic Church/LTRG	09 January 2025	
Edward Baggett	Director	MCEMA	09 January 2025	
Elizabeth Soard	Director of Case Management	TWK UMC/LTRG	09 January 2025	
Freddie Montgomery	Fire Chief	Clarksville Fire & Rescue Department	09 January 2025	
Jacinda Lyon	Tennessee State Administrator	Team Rubicon/LTRG	09 January 2025	
James Hunter	District Coordinator	TEMA	09 January 2025	
Jana Tolleson	Regional Healthcare Coordinator	TN Highland Rim Healthcare Coalition	09 January 2025	
Jay Luvendusky	Disaster Program Manager	American Red Cross (ARC)	09 January 2025	
Jeff Bryant	Supervisor	MOCO Highway Department	09 January 2025	
John Darnell	Executive Director	Loaves and Fishes/LTRG	09 January 2025	
Justin Crosby	Director	Clarksville Building and Codes	09 January 2025	
Keith Cutshall	Chief Officer	CDE Lightband	09 January 2025	
Kristen Jaggers	Long Term Recovery Group Manager	Greater United Way of Clarksville/LTRG	09 January 2025	
Leslie Chiodini	Executive Director	Community Action Agency/LTRG	09 January 2025	
Rodney Grimsley Lori Shinton	Deputy Director Long-Term Recover Group (LTRG) Chairperson	Montgomery County Emergency Management Greater United Way of Clarksville/LTRG/Hands on Nashville	09 January 2025 09 January 2025	
Mayer Marks	Liaison	Lifepoint Church/LTRG	09 January 2025	
Natalie Villegas	Liaison	Lifepoint Church/LTRG	09 January 2025	

Micheal Rios	Fire Chief	Montgomery County Fire Department	09 January 2025	
Micheal Austin	Director	City of Clarksville Neighborhood & Community Services	09 January 2025	
Robin Pingilley	Pastor	Christ Lutheran Church/LTRG	09 January 2025	
Richard Chase	Mitigation Specialist	TEMA	09 January 2025	
Sally Read	Director	Montgomery County Parks and Recreation	09 January 2025	
Scott Smith	Planner	Montgomery County EMA	09 January 2025	
Sherry Nicholson	Founder/CEO	YAIPAK	09 January 2025	
Vicky York	CEO	Manna Cafe	09 January 2025	
Terrie Williams	Executive Director	Crisis 211 Center/LTRG	09 January 2025	
Valerie Guzman	CEO	Greater United Way of Clarksville/LTRG	09 January 2025	
Jeff Tyndall	Director	Clarksville- MOCO Planning Commission	09 January 2025	
David Abernathy	Operations Manager	CEMC	09 January 2025	
Jodi McBryant	Executive Director	Urban Ministries/LTRG	09 January 2025	

1.2.2 Hazard Mitigation Planning Process

The 2025 Montgomery County Hazard Mitigation Plan was updated following guidance put forth by FEMA in the ***Local Mitigation Planning Policy Guide*** which became effective on April 19, 2023. This guidance emphasized the need for a whole community planning approach to include representatives from all sectors of the community with an emphasis on the increased need for vulnerable and underserved population representation. The guidance also highlighted increased emphasis on risk, vulnerability, and resilience assessments, the inclusion of high hazard dams, and future weather trends/patterns.

FEMA guidance proposes a structured four-phase approach to completing a Hazard Mitigation Plan as follows:

1) Planning Process
2) Risk Assessment
3) Mitigation Strategy
4) Plan Maintenance

Phase I - Planning Process

Organize to Prepare the Plan
The planning process officially began with a meeting held on **09 January 2025** at **350 Pageant Lane, Clarksville, TN 37040**. The meeting covered the scope of hazard mitigation, the purpose of planning, eligible grants, risk assessments and vulnerabilities impacting the community. During the planning process, the committee communicated through face-to-face meetings, email, and telephone conversations. The neighboring communities were given an opportunity to be involved in the planning process with email invitations by the Montgomery County Emergency Management Agency for the planning committee meetings. Some of those neighboring communities that were outreached to include:

- Houston County
- Stewart County
- Dickson County
- Robertson County

Involve the Public
Early discussions established the significance of involving the public. The HMPC agreed to an approach using established public information mechanisms and resources within the community. Public involvement activities for this plan update included public notices, stakeholder and public meetings, and the collection of public and stakeholder comments on the draft plan. To ensure socially vulnerable and underserved populations were included in organizing efforts the Montgomery County Emergency Agency contacted organizations that had roots within the community such as Manna Café, Loaves and Fishes, Life Point Church, Mosaic Church, Habitat for Humanities, Yaipak, and Clarksville-Montgomery County Action Agency. Due to the nature of the public meetings, neighboring communities, agencies, utilities, academia, civic organizations, and other interested parties were given the opportunity to participate.

A public notice was posted on **19 December 2024 on Montgomery County Emergency Management** webpage (https://mcgtn.org/ema) and flyer locations listed in *Table 7*, inviting members of the public to attend the **Montgomery County Public Hazard Mitigation Meeting on 23rd and 24th of January 2025 at 130 South First St., Clarksville, TN 37040.** Documentation to support outreach efforts such as emails, community flyers, and social media postings can be found in Appendix A.

Sign-in sheets from all meetings are included in Appendix A. The meeting date and topics discussed are summarized below in *Table 3*. The meeting on **23rd and 24th January 2025** was open to the public and announced.

Table 3 Summary of Hazard Mitigation Planning Meetings

Meeting Number	Meeting Topic	Meeting Date	Meeting Location
Meeting #1	Overview of hazard mitigation	**09 January 2025**	**350 Pageant Lane, Clarksville, TN 37040**
	Hazard Mitigation Planning Process		
	Purpose of the HMP		
	Area growth and changes		
	Identification of		

	Hazards		
	Future weather predictions		
	Assessment of risk, vulnerabilities, resilience		
	Review of NFIP		
	Previous HMP goals/projects		
	New goals/projects		
Meeting Number	**Meeting Topic**	**Meeting Date**	**Meeting Location**
Meeting #2 Public Meeting	Overview of hazard mitigation	**23 January 2025**	**130 South First St., Clarksville, TN 37040**
	Hazard Mitigation Planning Process		
	Purpose of the HMP		
	Area growth and changes		
	Identification of Hazards		
	Future weather predictions		
	Assessment of risk, vulnerabilities, resilience		
	Review of NFIP		
	Previous HMP goals/projects		
	New goals/projects		
Meeting Number	**Meeting Topic**	**Meeting Date**	**Meeting Location**
Meeting #3 Public Meeting	Overview of hazard mitigation	**24 January 2025**	**130 South First St., Clarksville, TN 37040**
	Hazard Mitigation Planning Process		
	Purpose of the HMP		
	Area growth and changes		
	Identification of Hazards		
	Future weather		

	predictions		
	Assessment of risk, vulnerabilities, resilience		
	Review of NFIP		
	Previous HMP goals/projects		
	New goals/projects		

Coordination

Early in the planning process, the committee determined that the risk assessment, mitigation strategy development, and plan approval would be greatly enhanced by inviting other local and state partners to participate in the process. The coordination involved contacting these agencies through email, flyers, in-person, and phone conversations. All groups and agencies were advised on how to become involved in the plan development process and were solicited asking for their assistance and input. A summary of agencies and organizations actively involved in the HMPC is as follows:

- Tennessee Emergency Management Agency
- Montgomery County Emergency Management Agency
- Clarksville-Montgomery County School System
- Montgomery County Government
- Montgomery County Building and Codes
- Montgomery County Highway Department
- Montgomery County Emergency Medical Services
- City of Clarksville Government
- Clarksville Building and Codes
- Clarksville Street Department
- Clarksville Gas & Water
- Clarksville Parks & Recreations
- Clarksville Police Department
- Clarksville Fire and Rescue
- Clarksville Department of Electricity (CDE Lightband)
- Clarksville Finance Department (Grants Division)
- Clarksville-Montgomery County Regional Planning Commission
- Clarksville-Montgomery County Industrial Development Board Clarksville Transit System
- Coast Guard Auxiliary
- Cumberland Electric Membership Corporation
- Austin Peay State University Geographic Information System Center (APSU GIS)
- Austin Peay State University Police Department
- American Red Cross (ARC)
- Tennova Healthcare
- Montgomery County Assessors of Property
- Montgomery County VOAD
- YAIPAK

- United Way of the Greater Clarksville Region
- Mosaic Church
- LifePoint Church
- Long Term Recovery Group (LTRG)

Coordination with other community planning efforts was also paramount to the success of this plan. Mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. Montgomery County uses a variety of planning mechanisms such as land development regulations and ordinances to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs.

Table 4 identifies the existing planning mechanisms that were reviewed and how they were incorporated into the 2025 Hazard Mitigation Plan Update.

Table 4 Planning Mechanism Review

Existing Planning Mechanisms	Reviewed? (Yes/No)	Method of Use in Hazard Mitigation Plan
State Hazard Mitigation Plan	Yes	Identifying hazards, assessing vulnerabilities, and mitigation strategies
Emergency Operations Plan	Yes	Identify major capabilities
Community Data Profile	Yes	Development trends, capability assessment
Stormwater Ordinance	Yes	Capability assessment, mitigation strategies
Building and Codes	Yes	Different years of code regulations utilized in different jurisdictions
CDC Social Vulnerability Index	Yes	Analyze vulnerable population in jurisdictions
FEMA's National Risk Index	Yes	Analyze natural hazard risk within each jurisdiction
Land Use Maps	Yes	Assessing vulnerabilities, development trends, and mitigation strategies
Critical2TN Infrastructure Database	Yes	Assessing vulnerabilities, mitigation strategies
NOAA Archives	Yes	Analyze weather data and trends
ETSU Geoinformatics & Disaster Science Lab	Yes	Analyze future weather trends and patterns
U.S Census Bureau	Yes	Analyze community demographic data and trends
Local County Hazard Mitigation Plan	Yes	Analyze previous plan for updates
Flood Insurance Rate Maps	Yes	Analyze flood prone areas within the community

These and other documents were reviewed and considered, as appropriate, during the collection of hazard identification, vulnerability assessment, and capability assessment. Data from these plans and ordinances were incorporated into the risk assessment and hazard vulnerability

sections of the plan as appropriate. The data was also used in determining the capability of the community in being able to implement certain mitigation strategies.

Phase II – Risk Assessment

Identify the Hazard, Assess the Risk and Vulnerabilities
The committee completed a comprehensive effort to identify/update, document, and profile all hazards that have, or could have, an impact on the community. The committee also conducted a capability assessment to review and document the planning area's current capabilities and gaps. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the committee could assess the activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. A more detailed description of the risk assessment process and the results are included in Chapter 2 Risk and Vulnerability Assessment.

Phase III – Mitigation Strategy

Set Goals and Review Actions
This meeting facilitated brainstorming and discussion sessions that described the purpose and process of developing planning goals and objectives, a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. This information is included in Chapter 3 Mitigation Strategy.

Draft an Action Plan
A complete first draft of the plan was prepared based on information and input collected during the HMPC meetings, and various agencies and individuals were invited to comment on this draft. Public and agency comments were integrated into the final draft for TEMA and FEMA Region IV to review and approve, contingent upon final adoption by Montgomery County.

County Phase IV – Plan Maintenance

Adopt the Plan
To secure buy-in and officially implement the plan, the plan was reviewed and adopted by the appropriate governing bodies.

Implement, Evaluate, and Revise the Plan
Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning and actions. Chapter 4 Plan Integration and Maintenance discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

1.3 Plan Update

The 2025 Montgomery County Multi-Jurisdictional Hazard Mitigation Plan contained a hazard identification and risk assessment for each jurisdiction and a corresponding action list aimed at

mitigation risk. Since that time, progress has been made by both the County and incorporated jurisdictions on the implementation of the mitigation strategy with 0 completed action and 18 in progress. The HMPC has met annually over the past five years to monitor, implement, and update the plan. This chapter includes an overview of the approach to updating the plan and identifies new analyses and information included in this plan update.

1.3.1 The New Plan

The updated plan involved a comprehensive review and revision of each section of the 2025 plan and included an assessment of the success of the County and the incorporated jurisdictions in evaluating, monitoring, and implementing the mitigation strategy outlined in the 2025 plan. Only the information and data still valid from the 2025 plan was carried forward as applicable in this update. The following requirements were addressed during this plan update process with consideration of the priorities and goals of the Montgomery County Multi-Jurisdictional Hazard Mitigation Planning Committee:

- Consider changes in vulnerability due to action implementation.
- Document success stories where mitigation efforts have proven effective.
- Document areas where mitigation actions were not effective.
- Document any new hazards that may arise or were previously overlooked.
- Document NFIP as related to the county and jurisdictions.
- Incorporate new data or studies on hazards and risks.
- Incorporate new data related to future climate patterns and trend.
- Incorporate new capabilities or changes in capabilities.
- Incorporate social vulnerability data and vulnerable population information.
- Incorporate growth and development-related changes to inventories.
- Incorporate new action recommendations or changes in action prioritization.
- Enhanced public outreach and multi-agency coordination efforts.

1.3.2 2025 HMP Strategy Review

During the 2025 update of the Montgomery County Multi-Jurisdictional Hazard Mitigation Plan, the HMPC identified 20 actions as relevant to the county. Of these 20 actions, 0 has been completed, 9 are in progress, and 11 have not been started. Actions that had not been pursued were discussed for relevance to the new plan and were either carried over to the 2025 plan or deleted from the strategy. 20 of these projects were determined to still be viable and will be carried over or revised in this plan update. Details and the status of all previous actions are in *Table 5.*

Table 5 Mitigation Action Progress Summary (2025 Plan)

Action Number	Action Description	Responsible Dept.	Current Status			2025 Plan Update		Funding Source				Priority Score	Est. Cost	New or Existing Infrastructure
			Complete	In-Progress	Not yet Started	Delete Action	Carry Forward or Revise	HMGP	BRIC[1]	FMA	Local			
Project 1	Public education of NFIP and Drainage structure clearing	Clarksville Street Department Montgomery County Building and Codes/ Storm Water Division		X			X				X		$10,000	Existing
Project 2	Use of sinkholes to drain developed areas	Clarksville Street Department Montgomery County Building and Codes/ Storm Water Division		X			X				X		$50,000	Existing
Project 3	Enforcement of NFIP Requirements	Montgomery County Building and Codes City of Clarksville Building and Codes		X			X				X		$10,000	Existing

[1] BRIC previously referred to as PDM in the 2017 Hazard Mitigation Plan

Project 1	Need for additional salt sheds	Montgomery County Highway Department City of Clarksville Street Department		X			X				X		$50,000 per year	Existing
Project 1	Update all warning sirens and installation of new 6 sirens.	MCEMA Montgomery County		X			X	X			X		$200,000	Existing
Project 2	Protective safety film applied to existing windows	MCEMA Montgomery County City of Clarksville			X		X	X			X		$100,000 per building	Existing
Project 3	Replace windows with high impact storm windows	MCEMA Montgomery County City of Clarksville			X		X	X			X		$2,000,000	Existing
Project 4	Build safe rooms	MCEMA Montgomery County City of Clarksville			X		X	X			X		$2,000,000	Existing
Project 5	UAS Trailer	MCEMA Montgomery County City of Clarksville			X		X	X			X		$75,000	Existing

Project 6	Continued building and codes enforcement	Montgomery County Building and Codes City of Clarksville Building and Codes		X			X				X		$10,000 per year	Existing
Project 7	Continued removal of limbs and tree trimming	Montgomery County Highway Department City of Clarksville Street Department CEMC Clarksville Department of Electricity		X			X				X		$100,000 per year	Existing
Project 8	Retrofit older schools with safe rooms	CMCSS			X		X				X		$5,000,000	Existing
Project 1	Public awareness programs of hazards	MCEMA City of Clarksville		X			X	X			X		$10,000 per year	Existing
Project 2	Evaluate, improve, and implement Hazard Mitigation Planning	MCEMA City of Clarksville		X			X	X			X		$20,000 per year	Existing

Project 3	Build on existing equipment for SAR teams	MCEMA Montgomery County Fire Department Clarksville Fire and Rescue Montgomery County EMS		X			X	X			X		$250,000	Existing
Project 4	Train responders on tactics for threats	MCEMA Montgomery County Fire Department Clarksville Fire and Rescue Montgomery County EMS		X			X	X		X	X		$250,000	Existing
Project 5	Backup generators with automated switching systems for critical infrastructure	CMCSS City of Clarksville Montgomery County			X		X	X			X		$1,000,000	Existing
Project 6	Backup portable generators with automated switching systems for critical infrastructure	CMCSS City of Clarksville Montgomery County			X		X	X			X		$500,000	Existing

Project 7	Purchase power transfer switch for portable generators	CMCSS City of Clarksville Montgomery County			X		X	X			X		$10,000 per facility	Existing
Project 8	Solar panels and storage cells with automated switching systems for critical infrastructure	CMCSS City of Clarksville Montgomery County			X		X	X			X		$1,000,000	Existing

1.4 Multi-Jurisdictional Special Considerations

Hazards Assessment

Most of the natural hazards identified within this plan have an impact on both Montgomery County and the incorporated jurisdictions. Some hazards have a larger impact on the County rather than the incorporated jurisdictions and vice versa. Impacts of identified hazards differ the most at the rural and urban interface where flooding can have different severity levels. Therefore, the flooding section emphasizes the depth, duration, and timing of severe flooding events. Below is a table that shows whether a hazard will have multi-jurisdictional impacts.

Table 6: Multi-jurisdictional Differences

Hazards	Will the hazard have multi-jurisdictional differences?
Earthquake	No
Flooding	Yes
Severe Weather	Yes
Tornado	Yes
Hazardous Materials Release	No

1.5 Public Participation

Public involvement included press releases, public meetings, and a public comment period on the draft plan. Organizations representing vulnerable and underserved populations were contacted to gain further input from populations most at risk during hazardous events. The formal public meetings for this plan are summarized in *Table 3* (Section 1.2.2) discussed early in this chapter. The **23rd and 24th of January 2025** Public Hazzard Mitigation Planning Meeting was open to the public.

A public notice was posted in locations listed in Table 7. Documentation to support the public outreach efforts can be found in Appendix A. Over the past five years, the community was kept involved in the planning process through the implementation of projects in the plan.

Table 7 Public Notice Flyer Locations

Location/Building	Address	Date Flyer Posted
Manna Café Ministries	605 Providence Blvd., Clarksville, TN	19 December 2024
Yaipak	1255 Paradise Hill Rd., Clarksville, TN	19 December 2024
United Way of the Greater Clarksville Region	107 Jefferson St., Clarksville, TN	19 December 2024
Urban Ministries	217 S. 3rd St., Clarksville, TN	19 December 2024
Clarksville-Montgomery	150 Lafayette Rd., Clarksville, TN	19 December 2024

County Community Action Agency		
Montgomery County Building and Codes	350 Pageant Lane, Suite 309 Clarksville, TN	19 December 2024

1.6 County Data Profile

1.6.2 Resources and Assets

Tennova Medical Center provides 24-hour emergency care to residents of the county and is home to 270 beds. The county also has: 135 volunteer firefighters with 5 districts and with 5 stations and four sub stations, the City of Clarksville has 280 fulltime fire fighters and 12 stations, over 400 full time Law Enforcement officers and employees within the Montgomery County Sheriff Office and the City of Clarksville Police Department.

Clarksville-Montgomery County School System facilities the learning of approximately 32,398 students via their system of 42 schools within the region. According to the RWJ Foundation County Health Rankings profile Clarksville-Montgomery County Schools are underfunded by $2483 per pupil as related to dollars to test score achievement.

Montgomery County houses four radio stations (WVVR-FM, WCVQ, WVWF-FM, and WAY FM 883). The main phone companies in the area are Spectrum, AT&T, Verizon, and T-Mobile. Residents in the county can either obtain internet via Spectrum, AT&T, CDE Light band, Xfinity, and Cumberland Connect. Communication resources, a vital component of emergency response and preparedness, is notably lacking in the more rural portions of Montgomery County. Between 2016 and 2020, 97% of households had a computer and 91.6% had broadband internet access according to the United States Census Bureau.

The main roadways that travel through the county are Interstate 24 and State Highways 13, 12, 237, 79, 233, and 41A. The Cumberland River enters the Southeastern region of the county and is the only large waterway in the county. Other smaller waterways that intersect throughout Montgomery County are the Red River, Yellow Creek, Sugar Creek, Little McAdoo Creek, Hurricane Creek, Rocky Ford, and Indian Creek, a further analysis of these water systems will be explored in the hazard flood section as related to their propensity for flood events.

The nearest international airport is BNA (approx. 57.6 miles) and the closest general aviation location is Clarksville Regional Airport in the City of Clarksville. Given the limited public transportation options and the rural environment of Montgomery County, 49% of working individuals endure a commute of more than 30 minutes and 86% of all working individuals drive alone to work.

Montgomery County is governed by an elected County Mayor and Board of Commissioners (fourteen members). The City of Clarksville is governed by an elected Mayor and Council. There are multiple regulatory committees that are appointed by both the County Mayor and the Board of Commissioners.

1.6.3 Development and Growth

Like most of its counterparts, Montgomery County, has been experiencing rapid growth over the past few years. The population of the county increased between the 2010 and 2020 censuses from 172,331 to 235,201. 13% of the 93,702 Montgomery County households deal with at least 1 severe housing problem (overcrowding, high housing costs, lack of kitchen facilities, or lack

of plumbing facilities). From 2020 to 2021, employment in Montgomery County, TN grew 7.04% from 85,800 employees to 91,800 employees. The most common job groups are Office and administrative support (10,740), Sales related positions (8935) and Management Occupations (8,000). CMCSS is the largest employer in Montgomery County, outside of Fort Campbell. Employees: 5,594 (includes substitutes) Certified teachers: 2,564 Montgomery County is a member of Joint Economic and Community Development Boards to ensure and promote economic growth within the county and for its constituents. As stated, Montgomery County has experienced much growth since the last planning period, specifically residential/industrial/commercial growth.

1.6.4 Demographics

Throughout the planning process, Montgomery County HMPC remained committed to recognizing socially vulnerable and underserved populations. To maintain this commitment, the HMPC reached out to key stakeholders as discussed in Section 1.2 and reviewed the CDC/ATSDR Social Vulnerability Index (SVI). SVI information is in Appendix B.

Table 8 below illustrates the population data of the county according to the 2020 U.S Census. Other important demographics obtained via the U.S Census Bureau and County Health Rankings (RWJ Foundation) are presented in list form. Of the 235,201 residents living within Montgomery County:

- The median household income is $67,890.
- 11.2% live below the national poverty line.
- 19.7% live in rural areas.
- 12% are confronted with food insecurity.
- 12.5% of the under 65 years of age population live with a disability.
- 9.6% of the under-65 population do not have health insurance.
- Population as of 2025 was 408.2 people per square mile.

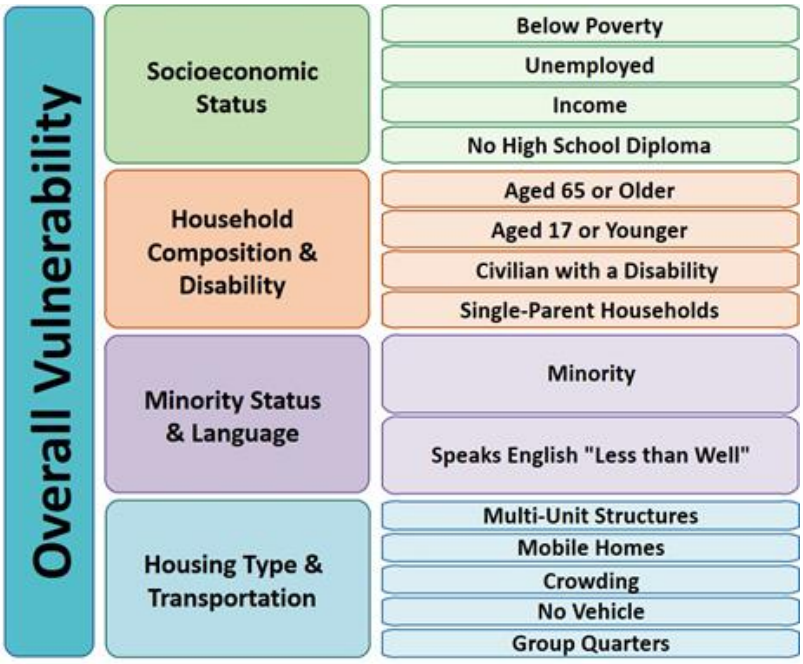
Table 8: Population Data

Demographic	Percentage
Identified gender	
Male	49.9
Female	50.1
Age Group	
Under 5	7.5
Under 18	26.6
Over 65	10.3
Race/Ethnicity (one)	
White (not Hispanic/Latin)	68.7
Asian	2.4
Black or African American	22.6
American Indian or Alaskan Native	0.8
Hispanic/Latino	11.6
Education	
High School Graduate or Higher	94.1
Bachelor's Degree or Higher	30.4

1.6.5 Social Vulnerability

Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. Social vulnerability considerations were included in this plan update to identify areas across the planning area that might be more vulnerable to hazard impacts based on several factors. The Montgomery County BEOP will also incorporate this information to improve response efforts in socially vulnerable neighborhoods.

The Center for Disease Control and Prevention (CDC) has developed a social vulnerability index (SVI) to measure the resilience of communities when confronted by external stresses such as natural or human-caused disasters or disease outbreaks. The SVI is broken down to the census tract level and provides insight into vulnerable populations to assist emergency planners and public health officials in identifying communities more likely to require additional support before, during, and after a hazardous event. The SVI index combines four main themes of vulnerability, which are, in turn, broken down into subcategories for 16 vulnerability factors. The themes are outlined in the below table.



The specific breakdown for Montgomery County and all participating jurisdictions is as follows:

Montgomery County Social Vulnerability Factors	
Total Square Miles	310.80
Total Population (as of 2018)	52,826
Housing Units Estimated	23,365

Households	20,652
Persons below Poverty	7971
Age 16+ unemployed	1445
Per Capita Income	26,251.09
Age 25+ w/ no HS Diploma	5,708
Percentage of Persons below poverty	16.06
Unemployment rate	6.29
Per Capita Income	26,251
Percentage of persons w/ no HS diploma 25 yo+	15.74
Aged 65+ & older	10,520
Age 17 & younger	11,061
Civilian noninstitutionalized population with a disability	10,079
Single Parent HH w/ children under 18	1762
Percentage of person aged 65+	20.28
Percentage of persons 17 or younger	19.00
Percentage of civilian noninstitutionalized population with a disability	19.87
Percentage of single parent households with children under 18	7.92
Minority (all persons except white, non-Hispanic)	2,973
Persons (age 5+) who speak English "less than well"	86
Percentage minority (all persons except white, non-Hispanic)	5.45
Percentage of persons (age 5+) who speak English "less than well"	0.12
Housing in structures with 10 or more units	706
Mobile Homes	3985
At Household level (occupied housing units) more people than rooms	323
Households w/ no vehicle	1017
Persons in Group Quarters	865
Percentage of housing in structures with 10 or more units	2.32
Percentage of mobile homes	16.22
Percentage of occupied housing units with more people than rooms	1.22
Percentage of households with no vehicle available	4.96
Percentage of persons in group quarters	1.3

1.6.6 Critical Infrastructure

Critical Infrastructure are assets in a community that are considered vital to the public's health and safety. Due to the sensitivity of these assets in Montgomery County and the incorporated jurisdictions, these assets are restricted for public viewing. However, the data is viewable to restricted personal on the State of Tennessee's Critical2TN Database. The county and incorporated jurisdictions currently have 42 assets identified.

1.7 Resource Capabilities

The committee gathered the following resource capabilities to determine what existing staff and resources are being used to support mitigation programs. Since the approval of the former plan, mitigation planning has not been incorporated into any new planning mechanisms.

Table 9: Jurisdictional Mitigation Capabilities

Mitigation Capabilities	Montgomery County	City of Clarksville	CMCSS
Building Codes	X	X	
Zoning Codes	X	X	
Subdivision Ordinance	X	X	
Stormwater Ordinance	X	X	
Floodplain Ordinance	X	X	
Erosion, Sedimentation and Pollution Control Ordinance	X	X	
Stormwater Management Program	X	X	
Site Plan Review Requirements	X	X	
Capital Improvements Plan	X	X	
Economic Development Plan	X	X	
Local Emergency Operations Plan	X	X	X
Flood Insurance Study or Other Engineering Study for Streams	X	X	
Repetitive Loss Plan	X	X	
Elevation Certificates	X	X	
Grant writer	X	X	

Public Information Officer	**X**	**X**	**X**
Floodplain Manager	**X**	**X**	
Full Time Fire Service		**X**	
Law Enforcement	**X**	**X**	
Emergency Manager	**X**	**X**	
GIS Personnel	**X**	**X**	
Capital improvements project funding	**X**	**X**	
Fees for water, sewer, gas, or electric services		**X**	
Impact fees for new development	**X**	**X**	
General obligation bonds	**X**	**X**	
Withhold spending in hazard-prone areas	**X**	**X**	

Chapter 2: Hazard and Risk Assessment

2.0 Risk Assessment Overview

Hazard Mitigation Planning is about developing a strategy to reduce risk in the long term. An essential part of the process is identifying hazards, risks, impacts and vulnerabilities. In mitigation planning, "risk" is the potential for damage or loss when a hazard interacts with an asset. Assets can be people, buildings, infrastructure, the economy, or natural and cultural resources.

The probability of occurrence for each of these events was determined by using the National Risk Index as provided by FEMA. The risk equation behind the Risk Index includes three components: a natural hazards component (Expected Annual Loss), a consequence enhancing component (Social Vulnerability), and a consequence reduction component (Community Resilience). The dataset supporting the natural hazards component provides estimates measured in 2022 U.S. dollars. The datasets supporting the consequence enhancing and consequence reduction component have been standardized using a minimum-maximum normalization approach prior to being incorporated into the National Risk Index risk calculation.

Using these three components, composite Risk Index values and hazard type Risk Index values are calculated for each community (county and Census tract) included in the Index. Risk Index values form an absolute basis for measuring Risk within the National Risk Index, and they are used to generate Risk Index percentiles and ratings across communities.

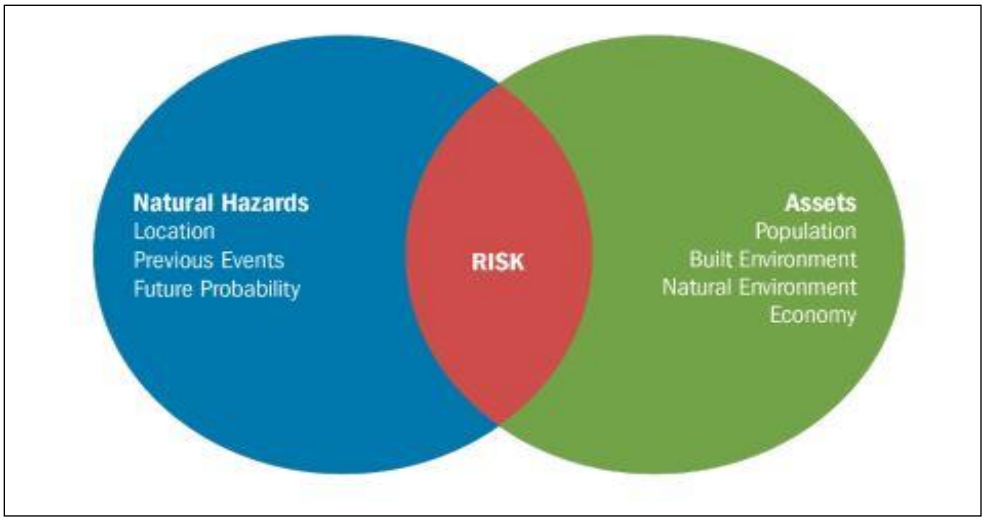
Each community has a composite Risk Index score and up to 18 hazard type Risk Index scores (e.g., Tornado Risk Index score). A composite Risk Index score measures the relative risk of a community based on all 18 natural hazards included in the Index by comparing its composite Risk Index value with other communities at the same level. A hazard type Risk Index score measures the relative risk of a community for a specific hazard type by comparing its hazard type Risk Index value with other communities at the same level.

Risk Index values form an absolute basis for measuring risk within the National Risk Index. They are used to generate all Risk Index percentiles and ratings.

To calculate Risk Index values, the National Risk Index generates a Community Risk Adjustment to scale Expected Annual Loss values up or down, depending on their community risk factors. The Community Risk Adjustment increases with Social Vulnerability and decreases with Community Resilience. So, higher Social Vulnerability for a community result in a higher Risk Index value while higher Community Resilience for a community result in a lower Risk Index value.

Given the data driven approach used by FEMA to predict or anticipate expected annual occurrences or losses, this report helps drive probabilities using categories as defined by FEMA such as, "very high, relatively high, relatively moderate, relatively low, very low, no rating, not applicable, and insufficient data". The assigned scoring will be incorporated in each hazard section to identify the probability of each hazard as suggested by FEMA.

The risk assessment helps communicate vulnerabilities, develop priorities, and inform decision making. It is the factual basis for the mitigation strategy. The hazards and associated impacts in the risk assessment should be the hazards and impacts the mitigation strategy seeks to address. If, for example, the risk assessment shows that the state will have hurricane damage in a specific area, the mitigation strategy should include actions to protect state assets and jurisdictions, especially underserved communities, and socially vulnerable populations, in those areas.



The Montgomery County HMPC conducted a hazard identification analysis to determine the natural and man-made hazards that threaten the County. Existing hazard data from TEMA, FEMA, the National Oceanic and Atmospheric Administration (NOAA), and other sources were examined to assess the significance of these hazards to the planning area. Hazard data from the ETSU Geoinformatics & Disaster Science Lab was also analyzed as related to the changing weather trends and their significance. Significance was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths and injuries, as well as property and economic damage. Any hazard that had two or more green lifeline categories is considered low risk for damages and therefore, will not be providing mitigation actions for those specific hazards.

To further focus on the list of identified hazards for this plan update, the HMPC researched past events that resulted in a federal and/or state emergency or disaster declaration in Montgomery County to identify known hazards. *Table 10* presents a list of all major disaster and emergency declarations that have occurred in Montgomery County since 1953, illustrating which hazards pose the greatest risk to the County.

Table 10: Presidential Disaster Declarations in Montgomery County (1953-2023)

Declaration #	Date	Event Details	Individual Assistance	Public Assistance
459	1975-03-22	Flood	X	X
1010	1994-02-28	Severe Storm		X
1167	1997-03-07	Tornado	X	X
1262	1999-01-19	Severe Storm	X	X
1441	2002-11-13	Severe Storm	X	
1464	2003-05-08	Severe Storm	X	X

1745	2008-02-07	Severe Storm		X
1821	2009-02-17	Severe Ice Storm		X
3217	2009-05-09	Hurricane		X
1909	2010-05-04	Severe Storm		X
1974	2011-05-01	Severe Storm		X
1979	2011-05-09	Severe Storm		X
4471	2019-12-06	Severe Storm		X
3473	2020-03-13	Biological		X
4514	2020-04-02	Biological		X
4712	2023-05-17	Severe storms		X
4751	2023-12-13	Severe Storms		X
4792	2023-06-24	Severe Storm		X

Table 11 documents the hazards of interest to Montgomery County and the decision to re-evaluate or delete them from this plan update. The hazards of concern were altered as necessary to ensure the Montgomery County Multi-Jurisdictional Hazard Mitigation Plan is in accordance with the Tennessee Mitigation Strategy.

Table 11: Overview of Updates to Chapter 2: Risk and Vulnerability Assessment

Tennessee 2018 Mitigation Strategy	Montgomery County 2020 HMP	Status	Montgomery County 2025 HMP Update
Communicable Disease	X		
Land Subsidence/ Geological	X		
Earthquakes	X		X
Extreme Temperatures	X		X
Flooding	X		X
Hazardous Materials Release	X		
Tornadoes	X		X
Severe Weather (thunderstorms,	X		X

lighting, hail)			

Summary of changes in the 2025 plan update:

- Freezes are to be categorized as extreme heat and labeled as an Extreme Temperatures hazard.
- Winter Storms will be categorized with the Severe Weather hazard.
- Tornadoes and Severe Storms are to be split and categorized as Tornadoes and Severe Weather.

The complete list of hazards to be addressed in this 2025 Plan Update include:

- Earthquake
- Extreme Temperature
- Flooding
- Severe Weather (hail, lightning, wind, winter weather)
- Tornadoes

2.1 Earthquakes (Approximately one every 1-2 years)

A. Hazard Overview

An earthquake results from a sudden release of energy in the Earth's crust that creates seismic waves. The energy originates from a subsurface fault. A fault is a fracture or discontinuity in a volume of rock along tectonic plates. In the most general sense, the word earthquake describes any event that generates seismic waves. Earthquakes are typically caused by the rupturing of geological faults. Occasionally, they are also caused by other events such as volcanic activity, landslides, mine blasts, and nuclear tests. An earthquake's point of initial rupture is called its focus or hypocenter. The epicenter is the point at ground level directly above the hypocenter.

B. County Profile

Montgomery County is near the major intraplate (within a tectonic plate) seismic zone known as the New Madrid Seismic Zone. The New Madrid Seismic Zone (NMSZ) is an approximately 120-mile-long fault system that stretches across five states, including Western Tennessee. Montgomery County is near the East Tennessee Seismic Zone (ETSZ) which stretches across three states. The figure below illustrates the risk level of the NMSZ/ETSZ within the state.

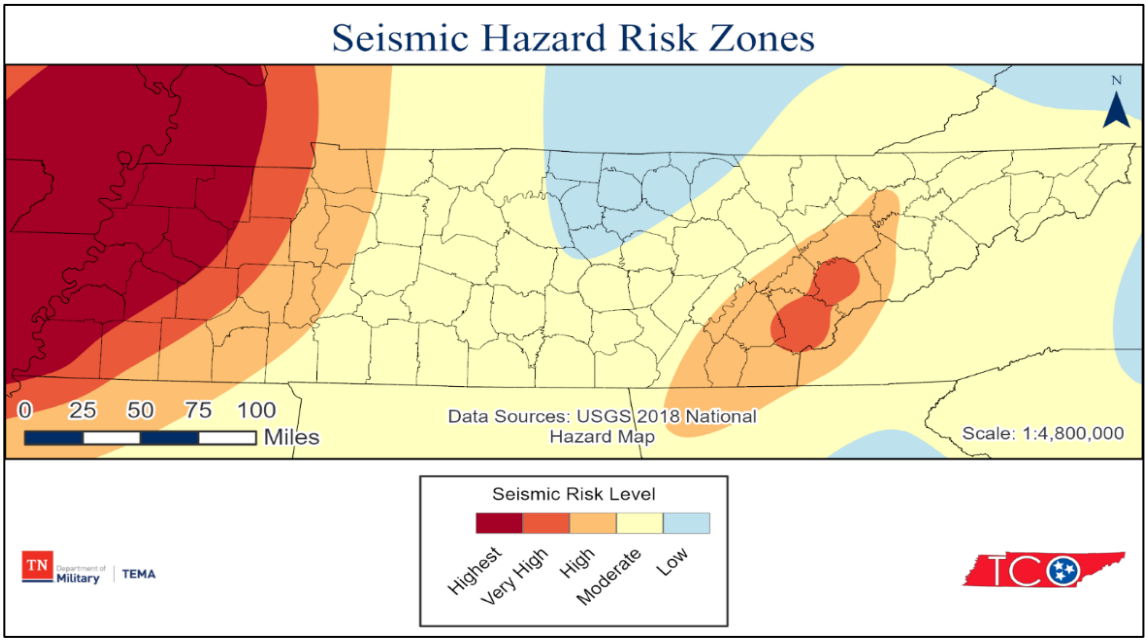


Figure 1 New Madrid Seismic Zone (Source: CUSEC)

A total of *3 earthquakes* with a magnitude of four or above have struck within 186 mi (300 km) of Montgomery County in the past 10 years. The NMSZ is known for producing four of the largest North American earthquakes in recorded history, all of which would have been felt in Montgomery County.

This includes the noted three-month period between December 1811 and February 1812 that had at least four earthquakes which are understood by scientists to be greater than a M7.0. During this period, there were dozens of strong earthquakes ranging between M6.0 and M7.5. Thousands of smaller shocks were documented. Like the 1811-12 New Madrid earthquake sequence which created Reelfoot Lake in Lake County, Tennessee, very large magnitude earthquake sequences are believed to have occurred in pre-historic times as well. Paleo-liquefaction and geologic evidence suggests large earthquake sequences occurred in the New Madrid Seismic Zone in 1450 AD and 900AD.

Based on geologic research on the paleo seismic record of past earthquakes, the USGS estimates that there is a 7 to 10 percent chance of a New Madrid earthquake the size of those in 1811-12 occurring in the next 50 years. However, the occurrence of even a moderate-sized earthquake located near urban centers such as Memphis or St. Louis could be locally devastating. The last magnitude-6 earthquake struck near Charleston, Missouri, in 1895. The chance of such an earthquake occurring in the New Madrid region in the next 50 years is 25 to 40 percent.

These probabilities are derived from the USGS National Seismic Hazard Maps, which are developed from geologic information about faults, evidence of prehistoric earthquakes, instrumental and historical earthquake catalogs generated by seismic monitoring, and ground deformation measurements. The National Seismic Hazard Maps are used to estimate probabilities of large earthquakes and the ground shaking to be expected if those earthquakes occur.

The Eastern Tennessee Seismic Zone (ETSZ), a zone of small earthquakes stretching from northeastern Alabama to southwestern Virginia. The ETSZ is the second-most active natural seismic zone in the central and eastern United States, behind the New Madrid Seismic Zone in the Mississippi River region that produced the 1811-1812 magnitude 7+ earthquakes. In historic times, the ETSZ has not produced earthquakes larger than magnitude 4.8, however scientists believe the ETSZ can generate magnitude 6 or greater. The ETSZ region is home to several nuclear power plants and hydroelectric dams related to the Tennessee Valley Authority, along with major population centers such as Knoxville and Chattanooga.

Table 12: Richter Scale Classification (Source: USGS)

Richter Scale for Earthquakes		
Magnitudes	**Description**	**Typical Impacts**
< 2.0	Micro	Not felt.
2.0-2.9	Slight	Generally, not felt but recorded.
3.0-3.9	Minor	Often felt, but rarely causes damage.
4.0-4.9	Light	Noticeable shaking of indoor items and rattling noises. Significant damage is likely.
5.0-5.9	Moderate	It can cause major damage to poorly constructed buildings in small regions. At most slight damage to well-designed buildings.
6.0-6.9	Strong	It can be destructive in areas up to about 100 miles across populated areas.
7.0-7.9	Major	It can cause serious damage over larger areas.
8.0-8.9	Great	It can cause severe damage in areas several hundred miles across.
9.0-9.9	Epic	They are devastating in areas several thousand miles across.

Since 1812, the most significant recorded earthquakes from the New Madrid Zone were in 1895 and 1968. Since seismic measurement instruments were installed in and around the zone in the 1970s, more than 4,000 small earthquakes have been recorded, with the vast majority being too small to be felt.

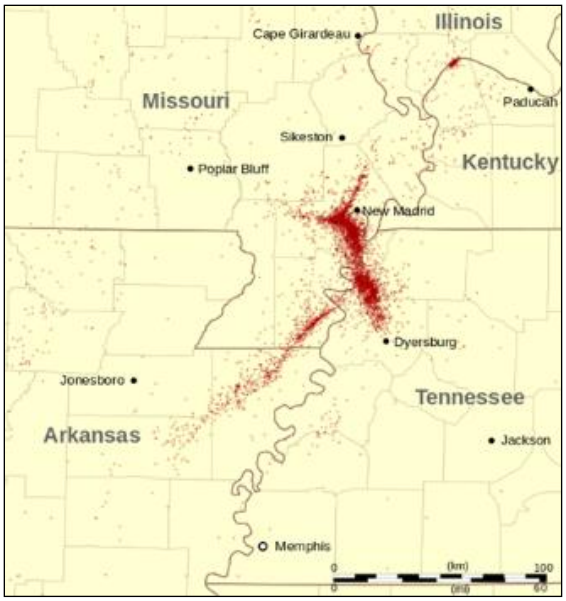


Figure 2 NMSZ Earthquakes Recorded Since 1974 (Source: USGS)

According to a 2008 FEMA report, a severe earthquake in the NMSZ could result in the highest economic loss due to a natural disaster in U.S. history. Based on this report, a 7.7 magnitude quake in the NMSZ would result in thousands of fatalities, hundreds of billions of dollars in damage to structures, and total disruption of vital infrastructure in Western Tennessee, including Montgomery County.

Probability of Future Events – Likely

A catastrophic earthquake at the NMSZ would result in $100-200 million in building damages. Furthermore, according to the HAZUS, Montgomery County will experience the following in a catastrophic earthquake scenario:

Table 13: Montgomery county Earthquake Impact Scenario

Impact Overview		**Numerical Value**	
Fatalities		21	
Injuries			
Displaced Residents		37	
Residents Requiring Shelter		21	
Debris (tons)		28.000	
Residencies experiencing >moderate damage		292.6	
Day 1			
Households without power		0.00%	
Households without potable water		0.00%	
Resources Functioning on Day 1		**Infrastructure Functioning after Day 1**	
Resource	**Percentage Functioning**	**Resource**	**Percentage Functioning**

Hospitals	100%	Highway Segments	100%
Police Stations	100%	Railway Segments	100%
Fire Stations	100%	Airport Segments	100%
Schools	100%	Bus facilities	100%
Communications	100%		

Many buildings and many infrastructure networks throughout the county could be vulnerable to earthquake impacts. Montgomery County's building stock can be broken down into the following percentage categories: 63.2% residential, 20.8% commercial, 9.9% industrial, 1% agricultural, 2.8% religious, 0.9% governmental, and 1.5% educational. Throughout the county, all buildings and infrastructure are vulnerable to earthquake impacts.

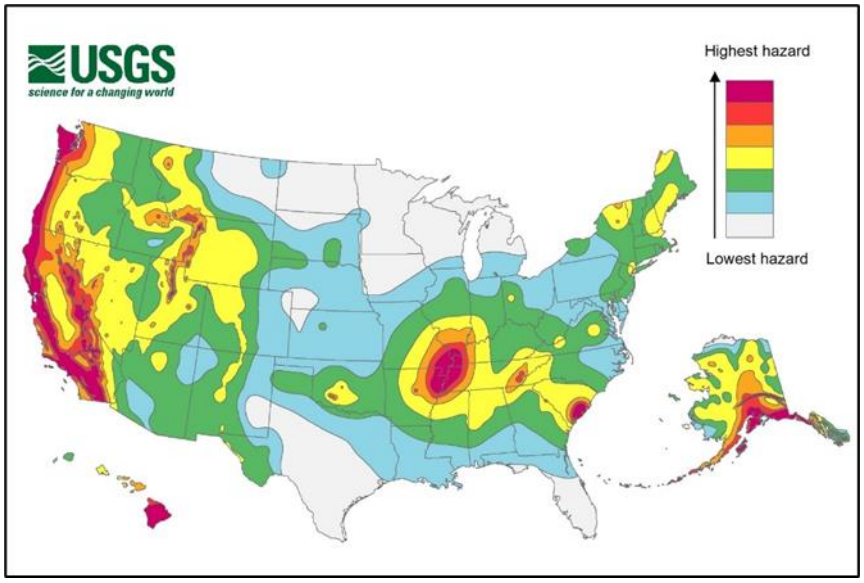


Figure 3 National Seismic Hazard Map (Source: USGS)
Ground Motions with a 2% Chance of Occurring in 50 Years

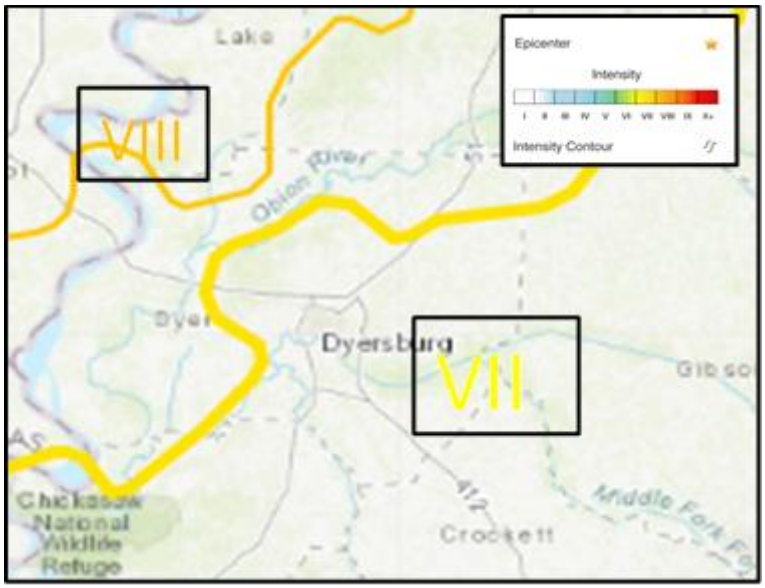


Figure 4 Mercalli Intensity Zones in Montgomery County (Source: USGS)

As indicated in the above maps, all of Montgomery County's jurisdictions and districts sit within intensity zones VII (strong) to VIII (severe) of the Modified Mercalli Intensity Scale due to its proximity to the NMSZ/ETSZ.

According to the Central United States Earthquake Consortium (CUSEC), Montgomery County is at low level of risk for liquefaction following an earthquake.

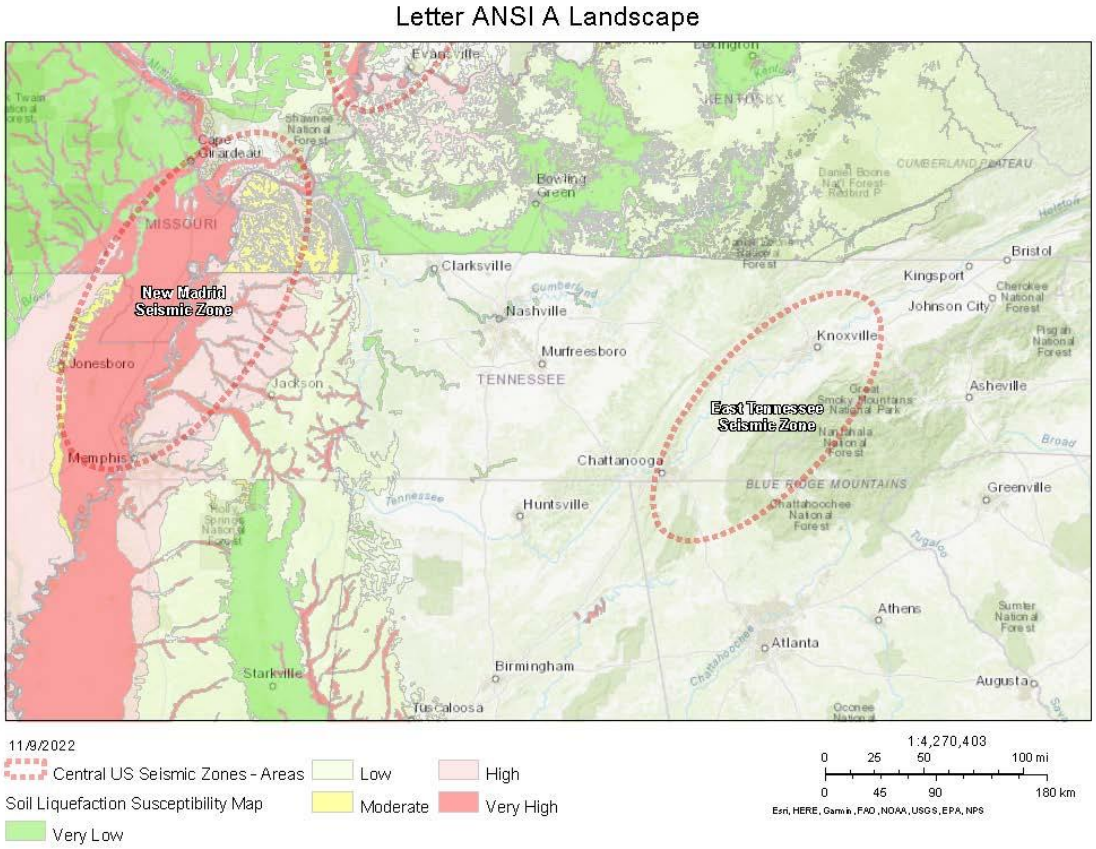


Figure 5 Earthquake Induced Liquification (Source: CUSEC)

C. Risk Assessment - Likely

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for natural hazards. It was built and designed by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal government. The Risk Index leverages available source data for natural hazards and community risk factors to develop a baseline relative risk assessment for each county and census trace. Some of these community risk factors include social vulnerability which is determined by the data pulled from the Census preformed every ten years. A higher social vulnerability score is proportional to a higher risk score.

National Risk Index Score for Earthquake = relatively low

Jurisdictional Risk Index Score for Earthquake = relatively low

Although the National Risk Index is a well-valued tool it fails to properly show the feedback from the participating jurisdictions. Therefore, all identified hazards were evaluated regarding risk in FEMA lifelines per jurisdiction. The scenario that local jurisdictions would evaluate the conditions off was a mid-level impact of the identified hazard. The results are below:

Table 14: Earthquake Risk based on selected FEMA Lifelines

Earthquake Risk							
Jurisdiction	**Safety & Security**	**Food, Water & Shelter**	**Health & Medical**	**Energy**	**Communications**	**Transportation**	**Hazardous Materials**
Montgomery County							
City of Clarksville							
Clarksville-Montgomery County School System							

Colors indicate lifeline or component conditions:	
Red	Significant Impact, Multiple Required Resources
Yellow	Some Impact, Some Outside Resources Required
Green	Little to No Impact, No Outside Resources Required

Given the information above it becomes vital that all participating jurisdictions can prioritize the necessity of mitigation actions in the following lifeline categories so that they can become more resilient in the whole community that they serve.

D. Land Use and Development Trends

Heavily populated or industrialized centers are at a higher risk for catastrophic earthquake damage. Montgomery County, like much of Tennessee, is experiencing rapid growth increasing the likelihood of significant impacts to life and property from a significant earthquake.

E. Multi-Jurisdictional Differences

Counties predominantly in the West Portion of Tennessee will be more likely impacted by the New Madrid Zone. However, a significant magnitude earthquake can cause primary and secondary effects across the state.

F. Climate Change Impact

Earthquakes are not influenced by climate change. According to USGS, the only correlation that's been noted between earthquakes and weather and climate is that large changes in atmospheric pressure caused by major storms (like hurricanes) can occasionally trigger "slow earthquakes," which release energy over comparatively long periods of time and do not result in ground shaking like traditional earthquakes do.

G. Summary

Due to its proximity to the New Madrid Fault, the entirety of Montgomery County could be subject to an earthquake. This includes the entire County population and all infrastructure. A significant earthquake event would result in a substantial loss of life and billions of dollars in damages.

2.2 Extreme Temperatures (~1-2 events per year)

A. Hazard Overview

Heat Waves

Excessive Heat is when the heat index reaches at least 105ºF for at least three hours on two consecutive days, and the nighttime air temperature does not drop below 75ºF. The definition of Excessive Heat is a "rule of thumb" because the detrimental effects of high temperatures and humidity vary among segments of the population (old, young, etc.) and whether the population, in general, has built up a heat tolerance (residents in desert communities fair better than visitors). While some may be better able to cope with Excessive Heat as defined, others may still be adversely affected by a lower heat index. A "rule of thumb" works for mitigation planning because the benefits of specific mitigation actions start accruing before conditions reach Excessive Heat levels. Exposure to extreme heat can pose health risks, including sunburn, dehydration, heat cramps, and heat stroke.

The National Weather Service Heat Index calculates how hot it feels when relative humidity is factored in with the actual air temperature using a 4-factor scale: caution, extreme caution, danger, extreme danger. The National Weather Service (NWS) also issues Heat Alerts.

- A Heat Advisory is issued 12-24 hours before the onset, at least 100ºF but less than 105ºF for at least 2 hours.
- An Excessive Heat Watch is issued when temperatures of 105ºF or greater are forecasted for the next 24 to 72 hours.
- An Excessive Heat Warning is issued when temperatures of 105°F last for more than 3 hours per day for two consecutive days or temperatures exceed 115°F for any period.

Cold Wave

Extreme cold temperatures occur during the winter months and typically accompany winter storm events. Extended periods of extremely cold temperatures result from the movement of high-pressure systems into the United States. When Arctic air masses are present, extreme winter temperatures hover over Tennessee.

The National Weather Service (NWS) issues the nation's Wind Chill Warning, Watch, and Advisory:

- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring.
- Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values, are expected or occurring.

The National Weather Service Wind Chill Chart calculates the danger from winter winds and freezing temperatures using a 3-factor time-based scale (30 min, 10 min, 5 min).

B. County Profile

The following figure provides extreme temperature event information for Montgomery County. The threat index for Montgomery County is 1 (low).

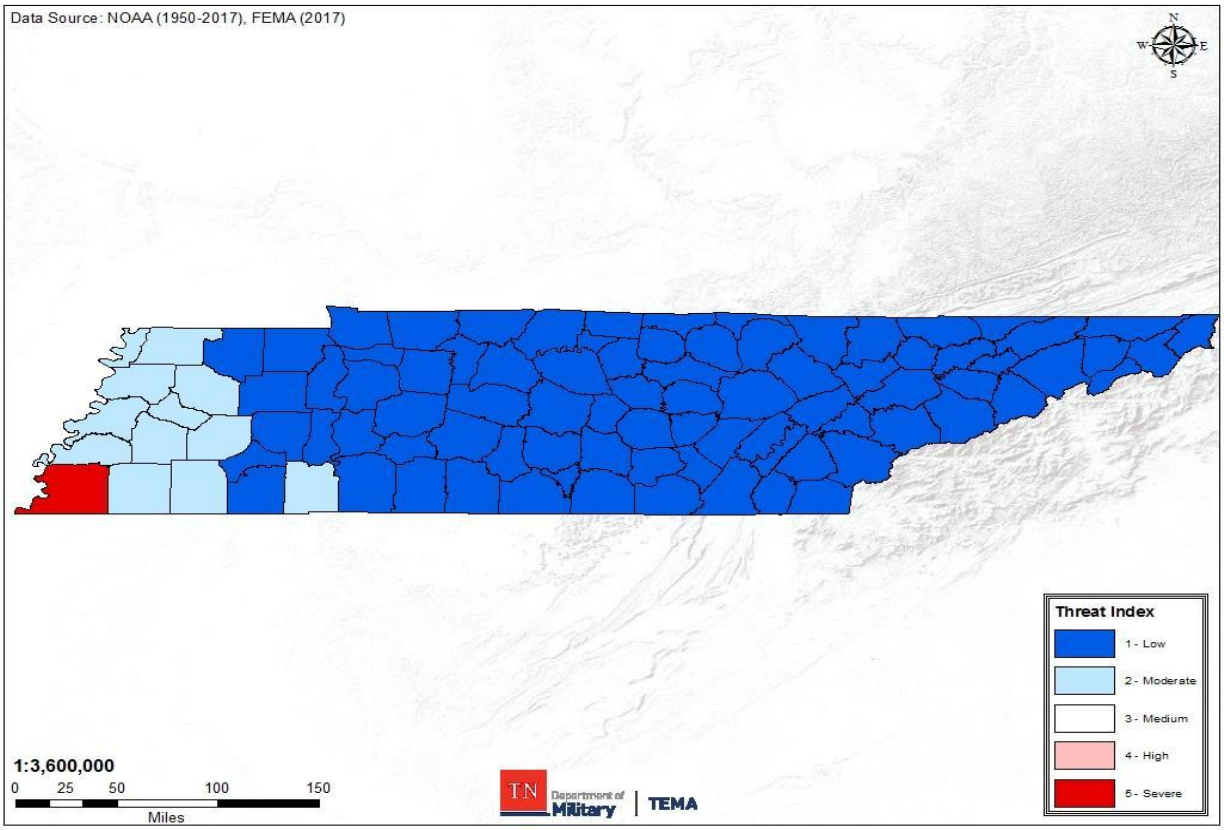


Figure 6: Extreme Temperatures Impact Density (Source: 2018 Tennessee Hazard Mitigation Plan)

The following narratives were obtained via the NOAA Storm Event Database for Cold/Wind Chill, Excessive Heat, and Extreme Cold/Wind Chill. A table containing all NOAA-recorded events between 2000-2024 for Montgomery County is included in Appendix C.

May 26, 2024 – Severe thunderstorm winds downed trees and power lines.

June 30th, 2023 – Multiple stations across Montgomery County recorded maximum heat index values exceeding 120 degrees.

C. Risk Assessment - Likely

In the county, road traveling conditions, electrical lines, human health, and agricultural functions are some of the most vulnerable features.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for natural hazards. It was built and designed by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal

government. The Risk Index leverages available source data for natural hazards and community risk factors to develop a baseline relative risk assessment for each county and census trace. Some of these community risk factors include social vulnerability which is determined by the data pulled from the Census preformed every ten years. A higher social vulnerability score is proportional to a higher risk score.

National Risk Index Score for Cold Waves = relatively low

Jurisdictional Index Score for Cold Waves = relatively low

National Risk Index Score for Hot Waves = relatively low

Jurisdictional Index Score for Hot Waves = relatively low

Although the National Risk Index is a well-valued tool it fails to properly show the feedback from the participating jurisdictions. Therefore, all identified hazards were evaluated regarding risk in FEMA lifelines per jurisdiction. The scenario that local jurisdictions would evaluate the conditions off was mid-level impact of the identified hazard. The results are below:

Table 14: Extreme Temperature Risk based on selected FEMA Lifelines

Extreme Temperature Risk							
Jurisdiction	**Safety & Security**	**Food, Water & Shelter**	**Health & Medical**	**Energy**	**Communications**	**Transportation**	**Hazardous Materials**
Montgomery County							
City of Clarksville							
Clarksville-Montgomery County School System							

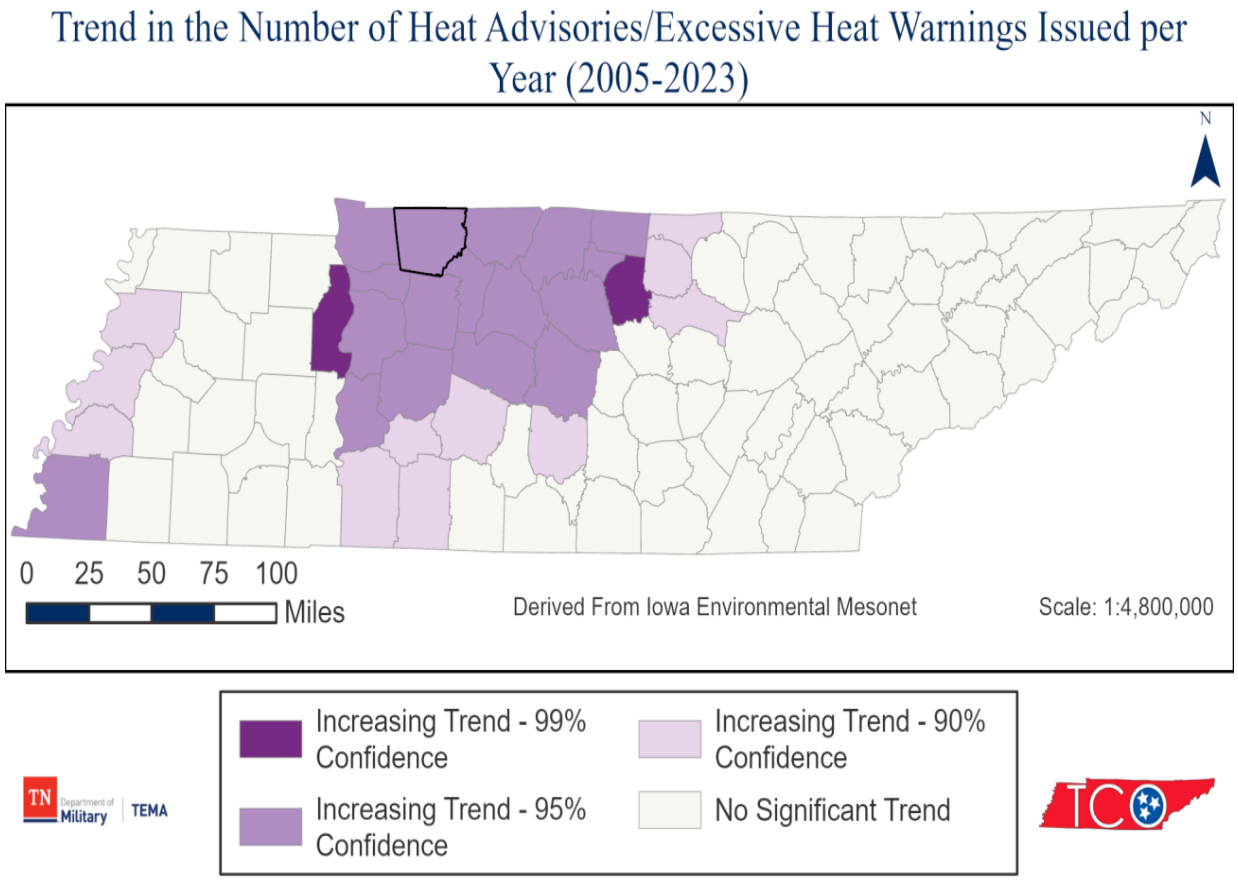
Colors indicate lifeline or component conditions:	
Red	Significant Impact, Multiple Required Resources
Yellow	Some Impact, Some Outside Resources Required
Green	Little to No Impact, No Outside Resources Required

Given the information above it becomes vital that all participating jurisdictions can prioritize the necessity of mitigation actions in the following lifeline categories so that they can become more resilient in the whole community that they serve.

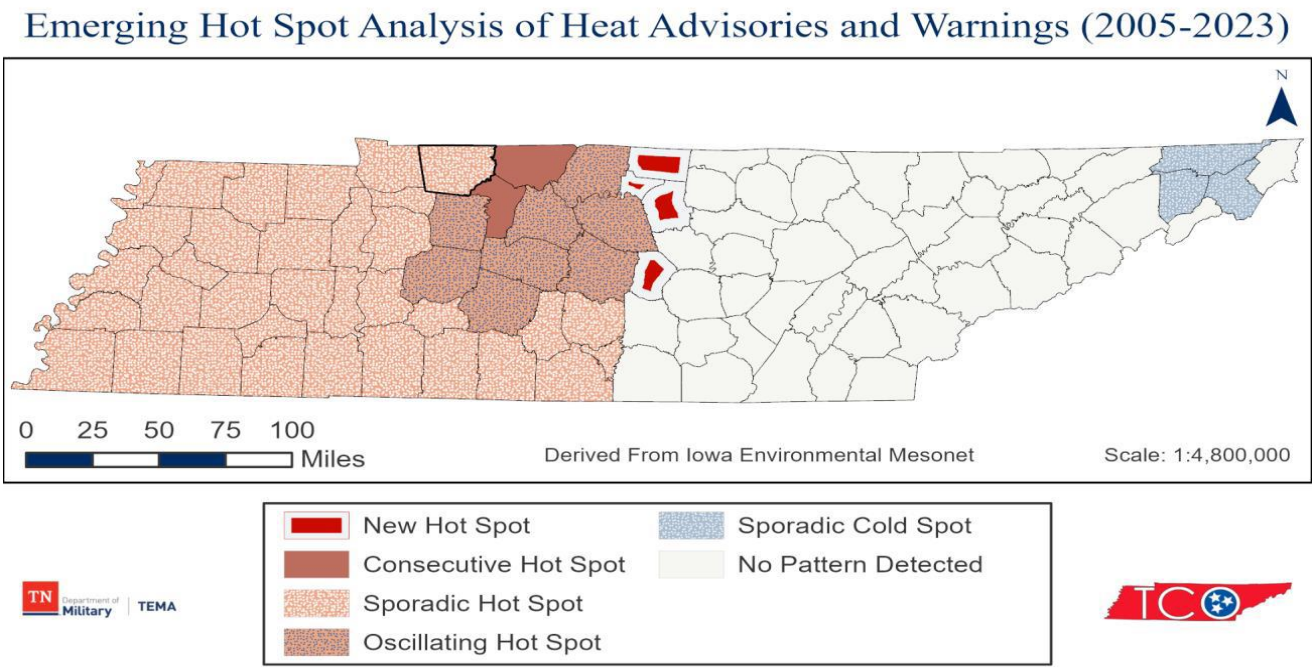
Future Heat Events and Social Vulnerability

Multiple determinates such as socioeconomic status, household composition, disability, minority status, language, housing, and transportation heavily indicate how an individual will be affected by extreme temperatures. Individuals within vulnerable or underserved populations are not only more likely to experience the effects of extreme temperatures but they will likely be impacted to a higher degree than their counterparts.

Trend analysis of heat advisories/excessive heat warnings showed an increasing trend for Montgomery County and its surrounding Tennessee counties that was significant to the 95% confidence level. Montgomery County was also identified as a sporadic hot spot for heat advisories/excessive heat warnings; meaning it was statistically more likely to have heat advisories or warnings than other parts of the state during at least 2 years in the time of the analysis.



Trend in the Number of Heat Advisories/Excessive Heat Warnings Issued per Year.



D. Land Use and Development

Extreme temperature events have significant or even catastrophic impacts on property and critical infrastructure. Montgomery County is interested in protecting facilities, property, and infrastructure owned and managed by the jurisdictions. Disasters can damage not only private property but government property as well, placing a financial and operational burden on the County. Losses can extend from structures and contents to the interruption of services and the general economy. Many of these structures could receive indirect impacts, such as downed electrical lines that cut off electricity to the facilities, frozen pipelines that crack, destroyed crops, and customers not being able to access travel to the structures due to ice-covered roads.

E. Multi-Jurisdictional Differences

Due to the nature of extreme temperatures, Montgomery County and the incorporated jurisdictions are equally susceptible. The entire State is vulnerable to extreme temperatures. Varying land elevations, the landscape's character, and proximity to large bodies of water play a significant role in the State's temperatures.

F. Climate Change Impact

Climate change impact could have mixed impacts on winter weather in the county. Temperatures in Tennessee have risen by 0.5°F since the beginning of the 20th century, less than a third of the warming for the contiguous United States. Additionally, climate models suggest that Montgomery County will see an increase in winter precipitation. Warmer temperatures may mean that some winter precipitation will fall as rain rather than snow, but the overall increase will likely present significant drainage and water management challenges in Montgomery County during the years to come. Heavy snowfall events may increase due to warmer temperatures, as snow crystal size increases as the temperature approaches the freezing point.

Because the probability of future occurrence of severe winter storms is already scored high, Montgomery County did not further adjust the probability of occurrence score given this expectation.

F. Summary

Montgomery County and the incorporated jurisdictions are equally vulnerable to extreme temperatures, affecting people's health and safety. Therefore, it is essential to have proper measurements in place to prevent critical structures from being vulnerable to utility failure during extreme temperatures.

2.3 Flood (~2-5 events per year)

A. Hazard Overview

Flooding events occur when excess water from rivers and other bodies of water overflow onto riverbanks and adjacent floodplains. In addition, lower-lying regions can collect water from rainfall, and poorly drained land can accumulate rain through ponding on the surface. Floods in Montgomery County are usually caused by rain and may also be caused by snowmelt and man-made incidents.

The area adjacent to a channel is the floodplain, as shown in *Figure 7*. A floodplain is flat or nearly flat land adjacent to a stream or river that experiences occasional or periodic flooding. It includes the floodway, which consists of the stream channel and adjacent areas that carry flood flows, and the flood fringe, which are areas covered by the flood but do not experience a strong current. Floodplains are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. When this occurs, sediments (including rocks and debris) are deposited that gradually build up over time to create the floor of the floodplain. Floodplains generally contain unconsolidated sediments, often extending below the stream's bed.

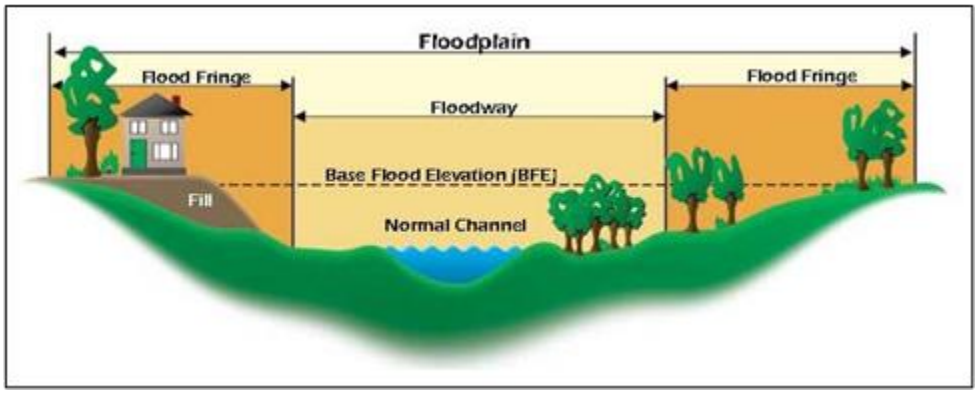


Figure 7: Characteristics of a Floodplain (Source: FEMA)

Three general health hazards common to flood events:

1. Floodwaters carry anything on the ground that the upstream runoff picked up, including dirt, oil, bacteria, animal waste, lawn, farm, and industrial chemicals. Pastures and areas where farm animals are kept, or their wastes are stored can contribute to polluted waters in the receiving streams. Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can

lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when flood waters dilute it, raw sewage can be a breeding ground for bacteria such as *E. coli* and other disease-causing agents.

2. The second health problem arises after most water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet building areas that have not been adequately cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly. Another health hazard occurs when ducts in a forced air system are not adequately cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the county water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.
3. The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home severely strain people, especially the unprepared and uninsured. There is also a long-term problem for those who know their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

B. County Profile

Riverine flooding occurs from inland water bodies such as streams and rivers. In Tennessee, flooding is highly dependent on precipitation amounts and is highly variable within the State.

HAZUS is a regional multi-hazard loss estimation model developed by FEMA and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state, and regional officials to plan and stimulate efforts to reduce multi-hazard risks to prepare for emergency response and recovery.

Table 15: Mapped Flood Insurance Zones

Flood Hazard Area	Description
HAZUS (100-yr)	Areas subject to inundation by the 1-percent-annual-chance flood event are generally determined using approximate methodologies. Mandatory flood insurance purchase requirements and floodplain management standards apply.
HAZUS (500-yr)	A 500-year flood zone is a moderate flood hazard area and is an area between the limits of the base flood and the 0.2- percent-annual-chance (or 500-year) flood. Mandatory flood insurance is not required.
Non-highlighted Areas	Minimal risk areas outside the 1-percent and .2 percent-annual-chance floodplains.

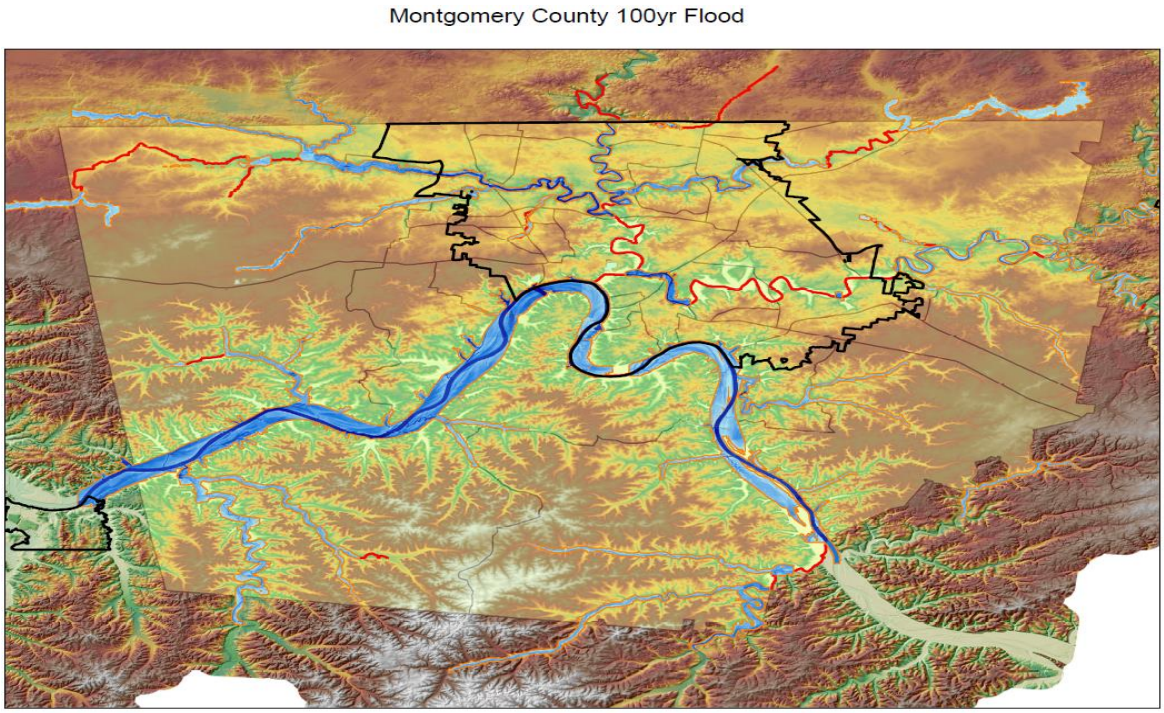


Figure 8: HAZUS 100-year Flood Map

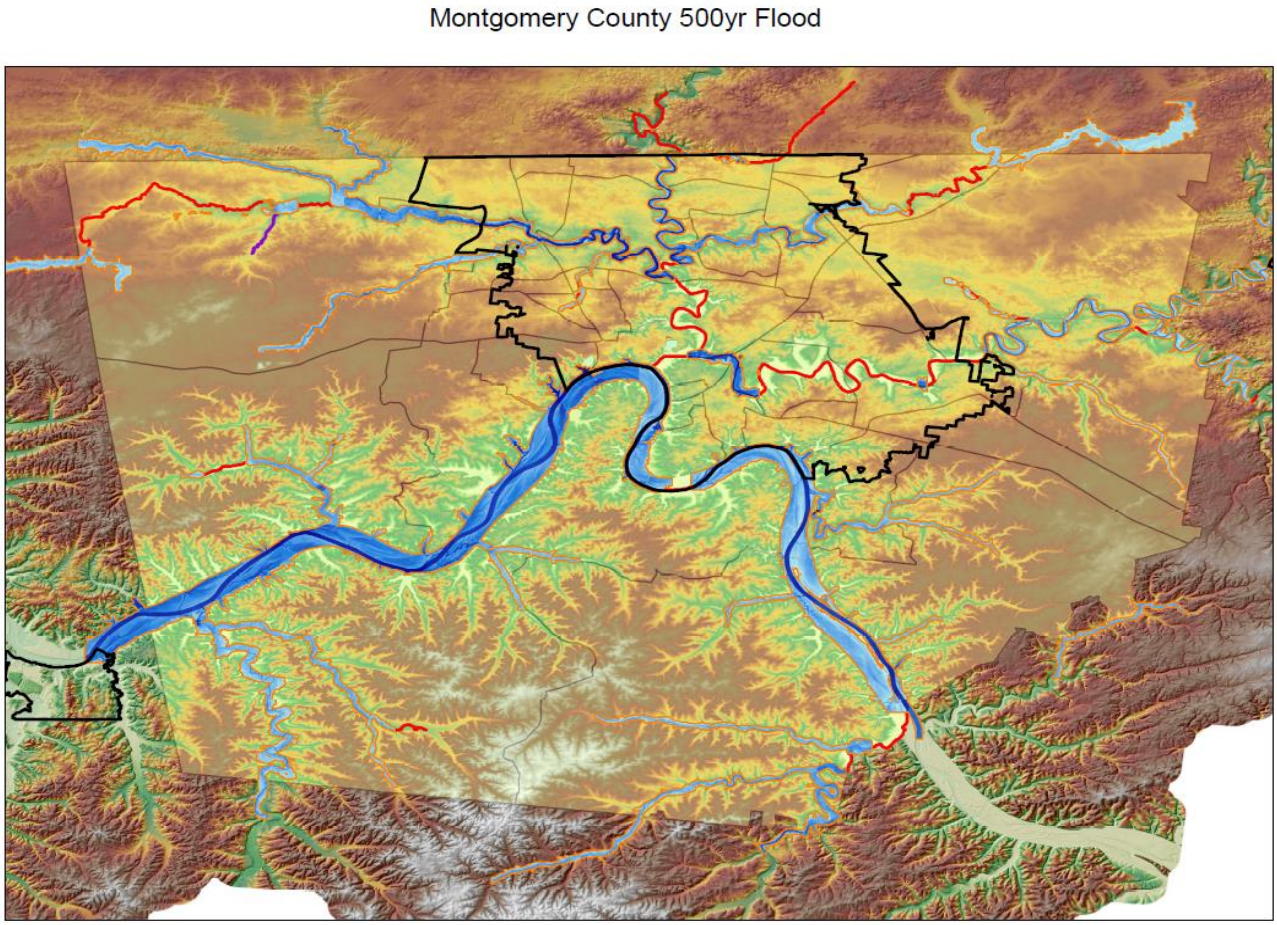


Figure 9: HAZUS 500-year Flood Map

Table 16: NFIP Policy Data

NFIP Policy Data for	Montgomery County			
Jurisdiction	**CID Number**	**Policies In-Force**	**Insurance In-Force Whole $**	**Written Premium In-Force**
Montgomery County	470136	66	$19,660,000	$50,866

According to the National Flood Insurance Program, repetitive flood loss is a facility or structure that has experienced two or more insurance claims of at least $1,000 in any given 10-year period since 1978. Severe repetitive loss is defined as a facility or structure that has experienced four or more insurance claims exceeding $5,000 or two claims exceeding the value of the building. Within the NFIP, flood loss properties are usually considered the most vital structures to mitigate. The chart below provides a summary of repetitive and severe repetitive losses for Montgomery County.

Table 17: NFIP Loss Data

NFIP Loss Data for Montgomery County					
Jurisdiction	**Total Losses**	**Closed Loses**	**Open Loses**	**CWOP Loses**	**Total Payments**
Montgomery County	RL: 11	73 (total not just RL/SRL)	0	N/A	$490,432.47
	SRL:0				

Of the repetitive loss properties identified by the Federal Emergency Management Agency (FEMA), there are:

- 26 - Single family residence.
- - Single-family residential building except for a mobile home or a single residential unit within a multi-unit building.
- 1 - Non-residential building; and,
- 1 - Residential building with more than 4 units.

Over the past years, there have been approximately 32 flooding events in Montgomery County. A table of NOAA-reported flooding events is in Appendix B. The following narratives were obtained via the NOAA Storm Event Database. Only events resulting in injury, death, or extensive damage (greater than $200.0K property/crop damage) were included as expanded narratives.

May 9th, 2024–

Event	**Flash Flood**
-- Flood Cause	**Heavy Rain**
State	**TENNESSEE**
County/Area	**MONTGOMERY**
WFO	**OHX**
Report Source	**Emergency Manager**
NCEI Data Source	**CSV**
Begin Date	**2024-05-08 07:42 CST-6**
Begin Location	**7W FT CAMPBELL**
End Date	**2024-05-09 04:45 CST-6**
End Location	**8NE PORT ROYAL**
Deaths Direct/Indirect	**0/0** (fatality details below, when available...)

Injuries Direct/Indirect	**0/0**
Property Damage	**1.00M**
Crop Damage	**0.00K**
Episode Narrative	**A widespread severe weather event impacted Middle Tennessee beginning in the early morning hours of May 8, 2024, and continued through the early morning hours of May 9th. During this time frame, numerous rounds of severe weather moved through the area, causing widespread wind damage in nearly every county in Middle Tennessee, hail up to 3 inches in diameter, and four tornadoes. One of these tornadoes in Columbia prompted a Tornado Emergency to be issued. In addition, major flash flooding also occurred with the worst flooding reported across Robertson and Sumner counties. With nearly nine inches of rain, Flash Flood Emergencies were issued for these counties. This is the first time National Weather Service Nashville issued both a Tornado Emergency and a Flash Flood Emergency in the same event. Unfortunately, this event claimed the lives of five individuals.**
Event Narrative	**Numerous reports of flash flooding were received across Montgomery County, especially in the Clarksville area. Several roadways across the county were reported to be flooded and impassable, including Trenton Road. Damages are a rough estimate.**

July 7th, 2016

Event	**Flash Flood**
-- Flood Cause	**Heavy Rain**
State	**TENNESSEE**
County/Area	**MONTGOMERY**
WFO	**OHX**
Report Source	**Newspaper**
NCEI Data Source	**CSV**
Begin Date	**2016-07-07 02:00 CST-6**

Begin Location	**8NNW OAKWOOD**
End Date	**2016-07-07 08:00 CST-6**
End Location	**5WSW SHILOH**
Deaths Direct/Indirect	**0/0** (fatality details below, when available...)
Injuries Direct/Indirect	**0/0**
Property Damage	**1.00M**
Crop Damage	**0.00K**
Episode Narrative	**A major severe thunderstorm and flash flood event affected Middle Tennessee from Wednesday, July 6 into Thursday, July 7. Three rounds of thunderstorms called Mesoscale Convective Systems (MCS) moved across the area over these two days, with the first MCS occurring on Wednesday afternoon July 6, the second MCS from Wednesday night into Thursday morning July 6-7, and the third MCS during the afternoon of July 7. The first MCS produced several reports of wind damage across northern parts of Middle Tennessee, while the second MCS produced scattered wind damage and dropped 3 to 8 of rain, which caused major flash flooding over northern Middle Tennessee. The final MCS on Thursday afternoon July 7 brought another round of more widespread wind damage.** **Based on reports from the Tennessee Emergency Management Agency and local media, the flash flooding damaged or destroyed over 65 homes, businesses, and other buildings across Stewart, Montgomery, Robertson, Sumner, and Cheatham Counties, as well as washed out numerous roads and bridges. Amazingly, no injuries or fatalities were reported despite the widespread damage.**
Event Narrative	**Major flash flooding affected much of Montgomery County, with several homes, businesses, vehicles and roads damaged by flooding. Several water rescues were also conducted for people trapped in flooded homes and vehicles in Clarksville. Homes that were flooded included at least one on Central Avenue in Clarksville, where 2 people were rescued from a flooded home, and others on Golf Club Lane. Businesses damaged by flooding in Clarksville included Swan Lake Golf Course on Dunbar Cave Road and the Tabernacle Church on Golf Club Lane. Roads that were flooded and closed in Clarksville included Liberty Parkway, Crossland Avenue, Central Avenue, Golf**

	Club Lane, Madison Street, University Avenue, Riverside Drive, Highway 41A near Eva Lane, and Saratoga Drive, where one person was rescued from a flooded car. The flooding also caused large sinkholes to open on Spencer Lane at Jackson Road, and Mossrose Road between West Happy Hollow Drive and Woody Hills Drive, forcing the closure of both roads. Flooded and closed roads elsewhere in Montgomery County, mainly western portions of the county, included Cooper Creek Road, Lylewood Road, Lake Road, Moore Hollow Road, and Dotsonville Road, which had a bridge damaged by flooding. Numerous parks were flooded and closed in Clarksville as well, which encompassed Billy Dunlop Park, Clarksville Greenway, Heritage Park, Kleeman Recreation Center, McGregor Park, and the New Providence Pool. No injuries or fatalities were reported.

April 28th, 2013

Event	**Flash Flood**
-- Flood Cause	**Heavy Rain**
State	**TENNESSEE**
County/Area	**MONTGOMERY**
WFO	**OHX**
Report Source	**Emergency Manager**
NCEI Data Source	**CSV**
Begin Date	**2013-04-27 19:00 CST-6**
Begin Location	**8NNW OAKWOOD**
End Date	**2013-04-28 03:00 CST-6**
End Location	**5WSW SHILOH**
Deaths Direct/Indirect	**0/0** (fatality details below, when available...)
Injuries Direct/Indirect	**0/0**
Property Damage	**1.00M**
Crop Damage	**0.00K**
Episode Narrative	**Numerous showers and thunderstorms developed across Middle Tennessee early on April 27 and continued into the**

	afternoon hours as a weak warm frontal boundary was draped across the region. Some flooding was reported in the Nashville metro area. Additional showers and thunderstorms formed later in the day on April 27 and continued into April 28. Training thunderstorms caused widespread flash flooding. The worst flash flooding was across Houston, Stewart, and Montgomery counties where many homes and businesses were flooded, numerous roads were washed out, and several people were rescued from the flood waters. Several reports of wind damage and large hail were also received.
Event Narrative	**Repeated development of thunderstorms across Montgomery County resulted in 5 to 7 inches of rain falling during the evening hours on April 27 into the early morning hours on April 28. Significant flash flooding resulted from the heavy rainfall, with numerous roadways flooded, impassable, and closed across the county. Flooded roadways included Trenton Road, Highway 76 at Port Royal Road, Madison Street in Clarksville, and many other secondary and low-lying roadways. Over the next several days following the flash flood, a few large sinkholes formed on some roadways, such as Fort Campbell Boulevard in Clarksville, which resulted in additional road closures.**

May 1st, 2010

Event	**Flood**
-- Flood Cause	**Heavy Rain**
State	**TENNESSEE**
County/Area	**MONTGOMERY**
WFO	**OHX**
Report Source	**Emergency Manager**
NCEI Data Source	**CSV**
Begin Date	**2010-05-01 15:40 CST-6**
Begin Location	**0N FT CAMPBELL**
Begin Lat/Lon	**36.63/-87.47**

End Date	**2010-05-04 18:00 CST-6**
End Location	**0N PORT ROYAL**
End Lat/Lon	**36.55/-87.15**
Deaths Direct/Indirect	**1/0** (fatality details below, when available...)
Injuries Direct/Indirect	**0/0**
Property Damage	**1.90M**
Crop Damage	**1.00K**
Episode Narrative	**A frontal boundary setup across Western and Middle Tennessee late Friday night (April 30) and remained through the weekend. A persistent southerly flow fed moisture into the area and precipitable water values rose to almost 2 inches, based on data from KOHX upper air soundings. As a series of shortwaves moved through, a band of showers and thunderstorms developed and remained nearly stationary for much of the day on Saturday, May 1st and Sunday, May 2nd, resulting in widespread record flooding across much of Middle Tennessee. Some of these thunderstorms became severe also, resulting in thunderstorm wind damage and seven confirmed tornadoes across Middle Tennessee.**
Event Narrative	**Flooding was reported along Salem Road. Flooding was also reported along Yellow Creek and East Fork Creek located southwest of Clarksville. Also, numerous homes, numerous businesses, numerous noncommercial buildings, along with several county, state, and federal roads across the county received damage due to the flood. A fatality occurred when a woman drove into the Cumberland River at 8 PM CST on May 3rd.**

Table 18: Flooding Extent History

Location	County/Zone	Date	Type	Mag	Dth	Inj	PrD	CrD
Totals:					2	0	5.317M	13.00K
CLARKSVILLE	MONTGOMERY CO.	05/04/2000	Flash Flood		0	0	0.00K	0.00K
WEST PORTION	MONTGOMERY CO.	11/29/2001	Flash Flood		0	0	0.00K	0.00K

MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	12/12/2001	Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	03/17/2002	Flash Flood		0	0	0.00K	0.00K
SOUTH PORTION	MONTGOMERY CO.	03/20/2002	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	09/27/2002	Flood		1	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	05/07/2003	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	06/18/2003	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	06/18/2003	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	08/04/2004	Flash Flood		0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	08/04/2004	Flash Flood		0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	12/07/2004	Flash Flood		0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	05/09/2009	Flash Flood		0	0	300.00K	0.00K
HAMPTON STATION	MONTGOMERY CO.	07/30/2009	Flash Flood		0	0	5.00K	0.00K
OAKRIDGE	MONTGOMERY CO.	09/22/2009	Flood		0	0	25.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	05/01/2010	Flood		1	0	1.900M	1.00K
CLARKSVILLE	MONTGOMERY CO.	05/20/2010	Flash Flood		0	0	50.00K	10.00K
KENNEDY	MONTGOMERY CO.	02/24/2011	Flood		0	0	1.00K	0.00K
WOODLAWN	MONTGOMERY CO.	02/28/2011	Flash Flood		0	0	1.00K	1.00K

BRIARWOOD	MONTGOMERY CO.	03/08/2012	Flash Flood		0	0	1.00K	1.00K
OAKWOOD	MONTGOMERY CO.	04/27/2013	Flash Flood		0	0	1.000M	0.00K
OAKWOOD	MONTGOMERY CO.	07/05/2013	Flash Flood		0	0	2.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	05/25/2016	Flood		0	0	0.00K	0.00K
OAKWOOD	MONTGOMERY CO.	07/07/2016	Flash Flood		0	0	1.000M	0.00K
KENWOOD	MONTGOMERY CO.	07/28/2016	Flood		0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	06/04/2017	Flash Flood		0	0	0.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	09/01/2017	Flash Flood		0	0	20.00K	0.00K
OAKWOOD	MONTGOMERY CO.	12/23/2017	Flash Flood		0	0	0.00K	0.00K
KENNEDY	MONTGOMERY CO.	08/20/2019	Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	08/12/2020	Flood		0	0	0.00K	0.00K
CUMBERLAND HGTS	MONTGOMERY CO.	02/28/2021	Flash Flood		0	0	0.00K	0.00K
NEW PROVIDENCE	MONTGOMERY CO.	07/25/2021	Flash Flood		0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	08/12/2023	Flash Flood		0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	05/08/2024	Flash Flood		0	0	1.000M	0.00K
PORT ROYAL	MONTGOMERY CO.	05/08/2024	Flood		0	0	0.00K	0.00K
Totals:					2	0	5.317M	13.00K

Jurisdictional Flood Extent –

Jurisdiction/ Municipality	Flood Extents Narrative
Montgomery County	In a typically experienced rain event where Montgomery County experiences 12” of rain, Montgomery County can expect to see 6” of standing flood waters and on Lock B Road, Hematite Road, and HWY 149, we can expect about 3”-4” of water.”
City of Clarksville	In a typically experienced rain event where Montgomery County experiences 12” of rain, Montgomery County can expect to see 6” of standing flood waters and on Riverside Dr., Crossland Ave, and Dunbar Cave Road, we can expect about 3”-4” of water.”
CMCSS	CMCSS typically does not experience and flood events.

Probability of Future Events -

The impact of extreme weather events may increase the frequency and intensity of flash flooding within Tennessee, particularly in highly urbanized regions such as Memphis, Nashville, Knoxville, and Chattanooga. Any area with extreme changes in deep terrain, predominately in East Tennessee, will experience significant flooding impacts.

Based on a historical record of 32 flood events over 24 years (2000 - 2024), there is a likelihood for a flood event to occur annually or semiannually. In conjunction with the future weather projections developed by ETSU Geoinformatics & Disaster Science Lab, it can be assumed that a flooding event could occur in Montgomery County on a regular basis.

The future risk of flooding in Montgomery County is tied to predicted changes in the precipitation patterns. Tennessee and Montgomery County have increasing trends in observed precipitation, and the Fifth National Climate Assessment (2023) reports that the broader Southeast region has seen an increase in the frequency and intensity of extreme rainfall events. There is high confidence that this trend will continue in the future. According to the Climate Mapping Risk Assessment (CMRA) Report, Montgomery County is expected to experience a modest increase in various flood indicators by mid- and late century. Both the increase in total precipitation and extreme rainfall events will increase the risk of flooding in Montgomery County. The long-term (1895-2023) trend in annual precipitation shows an increase of +0.48” per decade, the medium-term (1964-2023) trend in precipitation shows a slightly weaker increasing trend of +0.41” per decade. The short-term (1994-2023) trend shows a very weak positive trend of +0.05” per decade. This indicates that precipitation has increased in Montgomery County over the past several decades, but with a large amount of inter-annual variation with several consecutive years bouncing between wetter or drier than the 20th century means. Since 2001, there have been 15 years with total precipitation above the 20th century mean and 8 years with total precipitation below the 20th century mean.

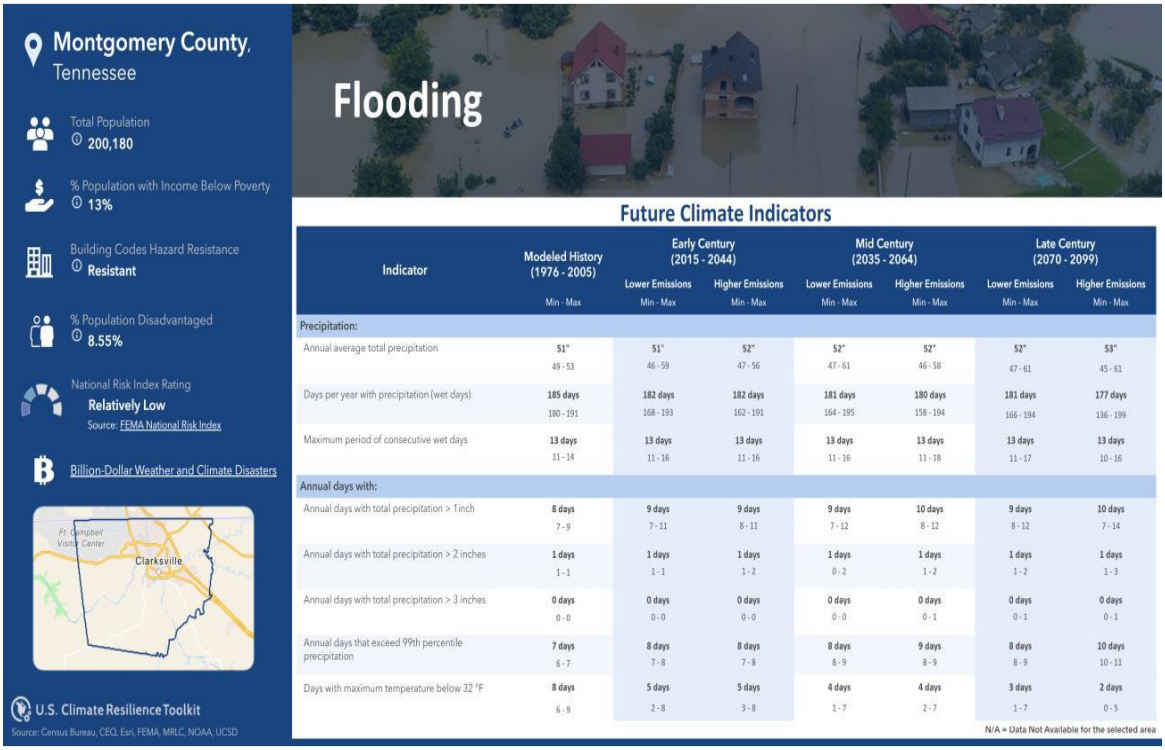


Figure 18: Climate Mapping Risk Assessment Report for Flooding in Montgomery County. (Source: US Climate Resilience Toolkit)

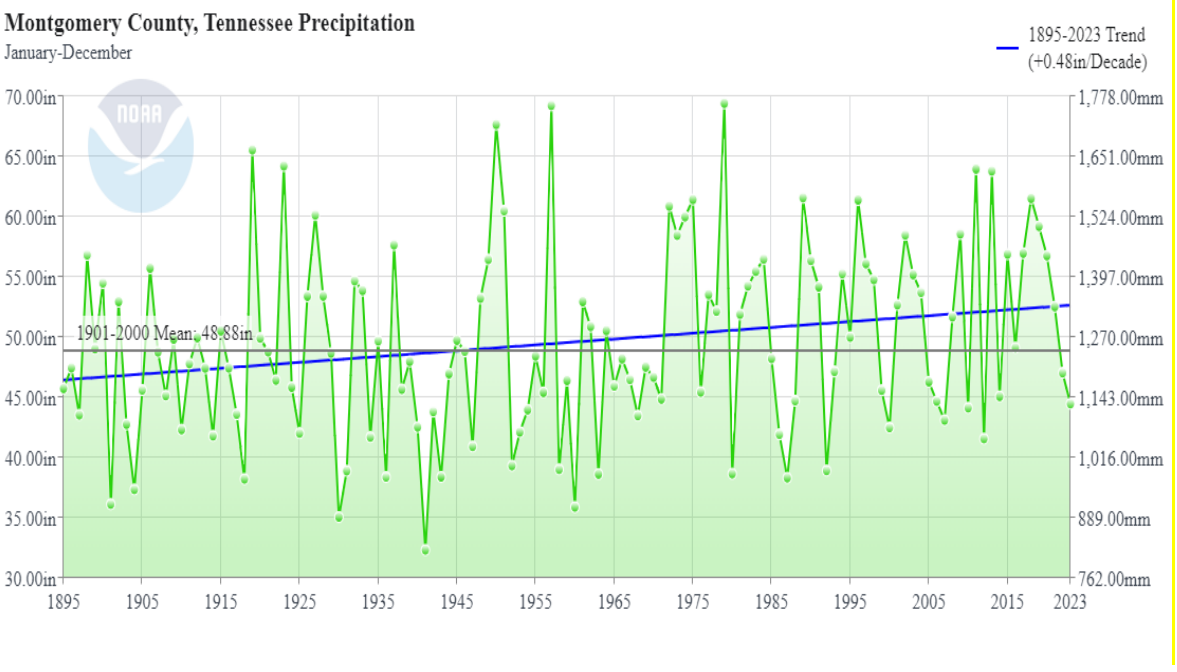


Figure 19: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.48-inch.
Increase per Decade Since 1895.
(Source: NOAA NCEI, Climate briefly: County Time Series)

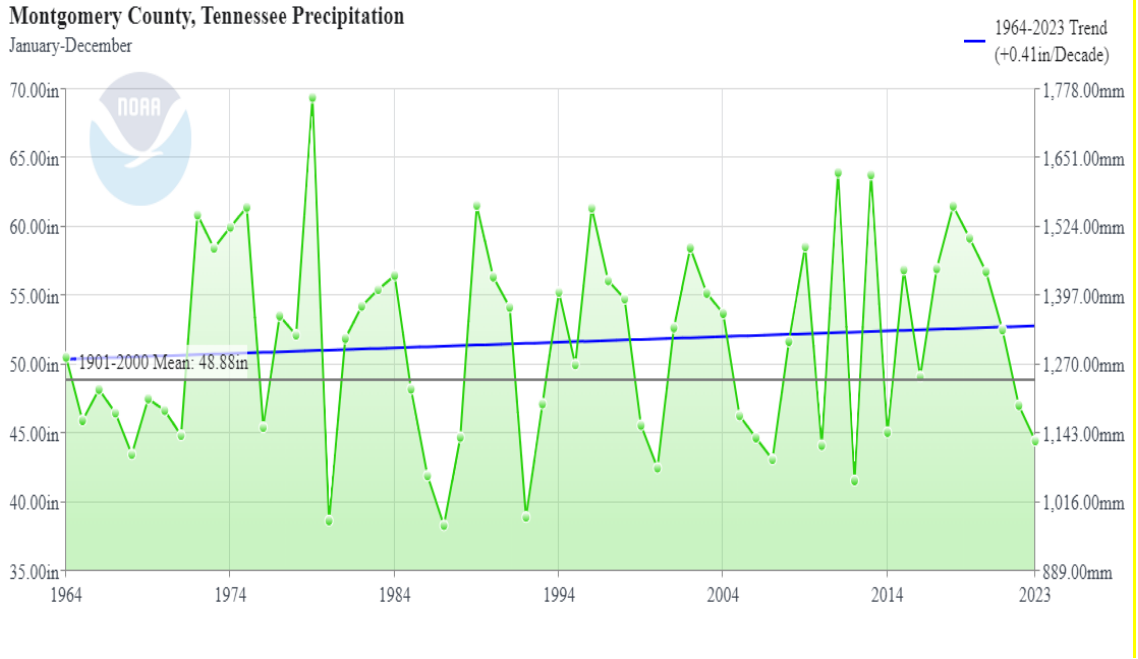


Figure 20: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.41-inch
Increase per Decade Over the Last Sixty Years (Since 1964).
(Source: NOAA NCEI, Climate briefly: County Time Series)

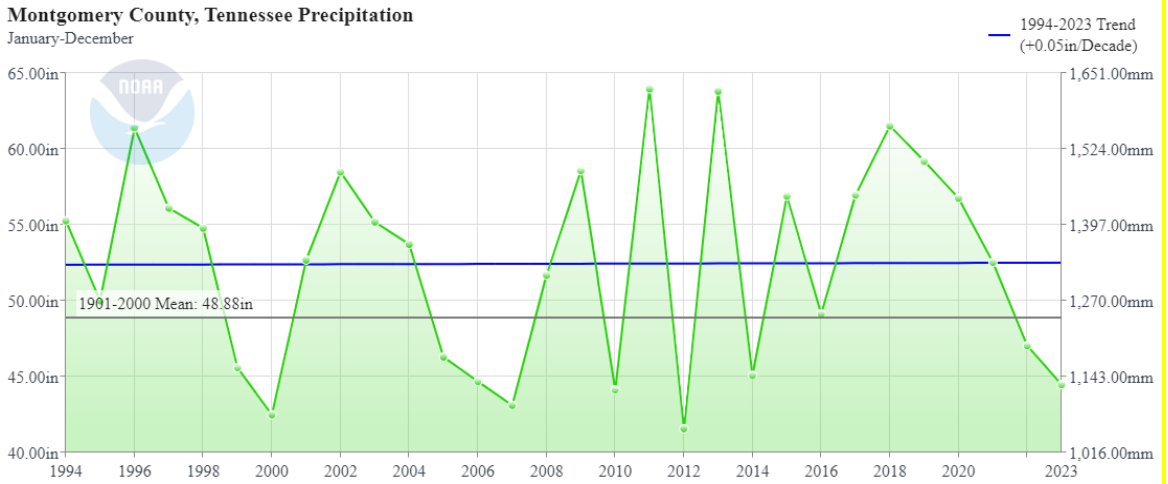


Figure 21: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.05-inch.
Increase per Decade Over the Last Thirty Years (Since 1994).
(Source: NOAA NCEI, Climate briefly: County Time Series)

Using the NOAA Storm Events Database, flood events and flood damages (dollars) were examined for trends between 1996 and 2022. Montgomery County showed no significant trend in the number of flood events or flood damages in the Storm Events Database in this time, indicating that the rate of these events has stayed somewhat steady in this time.
The trends in flood events and flood damages presented above are for riverine flooding, but as overall rainfall increases and trends towards higher intensity precipitation events continue flash flooding may become a higher concern for parts of Tennessee, including Montgomery County. The TCO analyzed trends in flash flood events and flash flood-related damages from the NOAA Storm Events Database from 1996 to 2022. Montgomery County showed a decreasing trend in the number of flash flooding events, but no significant trending the number of damages caused by flash flooding events.

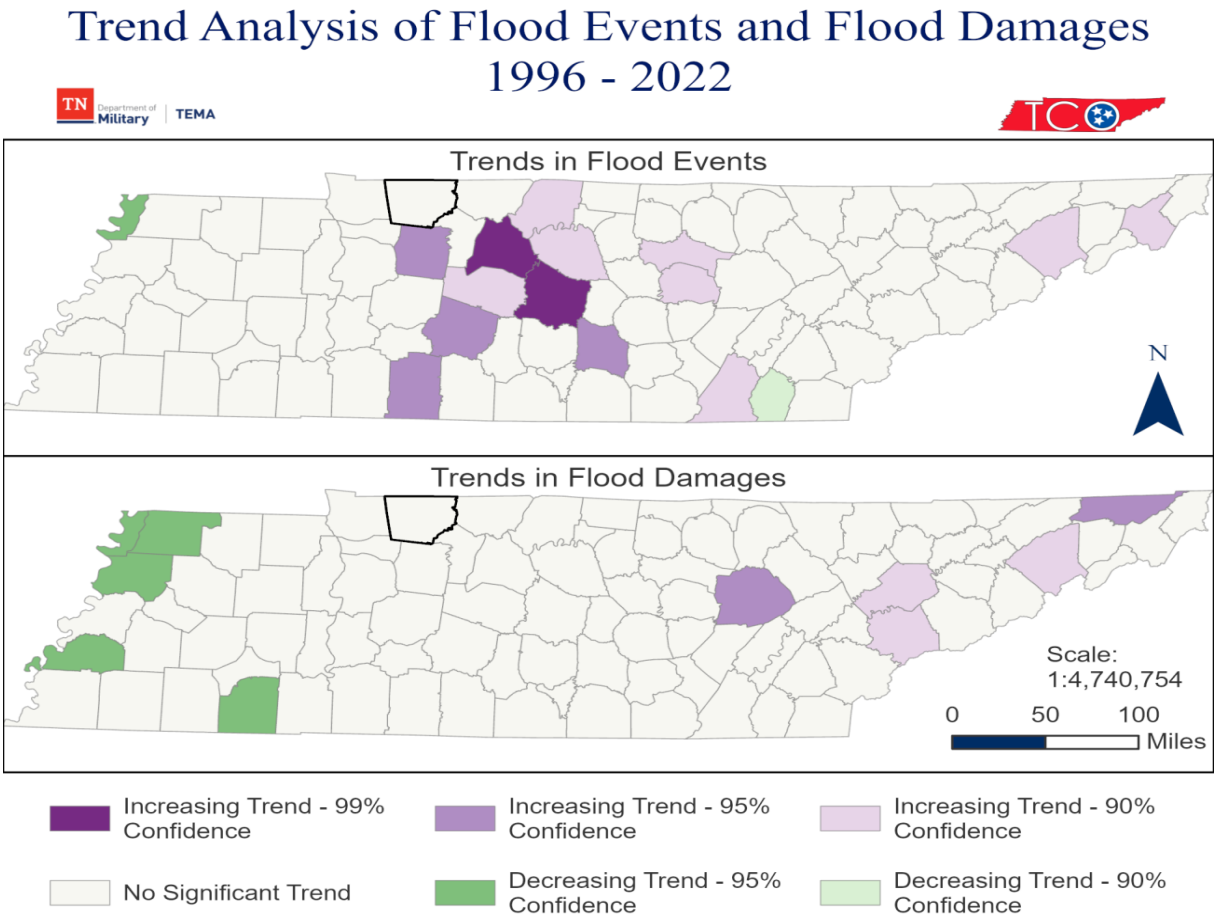
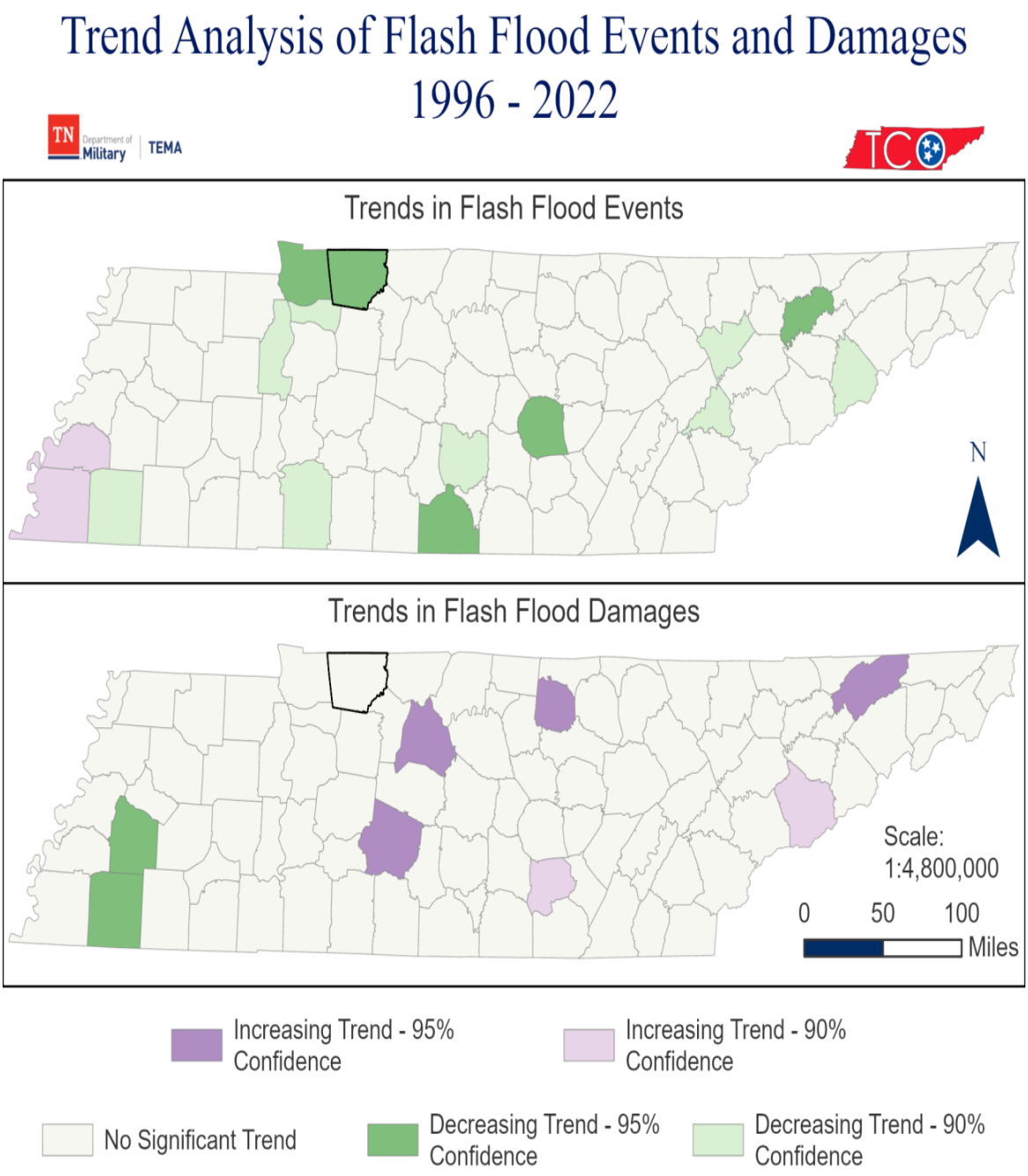
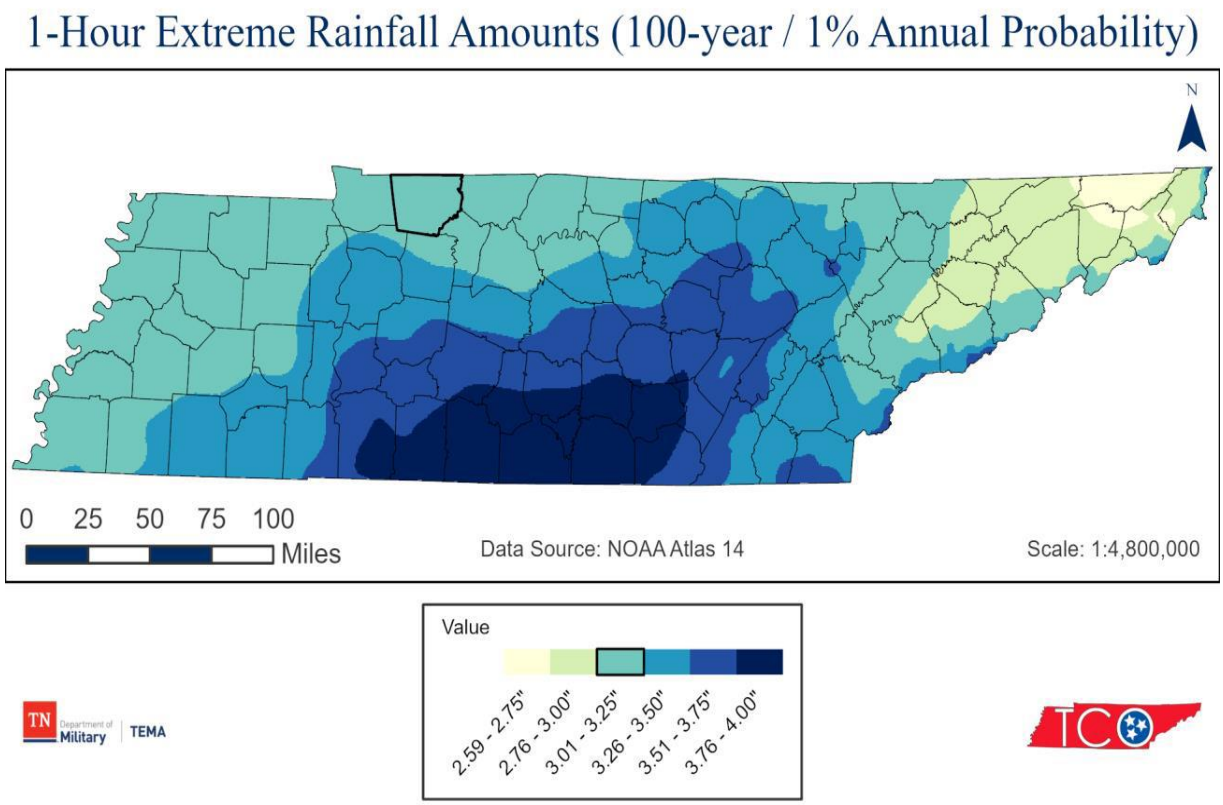


Figure 22: Trend in Flood Events and Flood Damages Reported in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

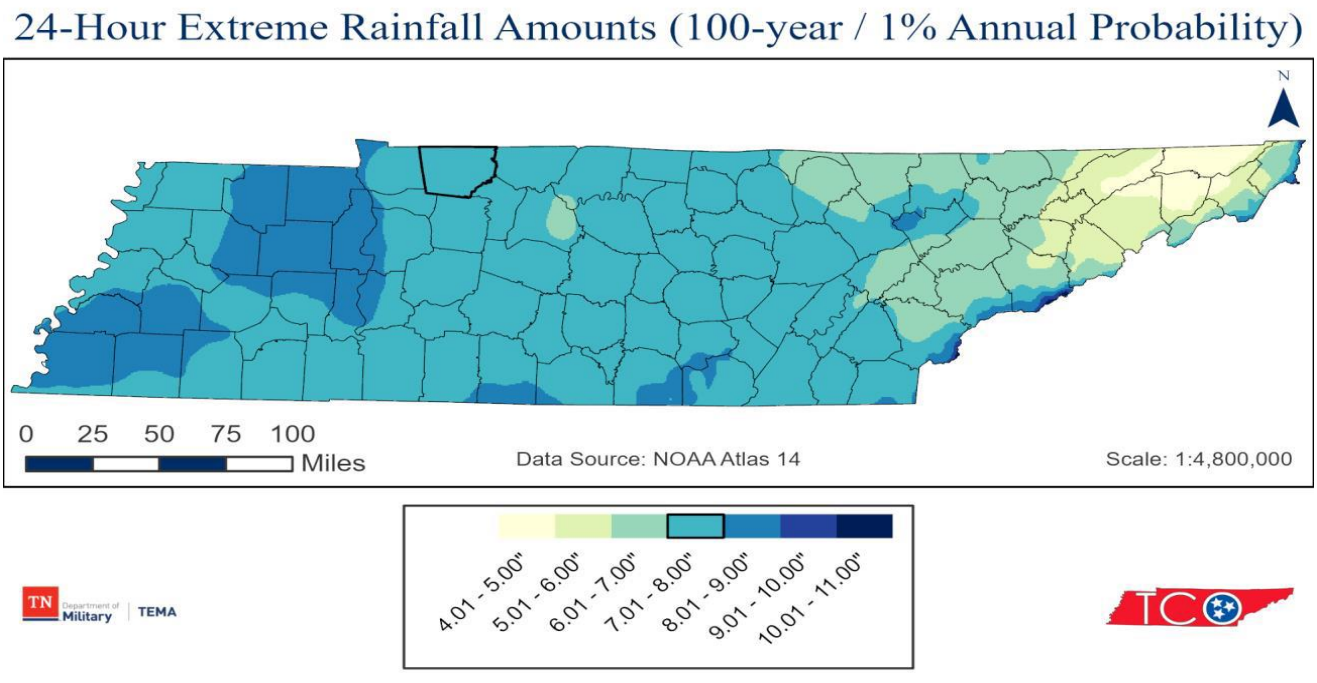


Trend in Flash Flood Events and Flash Flood Damages Reported in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

Extreme rainfall events are often categorized based on how much above or below their amounts were compared to the 100-year, or 1% annual probability, rainfall amounts. Using data from NOAA Atlas 14, in Montgomery County, a 100-year 1-hour extreme rainfall total would be approximately 3.01 to 3.25 inches. A 100-year 24-hour extreme rainfall event for Montgomery County would result in 7-8 inches of rain.

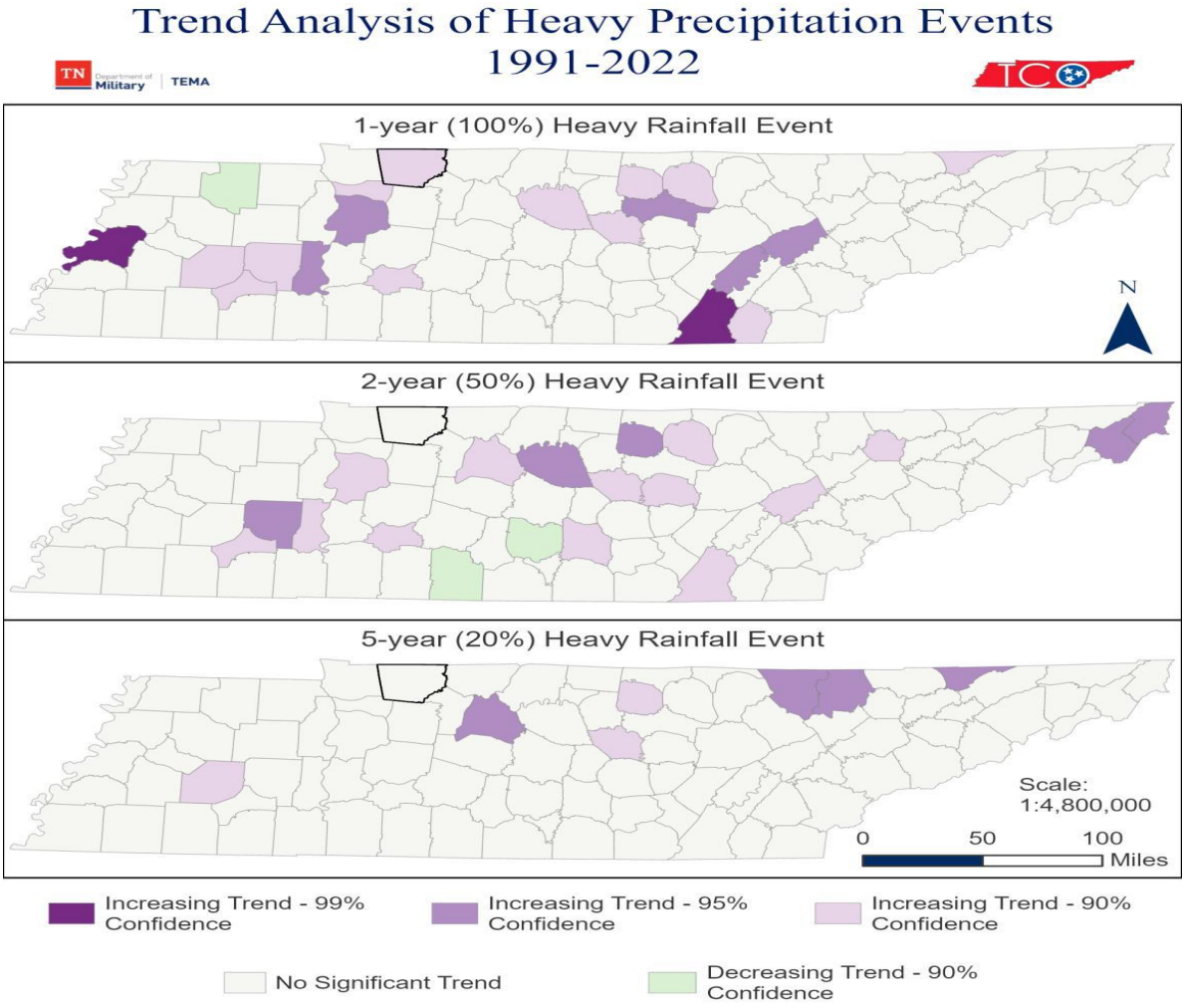


1-hour Extreme Rainfall Estimates for 100-year Return Period (1% Annual Probability of Exceedance) using NOAA Atlas 14, Montgomery County, Outlined in Bold.



24-hour Extreme Rainfall Estimates for 100-year Return Period (1% Annual Probability of Exceedance) using NOAA Atlas 14, Montgomery County, Outlined in Bold.

The TCO analyzed trends in heavy precipitation days per year in counties across Tennessee, these were the number of days that daily rainfall totals exceeded a 1-year (100% chance of annual probability), 2-year (50% chance of annual probability), or 5-year (20% chance of annual probability) event. Montgomery County showed an increasing trend in the number of 1-year (100% chance) heavy rainfall events, but no significant trend for 2-year and 5-year heavy precipitation events.



Trend in Heavy Precipitation Events (1-year, 2-year, and 5-year Return Period Exceedance events

C. Risk Assessment - **Likely**

The HMPC meeting cited flooding as a repetitive hazard in the county and jurisdictions. Discussion of commonly flood-prone areas took place, as did mention of improvements that have already been made to mitigate risks. Future projects were also discussed at this time and can be found in the Mitigation Action Plan.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for natural hazards. It was built and designed by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal

government. The Risk Index leverages available source data for natural hazards and community risk factors to develop a baseline relative risk assessment for each county and census trace. Some of these community risk factors include social vulnerability which is determined by the data pulled from the Census preformed every ten years. A higher social vulnerability score is proportional to a higher risk score.

National Risk Index Score for Flooding = Relatively low

Jurisdictional Risk Index Score for Flooding = Relatively low

Although the National Risk Index is a well-valued tool it fails to properly show the feedback from the participating jurisdictions. Therefore, all identified hazards were evaluated regarding risk in FEMA lifelines per jurisdiction. The scenario that local jurisdictions would evaluate the conditions off was a mid-level impact of the identified hazard. The results are below:

Table 19: Flooding Risk based on selected FEMA Lifelines

Flooding Risk							
Jurisdiction	**Safety & Security**	**Food, Water & Shelter**	**Health & Medical**	**Energy**	**Communications**	**Transportation**	**Hazardous Materials**
Montgomery County							
City of Clarksville							
Clarksville-Montgomery County School System							

Colors indicate lifeline or component conditions:	
Red	Significant Impact, Multiple Required Resources
Yellow	Some Impact, Some Outside Resources Required
Green	Little to No Impact, No Outside Resources Required

Given the information above it becomes vital that all participating jurisdictions can prioritize the necessity of mitigation actions in the following lifeline categories so that they can become more resilient in the whole community that they serve.

HAZUS Data
HAZUS Methodology

A Level I HAZUS analysis was completed using a probabilistic risk assessment for the 100-yr and 500-year return periods. The Level I vulnerability assessment is presented below by return period.

Building Inventory (General Building Stock)

HAZUS estimates that 72,028 buildings in the region have an aggregate total replacement value of $30,136 million. The tables below present the relative distribution of the value concerning the general occupancies by Study Region and Scenario, respectively.

Table 20: Building Exposure by Occupancy Type

Montgomery County (Study Region)		
Occupancy Type	**Exposure ($1000)**	**Percent Total**
Agricultural	32,535	0.1%
Commercial	4,864,496	16.1%
Education	2,121,335	7.0%
Government	233,439	0.8%
Industrial	1,396,546	4.6%
Religion	629,359	2.1%
Residential	20,858,774	69.2%
Total	30,136,484	100%

Table 21: Building Exposure by Occupancy Type for 100-yr Flood Scenario

100-year River Flood Scenario		
Occupancy Type	**Exposure ($1000)**	**Percent Total**
Agricultural	3,331	0.1%
Commercial	503,723	13.0%
Education	45,047	1.2%
Government	4,268	0.1%
Industrial	169,707	4.4%
Religion	104,543	2.7%
Residential	3,032,439	78.5%
Total	3,863,058	100%

Table 22: Building Exposure by Occupancy Type for 500-yr Flood Scenario

500-yr River Flood Scenario		
Occupancy Type	**Exposure ($1000)**	**Percent Total**
Agricultural	3,167	0.1%
Commercial	443,896	12.1%
Education	44,601	1.2%
Government	0	0.0%
Industrial	161,173	4.4%
Religion	95,746	2.6%
Residential	2,913,601	79.6%

Total	3,662,184	100%

Essential Facility Inventory

HAZUS indicates that there are 1 hospital in the region with a total capacity of 270 beds. There are 42schools, 24 fire stations, 4 police stations, and 1 emergency operation centers.

General Building Stock Damage

For the 100-year flood scenario, HAZUS estimates that about 134 buildings will be at least moderately damaged. This is over 31% of the total number of buildings in the scenario. There are estimated 60 buildings that will be destroyed completely. *Table 23* below summarizes the expected damage by general occupancy type for the buildings in the County during a 100-yr flood scenario.

Table 23: Expected Building Damage by Occupancy for 100-yr Flood Scenario

% Damaged	1-10		11-20		21-30		31-40		41-50		>50%	
Occupancy	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Agricultural	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	2	100	0	0	0	0	0	0	0	0
Residential	8	6	21	15	18	13	15	11	18	13	60	43
Total	**8**		**23**		**18**		**15**		**18**		**60**	

For the 500-year flood scenario, HAZUS estimates that about 134 buildings will be at least moderately damaged. This is over 31% of the total number of buildings in the scenario. There are estimated 60 buildings that will be destroyed completely. *Table 24* below summarizes the expected damage by general occupancy type for the buildings in the County during a 500-yr flood scenario.

Table 24: Expected Building Damage by Occupancy for 500-yr Flood Scenario

% Damaged	1-10		11-20		21-30		31-40		41-50		>50%	
Occupancy	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Residential	0	0	0	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0	0	0	0	0	0
Religion	0	0	2	100	0	0	0	0	0	0	0	0
Residential	8	6	21	15	18	13	15	11	18	13	60	43
Total	**8**		**23**		**18**		**15**		**18**		**60**	

Essential Facility Damage

Table 23 and *Table 24* summarize the expected damage to essential facilities following a 100-yr and 500-yr flood, respectively. Both scenarios analyzed have determined that on the day of the event, all 270 beds in the local hospital would be available for use.

Table 25: Expected Damage to Essential Facilities 100-yr Flood Scenario

Classification	Total	Number of Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
EOC	1	0	0	0
Fire Stations	24	0	0	0
Hospitals	1	0	0	0
Police Stations	4	0	0	0
Schools	42	0	0	0

Table 26: Expected Damage to Essential Facilities 500-yr Flood Scenario

Classification	Total	Number of Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
EOC	1	0	0	0
Fire Stations	24	0	0	0
Hospitals	4	0	0	0
Police Stations	442	0	0	0
Schools		0	0	0

Debris Generation

100-year Scenario

The model estimates that a total of 1670 tons of debris will be generated. Of the total amount, Finishes comprises 22% of the total, Structure comprises 43% of the total, and Foundation comprises 35%. If the debris tonnage is converted into an estimated number of truckloads, it will require 67truckloads (@25 tons/truck) to remove the debris generated by the flood.

500-year Scenario

The model estimates that a total of 2,367 tons of debris will be generated. Of the total amount, Finishes comprises 23% of the total, Structure comprises 43%of the total, and Foundation comprises 34%. If the debris tonnage is converted into an estimated number of truckloads, it will require 95 truckloads (@25tons/truck) to remove the debris generated by the flood.

Shelter Requirements

HAZUS estimates the number of households expected to be displaced due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters.

100-year Scenario

The model estimates 433households (or 1250 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 433 people (out of a total population of 220,041) will seek temporary shelter in public shelters.

500-year Scenario

The model estimates 550 households (or 1,651 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 527 people (out of a total population of 220,041) will seek temporary shelter in public shelters.

Building Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. Business interruption losses are the losses associated with the inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those displaced from their homes because of the flood. Total building-related losses were $108.76 million in the 100-year flood scenario and $160.38 million in the 500-yr flood scenario. *Table 27* and *Table 28* summarize the losses associated with the building damage in each scenario.

Table 27: Building Related Economic Loss Estimates for the 100-yr Flood Scenario ($ Millions)

Category	Area	Residential	Commercial	Industrial	Other	Total
Building Loss	Building	44.10	6.83	1.78	2.23	54.93
	Content	21.76	15.43	4.79	7.94	49.92
	Inventory	0.00	2.94	0.94	0.03	3.90
	Subtotal	65.86	25.20	7.50	10.20	108.76
Business Interruption	Income	0.10	11.72	0.18	2.71	14.70
	Relocation	8.45	1.92	0.10	1.23	11.69
	Rental Income	2.73	1.47	0.05	0.12	4.36
	Wage	0.24	11.49	0.31	6.44	18.47
	Subtotal	11.51	26.59	0.64	10.49	49.23
Total		**77.37**	**51.79**	**8.14**	**20.69**	**157.98**

Table 28: Building Related Economic Loss Estimates for the 500-yr Flood Scenario ($ Millions)

Category	Area	Residential	Commercial	Industrial	Other	Total
Building Loss	Building	62.61	11.05	2.69	3.10	79.44
	Content	30.72	24.75	6.79	12.63	74.89
	Inventory	0.00	4.64	1.30	0.10	6.05
	Subtotal	93.33	40.44	10.78	15.83	160.38
Business Interruption	Income	0.33	18.09	0.23	4.24	22.88
	Relocation	11.45	3.33	0.13	1.92	16.83
	Rental Income	4.03	2.55	0.06	0.17	6.81
	Wage	0.77	17.71	0.40	10.00	28.88
	Subtotal	16.58	41.67	0.82	16.33	75.39
Total		**109.91**	**82.11**	**11.60**	**32.16**	**235.78**

Landscapes across the country, the bedrock in which they are found, and the sinkhole hotspots. As shown, eastern and middle Tennessee have a higher tendency for sinkhole hotpots.

D. Land Use and Development

All future development within the floodplain may be considered at risk. An increase in population will likely increase the number of buildings and infrastructure. New development in unincorporated areas could potentially occur in areas prone to flooding and increase vulnerabilities and potential losses; however, most land use regulations require the consideration of flooding during the development process.

E. Multi-Jurisdictional Differences

Flooding affects all jurisdictions differently; that is why it is essential to document the depth, duration, and time that flooding occurred. These differences are noted in past occurrences to demonstrate the toll that flooding can take on the county's rural and urban areas. Due to the topography of Montgomery County with its rolling hills and deep valleys, flood events are prone to occur near the streams within the county. FIRM Panels are located within Appendix D to help illustrate the areas at risk and depth of flooding within the county and its incorporated jurisdictions.

Intersections & Roads that consistently flood in Montgomery County:

- **Port Royal**
- **Riverside Drive**
- **Cook Drive**
- **Tiny Town Rd.**
- **Golf Club Lane**
- **Central Ave.**
- **Dunbar Cave Road**
- **Madison St.**

- **HWY 76 near Port Royal**
- **Trenton Road**
- **Glenellen Landing**
- **Vaughn Road**
- **Samantha Drive**
- **Hayes Street**
- **Love Street**
- **Elberta Drive**
- **Freestone Drive**
- **Danielle Drive**
- **Spees Drive**

F. Climate Change Impact

While flooding is a natural process, development and changing precipitation patterns have increased the amount of water and flow through the landscape. Climate change could exacerbate future flooding in Montgomery County, especially as precipitation increases. Tennessee precipitation has increased by 24 percent in the last century, particularly in the spring and summer.

Without the proper planning, increasing impervious surfaces and an increase in extreme precipitation can impact Montgomery County through increased storm water management costs, flooding, and property damage. Because the probability of future occurrence of flood hazards is already scored high.

F. Summary

Severe flooding has the potential to inflict significant damage in Montgomery County. The total economic loss estimated for the 100-year riverine flood is $30,136,484 million. The total economic loss estimated for the 500-year riverine flood is $30,136,484 million. Residential, commercial, and public buildings and critical infrastructures such as transportation, water, energy, and communication systems may be damaged or destroyed by flood waters. During a flood event, chemicals and other hazardous substances may contaminate local water bodies. Flooding kills animals and, in general, disrupts the ecosystem. Snakes and insects may also make their way to the flooded areas.

2.4 Severe Weather (~5-10 events per year)

A. Hazard Overview

Thunderstorms

Thunderstorms result from the rapid upward movement of warm, moist air. They can occur inside warm, moist air masses and at fronts. As the warm, moist air moves upward, it cools, condenses, and forms cumulonimbus clouds that can reach heights greater than 35,000 ft. Thunderstorms are responsible for developing and forming many severe weather phenomena, posing significant hazards to the population and landscape. Damage from thunderstorms is

mainly inflicted by downburst winds, large hailstones, and flash flooding caused by heavy precipitation. Stronger thunderstorms can produce tornadoes and waterspouts.

Wind

All jurisdictions are vulnerable to receiving damage from severe winds. The NOAA Storm Data Preparation document categorizes wind into three different types, as defined below.

- High Wind: Sustained non-convective winds of 40mph or greater lasting for one hour or longer or winds (sustained or gusts) of 58 mph for any duration on a widespread or localized basis.
- Strong Wind: Non-convective winds gusting less than 58 mph or sustained winds less than 40 mph, resulting in a fatality, injury, or damage.
- Thunderstorm Wind: Winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 58 mph, or winds of any speed (non-severe thunderstorm winds below 58 mph) producing a fatality, injury, or damage.

Historically, severe wind events occur multiple times yearly in Montgomery County. It is not unusual for Montgomery County to experience winds speeds up to 79 MPH, causing structural damage, power outages, and downed trees. Based on a historical record of 6 wind events over 72 years (1950-2022).

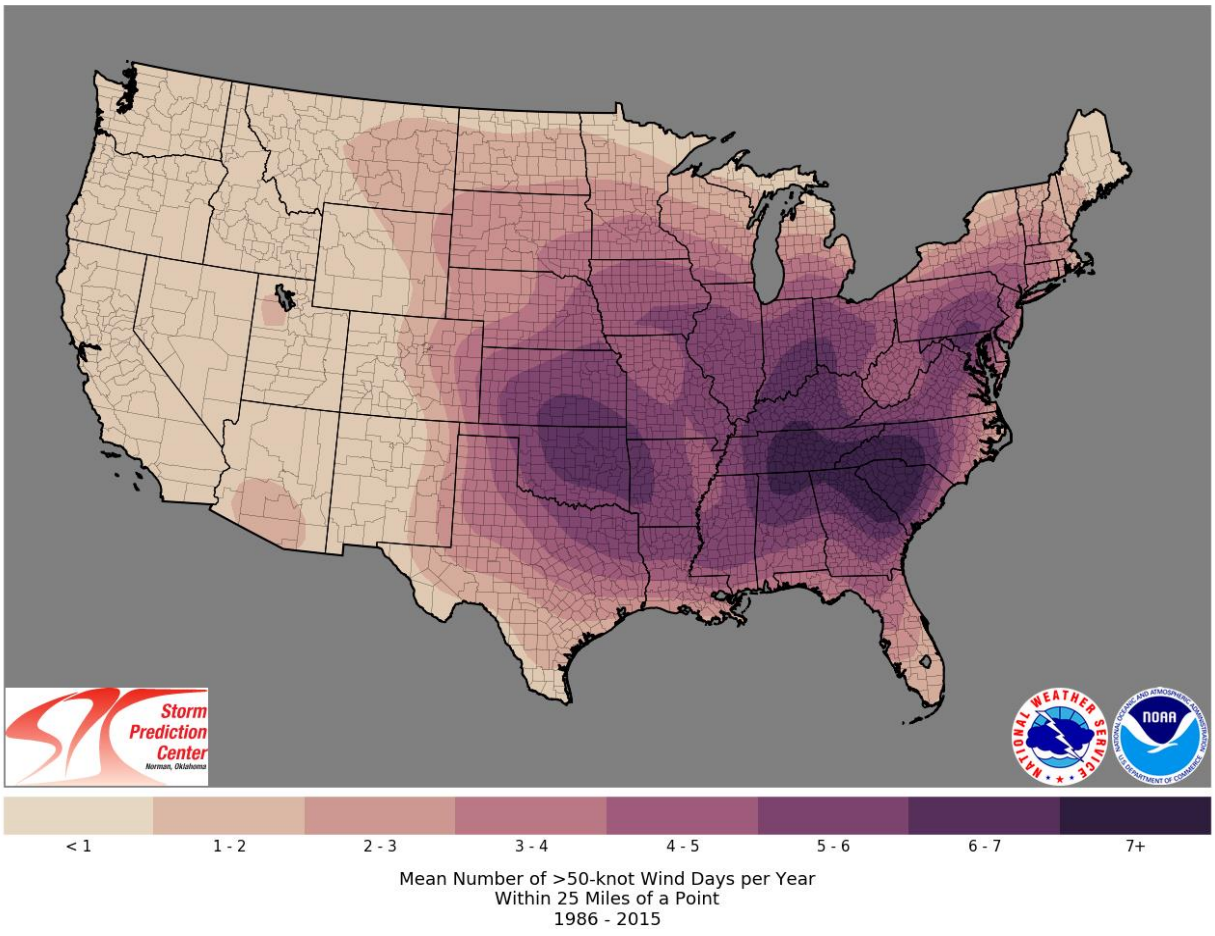


Figure 10: Mean Number of >50-knot Wind Days per Year (1986-2015) (source: NOAA)

Hail

Hail forms when updrafts carry raindrops into icy areas of the atmosphere, where they freeze into ice. Hailstorms occur throughout the spring, summer, and fall but are more frequent in late spring and early summer. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 mph. Hail causes nearly $1 billion in damage to crops and property yearly in the United States. *Table 33* provides an overview of the typical impacts on a community related to hailstone size.

Table 33: TORRO Hail Index (Source: The Tornado and Storm Research Organization)

Scale	Description	Max Diameter (mm)	Typical Damage
H0	Pea	5-9	No damage
H1	Mothball	10-15	Slight general damage to crops and plants
H2	Marble	16-20	Significant damage to crops and vegetation
H3	Walnut	21-30	Severe damage to fruits and crops, damage to glass and plastic structures, wood and paint scored
H4	Pigeons Egg	31-40	Widespread glass damage, auto-body damage
H5	Golf Ball	41-50	Destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Hens Egg	51-60	Grounded aircrafts dented; brick walls pitted
H7	Tennis Ball	61-75	Severe roof damage and risk of serious injury
H8	Softball	76-90	Severe damage to aircrafts
H9	Grapefruit	91-100	Extensive structural damage, risk of severe or fatal injuries to people caught in storm
H10	Melon	>100	Extensive structural damage, risk of severe or fatal injuries to people caught in storm

Lightning

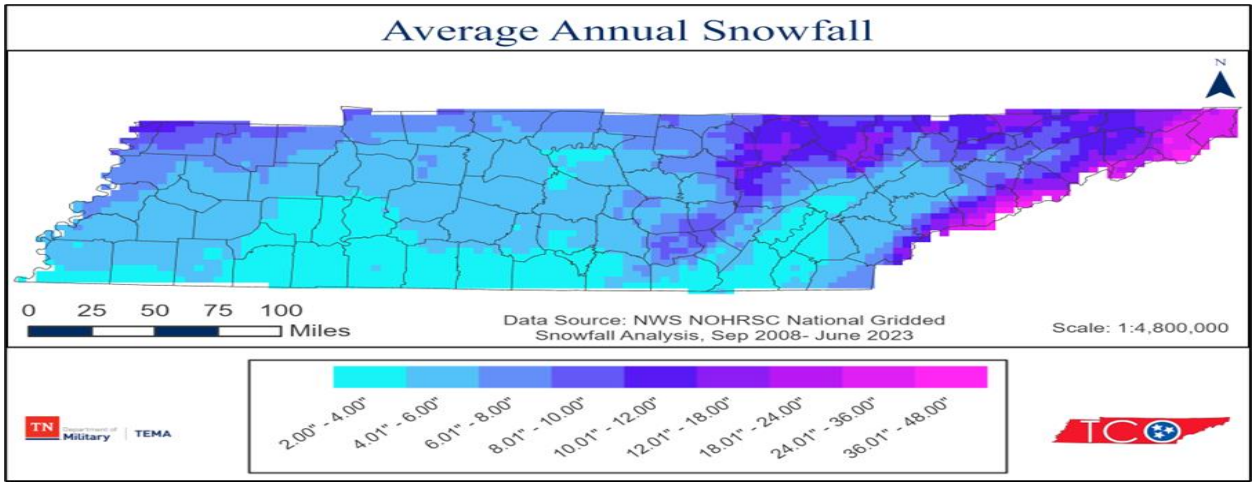
Lightning is an electrical discharge between positive and negative regions of a thunderstorm. Lightning is one of the more dangerous weather hazards in the United States. Annually, lightning is responsible for deaths, injuries, and millions of dollars in property damage, including damage to buildings, communications systems, power lines, and electrical systems. Lightning also causes forest and brush fires and deaths, and injuries to livestock and other animals. According to the National Lightning Safety Institute, lightning causes more than 26,000 fires in the United States annually. The institute estimates property damage, increased

operating costs, production delays, and lost revenue from lightning and secondary effects to be more than $6 billion annually. Impacts can be direct or indirect. People or objects can be struck or damaged when the current passes through or nearby.

Winter Weather

A freeze occurs when temperatures are below 32 degrees Fahrenheit for a period. These temperatures can damage crops, burst water pipes, and create layers of "black ice." Winter storms are events that can range from a few hours of moderate snow to blizzard-like circumstances that can affect driving conditions and impact communications, electricity, and other services. In Montgomery County, all jurisdictions are vulnerable to freezes and moderate winter storms, but not to the severity level seen in much of the northern U.S. Based on previous occurrences, Montgomery County can experience multiple winter weather events in one year affecting all jurisdictions equally. The severity of winter storms is commonly measured by inches of snowfall. It is possible for snowfall to accumulate up to 1 foot in Montgomery County and/or ice accumulations to cause hazardous conditions due to its proximity to and around the mountains.
U.S. Mean snowfall per year is from 6-12" annually average mean snowfall per year is below in *Figure 11.*

Figure 11: Average Annual Snowfall for Tennessee, 2008–2023



B. County Profile

The entirety of Montgomery County is at risk of severe weather. Severe weather events are most likely in the spring and summer months and during the afternoon and evening hours, but they can occur year-round and at all hours. In terms of magnitude, the NWS defines thunderstorms in terms of severity. A severe thunderstorm produces winds greater than 57 miles per hour and/or hail greater than 1 inch in diameter and/or a tornado. The NWS chose these severity measures as parameters more capable of producing considerable damage. Hail stones can vary in diameter, and in Tennessee, there have been records of hail up to 2.75 inches.

Event narratives were obtained via the NOAA Storm Event Database and are included below for each severe weather category. Tables containing all NOAA-recorded severe weather events between 1950- 202X for Montgomery County are contained in Appendix C.

Probability of Future Events - Likely

C. Risk Assessment

Severe weather is not as spatially defined in any location in Montgomery County; therefore, the entire County is equally at risk of severe weather. This includes the entire County population, all critical facilities, buildings (commercial and residential), and infrastructure.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for natural hazards. It was built and designed by FEMA in close collaboration with various stakeholders and partners in academia; local, state, and federal government. The Risk Index leverages available source data for natural hazards and community risk factors to develop a baseline relative risk assessment for each county and census trace. Some of these community risk factors include social vulnerability which is determined by the data pulled from the Census preformed every ten years. A higher social vulnerability score is proportional to a higher risk score.

National Risk Index Score for Hail = relatively low

Jurisdictional Index Score for Hail = relatively low National

National Risk Index Score for Strong Wind = relatively low

Jurisdictional Index Score for Strong Wind = relatively low

National Risk Index Score for Ice Storm = relatively low

Jurisdictional Index Score for Ice Storm = relatively low

National Risk Index Score for Winter Weather = relatively low

Jurisdictional Index Score for Winter Weather = relatively low

Although the National Risk Index is a well-valued tool it fails to properly show the feedback from the participating jurisdictions. Therefore, all identified hazards were evaluated regarding risk in FEMA lifelines per jurisdiction. The scenario that local jurisdictions would evaluate the conditions off was a mid-level impact of the identified hazard. The results are below:

Table 34: Severe Weather Risk based on selected FEMA Lifelines

Severe Weather Risk							
Jurisdiction	**Safety & Security**	**Food, Water & Shelter**	**Health & Medical**	**Energy**	**Communications**	**Transportation**	**Water Systems**
Montgomery County							

City of Clarksville							
Clarksville-Montgomery County School System							

Colors indicate lifeline or component conditions:	
Red	Significant Impact, Multiple Required Resources
Yellow	Some Impact, Some Outside Resources Required
Green	Little to No Impact, No Outside Resources Required

Given the information above it becomes vital that all participating jurisdictions can prioritize the necessity of mitigation actions in the following lifeline categories so that they can become more resilient in the whole community that they serve.

D. Land Use & Development

Increased development and population growth can reasonably translate to increased damages resulting from severe weather events. The population in Montgomery County is expected to rise similarly to its surrounding counties and Tennessee. An increase in population will lead to an increase in the number of residential and commercial structures as well as new and improved infrastructure, which in turn means an increase in the number and value of assets at risk of wind damage.

E. Multi-Jurisdictional Differences

The entirety of Montgomery County and the incorporated jurisdictions, including all assets, can be considered equally at risk of severe weather events. This includes the entire population, all critical facilities, buildings (commercial and residential), and infrastructure.

F. Climate Change Impact

Climate change impact could have mixed impacts on severe weather in the county. Temperatures in Tennessee have risen by 0.5°F since the beginning of the 20th century, less than a third of the warming for the contiguous United States. Additionally, climate models suggest that Montgomery County will see an increase in severe weather. Warmer temperatures may mean that some precipitation will fall as rain rather than snow, but the overall increase will likely present significant drainage and water management challenges in Montgomery County during the years to come. Because the probability of future occurrence of severe weather storms is already scored high, Montgomery County did not further adjust the probability of occurrence score given this expectation.

F. Summary

Montgomery County is subject to severe weather hazards, including thunderstorms, wind, lightning, and hail. Associated damages include impacts to utilities, residential and commercial buildings/property, and agricultural losses. High wind can cause trees to fall and potentially

result in injuries or death; lightning can lead to house fires and serious injury. Hail can cause injury and severe property damage to homes and automobiles.

2.5 Tornadoes (~1-2 per year)

A. Hazard Overview

Tornadoes have the potential to produce winds over 200 mph (EF5 on the Enhanced Fujita Scale) and can be very expansive. Before February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita scale. Both scales are wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage. *Table 35* shows the wind speeds associated with the enhanced Fujita scale ratings and the damage that could result at different intensity levels.

Table 35: Enhanced Fujita Scale

EF Rating	3 Second Wind Gust (mph)	Estimated Damage
0	65-85	**Light Damage.** Slight damage to roofs, gutters, siding, tree branches broken, shallow-rooted trees overturned
1	86-110	**Moderate Damage**. Mobile homes damaged, exterior portions of homes damaged or lost (i.e., roofs, doors, windows)
2	111-135	**Considerable Damage**. Mobile homes destroyed, cars lifted, well-constructed home frames shifted, roofs torn off, light-object missiles generated, large trees uprooted or snapped.
3	136-165	**Severe Damage**. Severe damage to large buildings, entire home stories destroyed, trees debarked, trains overturned, heavy vehicles lifted and thrown, structures with weaker foundations thrown
4	166-200	**Devastating Damage.** Well-constructed houses and whole frame houses leveled, cars thrown, small missiles generated
5	200+	**Incredible Damage**. Substantial frame houses leveled off foundations and the automobile-sized missiles generated, and high rises experience considerable damage and deformation

According to the Glossary of Meteorology (AMS 2000), a tornado is "a violently rotating column of air, pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud." Most tornadoes move from southwest to northeast or west to east.

Although tornadoes can occur in any location, most of the tornado activity in the United States exists in the Mid-West and Southeast. An exact season does not exist for tornadoes; however, most occur between early spring and mid-summer (February – June). The onset of tornado events is rapid, giving those in danger minimal time to seek shelter. The current average lead time, according to NOAA, is 13 minutes. A tornado can reach wind speeds of 40 mph to 250 mph and higher. The following map illustrates the frequency of tornadoes in Tennessee.

B. County Profile

Figure 12: Tornadoes by County (NWS/NOAA)

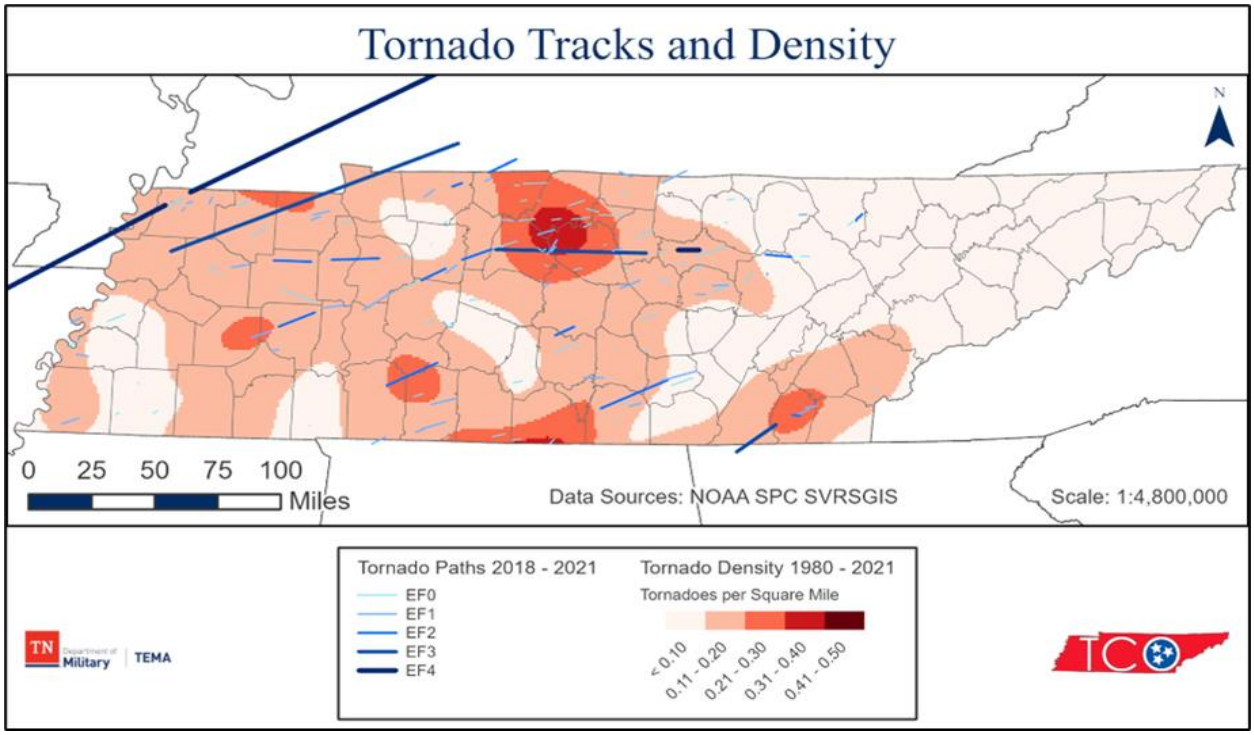


Figure 13: Tennessee Tornadoes by County

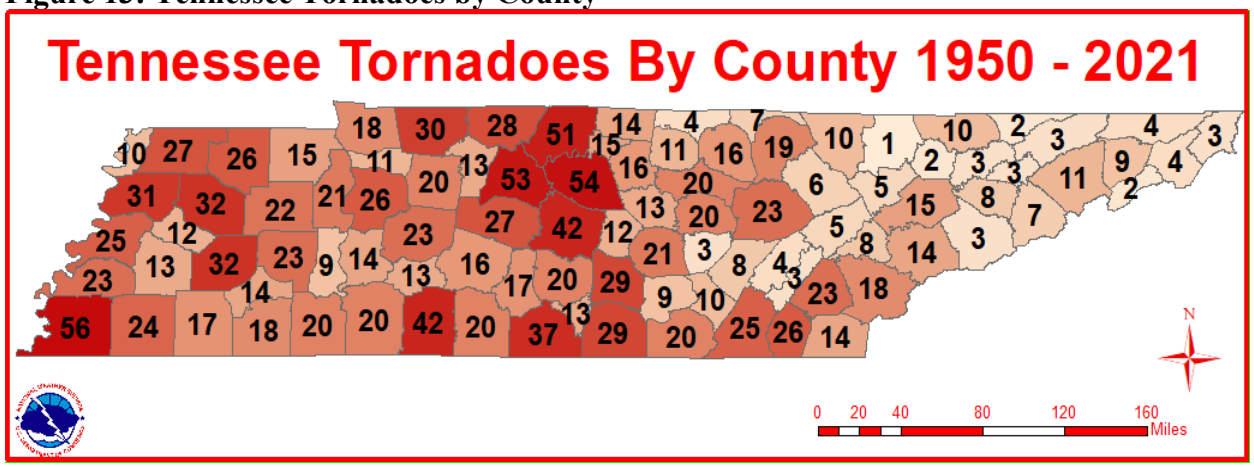


Figure 13 illustrates the track of tornadoes through Montgomery County as recorded by the National Weather Service Nashville and the National Climatic Data Center and compiled into a visual database by Mississippi State University.

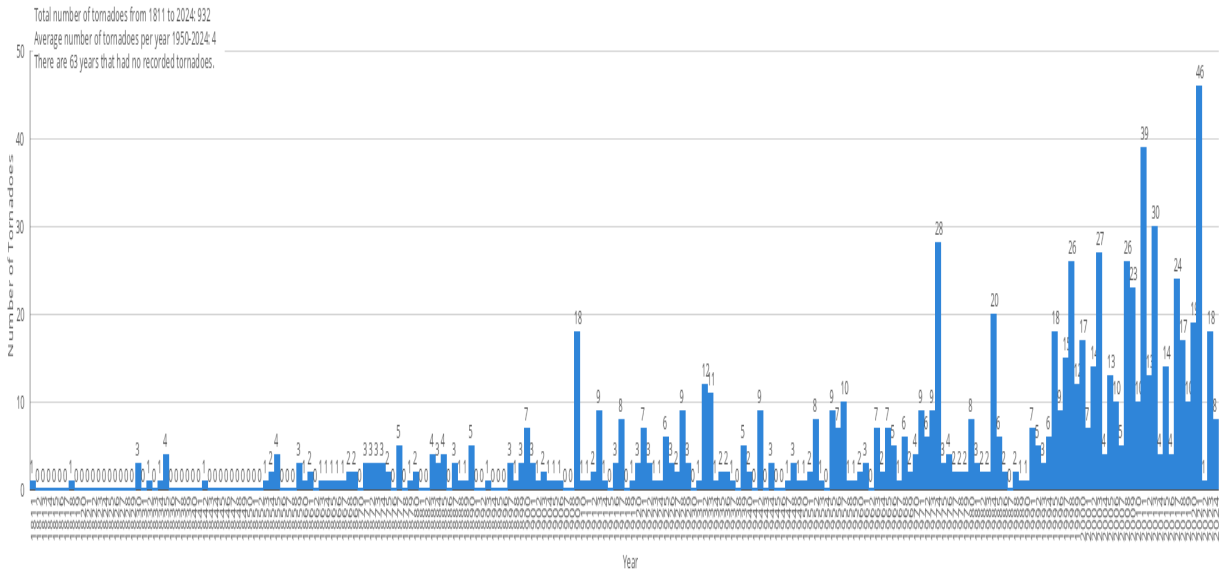
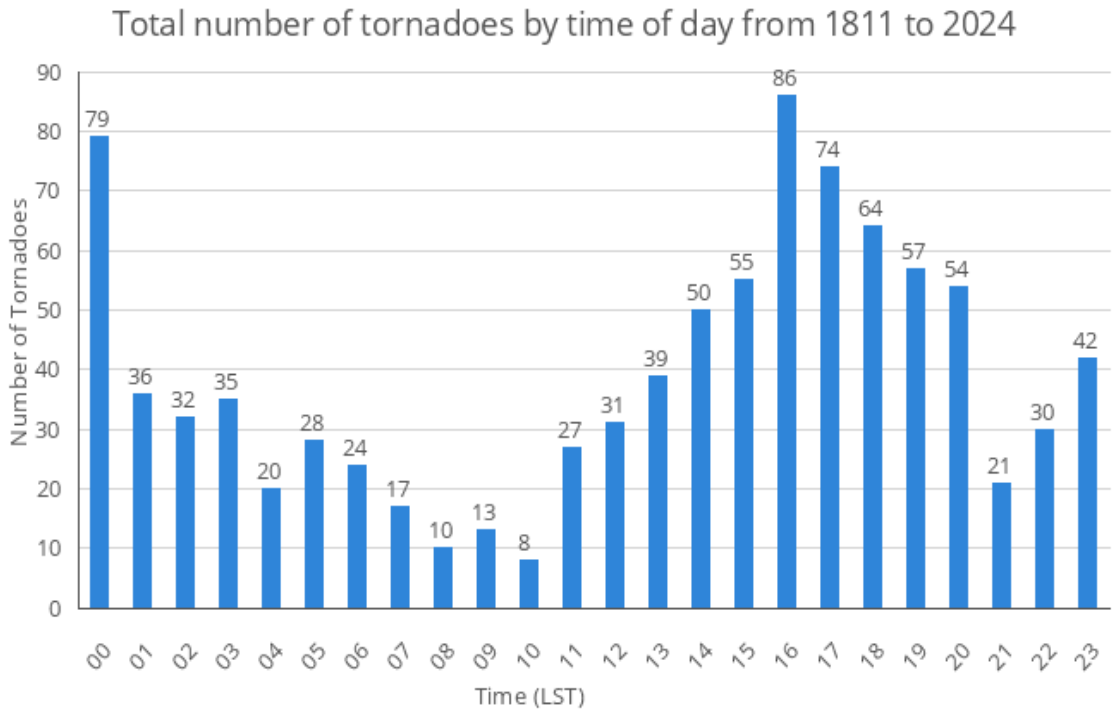
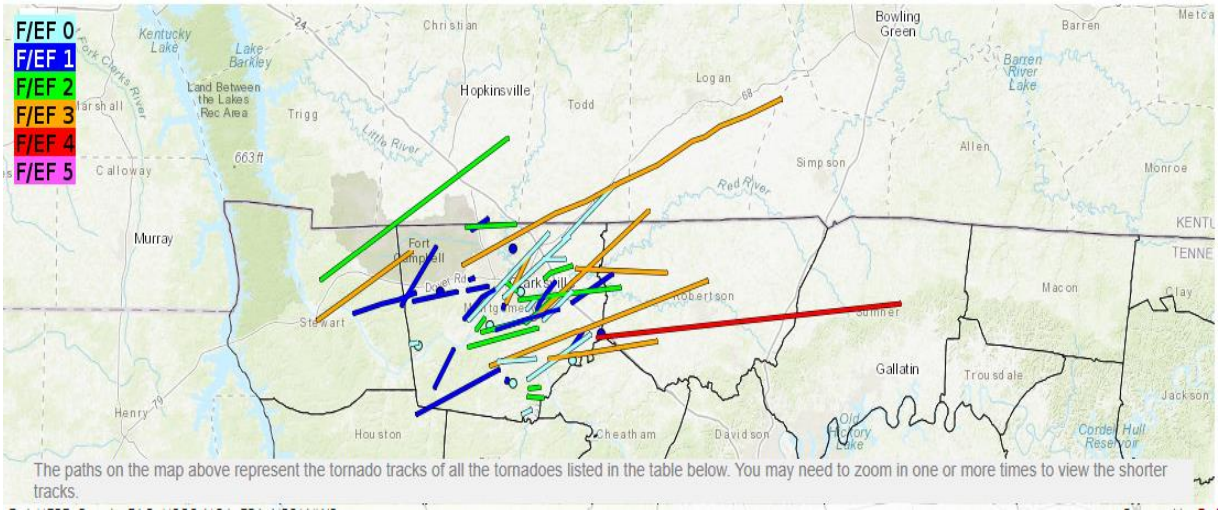


Table 36 provides a breakdown of tornado frequency by the hour in Montgomery County; tornadoes commonly hit between 4pm and 12am.

Table 36: Tornadoes by Time of Day





The following narratives were obtained via the NOAA Storm Event Database. Only events resulting in injury, death, or extensive damage (greater than $200K property/crop damage) were included as expanded narratives. A table containing all NOAA-recorded tornadoes between 1950-2024 for Montgomery County is contained in Appendix D.

12/09/2024 – A major tornado outbreak impacted Middle Tennessee during the afternoon and evening hours of December 9, 2023. With a surface low pressure system situated over the Great Lakes area, a cold front was oriented north-to-south from the Great Lakes southward into the southeastern United States. Ahead of this cold front, southerly flow advected plenty of moisture into Middle Tennessee as the atmosphere destabilized. Meanwhile, a potent low-level jet resulted in an abundant amount of wind shear. This helped to set the stage for organized thunderstorms with a tornado threat. Thunderstorms began to cross the Tennessee River into the mid-state during the early afternoon hours. The first tornado of the day touched down in Indian Mound in Stewart County. That same supercell spawned another, more significant, tornado in Montgomery County that impacted Clarksville. This was the strongest tornado of the event, causing EF-3 to damage before it continued its path into Kentucky. In total, six tornadoes were confirmed from this event, including another long-track EF-2 tornado that impacted Davidson, Sumner, and Trousdale counties which was warned with a Tornado Emergency. Unfortunately, seven people were killed during this event.

02/24/2018 - An intense storm system brought severe thunderstorms to northwest Middle Tennessee during the late afternoon and evening hours on February 24. One supercell thunderstorm developed along a warm front that moved northward across the area during the afternoon, spawning one tornado along the Kentucky/Tennessee border in Robertson County that then moved northeast into Kentucky. Later in the evening, a Quasi-Linear Convective System (QLCS) moved into the area from the west, spawning three more tornadoes across Montgomery and Robertson Counties which damaged dozens of homes and businesses and caused millions of dollars in damage. The QLCS also caused wind damage in several other counties.

02/14/2018 - An intense storm system brought severe thunderstorms to northwest Middle Tennessee during the late afternoon and evening hours on February 24. One supercell thunderstorm developed along a warm front that moved northward across the area during the afternoon, spawning one tornado along the Kentucky/Tennessee border in Robertson County that then moved northeast into Kentucky. Later in the evening, a Quasi-Linear Convective System (QLCS) moved into the area from the west, spawning three more tornadoes across Montgomery and Robertson Counties which damaged dozens of homes and businesses and caused millions of dollars in damage. The QLCS also caused wind damage in several other counties.

01/22/1999 - An F3 tornado struck Clarksville at 415 AM, travelled through the downtown area and dissipated near St. Bethlehem. There were 5 injuries, 2 of them were for broken bones. Clarksville has a population of 89,000 people is Tennessee's fifth largest city. 25,000 people were without power. The Tornado Warning was issued by the NWS at 354 AM CST. The NOAA Weather Radio alerted the sleepy resident s of Clarksville and urge them to take cover immediately. The tornado ripped apart a 5-block area of downtown Clarksville and teared up buildings in Austin Peay State University. Once the tornado ravaged the city, downtown Clarksville resembled bombed-out London during World War 2. Bricks and glass were strewn everywhere. The photo editor of the Leaf-Chronicle newspaper s, Fred Dye, said "It looked like somebody walked through with a broom and knocked over whatever was loose enough to knock down." The Montgomery County courthouse was in ruins. The City Fathers planned on rebuilding the courthouse. It was last rebuilt after a fire in 1878. The Leaf-Chronicle newspaper office was severely damaged. The newspaper had to set up a temporary office in Hopkinsville, KY. 22 buildings were heavily damaged at Austin Peay State University. Also, several old churches were heavily damaged in Clarksville. The Madison Street United Methodist Church lost its spires and roof. It will take about 2 years to rebuild the church. The Trinity Episcopal Church lost its roof. Police closed off downtown Clarksville from 6 PM-6 AM to prevent looting. The National Guard was on duty as well. On January 23, FEMA Director James Lee Whitt toured the devastation. He exclaimed, "Wow!" "It's like someone dropped a bomb on it. That's just what it looks like." There was a total of 124 buildings destroyed and 562 buildings damaged. These figures included residential, commercial, government, public and buildings at Austin Peay.

UPDATE: Clarksville EF-3 tornado had 150 mph winds, 91 homes destroyed, 675 damaged | VIDEO - ClarksvilleNow.com

Report details 11.3-mile, 600-yard-wide path of tornado destruction in Clarksville - ClarksvilleNow.com

Probability of Future Events - Likely

C. Risk Assessment

The entirety of Montgomery County can be considered at risk for a tornado. This includes the entire County population, all critical facilities, buildings (commercial and residential), and infrastructure. Tornadoes tracked in Tennessee predominantly travel in a northeasterly direction in the state. While all assets are considered at risk from this hazard, a particular tornado would only cause damages along its specific track.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for natural hazards. It was built and designed by FEMA in close

collaboration with various stakeholders and partners in academia; local, state, and federal government. The Risk Index leverages available source data for natural hazards and community risk factors to develop a baseline relative risk assessment for each county and census trace. Some of these community risk factors include social vulnerability which is determined by the data pulled from the Census preformed every ten years. A higher social vulnerability score is proportional to a higher risk score.

National Risk Index Score for Tornado = Relatively low

Jurisdictional Score for Tornado = Relatively low

Although the National Risk Index is a well-valued tool it fails to properly show the feedback from the participating jurisdictions. Therefore, all identified hazards were evaluated regarding risk in FEMA lifelines per jurisdiction. The scenario that local jurisdictions would evaluate the conditions off was a mid-level impact of the identified hazard. The results are below:

Table 37: Tornado Risk based on selected FEMA Lifelines

Tornado Risk							
Jurisdiction	**Safety & Security**	**Food, Water & Shelter**	**Health & Medical**	**Energy**	**Communications**	**Transportation**	**Water Systems**
Montgomery County							
City of Clarksville							
Clarksville-Montgomery County School System							

Colors indicate lifeline or component conditions:	
Red	Significant Impact, Multiple Required Resources
Yellow	Some Impact, Some Outside Resources Required
Green	Little to No Impact, No Outside Resources Required

Given the information above it becomes vital that all participating jurisdictions can prioritize the necessity of mitigation actions in the following lifeline categories so that they can become more resilient in the whole community that they serve.

D. Land Use and Development Trends

Montgomery County codes include proper wind strength and safety regulations consistent with state and federal regulations. While the adopted code provides adequate protection, older and mobile homes are highly susceptible to tornado events. There are multiple mobile home areas in the county, but an official counted to see how vulnerable those areas are. Additionally, many

incorporated jurisdictions do not have building ordinances for the structures that reside in the area.

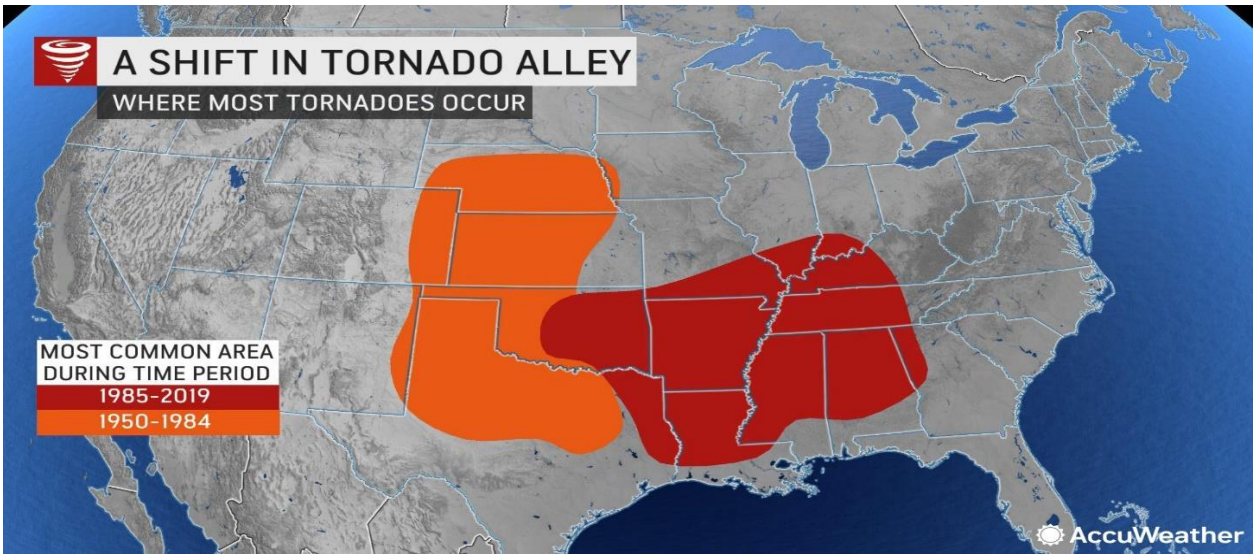
E. Multi-Jurisdictional Differences

The entirety of Montgomery County and its incorporated jurisdictions are at risk for a tornado event**.** It is also worth noting that given the county's sizeable rural component, some tornadic events may have gone unreported.

F. Climate Change Impact

There is still some uncertainty as to the specific link between tornadoes and changing climatic conditions, and more research is needed to understand the full impact of climate change on tornadic activity but the ingredients that fuel more powerful storms including rising temperatures, moisture, and wind shear are intensifying as the planet warms. Due to the small scale of tornado events, observation and modeling can be challenging.

Under both future trajectories, the number of annual supercell storms becomes more frequent and intense, with mean national activity increasing by 7 percent for the intermediate scenario and 15 percent for the pessimistic scenario. Tornado Alley is also projected to shift under both scenarios. Tennessee is expected to potentially see an increase in supercell counts per year.



Montgomery County, TN-High Windstorm Damage (October 26, 2019)

G. Summary

This includes the entire County population, all critical facilities, buildings (commercial and residential), and infrastructure. While all assets are considered at risk from this hazard, a tornado would only cause damages along its specific track. The weakest tornadoes, EF0, can cause minor roof damage, and stronger tornadoes can destroy frame buildings and badly damage steel reinforced concrete structures. Given the strength of the wind impact and

construction techniques, buildings are vulnerable to direct impact, including potential destruction, from tornadoes and wind debris that tornadoes turn into missiles. Structures constructed of light materials such as mobile homes are most susceptible to damage.

Chapter 3. Mitigation Strategy

3.1 Mitigation Goals

Goals are general guidelines that explain what is to be achieved. They are usually broad-based policy-type statements, long-term, and represent global visions. Goals help define the benefits that the plan is trying to achieve.

Goal Setting Exercise

In 2020, the HMPC agreed upon the goals for their hazard mitigation plan. It was decided that the goals from the 2020 plan should be carried over into the 2025 plan. They still reflect the current hazards and current conditions in the community.

Resulting 2025 Plan Update Goals

At the end of the meeting, the HMPC agreed upon three general goals for planning efforts. Those goals are as follows:

Goal 1: Protect the Lives and health of citizens from the effects of natural hazards.

Goal 2: Emphasize mitigation planning to decrease vulnerability to new and existing structures.

Goal 3: Encourage public support and commitment to hazard mitigation by communicating mitigation benefits.

Expanding & Improving Mitigation Programs

All the jurisdictions in the Montgomery County Mitigation Plan have adopted the NFIP program since June 15th, 1984. The City of Clarksville and Montgomery County both have a Building and Coded department and NFIP designees. The existing codes, ordinances, and regulations and have not changed in the last five years since the plan had been updated.

The participating jurisdictions determined which areas they could improve or expand based on the table above. Gaps and limitations for each jurisdiction may be addressed in the mitigation strategy.

Table 38: Expansion Narrative

Jurisdiction/Applicant	How are you able to expand?
Montgomery County	Grant writing training.
Montgomery County	Hazardous Material Training
City of Clarksville	Expanding & Improving Mitigation Programs
City of Clarksville	Reevaluate stormwater ordinance
Clarksville-Montgomery County School System	Grant writing training.
Clarksville-Montgomery County School System	Expanding & Improving Mitigation Programs

3.3 Compliance with NFIP

Montgomery County and City of Clarksville participate in FEMA's National Flood Insurance Program (NFIP). NFIP was started on June 15th, 1984. Each participating community enforces a

flood damage prevention ordinance that regulates development within the Special Flood Hazard Area (SFHA). Additionally, as members of FEMA's NFIP, each community requires Elevation Certificates on all new buildings and substantial improvements within the SFHA.

When buildings undergo repair or improvement, it's an opportunity to reduce future flood damage. Communities participating in the National Flood Insurance Program adopt and enforce a floodplain management ordinance that applies to development in a Special Flood Hazard Area. Your local floodplain management ordinance contains minimum NFIP requirements that are not only for new structures, but also for existing structures with proposed "substantial improvements" or repair of "substantial damage." Local officials in communities that participate in the NFIP must determine whether proposed work qualifies as a substantial improvement or repair of substantial damage (referred to as an "SI/SD determination"). If work on buildings constitutes SI/SD, then structures must be brought into compliance with your local floodplain management ordinance.

The NFIP defines SI/SD as follows:
Substantial improvement (SI) means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure (or smaller percentage if established by the community) before the "start of construction" of the improvement.
Substantial damage (SD) means damage of any kind sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure.

Who Makes the Determination?
Local jurisdictions are responsible for substantial damage determinations based on their specific floodplain ordinances and will notify property owners of those decisions. FEMA does not make substantial damage determinations or notify property owners; however, FEMA may provide damage data that helps local jurisdictions make these determinations.

What Substantial Improvement/Substantial Damage Means for Homeowners:
If a building in an SFHA is determined by local officials to be SI/SD, it must be brought into compliance with current local floodplain management ordinance. This may involve:

- Elevating or modifying a structure to meet floodplain standards.
- Relocating or demolishing a structure.
- Floodproofing non-residential or historic buildings.

Ask local floodplain administrators and building officials about required permits before starting repairs.

Given the flood hazards in the planning area, an emphasis will be placed on continued compliance with the NFIP. Montgomery County adopted minimum Floodplain Management Criteria.

- How does a jurisdiction make substantial damage determinations following a flood event?
- How do you perform damage assessments?
- How do you inform property owners for permits?

- How do you review permit application for buildings located in special flood hazard area?
- How do you conduct field inspections during construction?
- How do you coordinate with property owners and insurance adjusters on NFIP claims and Increased Cost of Compliance coverage?

Each jurisdiction participates in NFIP Webinars hosted by the State National Flood Insurance program Office as illustrated in *Table 39*. Each participating community will take the following steps to meet or exceed the following minimum requirements as set by the NFIP:

- Issuing or denying floodplain development/building permits.
- Inspecting all development to ensure compliance with the local ordinance.
- Maintaining records of floodplain development.
- Assisting in the preparation and revision of floodplain maps.
- Helping residents obtain information on flood hazards, floodplain map data, flood insurance, and proper construction measures.

Table 39: NFIP Designees and Webinar Attendance

Jurisdiction	Name of NFIP Designee	Title:	Phone Number:
Montgomery County	John Doss	Stormwater Coordinator	931-648-5718
City of Clarksville	Chris Cowan	Engineering Manager	931-645-7464
Clarksville-Montgomery County School System	_	_	_

3.4 Prioritization Process

The prioritization process was necessary as most mitigation projects represent a significant investment of financial and personal resources. By evaluating each project's degree of feasibility and the level of costs versus benefits, Montgomery County could determine which projects should include based on the available funding and time. The HMPC used the SAFE-T method to prioritize these projects. This approach was adopted from the successful methodology used by other counties in FEMA Region 4. This rating system uses five variables to evaluate each project's overall feasibility and appropriateness. *Figure 14* further explains this method.

Project Prioritization Method: SAFE-T			
Variable		Value	Description
S	**Societal:** The public must support the overall implementation strategy and specified mitigation actions. The projects will be evaluated in terms of community acceptance, social vulnerability and societal benefits	1	Low community acceptance/priority
		2	Moderate community acceptance/priority
		3	High community acceptance/priority
A	**Administrative:** The projects will be evaluated for anticipated staffing and maintenance requirements to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the project or whether outside help will be needed.	1	High staffing, outside help needed
		2	Some staffing, no outside help needed
		3	Low staffing, no outside help needed
F	**Financial:** The projects will be evaluated on their general cost-effectiveness and whether additional outside funding will be required.	1	Somewhat cost-effective
		2	Moderately cost effective
		3	Very cost-effective
E	**Environmental:** The projects will be evaluated for any immediate or long-term environmental impacts caused by their construction or operation.	1	Many environmental impacts
		2	Some environmental impacts
		3	Few environmental impacts
T	**Technical:** the projects will be evaluated on their ability to reduce losses in the short term or long term.	1	Short-term fix
		2	Medium-term fix
		3	Long-term fix

Figure 14: SAFE-T Project Prioritization

The identification and analysis process of mitigation alternatives allowed the HMPC to come to a consensus and prioritize recommended mitigation actions. The HMPC discussed the contribution of the effort to save lives or property first and foremost, with additional consideration given to the benefit-cost aspect of a project; however, this was not a quantitative analysis. The team agreed that prioritizing the actions collectively enabled the actions to be ranked in order of relative importance and helped steer the development of additional actions that meet the more essential objectives while eliminating some of the actions which did not garner much support. The cost-effectiveness of any mitigation alternative will be considered in greater detail by performing benefit-cost project analyses when seeking FEMA mitigation grant funding for eligible actions associated with this plan.

3.5 Mitigation Action Plan

The Mitigation Action Plan was developed to present the recommendations developed by the HMPC for how the communities can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Emphasis was placed on both future and existing development. The action plan summarizes who is responsible for implementing each of the prioritized actions and when and how the actions will be implemented. Due to funding availability and other criteria, it should be clarified that the actions included in this mitigation strategy are subject to further review and refinement, alternatives analyses, and reprioritization. This document does not obligate Montgomery County and the incorporated jurisdictions to implement any or all these projects. Rather this mitigation strategy represents the desires of the community to mitigate the risks and vulnerabilities from identified hazards.

Please use the following survey link to generate the mitigation actions/projects list: https://arcg.is/1ibD0D

Action Description *Hazard Mitigated*	Responsible Department	Jurisdiction	Time Frame	Priority Score						Est Cost	Funding Sources	Infrastructure
				Societal	Administrative	Financial	Environmental	Technical	Total			
Generators for County EMS Stations *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMS MCEMA Montgomery County	Montgomery County	Medium-Term (3-5 years)	3	3	2	2	1	**11**	$500K	HMGP, Local	Existing
Generators for Radio Communication Towers *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	Montgomery County Law Enforcement Clarksville Police Department Montgomery County Emergency Medical Service	Montgomery County City of Clarksville	Medium-Term (3-5 years)	3	3	2	2	1	**11**	$150K	HMGP, Local	Existing

Generators for schools (x4) *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	CMCSS	CMCSS	Medium-Term (3-5 years)	3	3	2	2	1	**11**	$700K	HMGP, Local	Existing
Generators for county/city fire stations *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	Montgomery County Fire Department MCEMA Clarksville Fire and Rescue	All	Medium-Term (3-5 years)	3	3	2	2	1	**11**	$500K	HMGP, Local	Existing
Generator for city sewage building *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	City of Clarksville	City of Clarksville	Medium-Term (3-5 years)	3	3	2	2	1	**11**	$150K	HMGP, Local	Existing

Retrofit schools for high winds and debris (window film, harden walls, etc.) *Severe Weather, Tornadoes*	CMCSS	CMCSS	Long-Term (5-10 years)	3	1	2	2	3	**11**	$800K	HMGP, Local	Existing
Retrofit the Schools to function as a safe shelter. *Severe Weather, Tornadoes*	CMCSS	CMCSS	Long-Term (5-10 years)	3	1	2	2	3	**11**	$900K	HMGP, Local	Existing
Retrofit Community Centers for a safe shelter in higher population/higher risk area of the city. *Severe Weather, Tornadoes*	City of Clarksville	City of Clarksville	Long-Term (5-10 years)	3	1	2	2	3	**11**	$900K	HMGP, Local	New

Weather Radio Giveaway for households *Flood, Severe Weather, Tornadoes*	MCEMA Montgomery County City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	3	2	**13**	$15K	HMGP, BRIC, Local	Both New and Existing
Outdoor warning siren system in uncovered areas near schools *Earthquake, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville Montgomery County	All	Short-Term (0-3years)	2	2	2	2	2	**10**	$100K	HMGP, Local	New
Property Acquisition for RL/SRL properties *Flood*	City of Clarksville Montgomery County	All	Medium-Term (3-5 years)	2	2	2	2	3	**11**	$500K	HMGP, Local	Existing

Provide emergency preparedness instructional materials to citizens. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA Montgomery County City of Clarksville	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K	HMGP, Local	Both New and Existing
Public education of NFIP and Drainage structure clearing *Flood*	Clarksville Street Department Montgomery County Building and Codes/ Storm Water Division	Montgomery County City of Clarksville	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K	HMGP, Local	Existing

Enforcement of NFIP Requirements *Flood*	Montgomery County Building and Codes City of Clarksville Building and Codes	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K	HMGP, Local	Existing
Need for additional salt sheds. *Severe Weather*	Montgomery County Highway Department City of Clarksville Street Department Montgomery County	Montgomery County City of Clarksville	Medium-Term (3-5 years)	2	2	2	2	2	**10**	$100K	HMGP, Local	Existing
UAS Trailer *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA Montgomery County City of Clarksville	All	Medium-Term (3-5 years)	2	2	2	2	2	**10**	$150K	HMGP, Local	Existing

Continued building and codes enforcement. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	Montgomery County Building and Codes City of Clarksville Building and Codes	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K		Existing
Continued removal of limbs and tree trimming. *Flood, Severe Weather, Tornadoes*	Montgomery County Highway Department	Montgomery County City of Clarksville	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$100K	HMGP, Local	Existing

Train responders on tactics for Hazards. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA City of Clarksville	Montgomery County City of Clarksville	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$250K	HMGP, Local	Existing
Backup generators with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville Montgomery County	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$1M	HMGP, Local	New

Solar panels and storage cells with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$1M	HMGP, Local	New
Backup portable generators with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$500K	HMGP, Local	New

Purchase power transfer switch for portable generators. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$10K per Facility	HMGP, Local	New
Public education of NFIP and Drainage structure clearing *Flood*	Clarksville Street Department Montgomery County Building and Codes/ Storm Water Division	Montgomery County City of Clarksville	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K	HMGP, Local	Existing

Enforcement of NFIP Requirements *Flood*	Montgomery County Building and Codes City of Clarksville Building and Codes	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K	HMGP, Local	Existing
Need for additional salt sheds. *Severe Weather*	Montgomery County Highway Department City of Clarksville Street Department	Montgomery County City of Clarksville	Medium-Term (3-5 years)	2	2	2	2	2	**10**	$50K	HMGP, Local	Existing

UAS Trailer *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA	All	Medium-Term (3-5 years)	2	2	2	2	2	**10**	$75K	HMGP, Local	Existing
Continued building and codes enforcement. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	Montgomery County Building and Codes City of Clarksville Building and Codes	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$10K		Existing

Continued removal of limbs and tree trimming. *Flood, Severe Weather, Tornadoes*	Montgomery County Highway Department	Montgomery County City of Clarksville	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$100K	HMGP, Local	Existing
Train responders on tactics for hazzards. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA City of Clarksville	All	Ongoing This is an ongoing project that the county and its incorporated jurisdictions pursue continually.	2	2	3	3	2	**12**	$250K	HMGP, Local	Existing

Backup generators with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$1M	HMGP, Local	New
Solar panels and storage cells with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$1M	HMGP, Local	New

Backup portable generators with automated switching systems for critical infrastructure *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$500K	HMGP, Local	New
Purchase power transfer switch for portable generators. *Earthquake, Extreme Temperature, Flood, Severe Weather, Tornadoes*	MCEMA CMCSS City of Clarksville	All	Medium-Term (3-5 years)	3	3	2	2	2	**12**	$10K per Facility	HMGP, Local	New

Chapter 4. Implementation, Integration, and Maintenance

This section provides an overview of the plan implementation, integration and maintenance strategy and outlines the method and schedule for monitoring, evaluating, and updating the plan. This section also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

4.1 Plan Adoption, Implementation, Monitoring, and Evaluation

4.1.1 Plan Adoption

The purpose of formally adopting this plan is to secure buy-in, raise awareness of the plan, and formalize the plan's implementation. This plan will be adopted by the appropriate governing body for each participating community. Copies of the executed resolutions are shown below.

Note to Reviewer: Executed resolutions will be inserted when they become available.

4.1.2 Implementation

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This section provides an overview of the overall strategy for plan implementation and maintenance.

Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of the government. Implementation will be accomplished by adhering to the schedules identified for each action and through constant, pervasive, and energetic efforts to network and highlight the multi-objective benefits to each program and the community. This effort is achieved through the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community. Additional mitigation strategies could include consistent and ongoing enforcement of existing policies and vigilant review of programs for coordination and multi-objective opportunities.

Simultaneous to these efforts, it is important to maintain constant monitoring of funding opportunities that can be leveraged to implement some of the more costly actions. This will include creating and maintaining a list of ideas on how to meet local match or participation requirements. When funding does become available, the communities will be able to capitalize on the opportunity due to the diligence of the HMPC. Funding opportunities to be monitored include special pre- and post-disaster funds, state and federal funds, benefit assessments, and other grant programs, including those that can serve or support multi-objective applications.

Elected officials, officials appointed to head community departments and community staff are charged with the implementation of various activities in the plan. Recommendations will be made to modify timeframes for the completion of activities, funding resources, and responsible entities. On an annual basis, the priority standing of various activities may also be changed. Some activities that are found unachievable may be removed from the plan entirely and activities addressing problems unforeseen during plan development may be added.

4.1 Integration into Local Planning Mechanism

A vital implementation mechanism that is highly effective and low-cost is the incorporation of the Hazard Mitigation Plan recommendations and their underlying principles into other plans and tools. All plan participants will use existing methods and programs to implement hazard mitigation actions where possible. As previously stated, mitigation is most successful when it is

incorporated into government and public service's day-to-day functions and priorities. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include:

- Regularity Capabilities
- Administrative Capabilities
- Fiscal Capabilities

For further information regarding the different capabilities refer to Chapter 3 – Mitigation Strategy.

Implementation and incorporation into existing planning mechanisms will be conducted by respective planning authorities and will be done through the routine actions of:

- Monitoring other planning/program agendas.
- Attending other planning/program meetings.
- Participating in other planning processes; and
- Monitoring community budget meetings for other community program opportunities.

The successful implementation of this mitigation strategy will require constant and vigilant review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. Efforts should continuously be made to monitor the progress of mitigation actions implemented through other planning mechanisms. Where appropriate, priority actions should be incorporated into Hazard Mitigation Plan updates.

4.2 Monitoring, Evaluating, Updating

For the Hazard Mitigation Plan update review process, the Montgomery County Emergency Management Agency will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the plan. The review of the Hazard Mitigation Plan will be conducted as follows:

- The Montgomery County Emergency Management Agency will be responsible for leading the meeting to review the plan.
- Notices will be emailed to the members of the HMPC, federal, state, and local agencies, non-profit groups, local planning agencies, and representatives of business interests, neighboring communities, and others advising them of the date, time, and place for the review.
- Local City officials will be notified by email or phone call.
- Before the review, department heads and others tasked with implementing various projects/actions will be queried concerning progress in their area of responsibility and asked to present a report at the review meeting.
- A copy of the current plan will be available for public comment.
- After the review meeting, a status report will be developed outlining the implementation of projects over the past year.

Criteria for Annual Reviews

The criteria recommended for annual reviews will include the following:

- Community growth or change in the past year to include residential, commercial, and industrial growth trends.
- The number of substantially damaged or improved structures by flood zone and review of jurisdictional NFIP membership.
- Renovations to public infrastructure, including water, sewer, drainage, roads, bridges, gas lines, and buildings.
- Natural hazard occurrences that required activation of the Emergency Operations Center (EOC) and whether the event resulted in a presidential disaster declaration.
- Natural hazard occurrences that were not of a magnitude to warrant activation of the EOC or a federal disaster declaration but were severe enough to cause damage in the community or closure of businesses, schools, or public services.
- The dates of hazardous events, narratives, and documented damages.
- Closures of places of employment or schools and the number of days closed.
- Road or bridge closures due to the hazard and the length of time closed.
- Assessment of the number of private and public buildings damaged and whether the damage was minor, substantial, major, or if buildings were destroyed. The assessment will include residences, mobile homes, commercial structures, industrial structures, and public buildings, such as schools and public safety buildings.
- Review of any changes in federal, state, and local policies to determine the impact of these policies on the community and how and if the policy changes can or should be incorporated into the Hazard Mitigation Plan.
- Review of the implementation status of projects/actions (mitigation strategies). The reason for delay will be discussed for any projects that are behind schedule or not yet started.

4.2.1 Continued Public Involvement

Continued public involvement is imperative to the overall success of the plan's implementation. The update process provides an opportunity to solicit participation from new and existing stakeholders, publicize mitigation success stories, and seek additional public comment. The plan maintenance and update process will include continued public and stakeholder involvement and input through attendance at designated committee meetings, web postings, press releases to local media, and public hearings.

Public Involvement Process for Annual Reviews

The public will be notified via the Montgomery County website or any other form of a publicized social platform (i.e., local newspaper, Facebook, Twitter) well in advance of any public meetings or comment periods.

Public Involvement for Five-year Update

When the HMPC reconvenes for the five-year update, they will coordinate with all stakeholders participating in the planning process—including those that joined the committee since the

planning process began—to update and revise the plan. In reconvening, the HMPC will develop a plan for public involvement and will be responsible for disseminating information through various media channels detailing the plan update process. As part of this effort, public meetings will be held, and public comments will be solicited on the plan update draft.

2019

Hazard Mitigation Team Meeting

September 12, 2019

Name	Organization	Email
Rodney Grimsley	EMA	ragrimsley@mcgtn.net
Tommy Butler	CMCSS	
Derrick S Oliver	APSUPD	oliverd@apsu.edu
DAVID SHEPARD	CSD	dshepard@cityofclarksville.com
Scott Bibb	CSD	SBibb@cityofclarksville.com
Lauren Richmond	CMCSS	lauren.richmond@cmcss.net
EMILY BOWERS	CMCSS	emily.bowers@cmcss.net
Debbie Smith	City of Clarksville	Debbie.Smith@cityofclarksville.com
Angelia Koski	mcgill	akkoski@mcgtn.net
Shane Givens	Mont co E911	dsgivens@mcgtn.net
Wesley Golden	City of Clarksville	wes.golden@cityofclarksville.com
John Eskew	City of Clarksville	john.eskew@cityofclarksville.com
James Perras	Tennova Healthcare Clarksville	james.perras@mytennova.com
Jennifer Letourneau	City of Clks Parks/Rec	jennifer.letourneau@cityofclarksville.com
Donna E. Holden	TEMA	donna.holden@tn.gov
Kari Cochran	TEMA	Kari.M.Cochran@tn.gov

Amanda C. Sacoto-Dunbar

Subject:	Webex meeting invitation: Montgomery County Hazard Mitigation Team Meeting/BRIC
Location:	https://tngov.webex.com/tngov/j.php?MTID=mbbab1da74facec0131ae2771fc22ad8e
Start:	Fri 9/18/2020 9:00 AM
End:	Fri 9/18/2020 10:00 AM
Show Time As:	Tentative
Recurrence:	(none)
Organizer:	Kari M Cochran

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Kari M Cochran invites you to join this Webex meeting.

Meeting number (access code): 171 858 0152

Meeting password: Q5mS3x3vNU8

Friday, September 18, 2020
9:00 am | (UTC-05:00) Central Time (US & Canada) | 1 hr

Join meeting

Tap to join from a mobile device (attendees only)
+1-415-655-0003,,1718580152## US TOLL

Join by phone

1

Roll Call - Attendance 9/18/2020

Members:

Bronson Gibbs	bgibbs@cityofclarksville.com
Charles J. Frost	cjfrost@mcgtn.net
Chris Cowan (Storm Water)	chris.cowan@cityofclarksville.com
Chris Lambert (Chris.lambert@cityofclarksville.com)	Chris.lambert@cityofclarksville.com
Daniel Kimbell CDE	Daniel.kimbell@cdelightband.com
David Abernathy CEMC	dabernathy@cemc.org
'david.shepard@cityofclarksville.com'	david.shepard@cityofclarksville.com
Debbie Smith	Debbie.Smith@cityofclarksville.com
Doug Catellier	catellierd@apsu.edu
Dustin A. Haas	dahaas@mcgtn.net
Emily Bowers	Emily.Bowers@cmcss.net
Eric Salmon - Clarksville Street Department (eric.salmon@cityofclarksville.com)	eric.salmon@cityofclarksville.com
Fred Gilman - Coast Guard Auxiliary (reeltime@bellatlantic.net)	reeltime@bellatlantic.net
James Halford (james.halford@cityofclarksville.com)	james.halford@cityofclarksville.com
James Perras (james.perras@mytennova.com)	james.perras@mytennova.com
Jeff H. Bryant	jhbryant@mcgtn.net
Jennifer Letourneau (jennifer.letourneau@cityofclarksville.com)	jennifer.letourneau@cityofclarksville.com
Jennifer N. Hood	jnhood@mcgtn.net
Jimmie W. Edwards	jwedwards@mcgtn.net
John Doss	jhdoss@mcgtn.net
Kimberly Kassander (Kimberly.kassander@tn.gov)	Kimberly.kassander@tn.gov
Kyle D. Johnson	kdjohnson@mcgtn.net
Lt. Chris Jones - APSU Police	jonesc@apsu.edu
Mike Wilson	wilsonm@apsu.edu
Peter Griffin	Peter.Griffin@tn.gov
Phillip Whittinghill -Water Treatement	phil.whittinghill@cityofclarksville.com
Rod C. Streeter	rcstreeter@mcgtn.net
Rodney A. Grimsley	ragrimsley@mcgtn.net
Scott Audet	scott.audet@cityofclarksville.com
Steve Batten -CFR	steve.batten@cityofclarksville.com
Tom Heath	tom.heath@cityofclarksville.com
Tommy Butler	tommy.butler@cmcss.net
Wes Golden	wes.golden@cityofclarksville.com

* 9:00 - 9:33 am

Peter Griffin TEMA - Jerry Allbright

Lynn Fisher APSU

Donna Holder TEMA - Kari Cochran

- Tammy Arms

- Ed Baggett

- Scott Bibb City Street Department

(17 total)

Tammy J. Arms

Subject:	Hazard Mitigation Meeting
Location:	Virtual
Start:	Tue 10/12/2021 10:00 AM
End:	Tue 10/12/2021 10:30 AM
Recurrence:	(none)
Meeting Status:	Meeting organizer
Organizer:	Tammy J. Arms
Required Attendees:	Bronson Gibbs (bgibbs@cityofclarksville.com); chris.cowan@cityofclarksville.com; chris.lambert@cityofclarksville.com; Daniel Kimbell; 'dabernathy@cemc.org'; 'david.shepard@cityofclarksville.com'; Debbie Smith; Doug Catellier; Dustin A. Haas; Emily Bowers; eric.salmon@cityofclarksville.com; Lynn Fisher; Fred Gilman; James Halford; James Perras; Jeff Bryant (jhbryant@mcgtn.net); jennifer.letourneau@cityofclarksville.com; Jennifer N. Hood; Jimmie W. Edwards; John Doss; kimberly.kassander@tn.gov; Kyle D. Johnson; jonesc@apsu.edu; Michael Wilson; Peter Griffin (peter.griffin@tn.gov); phil.whittinghill@cityofclarksville.com; Rod C. Streeter; Rodney A. Grimsley; scott.audet@cityofclarksville.com; Steve Batten; tom.heath@cityofclarksville.com; Tommy Butler; Wes Golden; Amanda Sacoto-Dunbar (acsacoto-dunbar@mcgtn.net)

-- Do not delete or change any of the following text. --

When it's time, join your Webex meeting here.

Join meeting

More ways to join:

Join from the meeting link
https://mcgtn.webex.com/mcgtn/j.php?MTID=m1494cc1853df3e120a0a1e8822451afc

Join by meeting number
Meeting number (access code): 2465 344 1314
Meeting password: UncDPveP428

Tap to join from a mobile device (attendees only)
+1-415-655-0003,,24653441314## US Toll

Join by phone
+1-415-655-0003 US Toll

1

Roll Call - (virtual) 10/12/2021

10:00 - 10:31

Members:

Bronson Gibbs	bgibbs@cityofclarksville.com
Chris Cowan (Storm Water)	chris.cowan@cityofclarksville.com
✓ Chris Lambert (Chris.lambert@cityofclarksville.com)	Chris.lambert@cityofclarksville.com
✓ Daniel Kimbell CDE	Daniel.kimbell@cdelightband.com — Lauren Warren
David Abernathy CEMC	dabernathy@cemc.org
✓ david.shepard@cityofclarksville.com'	david.shepard@cityofclarksville.com
✓ Debbie Smith	Debbie.Smith@cityofclarksville.com
Doug Catellier	catellierd@apsu.edu
Dustin A. Haas	dahaas@mcgtn.net
Emily Bowers	Emily.Bowers@cmcss.net
Eric Salmon - Clarksville Street Department (eric.salmon@cityofclarksville.com)	eric.salmon@cityofclarksville.com
✓ Fisher, Lynn	fisherl@apsu.edu
Fred Gilman - Coast Guard Auxiliary (reeltime@bellatlantic.net)	reeltime@bellatlantic.net
James Halford (james.halford@cityofclarksville.com)	james.halford@cityofclarksville.com
James Perras (james.perras@mytennova.com)	james.perras@mytennova.com
✓ Jeff H. Bryant	jhbryant@mcgtn.net
Jennifer Letourneau (jennifer.letourneau@cityofclarksville.com)	jennifer.letourneau@cityofclarksville.com
✓ Jennifer N. Hood	jnhood@mcgtn.net
Jimmie W. Edwards	jwedwards@mcgtn.net
✓ John Doss	jhdoss@mcgtn.net
✓ Kimberly Kassander (Kimberly.kassander@tn.gov)	Kimberly.kassander@tn.gov
Kyle D. Johnson	kdjohnson@mcgtn.net
✓ Lauren Winters	lauren.winters@cityofclarksville.com
✓ Laurie Matta	laurie.matta@cityofclarksville.com
Lt. Chris Jones - APSU Police	jonesc@apsu.edu
Mike Wilson	wilsonm@apsu.edu
✓ Peter Griffin	Peter.Griffin@tn.gov
Phillip Whittinghill -Water Treatement	phil.whittinghill@cityofclarksville.com
✓ Randy Ellis	randy.ellis@cityofclarksville.com
Rod C. Streeter	rcstreeter@mcgtn.net
Rodney A. Grimsley	ragrimsley@mcgtn.net
Scott Audet	scott.audet@cityofclarksville.com
Steve Batten -CFR	steve.batten@cityofclarksville.com
Tom Heath	tom.heath@cityofclarksville.com
Tommy Butler	tommy.butler@cmcss.net
✓ Wes Golden	wes.golden@cityofclarksville.com

- Michael Blackwell CEMC
- Heather Tyndall HR
- Freddie Montgomery CFR
- Chief Batten CFR
- City Street Dept.
- Donna Holden
- Lawra Warren - City/CDE
- Ed Baggett

Rodney A. Grimsley

Subject:	Yearly Hazard Mitigation Team Meeting
Location:	Emergency Operations Center 130 S. 1st Street
Start:	Tue 12/6/2022 10:00 AM
End:	Tue 12/6/2022 11:30 AM
Recurrence:	(none)
Meeting Status:	Meeting organizer
Organizer:	Rodney A. Grimsley
Required Attendees:	Rodney A. Grimsley; Autumn Joanow (Autumn.Joanow@tn.gov); Bronson Gibbs ; carlye.sommers@cityofclarksville.com; Chris Cowan (chris.cowan@cityofclarksville.com); Chris Lambert (Chris.lambert@cityofclarksville.com); Chris Proctor (cmproctor@mcgtn.net); COSS Jennifer Hood (jnhood@mcgtn.net); CPT. Daniel Lane (daniel.lane@cityofclarksville.com); Debbie Smith ; Doug Catellier ; Emily Bowers; Eric Salmon - Clarksville Street Department (eric.salmon@cityofclarksville.com); Frank Tate (ftate@clarksville.tn.us); Fred Gilman - Coast Guard Auxiliary (reeltime@bellatlantic.net); Heather Tyndall (hatyndall@mcgtn.net); Ihab Habib (ihab.habib@cityofclarksville.com); James Halford (james.halford@cityofclarksville.com); James Perras (james.perras@mytennova.com); Jeff Bryant (jhbryant@mcgtn.net); Jennifer Letourneau (jennifer.letourneau@cityofclarksville.com); Jimmy Edwards (jwedwards@mcgtn.net); John Doss; Lauren Winters (lauren.winters@cityofclarksville.com); Fisher, Lynn; Mike Wilson ; Peyton Massey (peyton.massey@tn.gov); Randy Ellis (Randy.Ellis@cityofclarksville.com); Richard Teasley (rhteasley@mcgtn.net); Rod C. Streeter ; Scott Audet ; Tom Heath ; Tommy Butler
Optional Attendees:	Ed Baggett (eebaggett@mcgtn.net); Sesmith@mcgtn.net; tjarms@mcgtn.net; Kari M. Cochran; bronson.gibbs@cityofclarksville.com; ereka.clark@cityofclarksville.com; steve.batten@cityofclarksville.com; Donald J. Davidson; Michael F. Harris
Contacts:	Autumn Joanow

1

Name	Attendance	Response
Rodney A. Grimsley	Meeting Organizer	None
Autumn Joanow (Autumn.Joanow@tn.gov)	Required Attendee	Tentative
Bronson Gibbs	Required Attendee	None
carlye.sommers@cityofclarksville.com	Required Attendee	Accepted
Chris Cowan (chris.cowan@cityofclarksville.com)	Required Attendee	Accepted
Chris Lambert (Chris.lambert@cityofclarksville.com)	Required Attendee	Accepted
Chris Proctor (cmproctor@mcgtn.net)	Required Attendee	Accepted
COSS Jennifer Hood (jnhood@mcgtn.net)	Required Attendee	Accepted
CPT. Daniel Lane (daniel.lane@cityofclarksville.com)	Required Attendee	None
Debbie Smith	Required Attendee	None
Doug Catellier	Required Attendee	Accepted
Emily Bowers	Required Attendee	None
Eric Salmon - Clarksville Street Department	Required Attendee	Accepted
Frank Tate (ftate@clarksville.tn.us)	Required Attendee	None
Fred Gilman - Coast Guard Auxiliary net)	Required Attendee	None
Heather Tyndall (hatyndall@mcgtn.net)	Required Attendee	Accepted
Ihab Habib (ihab.habib@cityofclarksville.com)	Required Attendee	Tentative
James Halford (james.halford@cityofclarksville.com)	Required Attendee	None
James Perras (james.perras@mytennova.com)	Required Attendee	Accepted
Jeff Bryant (jhbryant@mcgtn.net)	Required Attendee	Accepted
Jennifer Letourneau	Required Attendee	Accepted
Jimmy Edwards (jwedwards@mcgtn.net)	Required Attendee	Accepted
John Doss	Required Attendee	Tentative
Lauren Winters (lauren.winters@cityofclarksville.com)	Required Attendee	Accepted
Fisher, Lynn	Required Attendee	Accepted
Mike Wilson	Required Attendee	Accepted
Peyton Massey (peyton.massey@tn.gov)	Required Attendee	Accepted
Randy Ellis (Randy.Ellis@cityofclarksville.com)	Required Attendee	Declined

Richard Teasley (rhteasley@mcgtn.net)	Required Attendee	Accepted
Rod C. Streeter	Required Attendee	Accepted
Scott Audet	Required Attendee	None
Tom Heath	Required Attendee	None
Tommy Butler	Required Attendee	Accepted
Ed Baggett (eebaggett@mcgtn.net)	Optional Attendee	Accepted
Sesmith@mcgtn.net	Optional Attendee	Accepted
tjarms@mcgtn.net	Optional Attendee	Accepted
Kari M. Cochran	Optional Attendee	Accepted
bronson.gibbs@cityofclarksville.com	Optional Attendee	Accepted
ereka.clark@cityofclarksville.com	Optional Attendee	Accepted
steve.batten@cityofclarksville.com	Optional Attendee	Accepted
Donald J. Davidson	Optional Attendee	Accepted
Michael F. Harris	Optional Attendee	None

The December 20, 2023 meeting was canceled due to the Dec. 9th tornado recover operations.

2023/2024 Hazard Mitigation Team Meeting

2-15-2024

Name	Organization	EMAIL
Rodney Grimsley	Montgomery County EMA	ragrimsley@mcgtn.net
Rachel Chase	TEMA Mitigation	rachel.chase@tn.gov
Emily Bates	CMCSS	emily.bates@cmcss.net
Lauren Richmond	CMCSS	lauren.richmond@cmcss.net
Tommy Butler	CMCSS	tommy.butler@cmcss.net
Shannon Ball	TEMA M.I.	Shannon.Ball@TN.GOV
Heather Tyndall	Moco Risk Mgmt	hatyndall@mcgtn.net
Candice Hendricks	Mont. Co.	Chendricks@mcgtn.net
Lauren Winters	City of Clarksville	lauren.winters@cityofclarksville.com
Norm Brumbley	CMCSS	Norm.Brumbley@cmcss.net
~~Tommy Butler~~	~~CMCSS~~	
Randy Kelly	P&R	
Jennifer Letourneau	P&R	
Scott Smith	EMA	ssmith@[redacted].mcgtn.net
Adam B. Collins	CBW	Adam.Collins@cityofclarksville.com
Randall Gilliam	CGW	randall.gilliam@[redacted]cityofclarksville.com
Carlye Sommers	CGW	Carlye.Sommers@cityofclarksville.com
Brandon McCurdy	Clarksville Fire Rescue	Brandon.McCurdy@cityofclarksville.com
Robert Miller	Clarksville Police	robert.miller@cityofclarksville.com

APPENDIX B

County Overview

All Topics Population Age and Sex Race and Hispanic Origin Population Characteristics Housing Families & Living Arrangements Computer and Internet Use Education Health Economy Transportation Income & Poverty Businesses Geography	Montgomery County, Tennessee	United States
Population estimates, July 1, 2023, (V2023)	**239,872**	**334,914,895**
Population		
Population estimates, July 1, 2023, (V2023)	**239,872**	**334,914,895**
Population estimates base, April 1, 2020, (V2023)	219,996	331,464,948
Population, percent change - April 1, 2020 (estimates base) to July 1, 2023, (V2023)	9.0%	1.0%
Population, Census, April 1, 2020	220,069	331,449,281
Population, Census, April 1, 2010	172,331	308,745,538
Age and Sex		
Persons under 5 years, percent	7.5%	5.5%
Persons under 18 years, percent	26.6%	21.7%
[illegible]	10.3%	17.7%
Female persons, percent	50.1%	50.5%
Race and Hispanic Origin		

White alone, percent	68.7%	75.3%
Black or African American alone, percent(a)	22.6%	13.7%
American Indian and Alaska Native alone, percent(a)	0.8%	1.3%
Asian alone, percent(a)	2.4%	6.4%
Native Hawaiian and Other Pacific Islander alone, percent(a)	0.4%	0.3%
Two or More Races, percent	5.1%	3.1%
Hispanic or Latino, percent(b)	11.6%	19.5%
White alone, not Hispanic or Latino, percent	59.5%	58.4%
Population Characteristics		
Veterans, 2018-2022	29,129	17,038,807
Foreign born persons, percent, 2018-2022	6.1%	13.7%
Housing		
Housing Units, July 1, 2023, (V2023)	97,513	145,344,636
Owner-occupied housing unit rate, 2018-2022	62.6%	64.8%
Median value of owner-occupied housing units, 2018-2022	$226,400	$281,900
Median selected monthly owner costs -with a mortgage, 2018-2022	$1,451	$1,828
Median selected monthly owner costs -without a mortgage, 2018-2022	$465	$584
Median gross rent, 2018-2022	$1,128	$1,268
Building Permits, 2023	2,784	1,511,102

Families & Living Arrangements		
Households, 2018-2022	80,474	125,736,353
Persons per household, 2018-2022	2.71	2.57
Living in same house 1 year ago, percent of persons age 1 year+, 2018-2022	80.3%	86.9%
Language other than English spoken at home, percent of persons age 5 years+, 2018-2022	9.1%	21.7%
Computer and Internet Use		
Households with a computer, percent, 2018-2022	97.0%	94.0%
Households with a broadband Internet subscription, percent, 2018-2022	91.6%	88.3%
Education		
High school graduate or higher, percent of persons age 25 years+, 2018-2022	94.1%	89.1%
Bachelor's degree or higher, percent of persons age 25 years+, 2018-2022	30.4%	34.3%
Health		
With a disability, under age 65 years, percent, 2018-2022	12.5%	8.9%
Persons without health insurance, under age 65 years, percent	9.4%	9.5%
Economy		
In civilian labor force, total, percent of population age 16 years+, 2018-2022	59.7%	63.0%
In civilian labor force, female, percent of population age 16 years+, 2018-2022	59.4%	58.5%
Total accommodation and food services sales, 2017 ($1,000)(c)	379,413	938,237,077
Total health care and social assistance receipts/revenue, 2017 ($1,000)(c)	836,459	2,527,903,275
Total transportation and warehousing receipts/revenue, 2017 ($1,000)(c)	D	895,225,411
Total retail sales, 2017 ($1,000)(c)	2,260,958	4,949,601,481
Total retail sales per capita, 2017(c)	$11,292	$15,224
Transportation		

Mean travel time to work (minutes), workers age 16 years+, 2018-2022	26.6	26.7
Income & Poverty		
Median household income (in 2022 dollars), 2018-2022	$67,890	$75,149
Per capita income in past 12 months (in 2022 dollars), 2018-2022	$31,438	$41,261
Persons in poverty, percent	11.2%	11.1%

BUSINESSES

Businesses		
Total employer establishments, 2022	3,342	8,298,562
Total employment, 2022	50,439	135,748,407
Total annual payroll, 2022 ($1,000)	2,163,031	8,965,035,263
Total employment, percent change, 2021-2022	8.1%	5.8%
Total non-employer establishments, 2021	15,399	28,477,518
All employer firms, Reference year 2017	2,345	5,744,643
Men-owned employer firms, Reference year 2017	1,261	3,480,438
Women-owned employer firms, Reference year 2017	440	1,134,549
Minority-owned employer firms, Reference year 2017	423	1,014,958
Nonminority-owned employer firms, Reference year 2017	1,539	4,371,152
Veteran-owned employer firms, Reference year 2017	S	351,237
Nonveteran-owned employer firms, Reference year 2017	1,673	4,968,606

GEOGRAPHY

Geography		
Population per square mile, 2020	408.2	93.8
Population per square mile, 2010	319.6	87.4

Land area in square miles, 2020	539.17	3,533,038.28
Land area in square miles, 2010	539.18	3,531,905.43
FIPS Code	47125	1

About datasets used in this table

UPDATE: Clarksville EF-3 tornado had 150 mph winds, 91 homes destroyed, 675 damaged | VIDEO
By Chris Smith December 10, 2023 8:15 am

Clarksville Now An aerial view from a Black Hawk helicopter as Gov. Bill Lee views tornado damage in Clarksville on Sunday, Dec. 10, 2023. (Nicole Hester/The Tennessean via Pool)

Update, 10 p.m.: There are still 11,600 CDE Lightband customers without power, with lines, wires and even a TVA tower down in Clarksville.

Update, 6:40 p.m.: The majority of Montgomery County Government offices will be closed Monday and Tuesday. Bi-County Solid Waste Management, the Highway Department, Public Safety offices, and several other County offices will remain open and focused on recovery efforts.

December's Formal County Commission Meeting will take place Monday at 6 p.m. as scheduled.

Update, 4:30 p.m.: Down from a peak of 20,000 customers without power, CDE Lightband is now down to 11,600. "It will still be a long road ahead. There are 100-plus poles that will need to be replaced," CDE reported. "Crews are working rotating 24-hour shifts to quickly and safely restore power."

Update, 3:30 p.m.: Clarksville School of Fine Arts was destroyed by the storm. Next door, Walnut Grove Missionary Baptist Church had roof damage.

Update, 3:20 p.m.: Based on the preliminary storm survey results from the National Weather Service, an EF-3 tornado passed through Montgomery County with 150 mph winds and a path 600 yards wide, Clarksville Now news partner WKRN reported.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Update, 2 p.m.: State and local officials toured the damage in Clarksville Sunday afternoon. The group included Gov. Bill Lee, First Lady Maria Lee, Montgomery County Mayor Wes Golden and Clarksville Mayor Joe Pitts.

They were told there were three deaths from the storm in Clarksville. In one fatality, a two-story home collapsed, and a child was killed inside.

FEMA has issued a Level 3 state of emergency for Montgomery County. All non-essential county offices will be closed Monday.

Update, 1:40 p.m.: Montgomery County Emergency Management Agency reports that Clarksville has 65 structures that have minor damage, 339 with moderate damage, and 271 with major damage making them uninhabitable, for a total of 675 damaged. There are 91 structures that were destroyed.

The vast majority of these structures are homes, according to EMA. The numbers continue to be gathered.

Update, 12:25 p.m.: CDE Lightband is working to restore power to 12,100 households as of Sunday afternoon. There are 31 additional crews, with over 200 line workers, helping with power restoration, CDE reported.

Residents are warned to stay away from any downed lines as they could be live and cause serious harm.

Update, 11:20 a.m.: Montgomery County residents are asked to put all storm debris in the county right-of-way and crews will pick it up. “Please be patient as there is a lot to remove,” the announcement said.

Update, 10:30 a.m.: Emergency officials gave an update Sunday morning on the tornado damage and impact.

The fatalities has remained at three. A total of 62 people were injured, nine of them critically, according to Montgomery County Emergency Services Chief Jimmie Edwards.

People are urged to stay away from the area as crews continue search and recovery operations. “Please stay out of the way,” Police Chief David Crockerell said, adding that the fewer calls for service CPD has, the better they can respond to the storm damage. A 9 p.m. curfew remains in effect Sunday night.

Fort Campbell Garrison Commander Col. Christopher Midberry said about 100 Fort Campbell families lost their homes in the storm.

Update, 10 a.m.: Clarksville-Montgomery County Schools will be closed Monday and Tuesday.

District offices will also be closed so personnel can assist with tornado recovery. “Assessments are ongoing of campuses and communities, and we will update families tomorrow about plans for the rest of the week, including plans for high school exams,” according to CMCSS spokesman Anthony Johnson.

“Our hearts are heavy as we learn of the loss of lives and critical injuries from yesterday’s storms. Many families have completely lost their homes and others are doing what they can to make repairs. This was a devastating and tragic weather event in our community,” Johnson said.

“From emergency services and utilities crews to churches, businesses, and community volunteers, we are so grateful for everyone who has worked through the night to help their neighbors. Last night at the Northeast High shelter, there was an outpouring of support and donations from churches, restaurants, businesses, and community members. We did not want to accidentally leave anyone out by name, so we just want to say thank you to everyone who has offered support. The Clarksville-Montgomery County community is strong, and families will need our continued support, love, and prayers in the days ahead.”

CLARKSVILLE, TN (CLARKSVILLE NOW) – Two adults and a child were killed when a tornado ripped across north Clarksville Saturday at about 1:35 p.m. At least 23 people were treated for injuries at the hospital.

Police on Sunday morning urged people who are not directly involved to avoid the tornado-damaged area.

***NEWS ALERTS**: To get free breaking news alerts on your phone, text the word NEWS to 43414.*

"The Clarksville Police Department wants to express their deepest condolences to the families that lost loved ones, and to those who were directly affected by the tornado yesterday. The road to recovery is going to take time and we ask that citizens who are not directly involved in search, rescue, or recovery efforts avoid the impacted areas," police spokesman Scott Beaubien said.

"Emergency crews are working as quickly as possible, and operations will continue until the scenes have been checked and cleared."

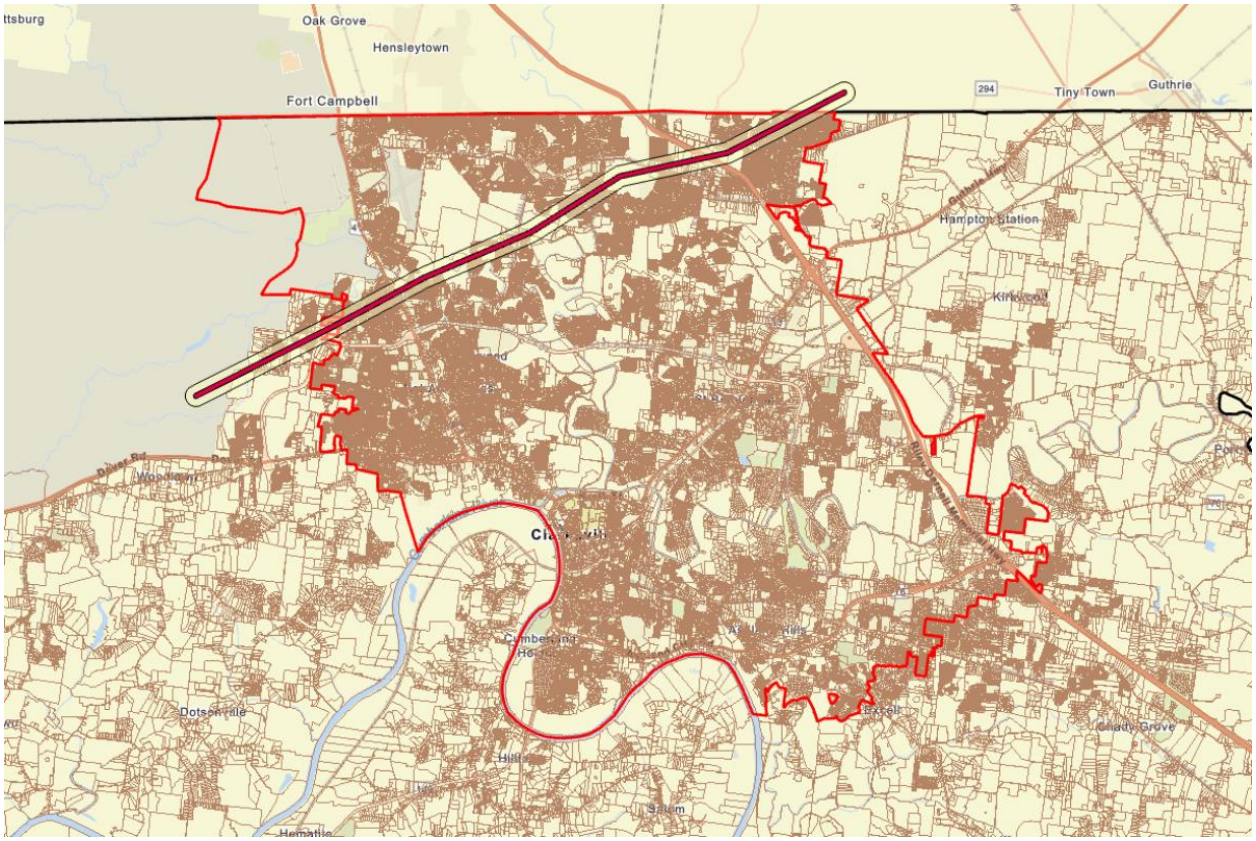
The Red Cross is still set up at Northeast High School, located at 3701 Trenton Road, as a shelter for those who need assistance.

Clarksville Mayor Joe Pitts declared a State of Emergency Saturday night, including a curfew that continues Sunday night, beginning at 9 p.m.

"This is devastating news and our hearts are broken for the families of those who lost loved ones. The City stands ready to help them in their time of grief," Pitts said.

Mayor Wes Golden said, "This is a sad day for our community. We are praying for those who are injured, lost loved ones, and lost their homes. This community pulls together like no other and we will be here until the end."

Report details 11.3-mile, 600-yard-wide path of tornado destruction in Clarksville



Montgomery County Assessor of Property's Office map based on National Weather Service data that followed the tornado's radar debris path. PHOTO: CLARKSVILLE NOW/MONTGOMERY COUNTY GOVERNMENT, CONTRIBUTED

CLARKSVILLE, TN (CLARKSVILLE NOW) – The National Weather Service has completed a survey of damage from the tornado that hit Clarksville, determining that it was an EF-3 with 150 mph winds. The path of destruction was 600 yards wide and 11.33 miles long.

The tornado first touched down at 1:41 p.m. on Fort Campbell just north of the Sabre Airfield with mostly minor tree damage, according to the NWS report. “It quickly intensified as crossed Walnut Grove Road and destroyed a building next to a church.” This was the Clarksville School of Fine Arts.

Clarksville School Of Fine Arts tornado damage in Clarksville the morning after on Dec. 10, 2023. (Wesley Irvin)
“The tornado then continued northeast and damaged dozens of homes in a neighborhood along Garrettsburg Road near Purple Heart Highway,” the report said. At this point, it was an EF2/120 mph tornado.

“The tornado then went through a heavily wooded neighborhood south of Britton Springs Road where dozens of mobile and manufactured homes were destroyed. The tornado crossed into another neighborhood causing heavy damage in and near Eva Drive, with several houses shifted off their foundations that were only attached with straight nails,” the NWS said.

“The tornado intensified to EF-3 (140 mph) as it crossed Highway 41 and struck several commercial businesses, including a vacant fast-food restaurant and strip mall where only the interior remained.”

Tornado damage in Clarksville on Dec. 9, 2023. (Wesley Irvin)
“Just east of Highway 41 north of Ringgold Road, another neighborhood was struck with several homes sustaining significant damage. As the tornado continued northeast, it strengthened further to EF-3 (150 mph), destroying four two-story brick and vinyl siding homes on Henry Place Boulevard.”

Henry Place is where two people were killed in separate houses: Donna Allen, 59, of Florida, and Arlan Coty, 10.

The remains of the Burnham home on Henry Place Boulevard after the Dec. 9, 2023 tornado. (Amber Anderson)
“Debris was blown across the field towards West Creek Elementary School, where the school sustained roof damage. As the tornado crossed Peachers Mill Road, two dozen brand new two-story brick apartment homes were severely damaged with roofs missing on at least a dozen of these structures. Dozens more houses suffered significant roof damage along and near Needmore Road and Tiny Town Rd (EF-2),” the NWS report said.

“The tornado then crossed Interstate 24 at Trenton Road, where numerous cedar trees were uprooted. Continuing across Tylertown Road, the tornado caused EF-1 to EF-2 damage roof and siding damage to dozens of homes across three neighborhoods before moving into Kentucky.”

Tornado damage on Tylertown Road in Clarksville on Dec. 11, 2023. (Wesley Irvin)
The storm crossed the state line at 1:56 p.m., for a 15-minute tornado event.

Montgomery County Emergency Management Agency officials said 243 “residential sites” were destroyed. Another 1,711 had damage. EMA noted that a “residential site” could be an individual home or a housing unit, such as a duplex or apartments.

In all, 1,974 residential sites, 58 commercial sites and 3 public facilities were hit by the tornado, the EMA said.

Montgomery County Climate Trends and Variations

Drought

The future risk of drought in Montgomery County is tied to changes in the precipitation and temperature patterns the county may experience due to climate trends and variations. The Fifth National Climate Assessment (2023, NCA5) states climate variability is expected to increase the average temperature and the number of high-heat days in the southeastern United States and intensify the hydrologic cycle, leading to an increase in both extreme precipitation events and periods of drought in the southeastern United States. The Climate Mapping Risk Assessment (CMRA) Report for Montgomery County shows that while overall annual precipitation may increase, the number of dry days is expected to increase through the 21st century. Also, high-heat days are expected to increase, which could favor short-term periods of drought.

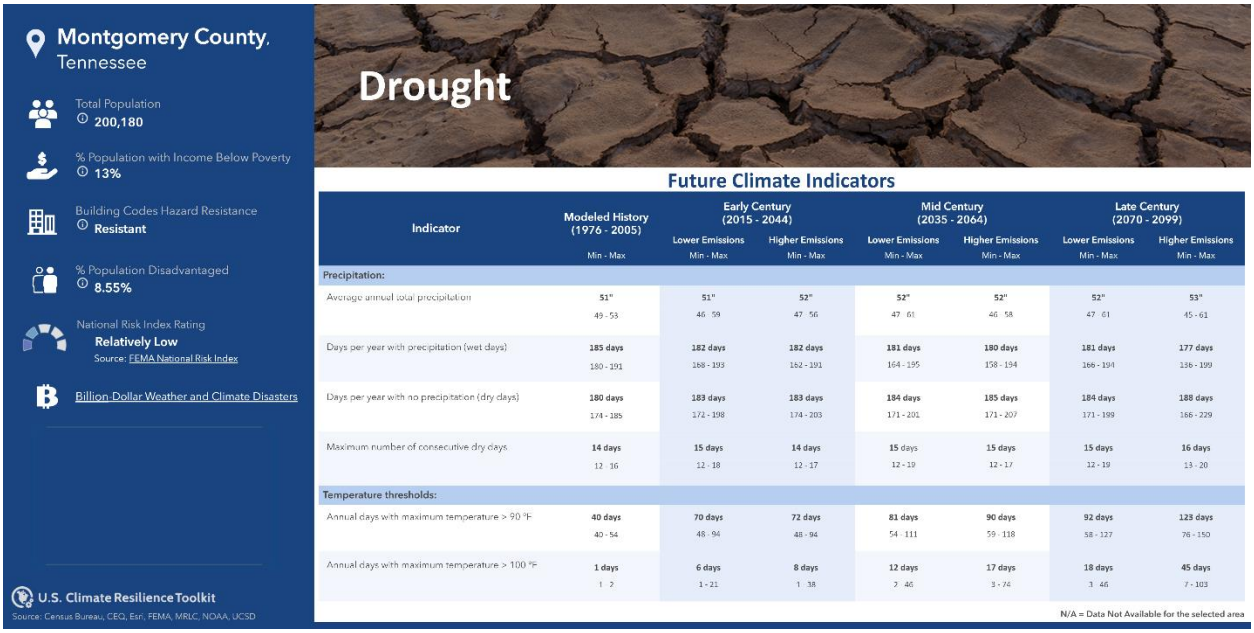


Figure 1: Climate Mapping Risk Assessment Report for Drought in Montgomery County. (Source: US Climate Resilience Toolkit)

The increasing trends in average temperature and total precipitation in Montgomery County are also supported by observed historical data available from the NOAA National Centers for Environmental Information Climate-at-a-Glance tool (refer to subsequent figures). The trend of increasing temperature has been more pronounced over the past several decades compared to the longer-term (1895-2023) trend. The long-term trend in temperature is slightly positive, with an increase of +0.1°F per decade due to several warm decades in the early 20th century followed by a cool period from the 1950's to the early 1980's, and then years that were mostly warmer than the 20th century average after 1985.

The medium-term (1964-2023) shows an increased warming trend of +0.5°F per decade and the short-term (1994-2023) shows a trend of +0.8°F per decade. Additionally, the county's climate stripes graphics from NOAA show that aside from a few warmer than normal years early in the period, most of the above average temperature years have occurred in the past two decades. This indicates that warming has substantially increased in Montgomery County and based on the NCA5, this trend is expected to continue in the future.

However, total precipitation shows an overall increase in Montgomery County, with the long-term (1895-2023) trend in precipitation having a +0.48" increase per decade, the medium-term (1964-2023) showing a slightly moderated trend of +0.41" increase per decade, and the short-term (1994-2023) showing a much weaker slightly positive trend of 0.05" per decade due to a high level of inter-annual variation. This indicates that precipitation has increased in Montgomery County; however, there is a large amount of inter-annual variability. Based on the NCA5, this trend is expected to continue in the future. Refer to Figures 19-21 in the Flood section for additional information. An increasing trend in precipitation may infer a decrease in drought potential; however, the observed pattern has been highly variable year-to-year and on shorter time periods. As temperatures increase, there can be more rapid evapotranspiration, potentially leading to more rapid onset of drought occurrences (i.e., Flash Droughts).

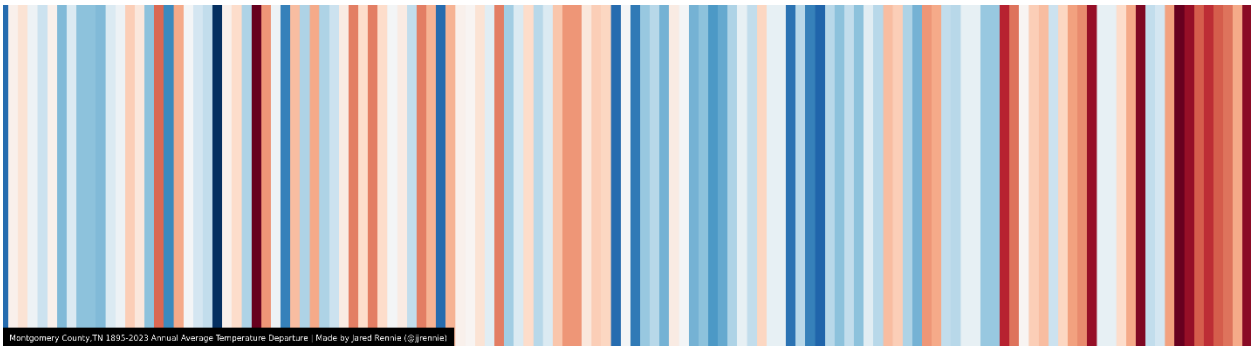


Figure 2: Observed (1895-2023) Annual Temperature for Montgomery County, Tennessee, Compared to the 20th Century Average with Darkening Shades of Blue for Below Average Temperature and Darkening Shades of Red for Above Average Temperature.
(Source: NOAA NCEI)

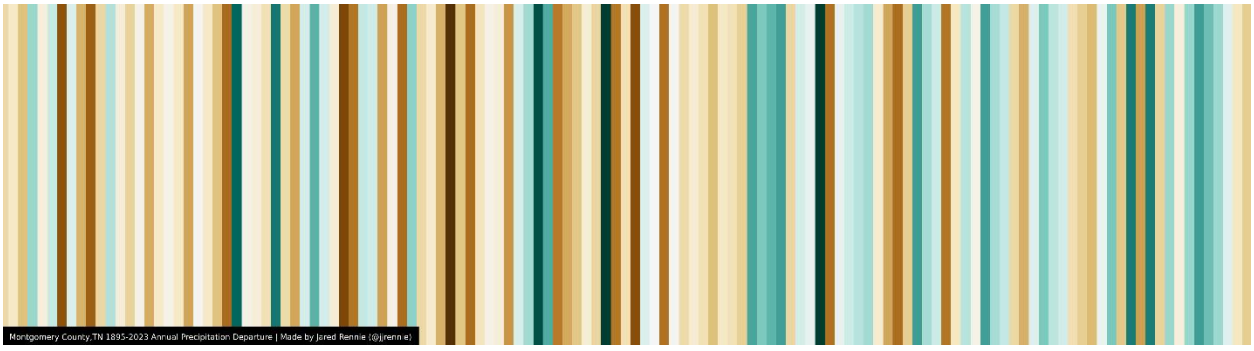


Figure 3: Observed (1895-2023) Annual Precipitation for Montgomery County, Tennessee, Compared

to the 20th Century Average with Darkening Shades of Brown for Below Average Precipitation and Darkening Shades of Green for Above Average.
(Source: NOAA NCEI)

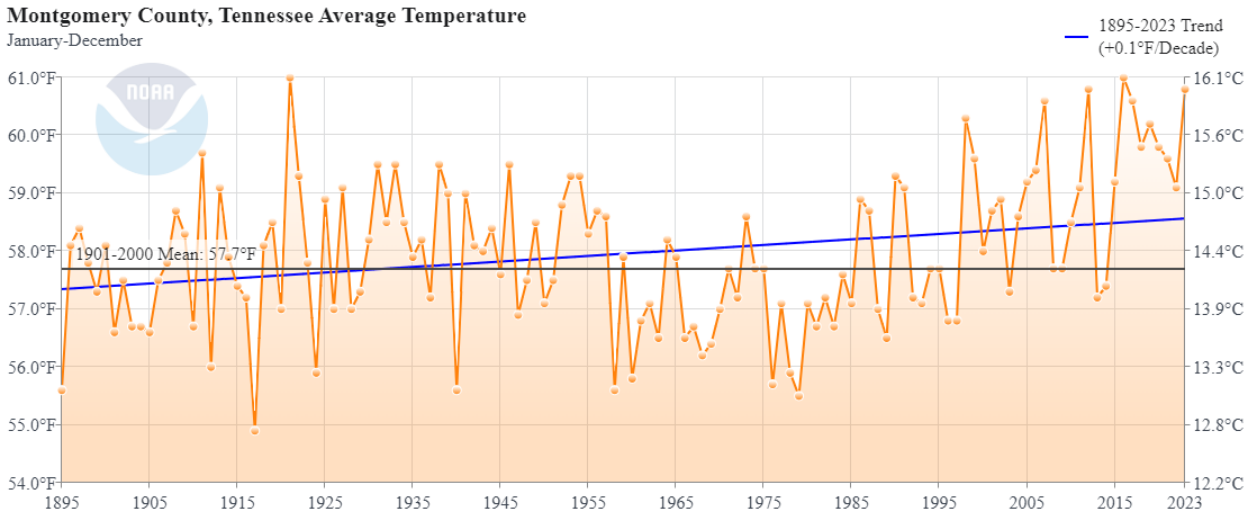


Figure 4: Annual Average Temperature for Montgomery County Tennessee, Showing a +0.1˚F Increase per Decade Since 1895.
(Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

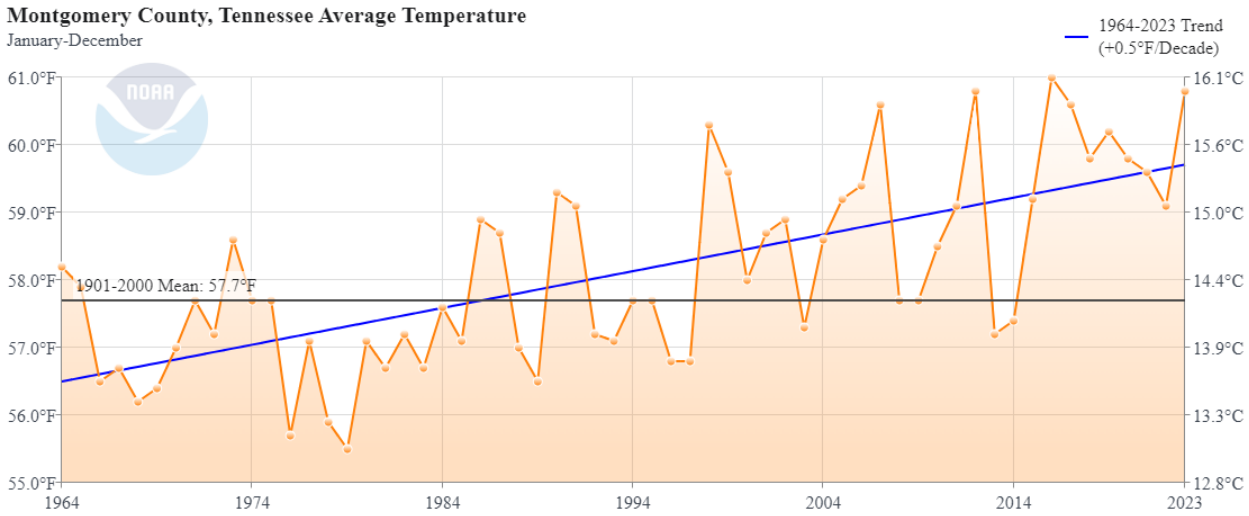


Figure 5: Annual Average Temperature for Montgomery County, Tennessee, Showing a +0.5˚F Increase per Decade Over the Last Sixty Years (Since 1964).
(Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

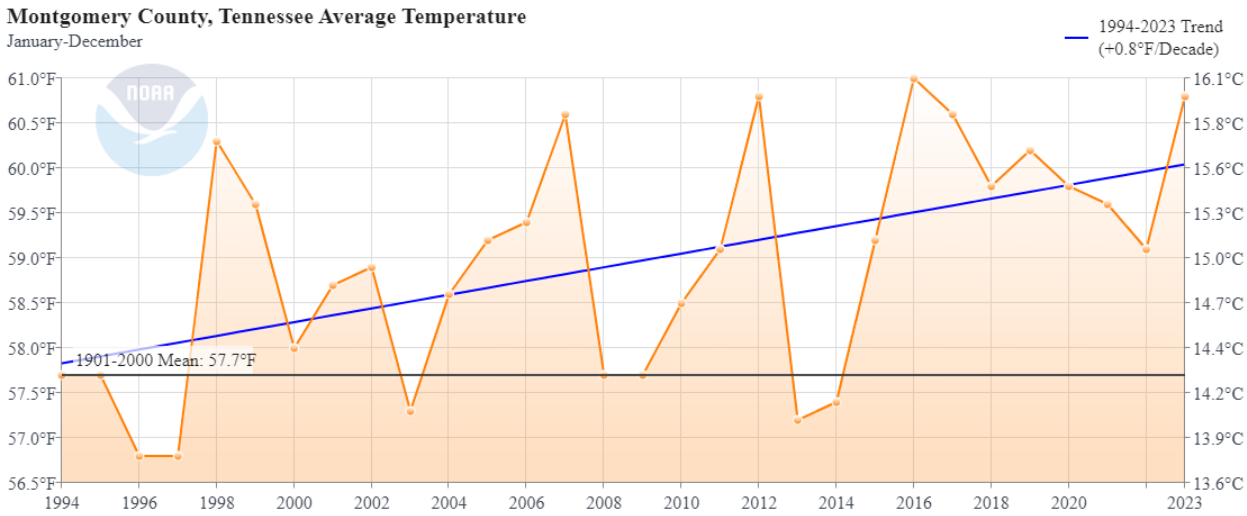


Figure 6: Annual Average Temperature for Montgomery County, Tennessee, Showing a +0.8˚F Increase per Decade Over the Last Thirty Years (Since 1994).
(Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

The U.S. Drought Monitor (USDM) provides a weekly snapshot of drought conditions across the United States, starting in January of 2000 and continuing through the present. Using the timeline of drought conditions from the USDM, the cyclical nature of drought in Montgomery County is clear. Several periods of drought were recorded in this time, with the most intense drought seen in 2007-2008, but several other short periods of severe drought were observed, including 2012 and in the later parts of 2023. The Tennessee Climate Office (TCO) analyzed trends in the USDM throughout Tennessee from 2000 to 2023. County-level trends were developed based on the amount of each county that was covered in D1 (Moderate Drought) or worse, D2 (Severe Drought) or worse, D3 (Extreme Drought) or worse, and D4 (Exceptional Drought) each week. Trends were assessed using space-time cube analysis tools in ArcGIS Pro, with the results shown subsequently. There was no significant trend in the amount of time that Montgomery County spent in drought conditions over this period.

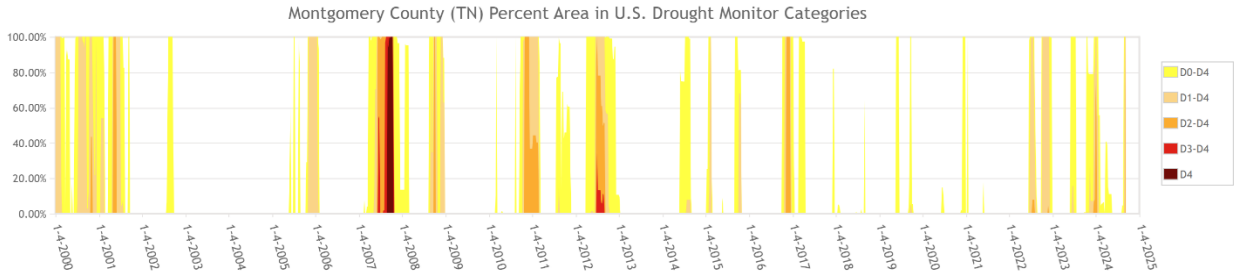


Figure 7: Timeline of drought conditions from the U.S. Drought Monitor from 2000 – 2023 for Montgomery County.

Trend Analysis of U.S. Drought Monitor Drought Categories 2000 to 2023

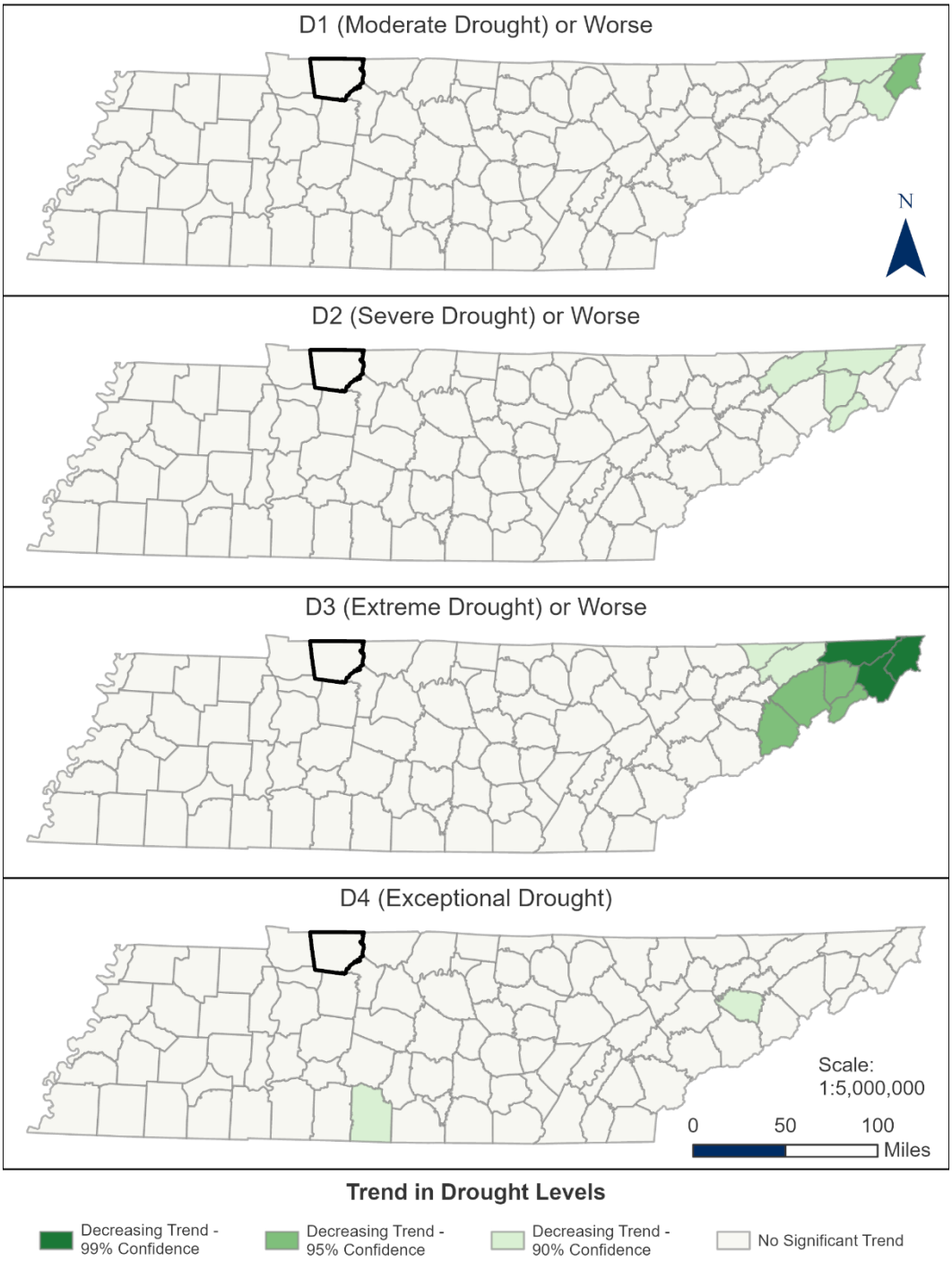


Figure 8: Trend Analysis of U.S. Drought Monitor from 2000 – 2023, Montgomery County Outlined in Bold.

Since the USDM only dates back to 2000, other metrics must be used to examine longer trends in drought occurrences. The Standardized Precipitation Index (SPI) is another metric that can quantify drought and periods of wetness by capturing how observed precipitation deviates from the climatological average. Drought.gov provides a timeline of the SPI derived from the Global Historical Climatology Network (GHCN), with data back to 1895 for the contiguous U.S. Red hues indicate drier conditions, while blue hues indicate wetter conditions. With this longer dataset the cyclical nature of dry and wet periods across Montgomery County is even more apparent.

Looking at the longer-term Standardized Precipitation Index (SPI) from the NCEI nClimGrid-monthly dataset (starting 1895) there is an increasing trend in the 3-month SPI value, indicating an increasing trend in precipitation (averaged over 3-months) across all of Tennessee with a moderate increase in values across Montgomery County. A gridded SPI dataset is also available at a 5km resolution from NCEI. This gridded dataset with data from 1895 to 2023 was used to analyze the linear trend in 3-month SPI values (SPI value calculated from the dryness or wetness values of the previous 3 months), shown in the following figure. All areas of Tennessee had an increasing trend in SPI values over this time period, indicating an increasing trend in precipitation that is consistent with other observed records and climate models signifying that Tennessee is seeing a decrease in the risk for longer-term droughts. The overall trend in increasing wetness will not prevent future periods of drought, especially short-duration high-intensity Flash Droughts.

Table 1: SPI Category and Value Definitions.

SPI Category	SPI Value	Description
D4	≤ -2	Exceptionally Dry
D3	-1.6 to -1.9	Extremely Dry
D2	-1.3 to -1.5	Severely Dry
D1	-0.8 to -1.2	Moderately Dry
D0	-0.5 to –0.7	Abnormally Dry
W0	+0.5 to + 0.7	Abnormally Wet
W1	+0.8 to +1.2	Moderately Wet
W2	+1.3 to +1.5	Severely Wet
W3	+1.6 to +1.9	Extremely Wet
W4	≥ 2.0	Exceptionally Wet

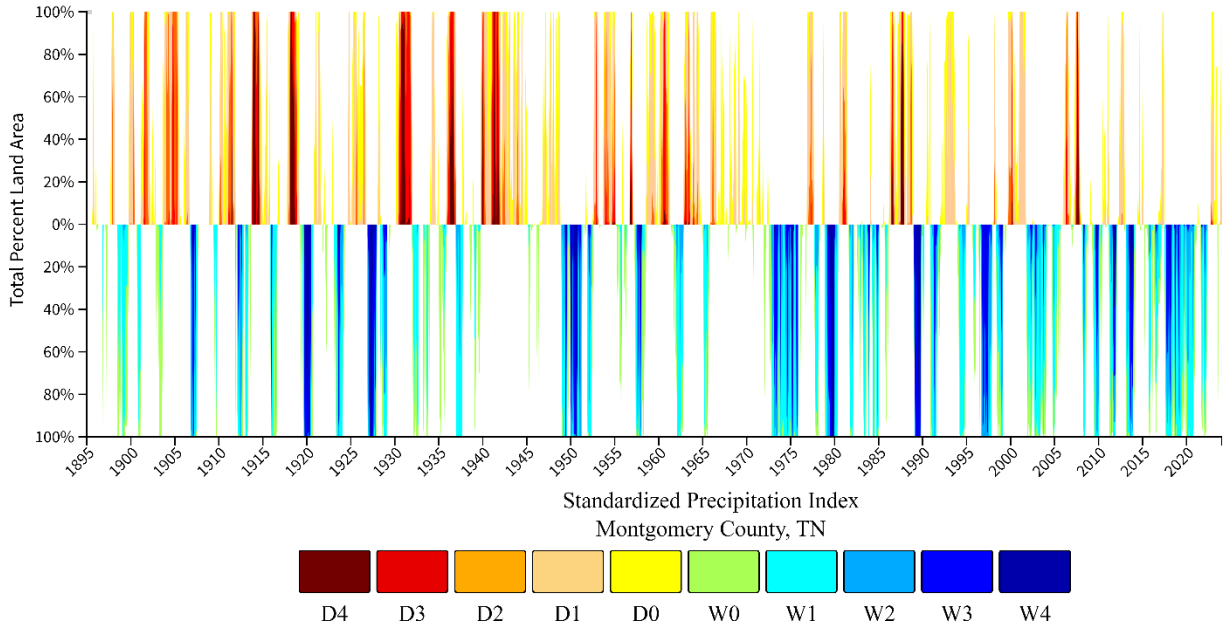


Figure 9: Periods of Drought and Wetness in Montgomery County, Tennessee from 1895 to 2023. (Source: Drought.gov)

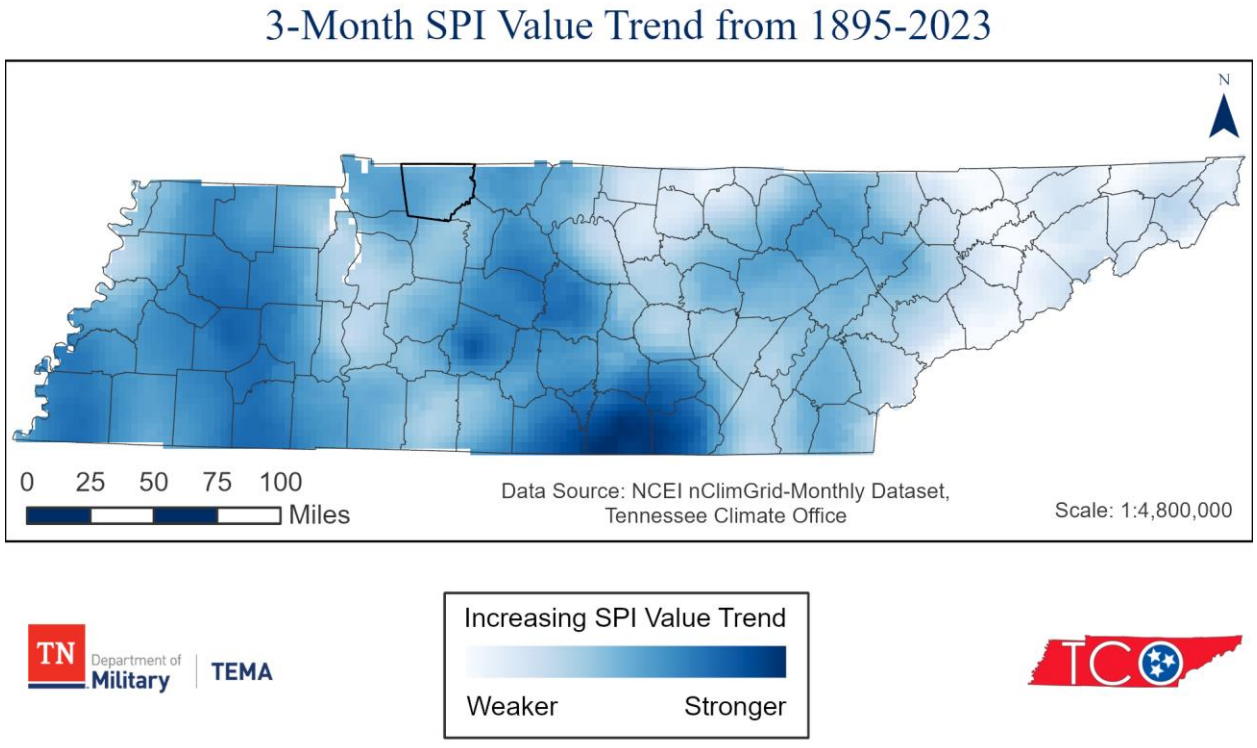


Figure 10: SPI Value Trend for 3-Months from 1895 to 2023, Montgomery County Outlined in Bold.

The previous trends are based on observed historical data, but the Climate Mapping for Resilience and Adaptation (CMRA) Assessment tool provides county-level output from future climate projections. Data from this tool indicates Montgomery County could expect an increase in the number of dry days per year due to climate variability. However, the tool provides a range of possible outcomes, with higher and lower greenhouse gas emission scenarios, for Early-Century (2015-2044), Mid-Century (2035-2064), and Late Century (2070-2099) time periods, and maximum, minimum, and mean projected values. The following table shows the projected change in the number of dry days per year for Montgomery County. The Early-, Mid-, and Late-Century values represent the increase (positive values) or decrease (negative values) in dry days per year compared to the number of dry days per year from modeled history. In the mean projection, Montgomery County could see an increase of 3.6 to 4.8 dry days per year by Mid-Century and an increase of 4.1 to 8 dry days per year by Late-Century.

Table 2: Possible Change in the Number of Dry Days per Year for Montgomery County, Tennessee.

High Emissions Scenario	Modeled History (1976-2005)	Early Century (2015-2044)	Mid Century (2035-2064)	Late Century (2070-2099)
Driest Projection	185.4	+17.7	+21.8	+43.5
Mean Projection	180.2	+3.1	+4.8	+8.0
Wettest Projection	173.9	+0.4	-2.6	-7.7
Low Emissions Scenario	**Modeled History (1976-2005)**	**Early Century (2015-2044)**	**Mid Century (2035-2064)**	**Late Century (2070-2099)**
Driest Projection	185.4	+12.2	+15.8	+13.3
Mean Projection	180.2	+2.7	+3.6	+4.1
Wettest Projection	173.9	-1.8	-3.3	-2.5

The projected increase in high-heat days and the intensification of the hydrologic cycle will likely lead to more Flash Droughts, defined by the rapid onset or intensification of drought conditions. Flash Droughts in the southeastern United States are often connected to short periods of time (a couple of weeks or months) with much higher-than-normal temperatures and much lower-than-normal precipitation leading to the rapid depletion of soil moisture and streamflow. October 2023 was a prime example of recent Flash Drought in Tennessee, and more broadly across the Southeast. During the 2023 fall flash drought, Montgomery County was minimally impacted, but large portions of the state degraded by two or three drought monitor categories over a 5-week period. Drought conditions related to the Fall 2023 drought peaked in Montgomery County in early January of 2024, when 73% of the county was in Severe Drought (D2) on the US Drought Monitor.

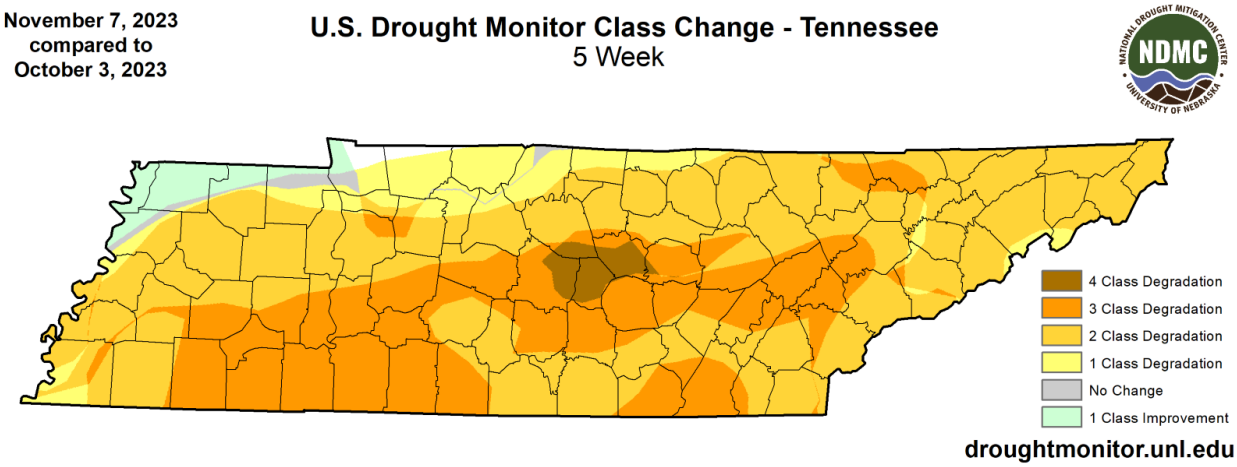


Figure 11: U.S. Drought Monitor Five Week Class Change in the State of Tennessee from October 3, 2023 to November 7, 2023.
(Source: National Drought Mitigation Center)

A study conducted by the U.S. Department of Agriculture (USDA) and U.S. Forest Service Office of Sustainability and Climate compared the length of a 10-year Drought, defined as a once in a decade drought as measured by the number of consecutive dry days (days with less than 0.1 inches of rain) during the summer season (May – September) between historical data and future climate models. For this study, the historical period was based on observed data from 1975 to 2005, and the future scenario was for the 2080's based on the RCP8.5 (higher emissions) ensemble mean of 20 global climate models from the CMIP5 experiment. The output of this study, shown in the following figure, indicates that most areas of Tennessee could expect a 10-year Drought (10% annual probability of occurrence) to maintain its current length or increase by as much as 6 days in the 2080's compared to a 10-year Drought from 1975-2005. In Montgomery County, a 10-year drought could be up to 1 day shorter or 2-4 days longer compared to the modeled history. This demonstrates that although the average annual precipitation amount may increase in Tennessee and in Montgomery County, periods between precipitation events could get longer, leading to flash droughts or shorter-term drought periods.

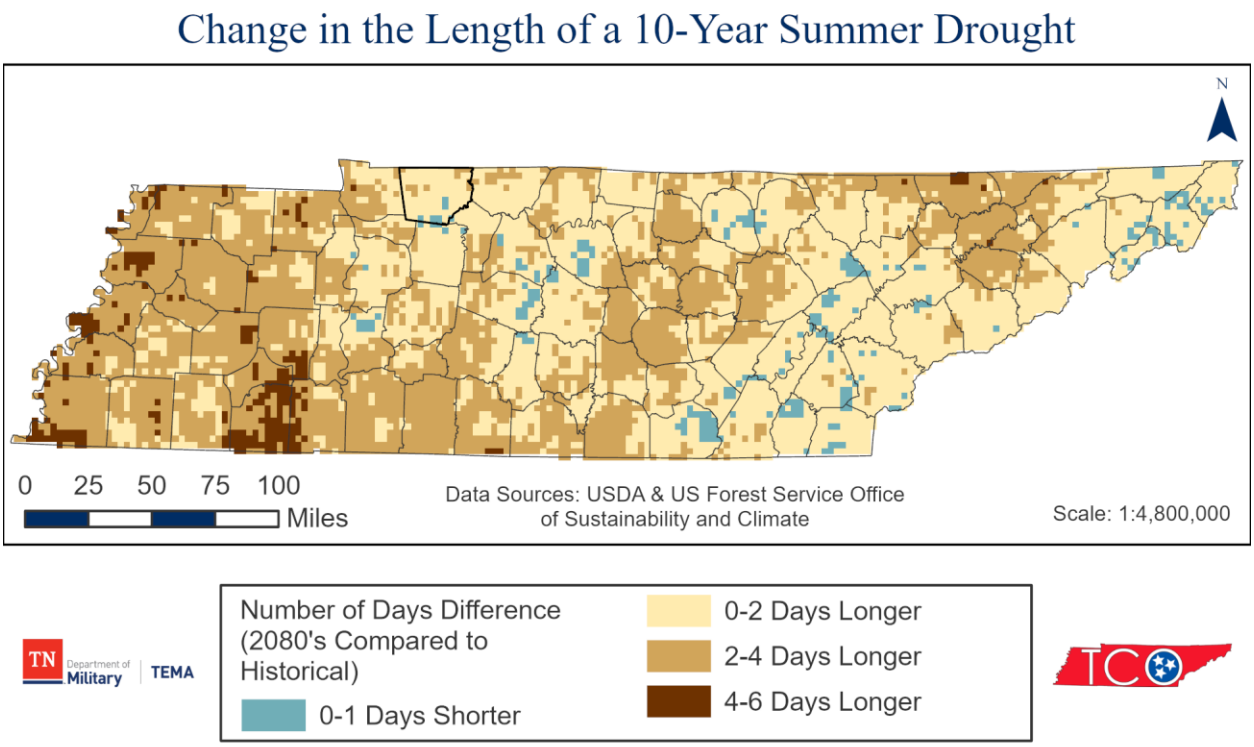


Figure 12: Change in the Length of a 10-Year (10% Annual Probability of Occurrence) Drought from Historical Data (1975-2005) to a 10-Year Drought in the 2080s (RCP8.5 Scenario), Montgomery County Outlined in Bold.

In addition to the variable climate, population growth and development in Tennessee means that the state will be at a higher risk for hydrological and socioeconomic droughts in the future as water demand increases.

Extreme Temperature

The Fifth National Climate Assessment (2023, NCA5) states climate variability is expected to increase the average temperature and the number of high-heat days in the southeastern United States and intensify the hydrologic cycle, leading to an increase in both extreme temperature and precipitation events in the southeastern United States. The increasing trend in average temperature in Montgomery County is also supported by observed historical data available from the NOAA National Centers for Environmental Information Climate-at-a-Glance tool (refer to Figures 4-6 in the Drought section of this appendix), and based on the NCA5, this trend is expected to continue in the future.

Heat

The Climate Mapping Risk Assessment (CMRA) Report for Montgomery County shows the potential for an increase in high heat days, when examining temperature thresholds and annual temperatures. By mid-century, Montgomery County could experience between 81 and 90 days of maximum temperatures exceeding 90°F, compared to an historical (1976-

2005) average of 40 days. There could be 12-17 days of maximum temperatures exceeding 100°F by mid-century, compared to an historical average of 1 day per year. Additionally, the annual single highest maximum temperature could be 104-105°F by mid-century, compared to an historical average of 99°F.

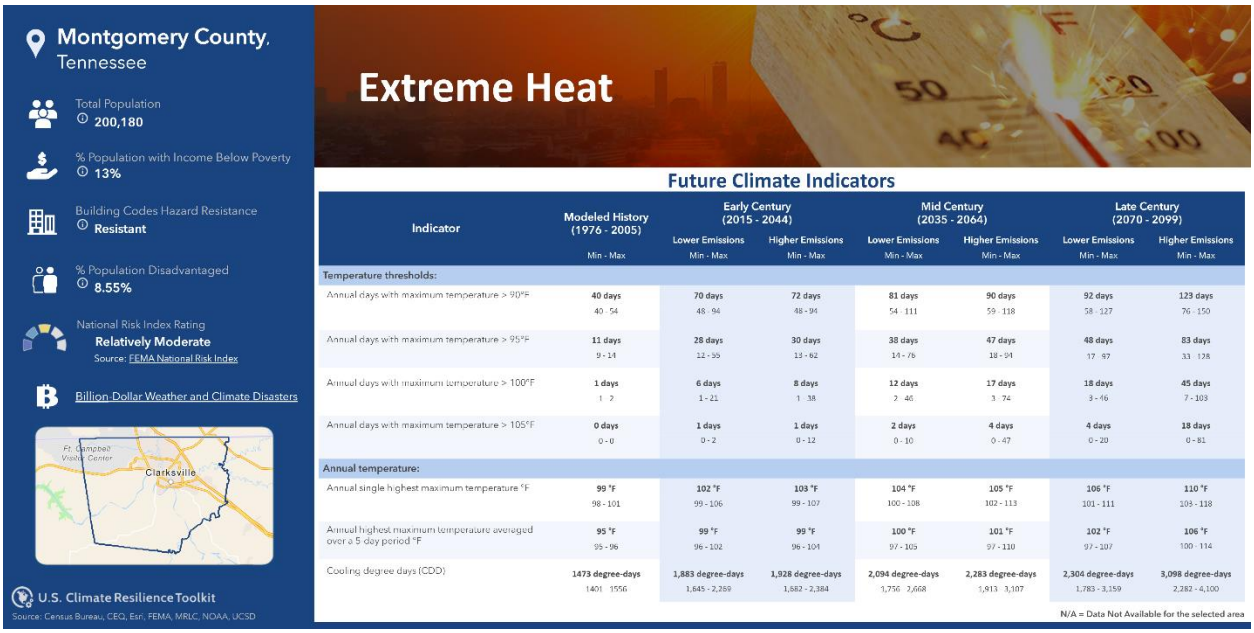


Figure 13: Climate Mapping Risk Assessment Report for Extreme Heat in Montgomery County. (Source: US Climate Resilience Toolkit)

Trend analysis of heat advisories/excessive heat warnings showed an increasing trend for Montgomery County and its surrounding Tennessee counties that was significant to the 95% confidence level. Montgomery County was also identified as a sporadic hot spot for heat advisories/excessive heat warnings; meaning it was statistically more likely to have heat advisories or warnings than other parts of the state during at least 2 years in the time period of the analysis.

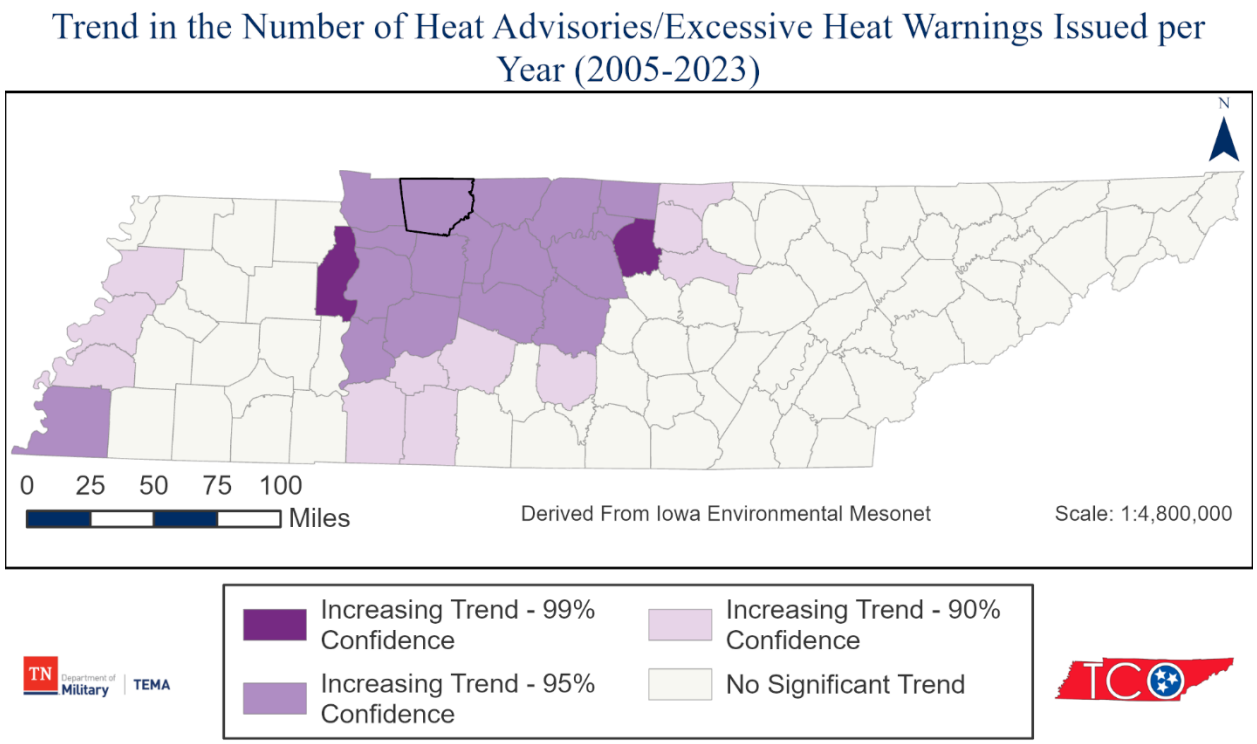


Figure 14: Trend in the Number of Heat Advisories/Excessive Heat Warnings Issued per Year, Montgomery County Outlined in Bold.

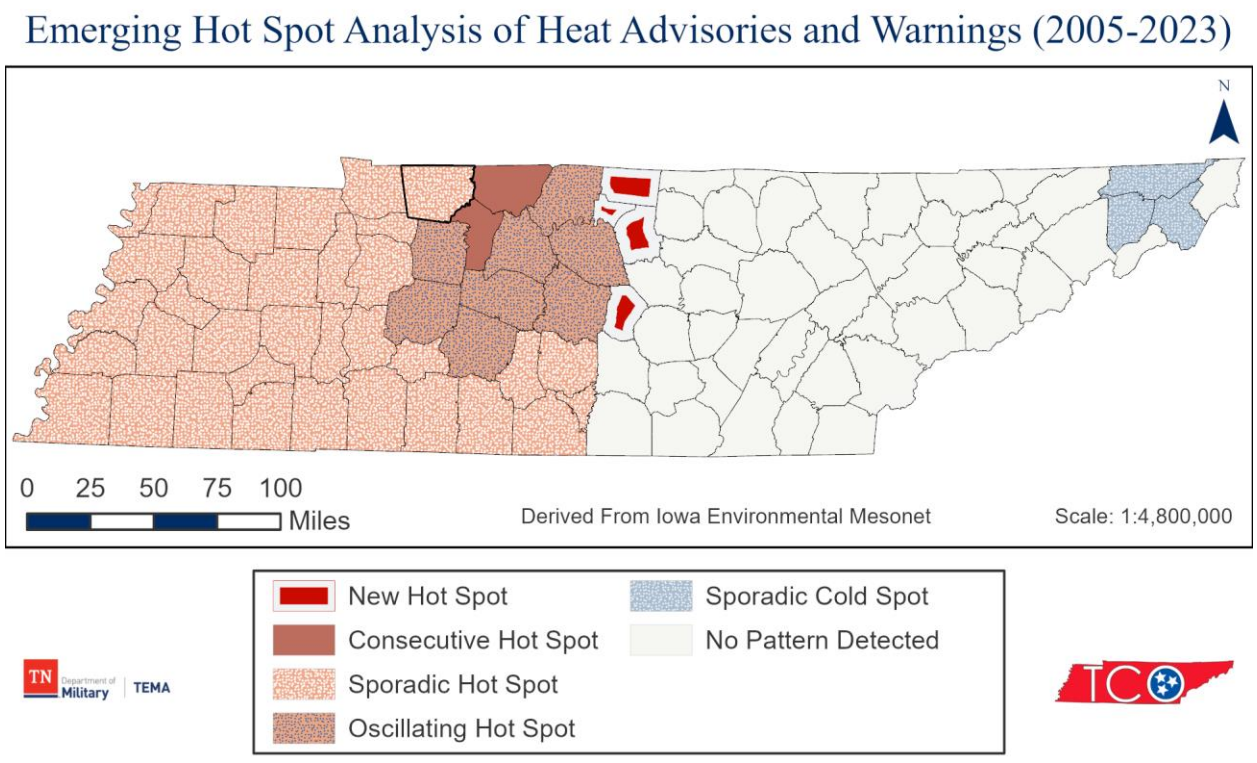


Figure 15: Emerging Hot Spot Analysis of Heat Advisories/Warnings Issued per Year, Montgomery County Outlined in Bold.

Cold

Trend analysis of cold/windchill advisories and extreme cold/extreme windchill warnings did not show a significant trend for Montgomery County. Montgomery County was not identified as an emerging hot spot, meaning it was not more or less likely to have this type of warning or advisory than other parts of the state.

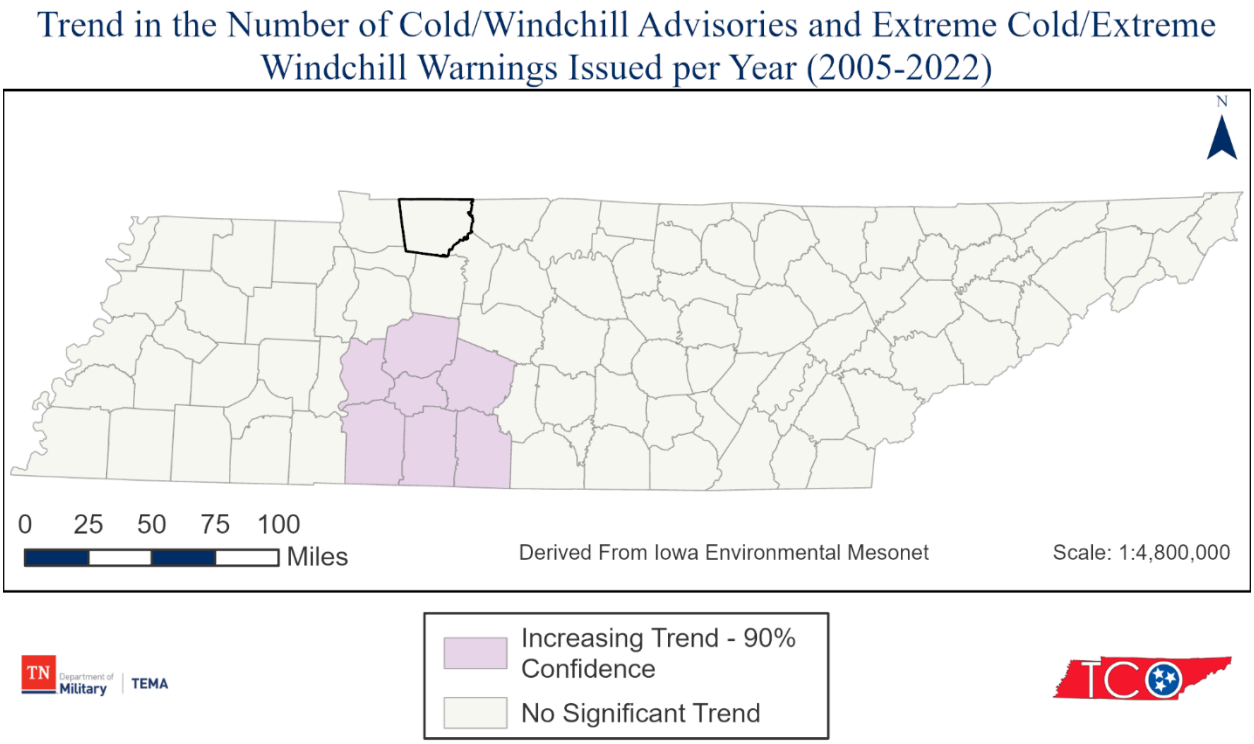


Figure 16: Trend in the Number of Cold/Windchill Advisories and Extreme Cold/Extreme Windchill Warnings Issued per Year, Montgomery County Outlined in Bold.

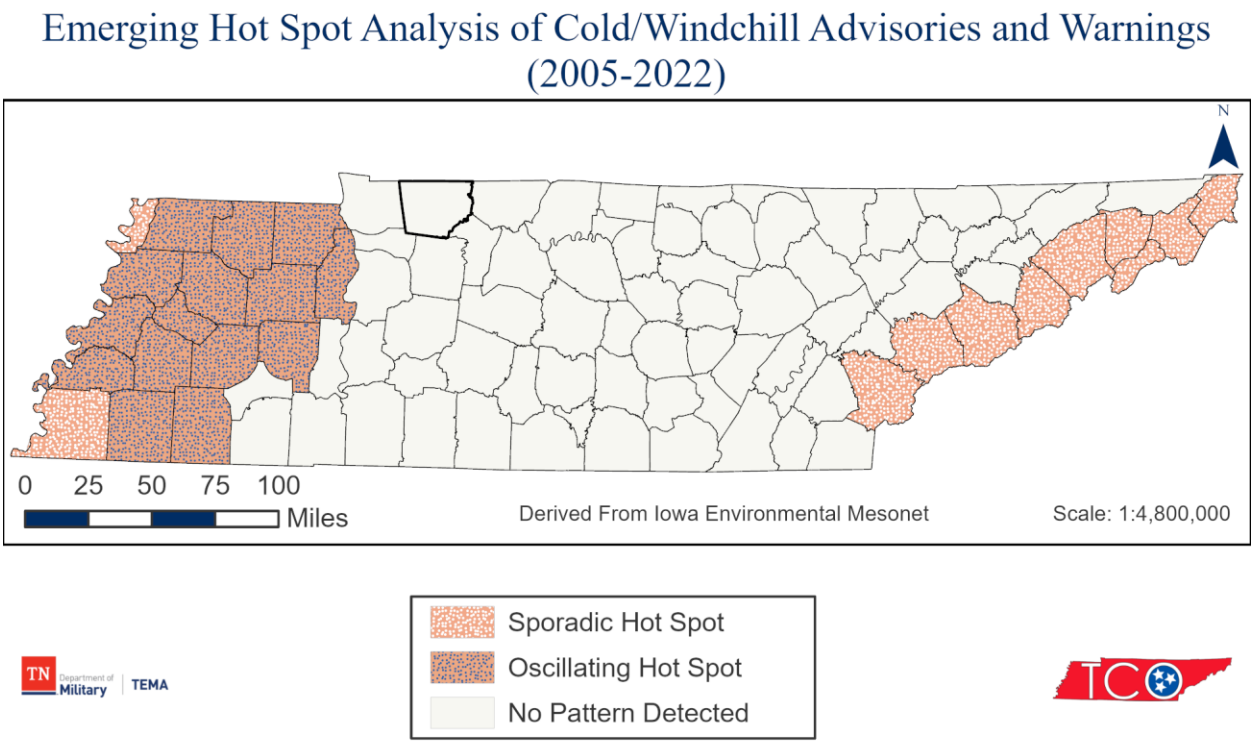


Figure 17: Emerging Hot Spot Analysis of Cold/Windchill Advisories/Warnings, Montgomery County Outlined in Bold.

Flooding

The future risk of flooding in Montgomery County is tied to predicted changes in the precipitation patterns. Tennessee and Montgomery County have increasing trends in observed precipitation, and the Fifth National Climate Assessment (2023) reports that the broader Southeast region has seen an increase in the frequency and intensity of extreme rainfall events. There is high confidence that this trend will continue in the future. According to the Climate Mapping Risk Assessment (CMRA) Report, Montgomery County is expected to experience a modest increase in various flood indicators by mid- and late century. Both the increase in total precipitation and extreme rainfall events will increase the risk of flooding in Montgomery County. The long-term (1895-2023) trend in annual precipitation shows an increase of +0.48” per decade, the medium-term (1964-2023) trend in precipitation shows a slightly weaker increasing trend of +0.41” per decade. The short-term (1994-2023) trend shows a very weak positive trend of +0.05” per decade. This indicates that precipitation has increased in Montgomery County over the past several decades, but with a large amount of inter-annual variation with several consecutive years bouncing between wetter or drier than the 20th century mean. Since 2001, there have been 15 years with total precipitation above the 20th century mean and 8 years with total precipitation below the 20th century mean.

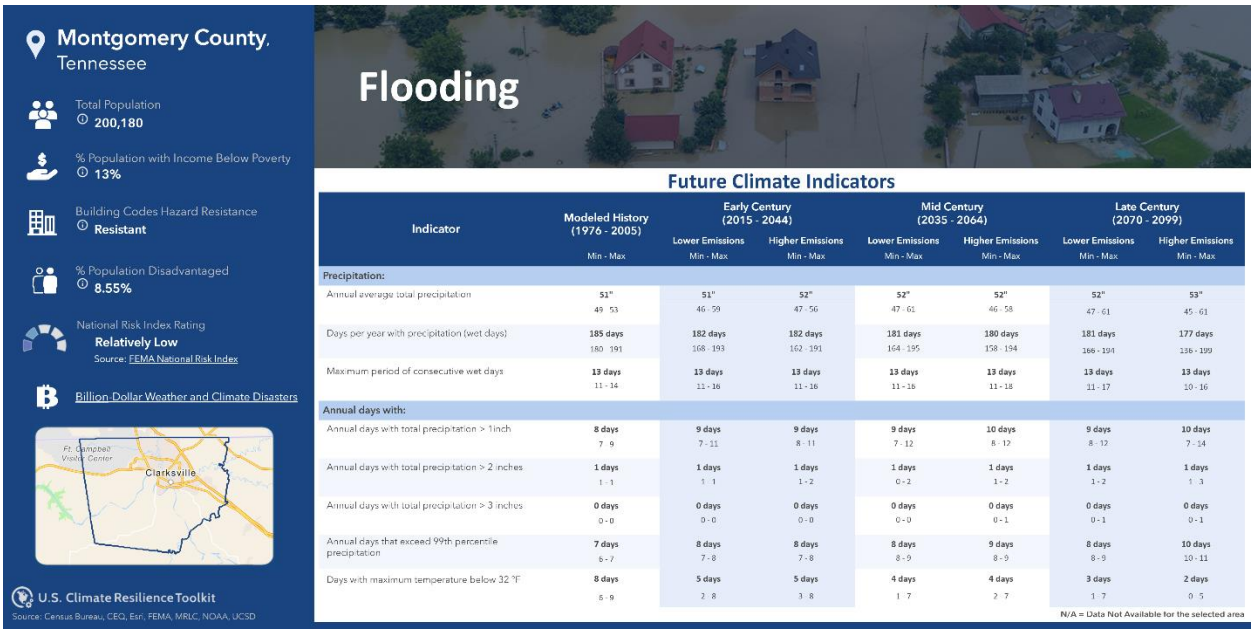


Figure 18: Climate Mapping Risk Assessment Report for Flooding in Montgomery County. (Source: US Climate Resilience Toolkit)

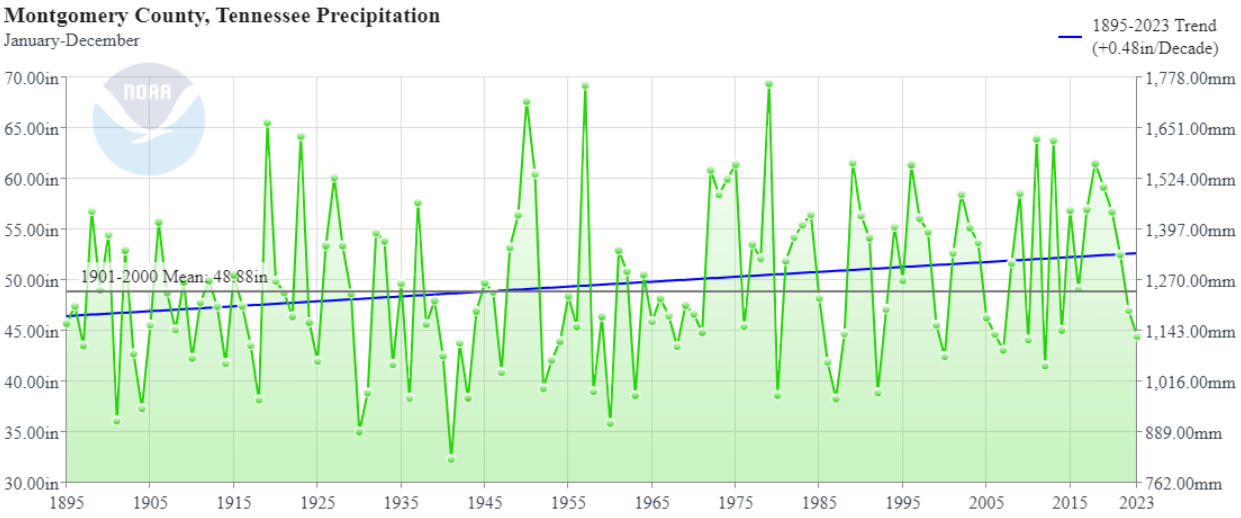


Figure 19: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.48-inch Increase per Decade Since 1895. (Source: NOAA NCEI, Climate at a Glance: County Time Series)

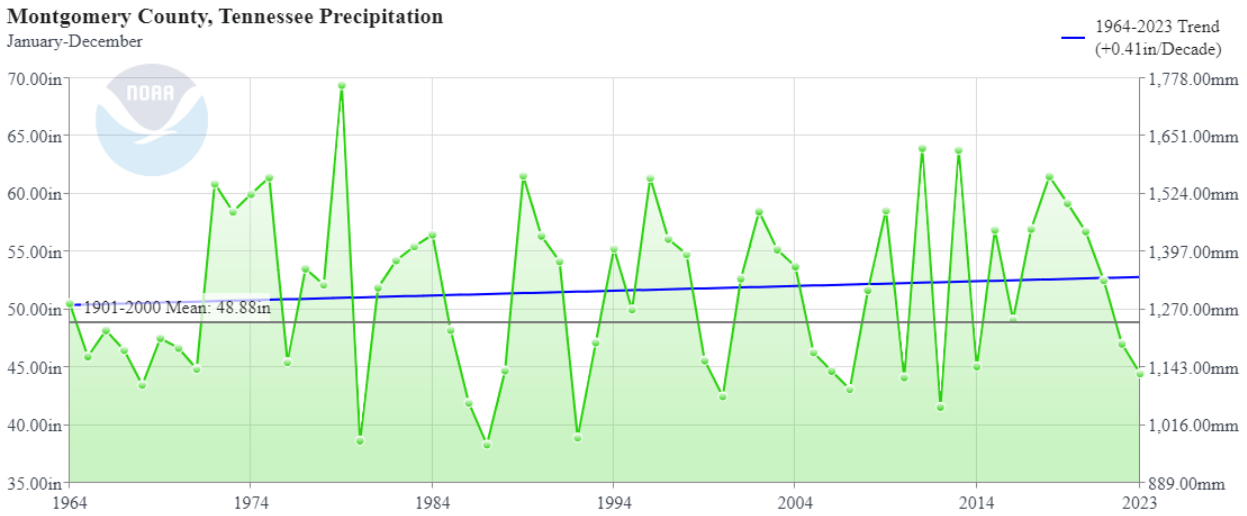


Figure 20: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.41-inch Increase per Decade Over the Last Sixty Years (Since 1964). (Source: NOAA NCEI, Climate at a Glance: County Time Series)

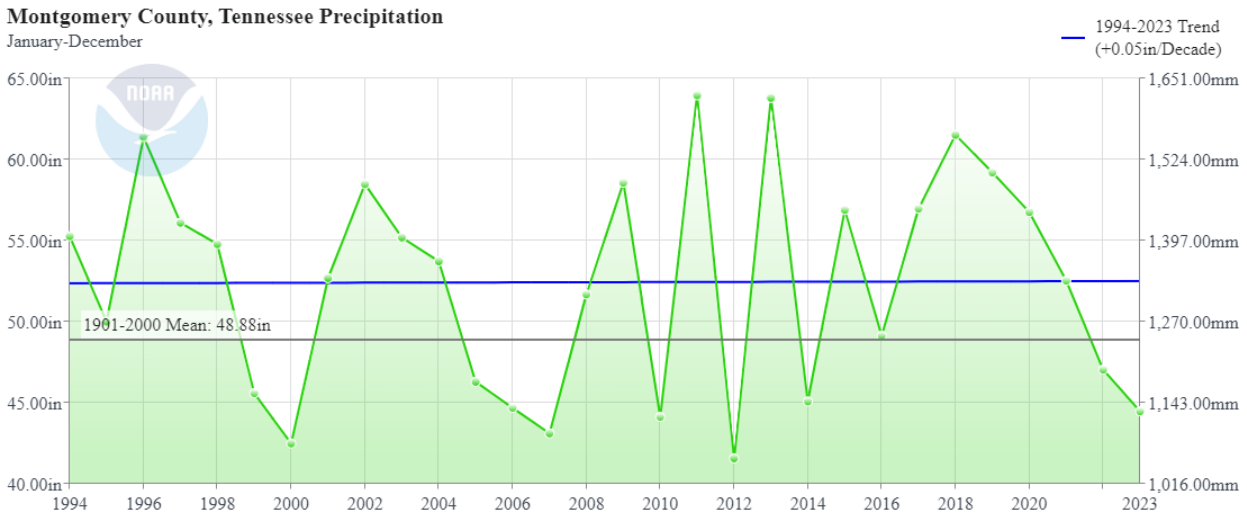


Figure 21: Total Annual Precipitation for Montgomery County, Tennessee, Showing a +0.05-inch Increase per Decade Over the Last Thirty Years (Since 1994). (Source: NOAA NCEI, Climate at a Glance: County Time Series)

Using the NOAA Storm Events Database, flood events and flood damages (dollars) were examined for trends between 1996 and 2022. Montgomery County showed no significant trend in the number of flood events or flood damages in the Storm Events Database in this time period, indicating that the rate of these events has stayed somewhat steady in this time. The trends in flood events and flood damages presented above are for riverine flooding, but as overall rainfall increases and trends towards higher intensity precipitation events continue flash flooding may become a higher concern for parts of Tennessee,

including Montgomery County. The TCO analyzed trends in flash flood events and flash flood-related damages from the NOAA Storm Events Database from 1996 to 2022. Montgomery County showed a decreasing trend in the number of flash flooding events, but no significant trend in the amount of damages caused by flash flooding events.

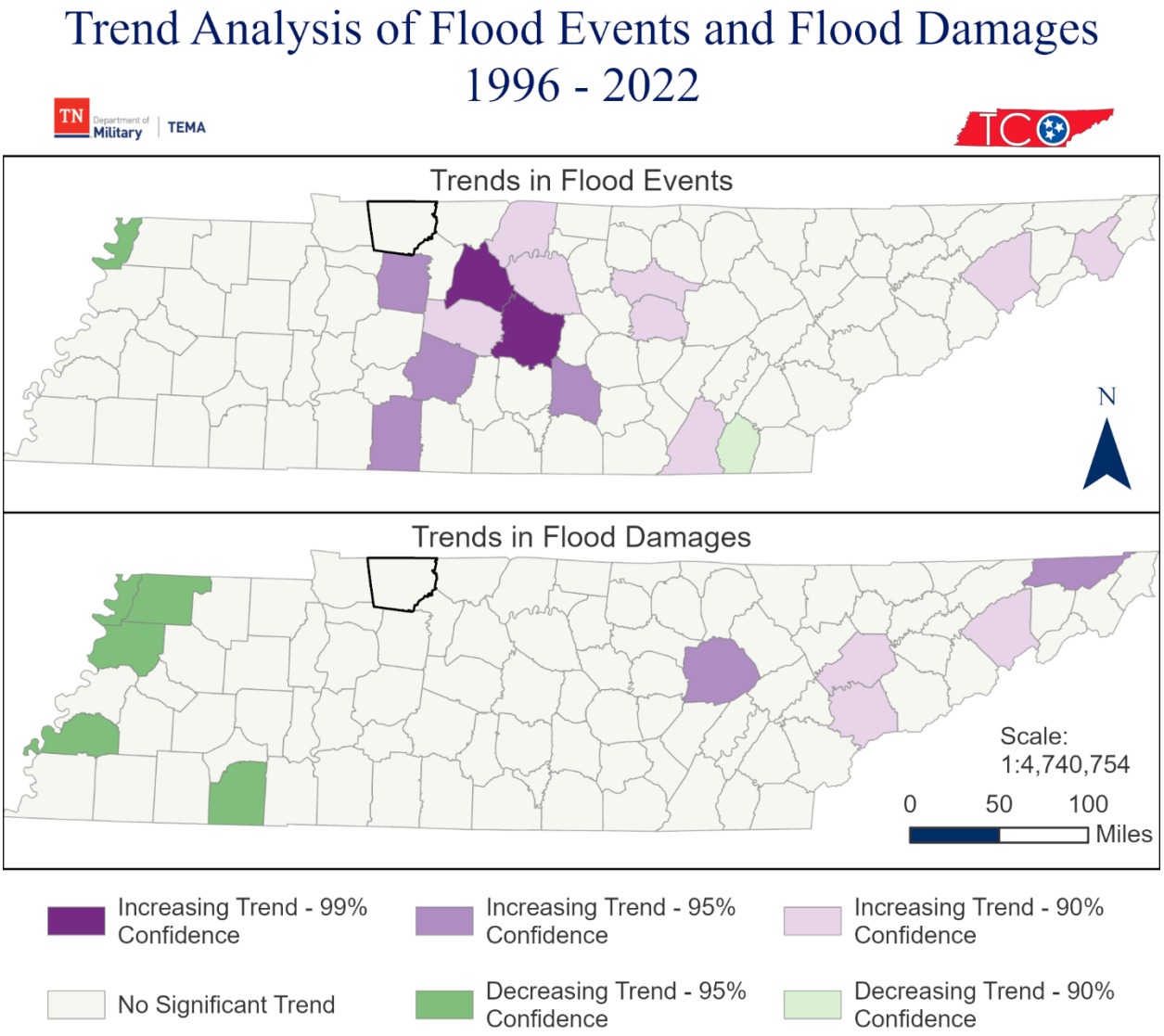


Figure 22: Trend in Flood Events and Flood Damages Reported in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

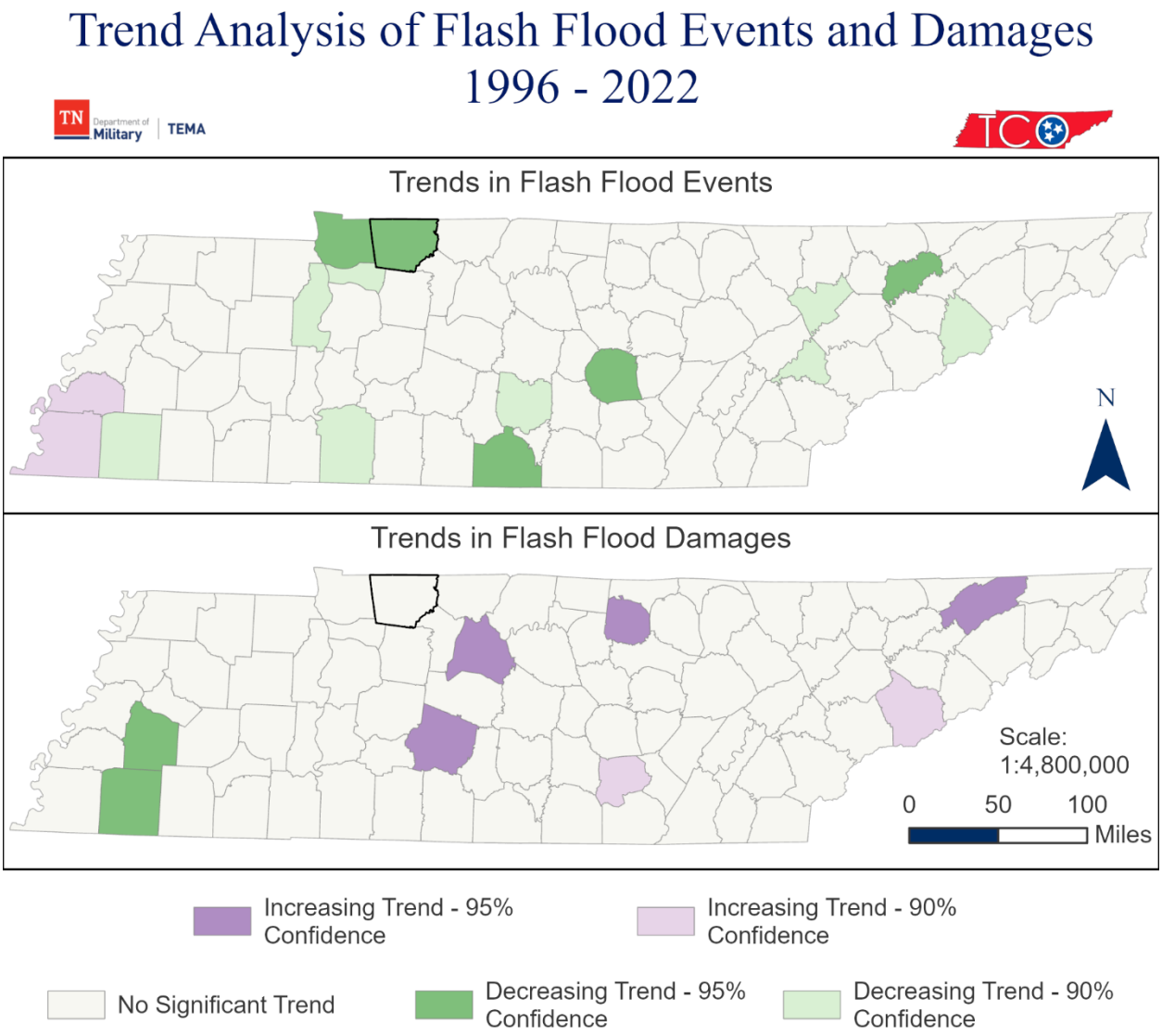


Figure 23: Trend in Flash Flood Events and Flash Flood Damages Reported in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

Extreme rainfall events are often categorized based on how much above or below their amounts were compared to the 100-year, or 1% annual probability, rainfall amounts. Using data from NOAA Atlas 14, in Montgomery County, a 100-year 1-hour extreme rainfall total would be approximately 3.01 to 3.25 inches. A 100-year 24-hour extreme rainfall event for Montgomery County would result in 7-8 inches of rain.

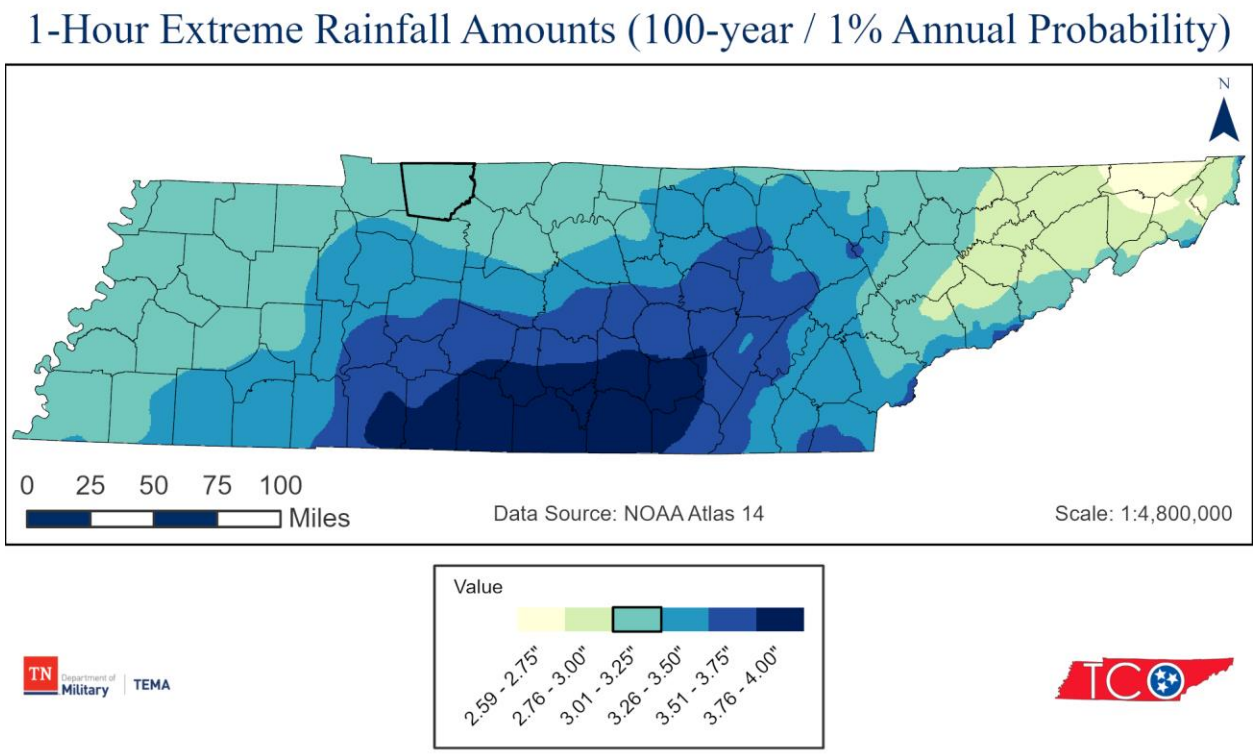


Figure 24: 1-hour Extreme Rainfall Estimates for 100-year Return Period (1% Annual Probability of Exceedance) using NOAA Atlas 14, Montgomery County, Outlined in Bold.

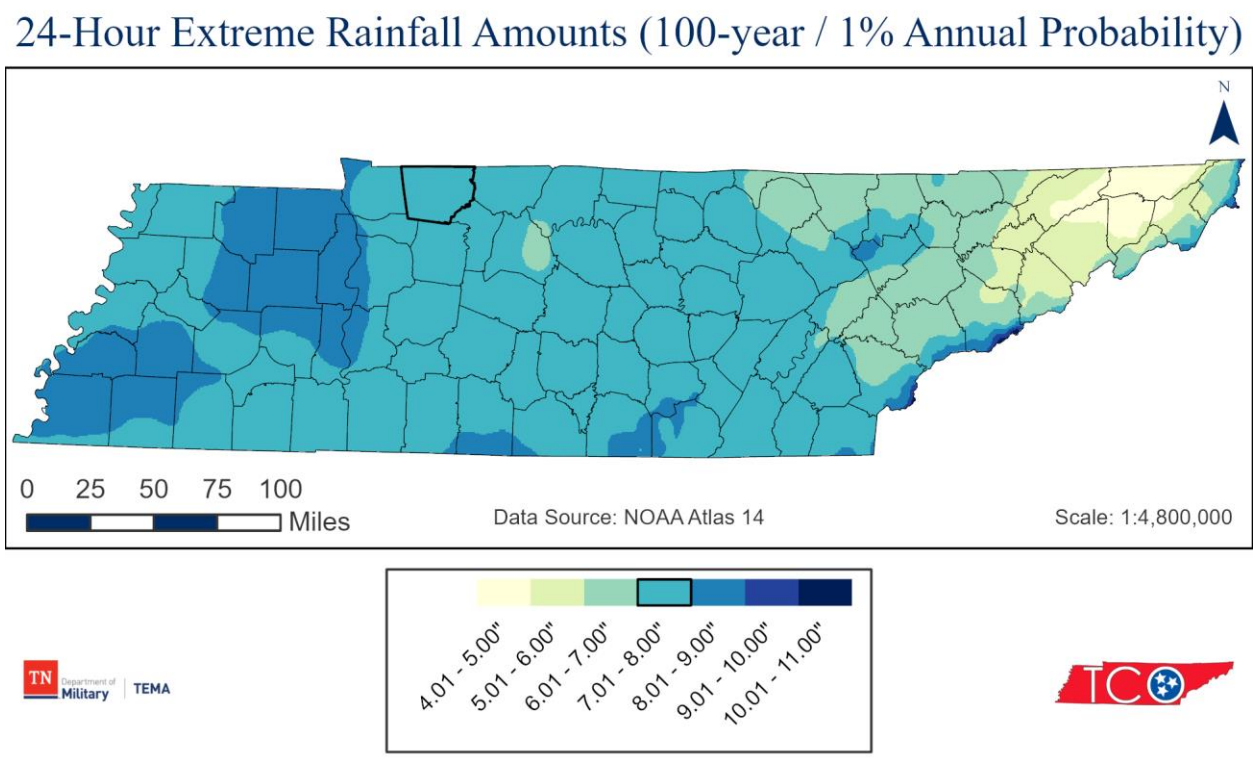


Figure 25: 24-hour Extreme Rainfall Estimates for 100-year Return Period (1% Annual Probability of Exceedance) using NOAA Atlas 14, Montgomery County, Outlined in Bold.

The TCO analyzed trends in heavy precipitation days per year in counties across Tennessee, these were the number of days that daily rainfall totals exceeded a 1-year (100% chance of annual probability), 2-year (50% chance of annual probability), or 5-year (20% chance of annual probability) event. Montgomery County showed an increasing trend in the number of 1-year (100% chance) heavy rainfall events, but no significant trend for 2-year and 5-year heavy precipitation events.

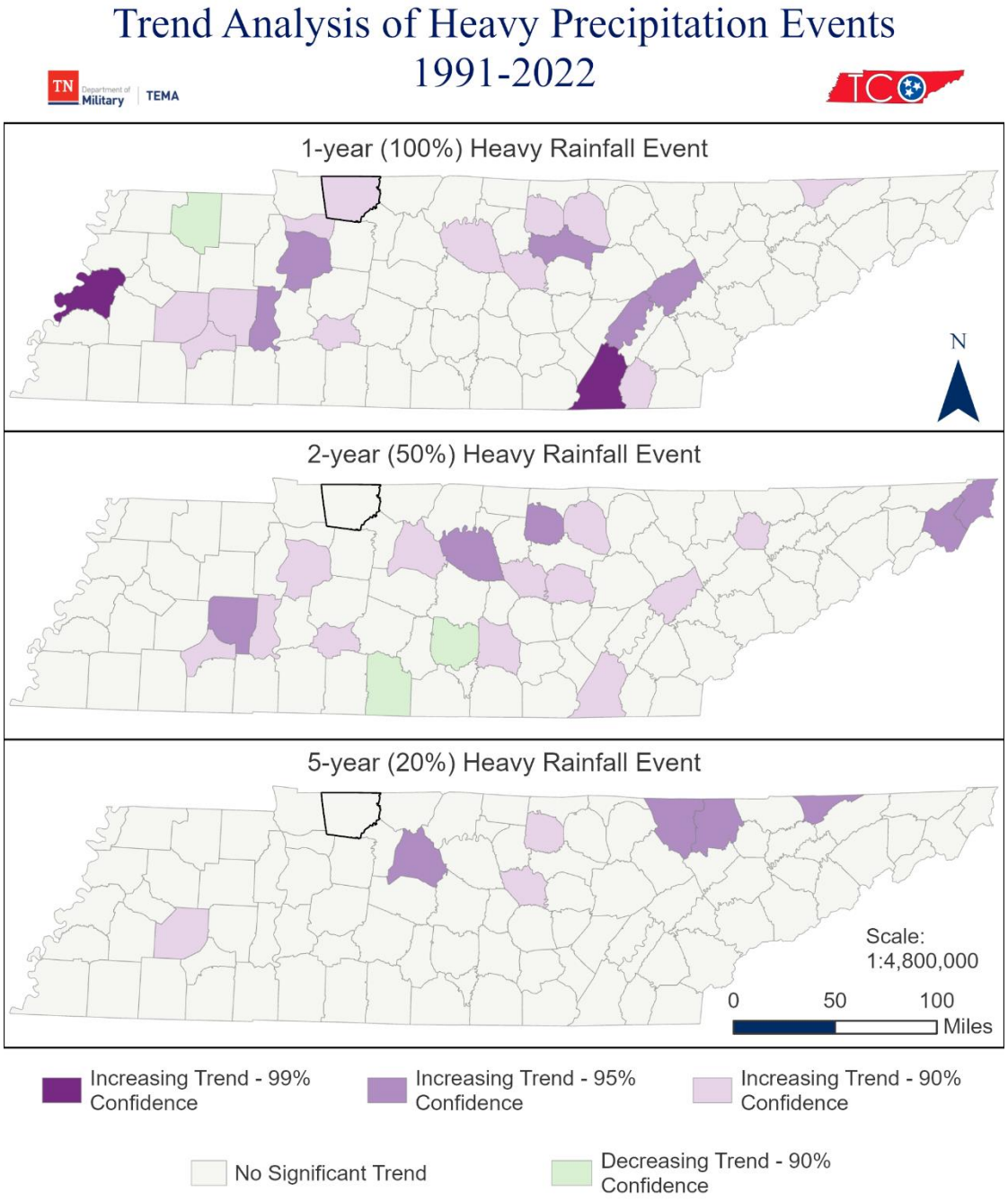


Figure 26: Trend in Heavy Precipitation Events (1-year, 2-year, and 5-year Return Period Exceedance Events), Montgomery County Outlined in Bold.

Additional data from the CMRA report for Montgomery County predicts an increase in the number of days per year with extreme precipitation throughout the 21st century. Based on analysis by the NCICS and NOAA, Clarksville (the county seat of Montgomery County) currently has a 100-year 24-hour extreme rainfall amount of 7.60 inches and that amount is predicted to rise by as much as 1.27 inches (to 8.87") by 2055.

Table 3: Possible Change in the Number of Days per Year with Precipitation Exceeding 99th Percentile (Extreme Precipitation Days).

High Emissions Scenario	Modeled History (1976-2005)	Early Century (2015-2044)	Mid Century (2035-2064)	Late Century (2070-2099)
Driest Projection	6.4	+1.0	+1.7	+3.2
Mean Projection	6.6	+1.2	+1.9	+3.5
Wettest Projection	7.2	+1.1	+1.7	+3.4
Low Emissions Scenario	**Modeled History (1976-2005)**	**Early Century (2015-2044)**	**Mid Century (2035-2064)**	**Late Century (2070-2099)**
Driest Projection	6.4	+0.8	+1.5	+1.7
Mean Projection	6.6	+0.9	+1.5	+1.8
Wettest Projection	7.2	+0.9	+1.4	+1.8

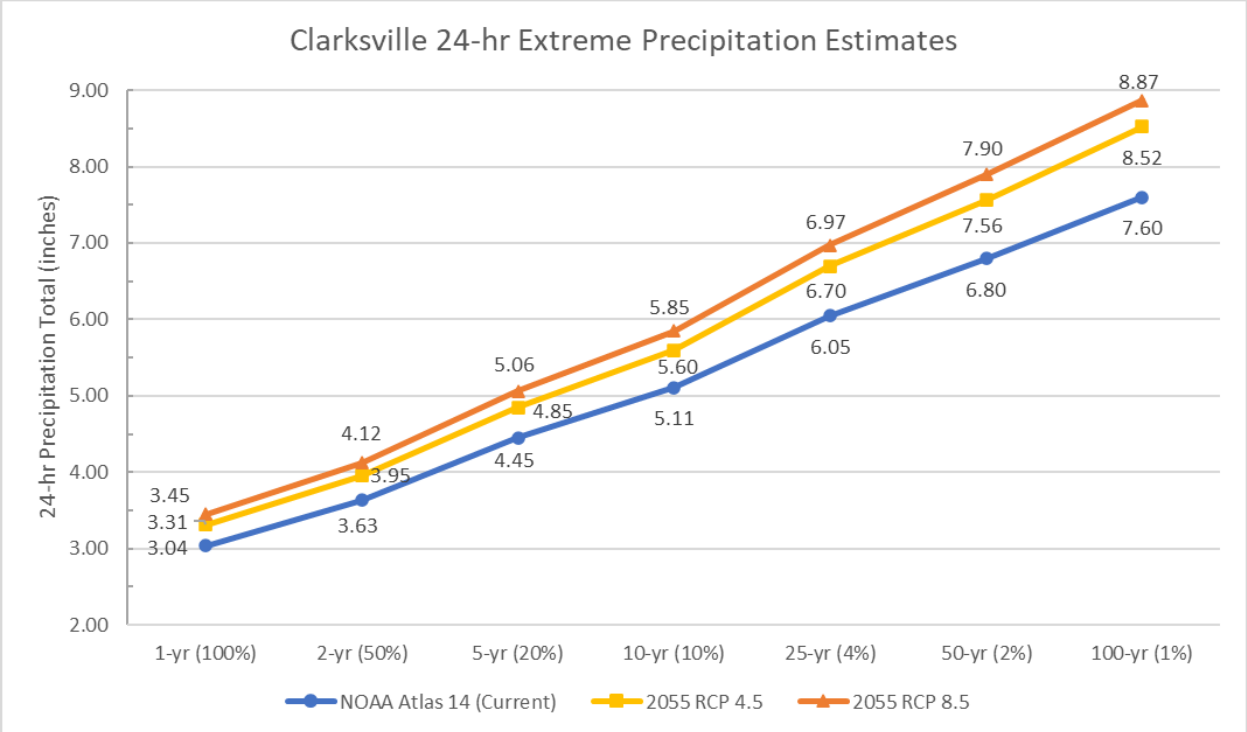


Figure 27: 24-hour Extreme Rainfall Estimates for 1-year, 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year Return Periods using NOAA Atlas 14 (historical data) and Mid-Century Values for 2055 using RCP4.5 and RCP8.5 Emission Scenarios.

The US Department of Agriculture and US Forest Service created a report based on models and projection data from Multivariate Adaptive Constructed Analogs (MACA), that show most of Tennessee is expected to see an increase in annual precipitation by the late 21st century. Montgomery County is projected to see an increase of 2-6% in annual precipitation by the late 21st century. However, potential changes in precipitation are not expected to be spread equally across all four seasons. The largest change for Montgomery County is projected to come in the spring season, with an increase of 8-10% across the county compared to the historical average for spring. The next largest change is to winter precipitation, which is projected to increase by 4-6%, and fall precipitation is projected to increase by 2-6%. Summer precipitation is projected to decrease by up to 4% compared to the historical average for summer.

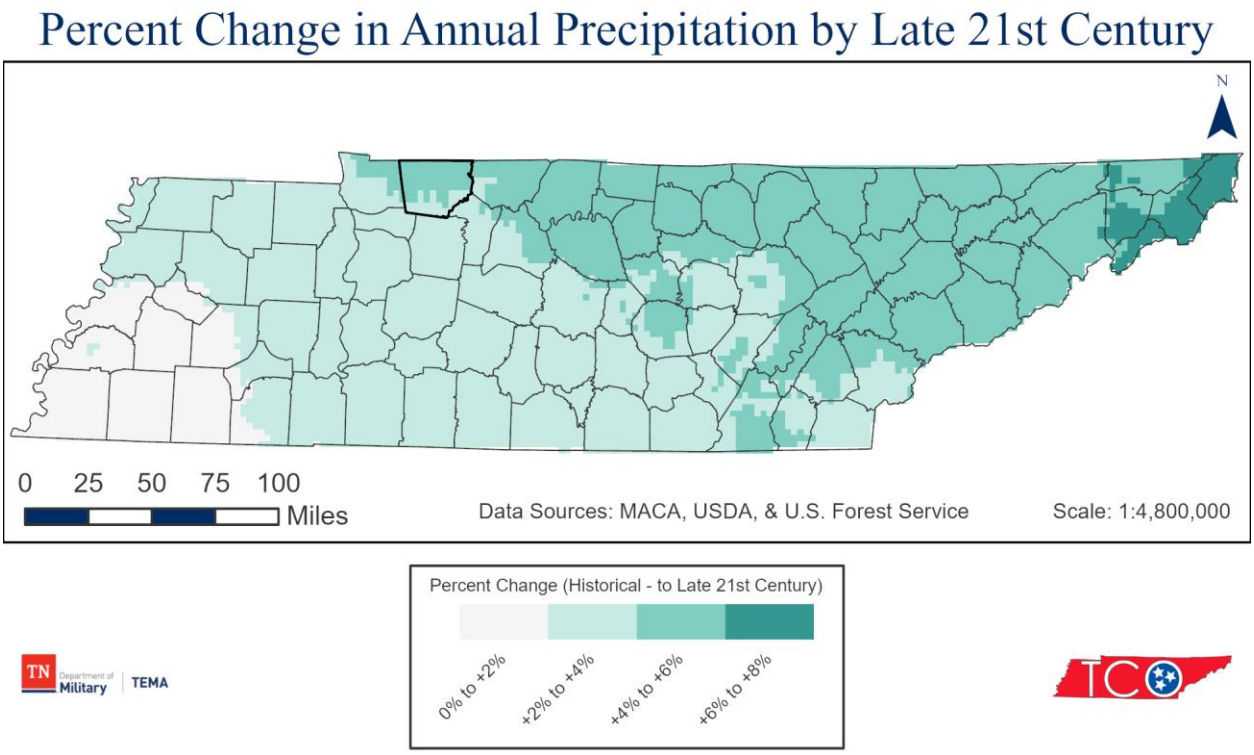


Figure 28: Projected Change in Annual Precipitation for Tennessee, Montgomery County Outlined in Bold.

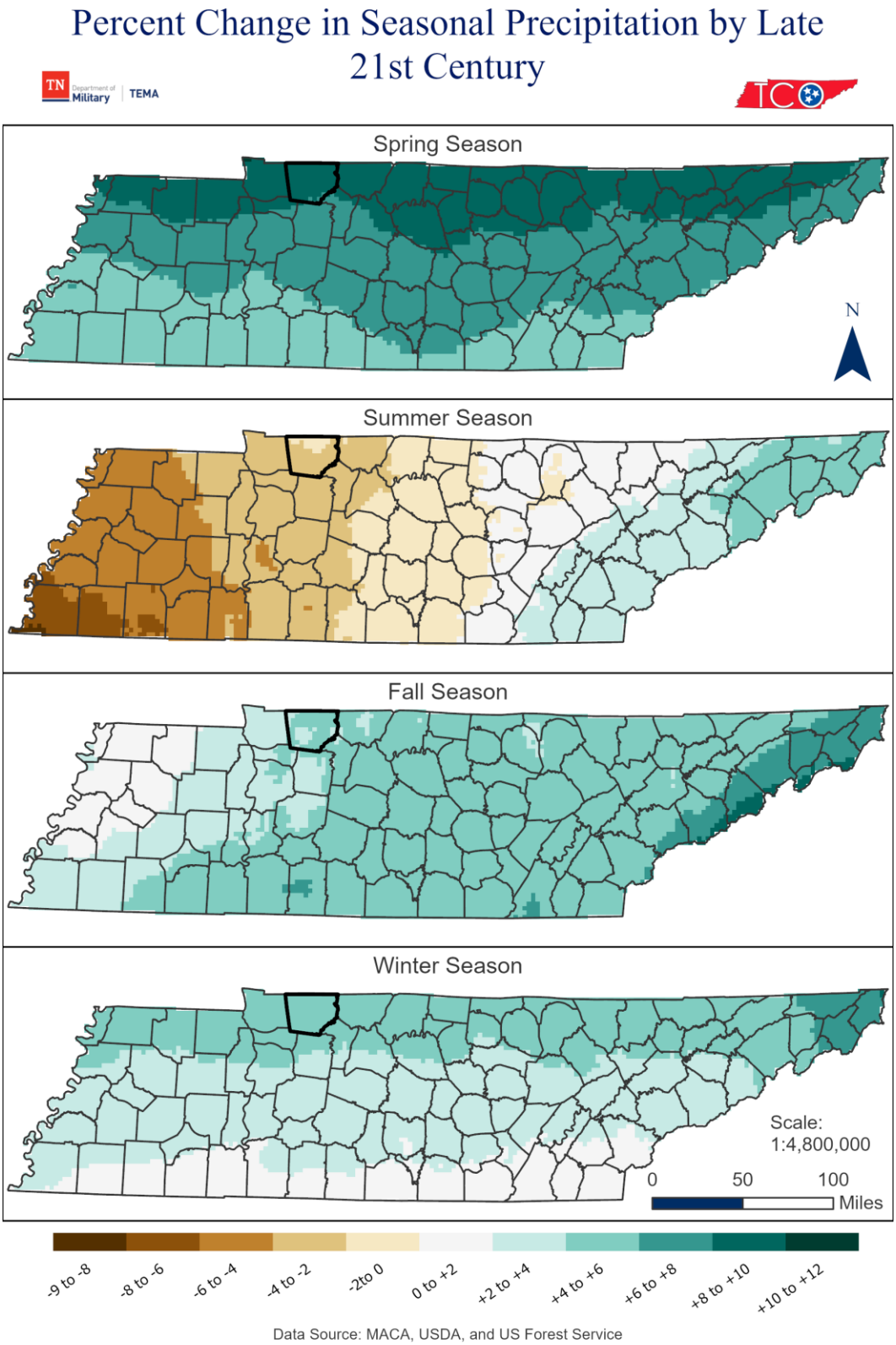


Figure 29: Projected Change in Seasonal Precipitation for Tennessee, Montgomery County Outlined in Bold.

Severe Storms

Climate trends and variations may lead to an increase in frequency and intensity of certain types of severe storms. Warmer air temperatures can contribute to more moisture in the atmosphere, providing fuel for stronger rainfall events and potentially more intense thunderstorms. The increased energy in the atmosphere can also contribute to the development of more powerful storms. Climate trends can also result in altered precipitation patterns influencing the distribution, timing, and intensity of rainfall during storms. Climate trends can influence the paths and tracks of severe storms too. Changes in atmospheric circulation patterns may lead to shifts in the regions where storms typically form or move, potentially affecting the areas that are historically vulnerable to specific types of storms. This can result in new areas being exposed to severe storms while other areas experience a decrease. Research by Ashley et al. (2023) into supercell thunderstorm formation compared historical data (1990-2005) and future climate models for the late 21st century (2085 – 2100), which indicate that the mid-South region of the U.S. could see an increase in the number of supercell thunderstorms capable of producing severe thunderstorm hazards and tornadoes. These increases were mostly found in the late winter to early spring months of February, March, and April. Additionally, they found that an increasing number of supercell thunderstorms in this region could form in the late afternoon to overnight hours. Climate trends can contribute to compound events where multiple extreme weather events can occur simultaneously or in succession. These compound events can amplify the overall impacts on communities and ecosystems, making them more challenging to manage and recover from.

Severe Thunderstorms (Convective Wind, Hail, and Lightning)

Using data from the NOAA Storm Prediction Center severe storm reports archive from 1980-2022, Montgomery County has a moderate-high number of severe thunderstorm wind damage reports, and a moderate number of severe hail reports compared to other parts of the state. Montgomery County also has a moderate density of lightning strikes per year compared to other areas of the state. The Tennessee Climate Office (TCO) analyzed trends for thunderstorm winds (convective wind) and severe hail reports in counties across Tennessee using the NOAA Storm Events Database with data from 1996 to 2022, and lightning strikes per county from 1996 to 2023 from the NOAA Severe Weather Data Inventory (SWDI). The trend analysis for severe thunderstorm winds and hail showed no significant trend in Montgomery County. However, there was a decreasing trend in lightning, significant to the 99% confidence level.

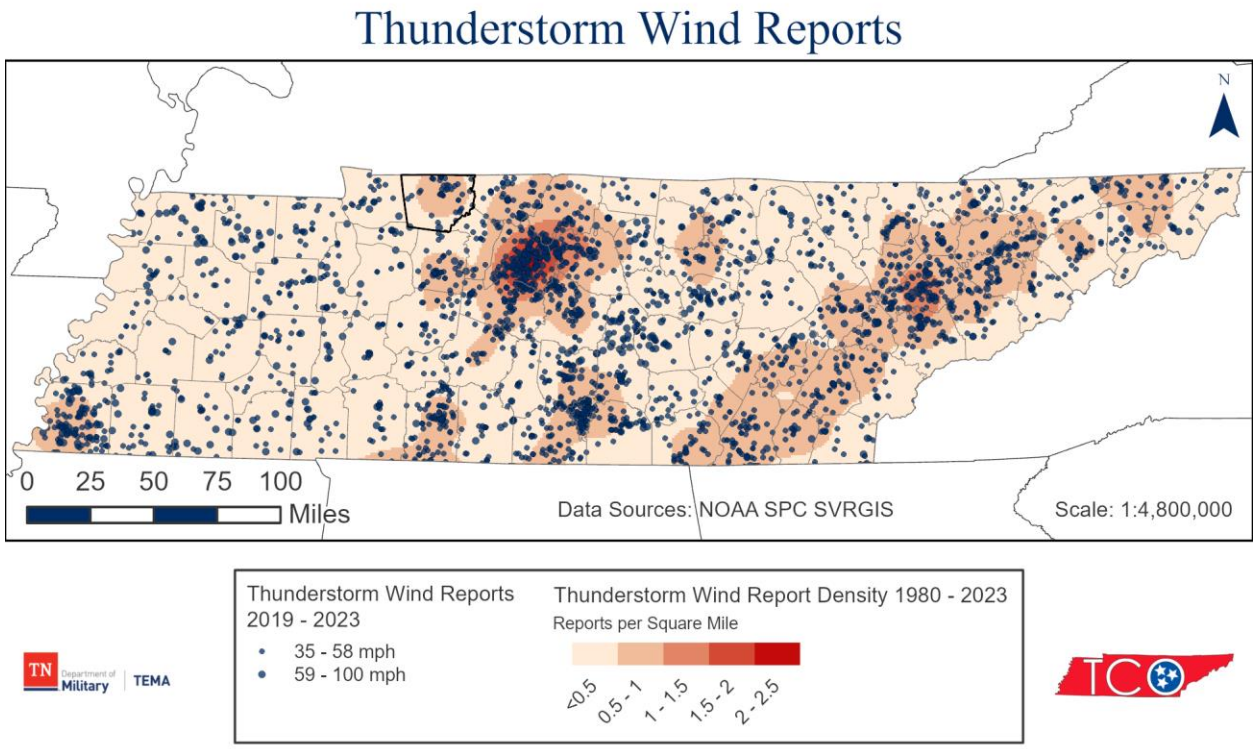


Figure 30: Severe Thunderstorm Wind Reports from 2019-2023 and Severe Thunderstorm Wind Report Density from 1980-2023, Montgomery County Outlined in Bold.

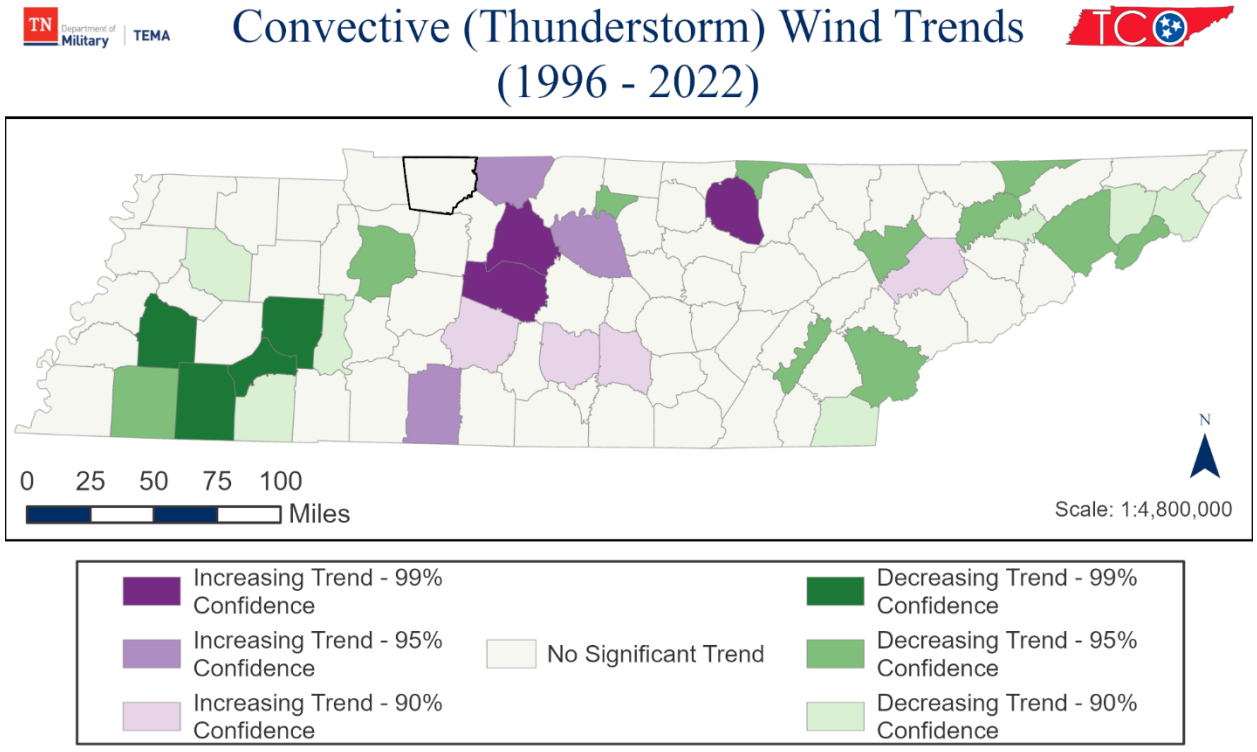


Figure 31: Trends in the Number of Thunderstorm Wind Events Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

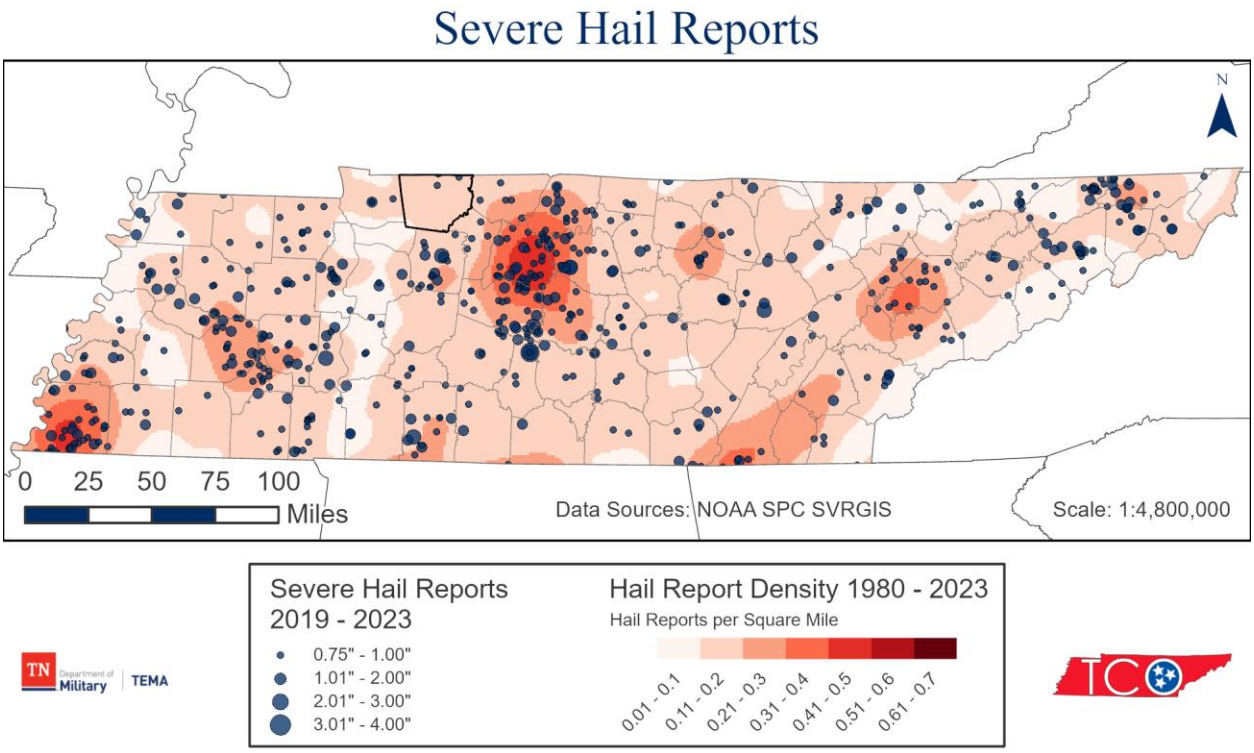


Figure 32: Severe Hail Reports from 2019-2023 and Severe Hail Density from 1980-2023, Montgomery County Outlined in Bold.

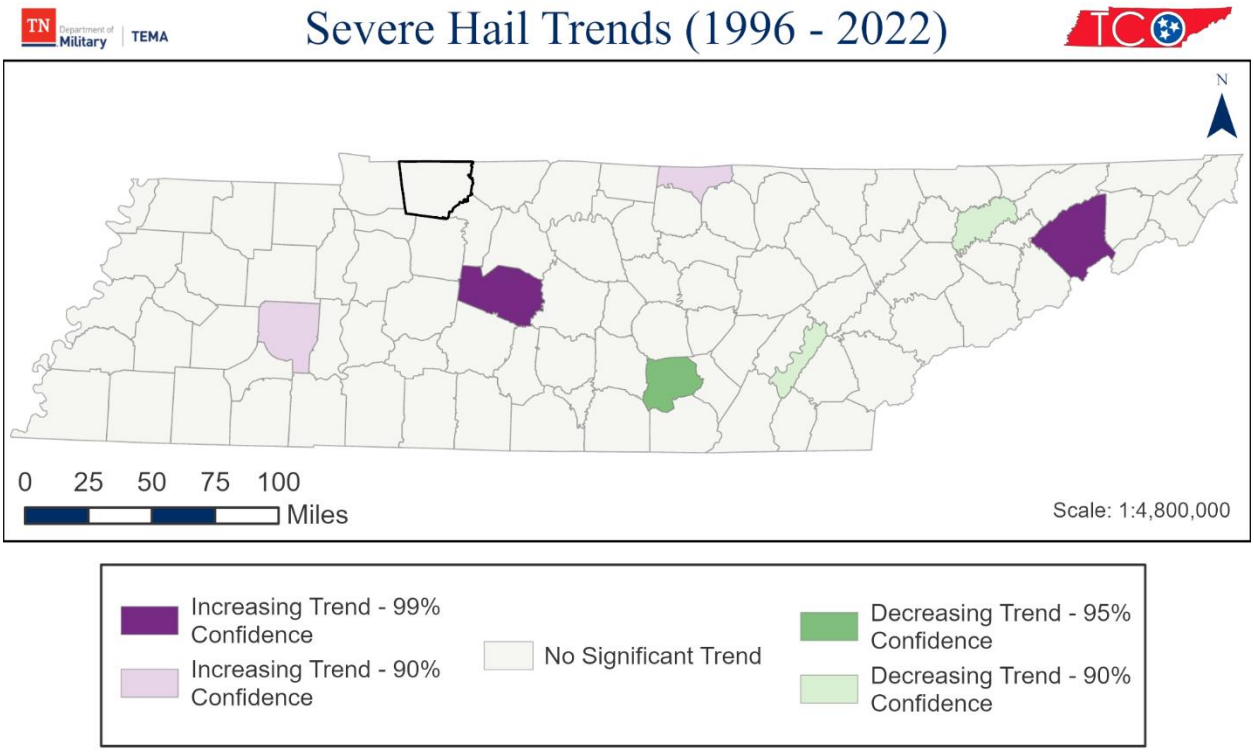


Figure 33: Trends in the Number of Severe Hail Events Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

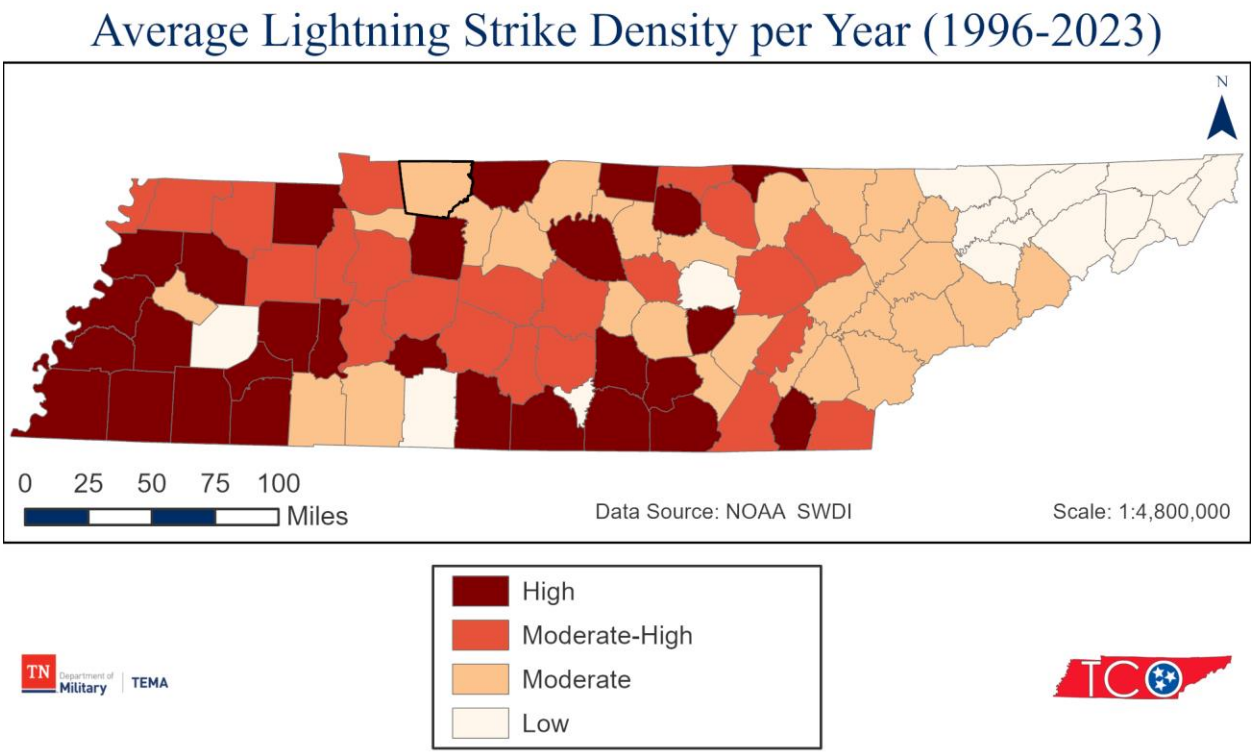


Figure 34: Average Annual Lightning Strike Density from 1996 to 2023, Montgomery County Outlined in Bold.

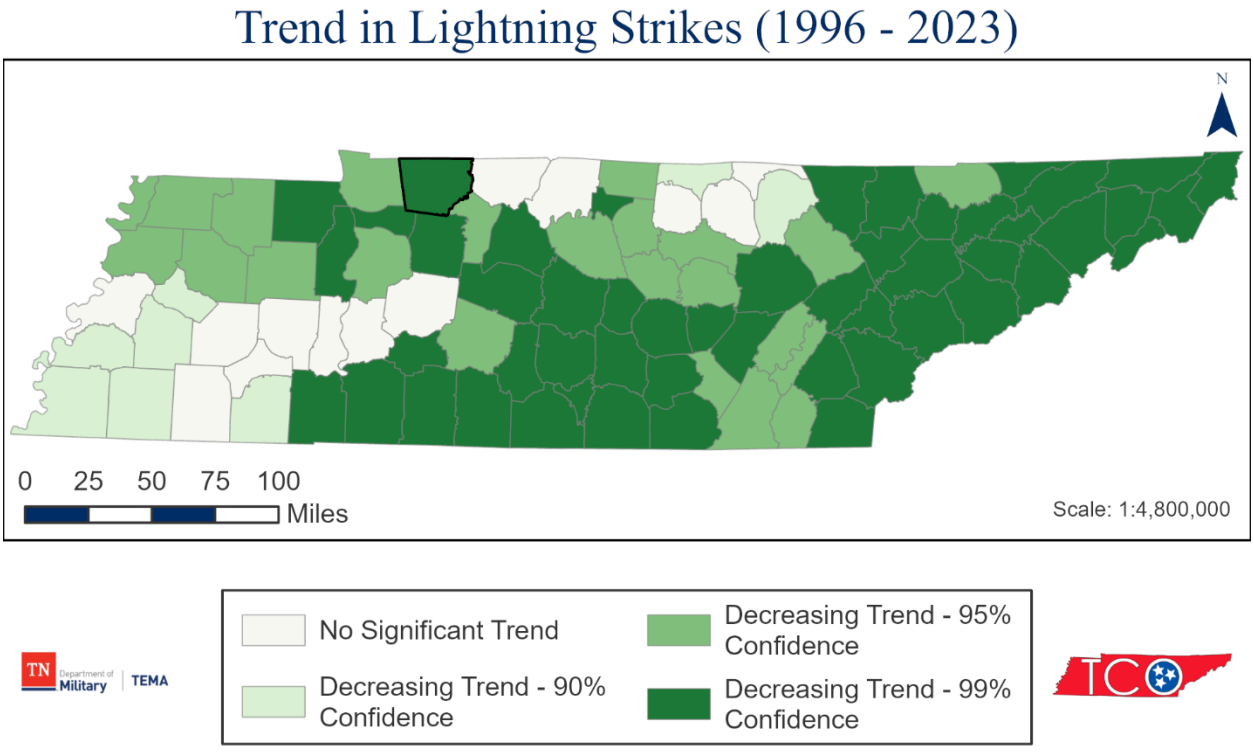


Figure 35: Trends in the Number of Lightning Strikes per County Recorded in the NOAA Severe Weather Data Inventory from 1996 to 2023, Montgomery County Outlined in Bold.

Non-Thunderstorm Winds

The Tennessee Climate Office (TCO) also analyzed trends for non-convective (non-thunderstorm) wind reports in counties across Tennessee using the NOAA Storm Events Database with data from 1996 to 2022, and Montgomery County showed no significant trend in non-convective wind events during this time.

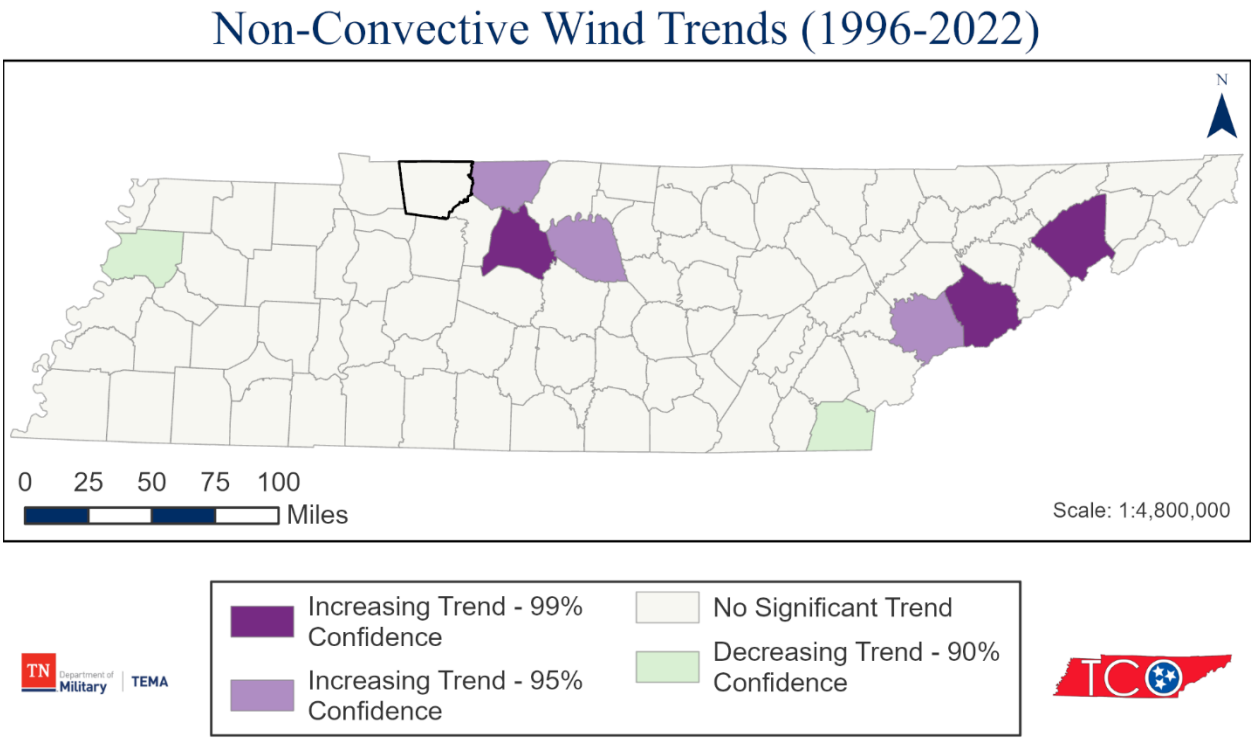


Figure 36: Trends in the Number of Non-Convective Wind Events Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

Winter Weather

Data from the National Weather Service NOHRSC National Gridded Snowfall Analysis webpage covering the winters of 2008-2009 to 2023-2024 (the last 16-years) indicates that the average annual snowfall for Montgomery County ranges from 4 to 10-inches per year, with lower totals in the southern half of the county. Using data from the NOAA Storm Events Database, trend analysis was performed on winter weather-related storms from 1996 to 2022 across the state of Tennessee. In this time period Montgomery County showed an increasing trend in the number of winter storms significant to the 99% confidence level along with most other counties in Middle and West Tennessee.

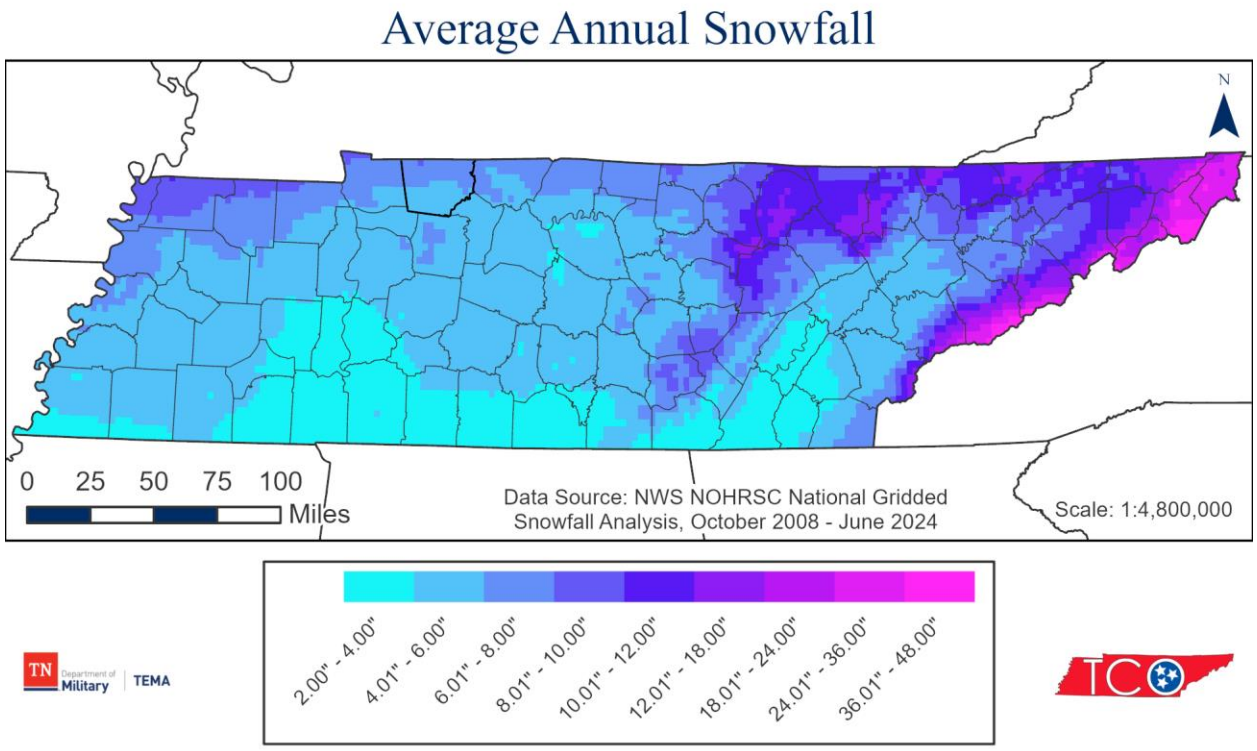


Figure 37: Average Annual Snowfall from the Winter of 2008/2009 to the Winter of 2023/2024, Montgomery County Outlined in Bold.

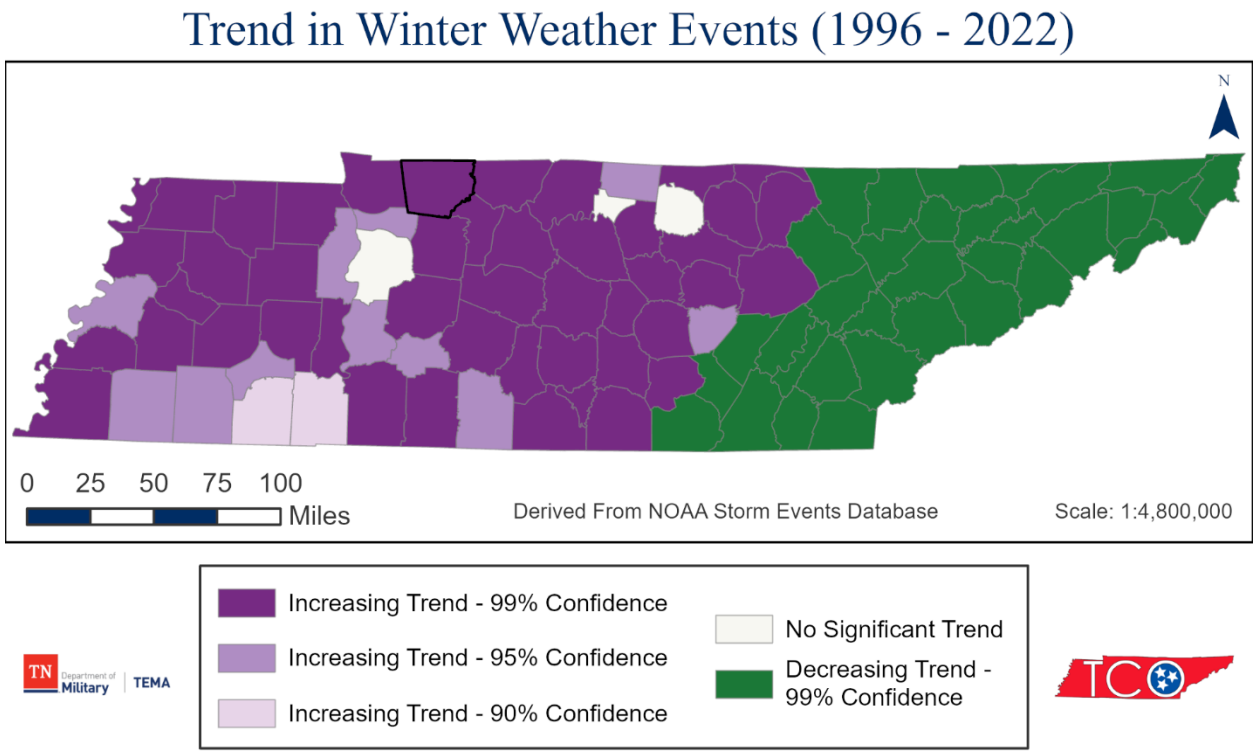


Figure 38: Trends in the Number of Winter Weather-Related Events Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

Climate trends and variability will impact the future likelihood of winter weather events or severe winter storms in Tennessee, likely decreasing but not eliminating the overall risk. Average annual temperatures are expected to increase across the Southeast US, including temperatures during the winter season. Montgomery County has an observed warming trend of +0.2°F per decade from 1896 to 2024 throughout the meteorological or climatological winter season (December – February). In the medium-term (1965-2024) the warming trend strengthens to 0.9°F per decade and is an even stronger 1.0°F per decade in the short term (1995-2024).

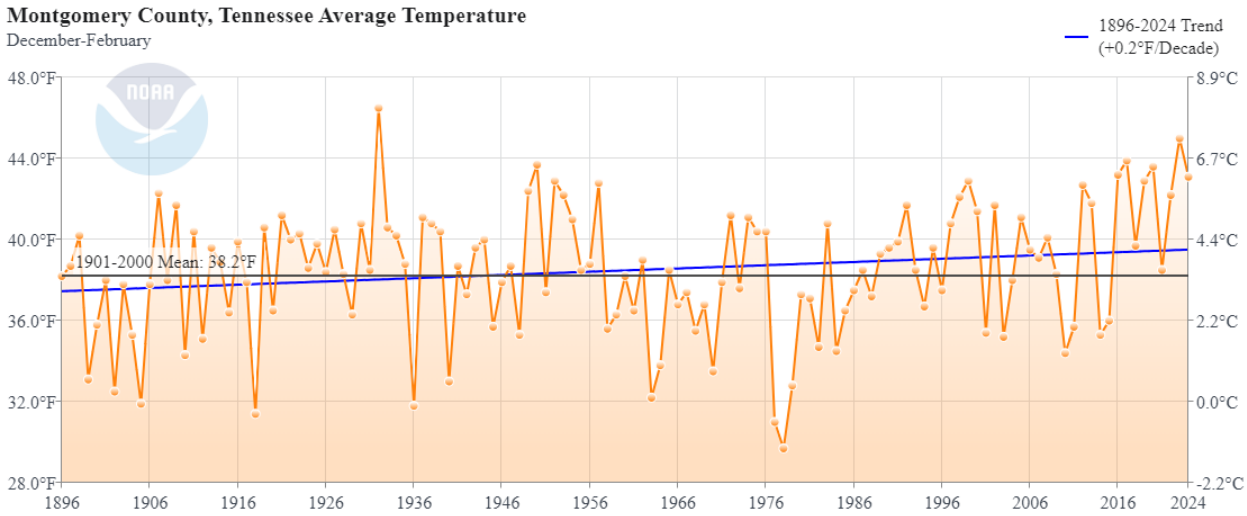


Figure 39: Winter (December to February) Mean Temperature for Montgomery County, Tennessee, Showing a +0.2°F Increase per Decade Since 1895.
(Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

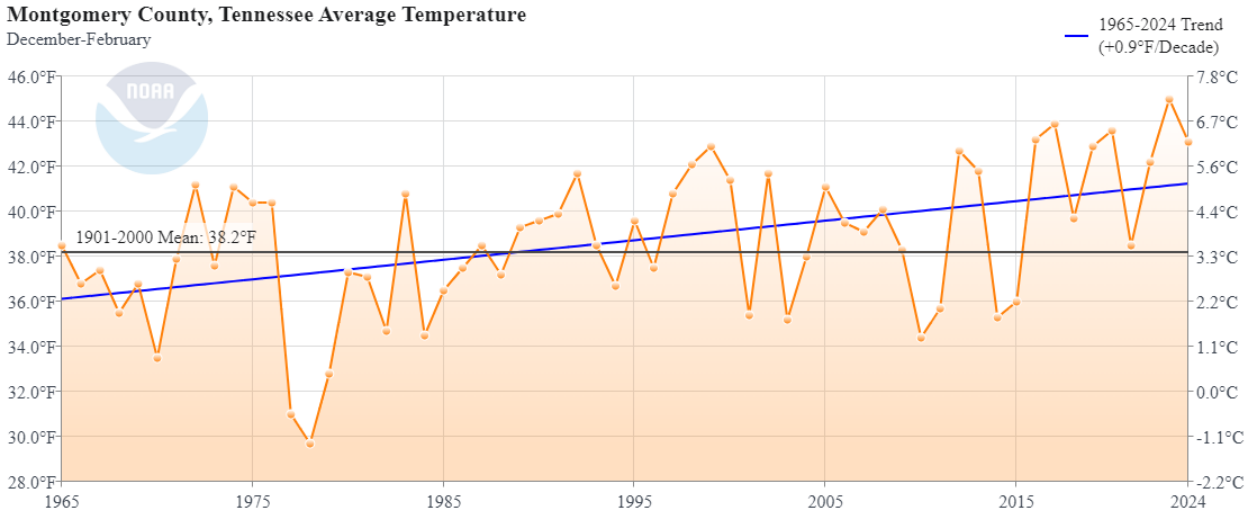


Figure 40: Winter (December to February) Mean Temperature for Montgomery County, Tennessee, Showing a +0.9°F Increase per Decade Over the Last Sixty Years (Since 1965).
(Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

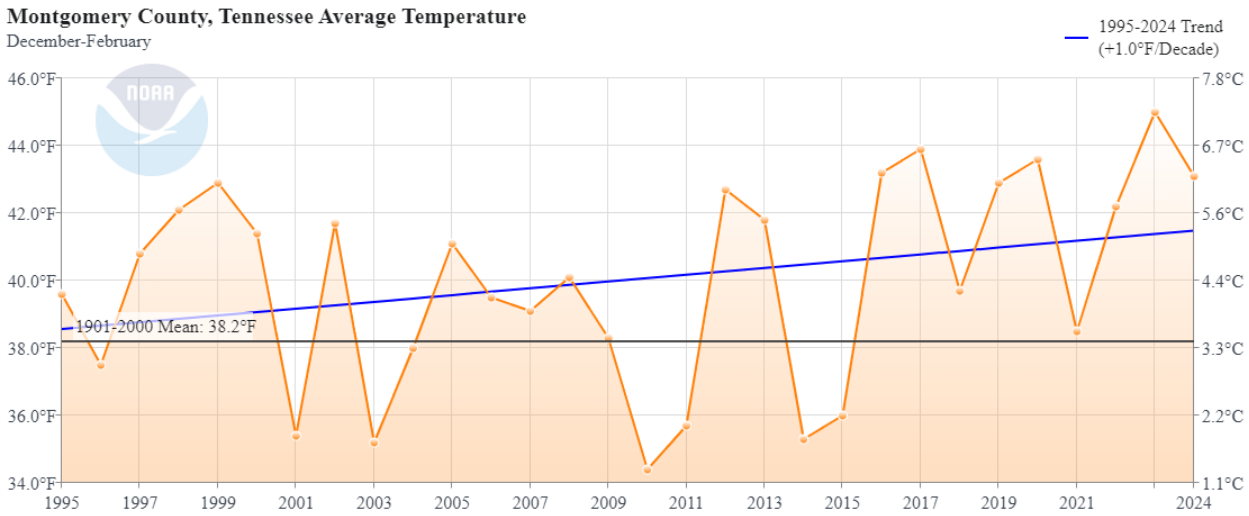


Figure 41: Winter (December to February) Mean Temperature for Montgomery County, Tennessee, Showing a +1.0°F Increase per Decade Over the Past Thirty Years (Since 1995). (Source: NOAA NCEI, Climate-at-a-Glance: County Time Series)

In addition to the increasing average annual and winter temperatures, the USDA and U.S. Forest Service Office of Sustainability and Climate projects that the length of the frost-free season will increase by 51-53 days across Montgomery County by the late 21st century. This means the time during the year when winter weather is possible will decrease. Currently, the average frost season in Montgomery County lasts for about five to five and a half months (late October to early April), but by the late 21st century that is projected to decrease to just about four months of the year. In the following two figures the historical and projected number of Frost Days (days with a minimum temperature below freezing) and Icing Days (days with a maximum temperature below freezing) are shown for Montgomery County from the U.S. Climate Resilience Toolkit Climate Explorer. The mean projection for the low emissions scenario indicates that Montgomery County could have 32 fewer Frost Days per year by the end of the century, while the mean projection for the high emissions scenario indicates there could be 50 fewer Frost Days per year than the 1961-1990 observed average number of frost days. The mean projection for the low emissions scenario shows that Montgomery County could observe approximately eight fewer Icing Days per year, while the high emissions scenario shows that there could be approximately nine fewer Icing Days per year by the end of the century compared to the 1961-1990 observed average.

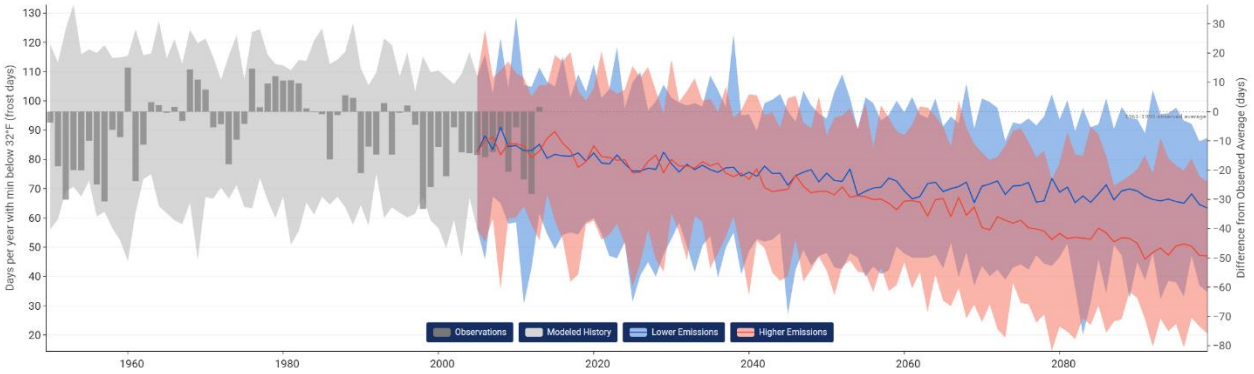


Figure 42: Days Per Year with Minimum Temperature Below 32°F (Frost Days) with Historical Observations from 1950 to 2013 and High (red) and Low (blue) Emission Scenarios Going to 2100 for Montgomery County, Tennessee.
(Source: U.S. Climate Resilience Toolkit Climate Explorer)

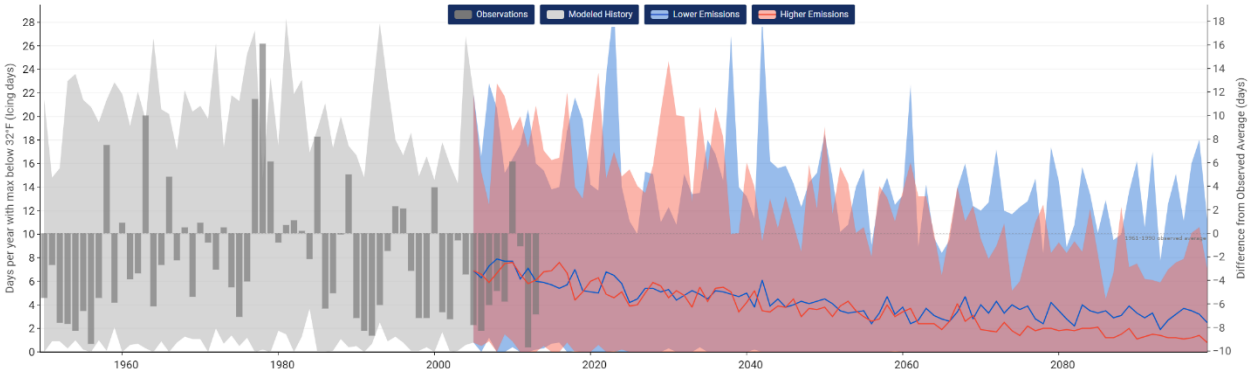


Figure 43: Days per Year with a Maximum Temperature Below 32°F (Icing Days) With Historical Observations from 1950 to 2013 and High (red) and Low (blue) Emission Scenarios Going to 2100 for Montgomery County, Tennessee.
(Source: U.S. Climate Resilience Toolkit Climate Explorer)

Additionally, the USDA forecasted changes in plant hardiness zones for the Southeast U.S. The following figure, from the Fifth National Climate Assessment (2023) indicates that Montgomery County may transition from Plant Hardiness Zone 7b (current climate normal, 1991-2020) to Plant Hardiness Zones 8b/9a by 2071-2100, based on climate models using the SSP5-8.5 (higher emissions) greenhouse gas emissions scenario. That would correlate to a warming of approximately 10-15 degrees in the average coldest temperature expected in parts of the county, from historical values of 5°F to 10°F to future values of +10°F to +20°F.

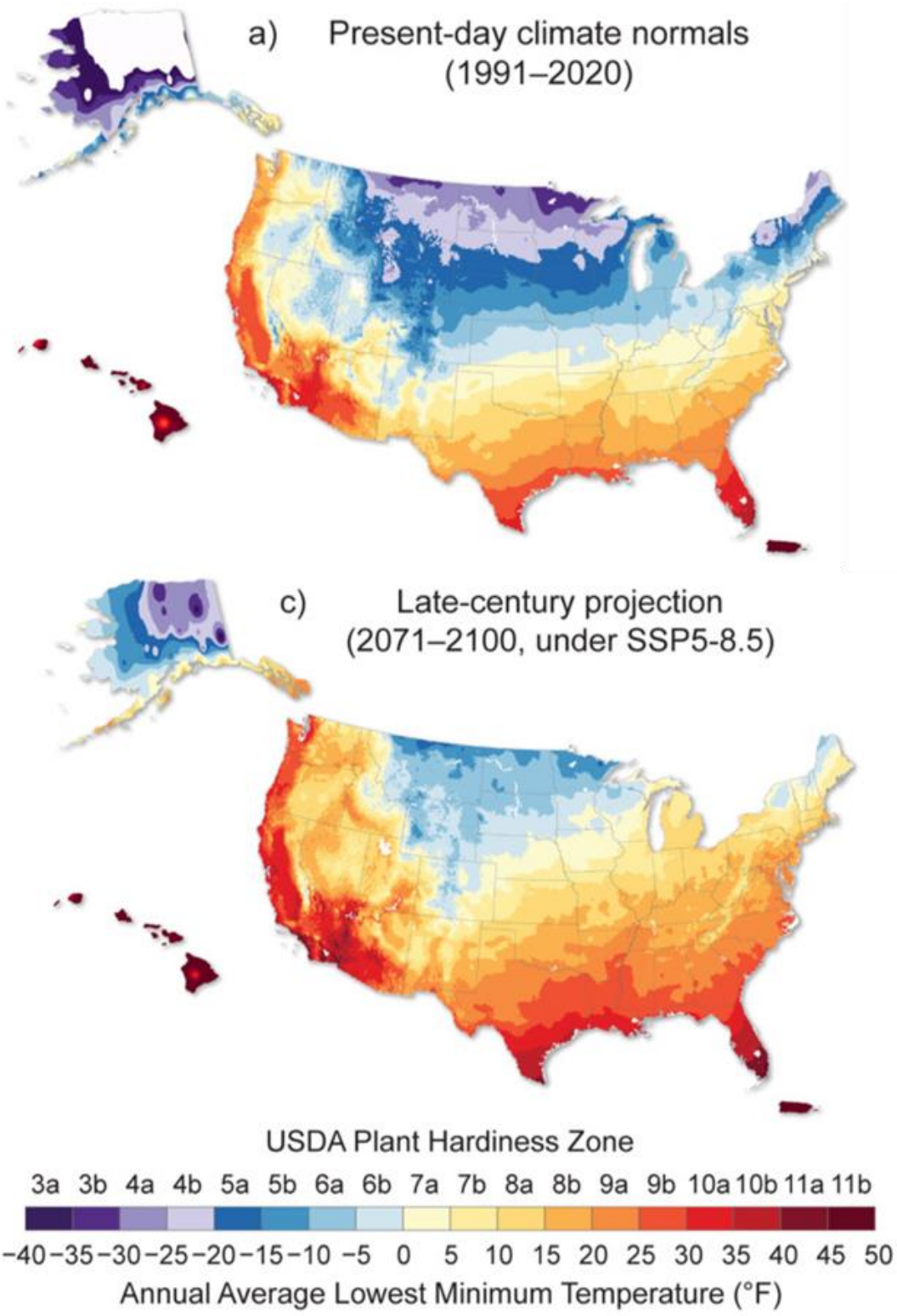


Figure 44: Comparison of Plant Hardiness Zones Across the Southeast U.S. from Current Averages and Projected Values for Late Century using SSP5-8.5 (high emissions) Scenario Models. (Source: Fifth National Climate Assessment (Chapter 11))

Tornado

It is uncertain how climate trends will impact the overall frequency of tornadoes, with convective storms (from which tornadoes form) being the least well understood extreme events when it comes to attributing future changes to climate trends and variations. However, some studies suggest that the number of days conducive to severe thunderstorms, which can spawn tornadoes, may increase in certain regions. Additionally, warmer temperatures can provide more energy to storms, potentially leading to more intense tornadoes. Tornado formation depends on the interaction of multiple atmospheric factors, including temperature, humidity, wind shear, and instability. While climate trends may alter some of these factors, the precise impact on tornado formation remains uncertain. Warmer temperatures and increased moisture content in the atmosphere can contribute to more favorable conditions for tornado formation, but other factors like wind shear patterns may also change and reduce the chances for tornado formation.

Using historical data from 1980 to 2022, Montgomery County has a moderate-to high density for tornadoes in Tennessee, with an average of 0.1-0.2 tornado tracks per square mile in most of the county, up to 0.21-0.3 tornado tracks per square mile in the north-northeast portions of the county. Using data from the NOAA Storm Events Database, trend analysis and emerging hotspot analysis were performed on the number of tornadoes reported in each county of Tennessee from 1996 to 2022. There was a decreasing trend in the number of tornadoes observed in Montgomery County, significant to the 90% confidence level. Montgomery County was not identified as an emerging hot spot, although counties to the east with a similarly high number of tornadoes were identified as a sporadic hot spot.

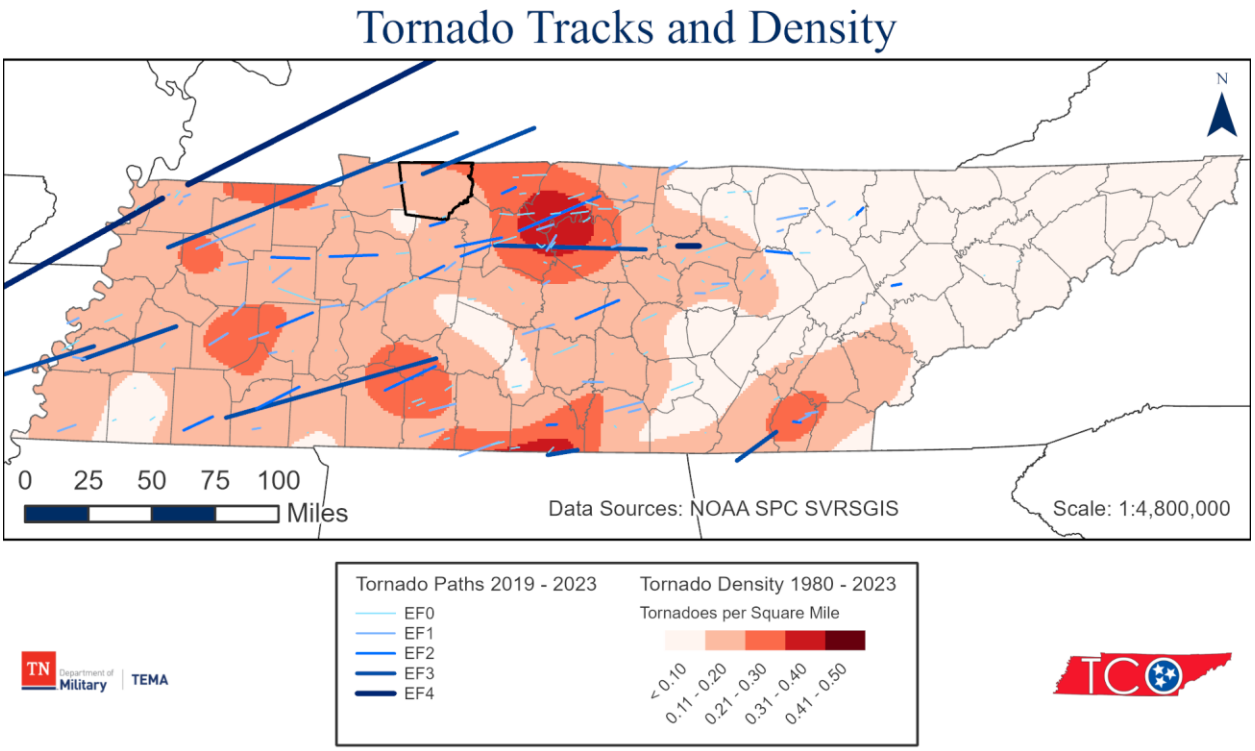


Figure 45: Tornado Tracks from 2019-2023 and the Density of Tornado Tracks across Tennessee from 1980 to 2023, Montgomery County Outlined in Bold.

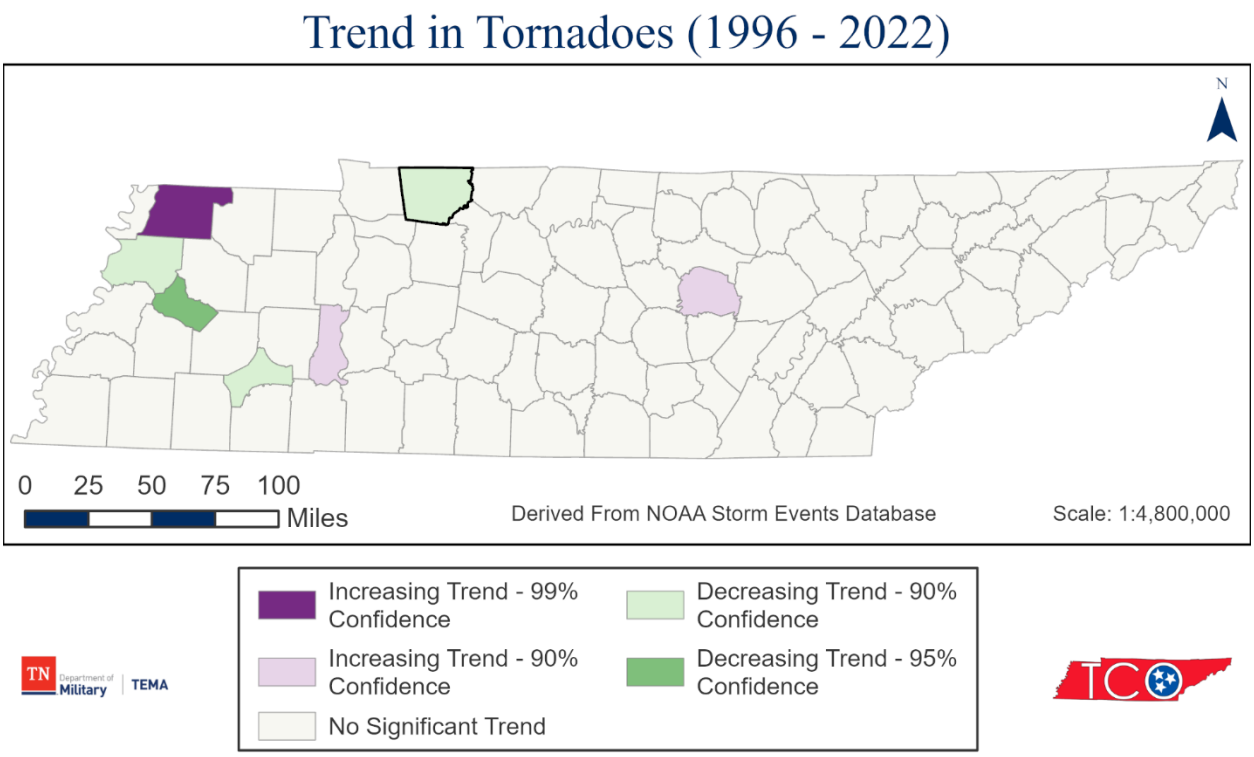


Figure 46: Trends in the Number of Tornadoes Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

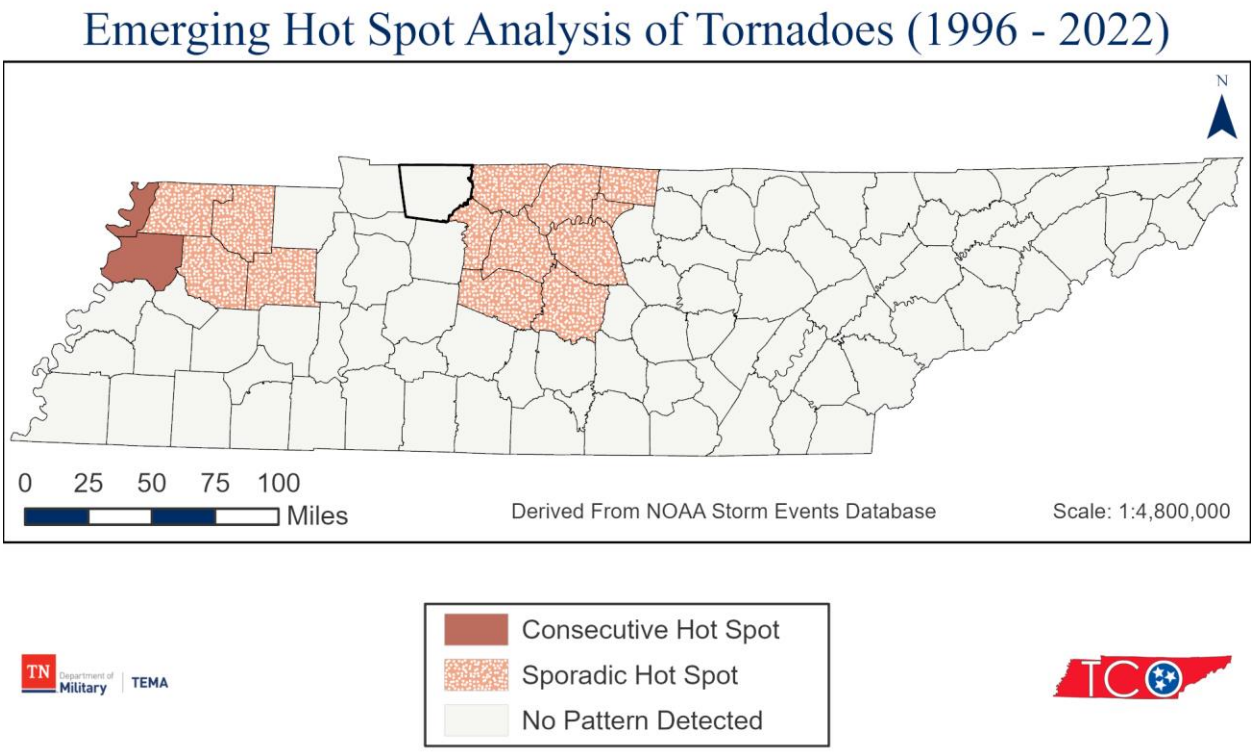


Figure 47: Emerging Hot Spot Analysis based on the Number of Tornadoes per Year Recorded in the NCEI Storm Events Database from 1996 to 2022, Montgomery County Outlined in Bold.

Wildfire

Climate trends and variations are expected to increase the intensity of the hydrological cycle (more precipitation coming in extreme rainfall events with longer dry stretches between precipitation events) which could lead to an increased risk of wildfires for Montgomery County. According to the Climate Mapping Risk Assessment (CMRA) Report, Montgomery County is expected to experience a modest increase in wildfire risk indicators like the number of dry days per year, and high heat days per year, by mid- and late century. The Fifth National Climate Assessment (2023) states that wildfires occur with greater frequency in the Southeast U.S. than in any other region of the country, though southeastern wildfires are often smaller is size compared to those in some other regions of the U.S. However, mitigation measures, particularly prescribed fire can significantly reduce wildfire risk and have been widely adopted across rural communities in the Southeast. They found that a doubling of prescribed fire at the landscape scale reduced wildfire ignitions by a factor of four, and that prescribed fires reduce the potential for crown fires.

Figure 48: Climate Mapping Risk Assessment Report for Wildfire in Montgomery County. (Source: US Climate Resilience Toolkit)

While climate variability will impact the future risk of wildfires in Montgomery County, a stronger impact will likely come from development within the county. Of particular concern is development in the wildland urban interface (WUI) where structures are at an enhanced risk of burning during a wildfire.

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD

Totals: (for 500 results below)								4	25	95.144M	107.50K
MONTGOMERY CO.	MONTGOMERY CO.	TN	03/20/1955	16:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	11/18/1957	04:00	CST	Tornado	F1	0	0	2.50K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/25/1961	18:15	CST	Tornado	F2	0	2	25.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	08/07/1962	08:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	01/19/1964	22:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	09/16/1965	02:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/27/1970	14:00	CST	Tornado	F4	0	0	2.500M	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/03/1970	18:50	CST	Tornado	F1	0	1	25.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	11/19/1970	22:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/07/1971	21:15	CST	Tornado	F0	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/27/1972	23:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/22/1973	19:15	CST	Tornado	F1	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/22/1974	15:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/07/1974	17:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/19/1974	23:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	01/10/1975	13:40	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	03/20/1976	18:45	CST	Thunderstorm Wind	85 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	03/20/1976	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/12/1977	16:30	CST	Thunderstorm Wind	57 kts.	0	0	0.00K	0.00K

MONTGOMERY CO.	MONTGOMERY CO.	TN	07/13/1978	11:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/16/1981	15:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/22/1982	16:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/22/1982	16:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/28/1982	20:20	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/28/1982	20:20	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	12/25/1982	18:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	08/28/1983	17:20	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	03/24/1984	21:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/07/1984	13:00	CST	Tornado	F1	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/23/1984	10:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/05/1985	14:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/05/1985	13:19	CST	Hail	0.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/05/1985	14:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	08/30/1985	19:00	CST	Tornado	F1	0	0	0.25K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	10/02/1986	14:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/30/1987	12:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/05/1987	16:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/09/1988	17:59	CST	Hail	1.75 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/09/1988	18:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K

MONTGOMERY CO.	MONTGOMERY CO.	TN	11/04/1988	16:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/12/1989	13:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	11/15/1989	13:48	CST	Hail	1.00 in.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/03/1990	03:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/06/1990	17:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	09/07/1990	15:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/09/1991	11:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/04/1991	13:20	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/12/1992	17:10	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	06/25/1992	17:00	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/03/1992	01:30	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	09/10/1992	02:20	PST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	05/06/1993	17:30	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
MONTGOMERY W CO.	MONTGOMERY W CO.	TN	04/10/1994	14:40	CST	Hail	0.75 in.	0	0	0.05K	0.00K
Clarksville	MONTGOMERY CO.	TN	06/21/1994	12:22	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
Clarksville	MONTGOMERY CO.	TN	06/22/1994	00:15	CST	Thunderstorm Wind	0 kts.	0	0	0.50K	0.00K
Clarksville	MONTGOMERY CO.	TN	05/14/1995	16:26	CST	Hail	1.75 in.	0	0	10.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	05/14/1995	16:30	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Palmyra	MONTGOMERY CO.	TN	06/06/1995	15:30	CST	Hail	1.75 in.	0	0	5.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	06/06/1995	15:45	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K

Clarksville	MONTGOMERY CO.	TN	06/07/1995	17:50	CST	Thunderstorm Wind	0 kts.	0	0	2.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	07/22/1995	13:45	CST	Thunderstorm Wind	0 kts.	0	0	10.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	07/24/1995	13:15	CST	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
Clarksville	MONTGOMERY CO.	TN	08/08/1995	11:10	CST	Thunderstorm Wind	0 kts.	0	0	0.10K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/06/1996	05:50	CST	Winter Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/06/1996	17:00	CST	Winter Storm		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/16/1996	13:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/16/1996	13:30	CST	Funnel Cloud		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/16/1996	13:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/16/1996	13:45	CST	Thunderstorm Wind		0	0	1.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	03/16/1996	14:00	CST	Thunderstorm Wind		0	0	20.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/19/1996	01:00	CST	Heavy Snow		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	04/20/1996	01:40	CST	Thunderstorm Wind		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/20/1996	01:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	04/20/1996	01:45	CST	Thunderstorm Wind		0	0	0.00K	0.00K
FREDONIA	MONTGOMERY CO.	TN	04/20/1996	01:45	CST	Hail	1.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/27/1996	13:30	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/15/1996	17:25	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	06/23/1996	19:58	CST	Thunderstorm Wind		0	0	0.50K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/23/1996	20:05	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	07/21/1996	19:33	CST	Thunderstorm Wind	50 kts.	0	0	3.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/29/1996	10:45	CST	Thunderstorm Wind		0	0	0.30K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	09/27/1996	02:45	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/07/1996	12:30	CST	Thunderstorm Wind	50 kts.	0	0	0.50K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	12/16/1996	22:35	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/24/1997	15:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/04/1997	01:40	CST	Flash Flood		0	0	10.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	02/04/1997	03:06	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	02/04/1997	05:45	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	02/21/1997	07:40	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	03/01/1997	15:00	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	03/01/1997	21:20	CST	Flash Flood		0	0	10.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/02/1997	00:00	CST	Flood		0	0	500.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/02/1997	00:30	CST	Flash Flood		0	0	500.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/02/1997	15:15	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	03/05/1997	13:00	CST	Flash Flood		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	04/30/1997	20:25	CST	Hail	0.88 in.	0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	04/30/1997	20:33	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	05/26/1997	08:55	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/13/1997	18:00	CST	Thunderstorm Wind		0	0	20.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	06/13/1997	23:30	CST	Flash Flood		0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	06/17/1997	18:13	CST	Tornado	F0	0	0	130.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/28/1997	08:33	CST	Flash Flood		0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/30/1997	14:05	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/04/1997	03:00	CST	Thunderstorm Wind		0	0	15.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/04/1997	03:25	CST	Thunderstorm Wind		0	0	1.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	07/14/1997	20:15	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/14/1997	20:15	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/28/1997	17:40	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MC ALLISTERS XRDS	MONTGOMERY CO.	TN	04/03/1998	13:58	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/03/1998	14:09	CST	Hail	1.75 in.	0	0	0.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	04/03/1998	14:10	CST	Tornado	F2	0	0	100.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/03/1998	14:15	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	04/03/1998	14:20	CST	Thunderstorm Wind	80 kts.	0	0	100.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/08/1998	11:00	CST	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
NORTHWEST PORTION	MONTGOMERY CO.	TN	04/08/1998	11:05	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	04/16/1998	09:18	CST	Tornado	F2	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/21/1998	17:00	CST	Thunderstorm Wind		0	0	80.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/21/1998	17:10	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
SANGO	MONTGOMERY CO.	TN	05/21/1998	17:15	CST	Hail	1.00 in.	0	0	0.00K	0.00K

WOODLAWN	MONTGOMERY CO.	TN	05/25/1998	18:20	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MC ALLISTERS XRDS	MONTGOMERY CO.	TN	05/31/1998	21:30	CST	Thunderstorm Wind	57 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/10/1998	10:10	CST	Flash Flood		0	0	0.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	06/10/1998	10:10	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/23/1998	19:43	CST	Flash Flood		0	0	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/10/1998	09:45	CST	Thunderstorm Wind	50 kts.	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/24/1998	09:00	CST	Winter Storm		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	01/17/1999	19:28	CST	Tornado	F1	0	0	20.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/17/1999	19:53	CST	Thunderstorm Wind		0	0	5.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/22/1999	04:15	CST	Tornado	F3	0	5	72.700M	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	01/22/1999	16:30	CST	Flash Flood		0	0	0.00K	0.00K
SANGO	MONTGOMERY CO.	TN	02/07/1999	04:00	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	02/11/1999	20:10	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/05/1999	17:58	CST	Tornado	F0	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/05/1999	22:00	CST	Flash Flood		0	0	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/04/1999	21:30	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/04/1999	21:57	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/04/1999	22:10	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	06/04/1999	22:23	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/28/1999	13:45	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	07/01/1999	20:10	CST	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	07/01/1999	22:35	CST	Thunderstorm Wind	50 kts.	0	0	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/02/1999	08:15	CST	Flash Flood		0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	07/02/1999	10:00	CST	Flash Flood		0	0	0.00K	0.00K
SOUTHEAST PORTION	MONTGOMERY CO.	TN	08/12/1999	15:15	CST	Funnel Cloud		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/22/2000	14:30	CST	Winter Storm		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	02/18/2000	18:20	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/17/2000	01:00	CST	Thunderstorm Wind	60 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/20/2000	16:00	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	05/04/2000	16:49	CST	Hail	1.50 in.	0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	05/04/2000	16:51	CST	Hail	1.25 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2000	19:00	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/13/2000	01:45	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	05/24/2000	20:42	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/26/2000	18:10	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/27/2000	14:10	CST	Tornado	F0	0	0	0.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	05/27/2000	14:20	CST	Thunderstorm Wind	60 kts. E	0	0	10.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	07/12/2000	12:45	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/03/2000	18:05	CST	Thunderstorm Wind	52 kts. M	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/03/2000	18:10	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/04/2000	03:30	CST	Thunderstorm Wind	60 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/09/2000	11:05	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/24/2001	23:30	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	05/07/2001	15:40	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	05/20/2001	04:00	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	06/04/2001	19:58	CST	High Wind	52 kts. E	0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	06/27/2001	14:41	CST	Thunderstorm Wind	61 kts. E	0	0	0.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	07/05/2001	08:32	CST	Hail	1.50 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/18/2001	16:50	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/26/2001	20:00	CST	Thunderstorm Wind	55 kts. E	0	0	5.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	09/06/2001	18:00	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	10/24/2001	18:15	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	11/24/2001	09:10	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
WEST PORTION	MONTGOMERY CO.	TN	11/29/2001	02:00	CST	Flash Flood		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/12/2001	16:55	CST	Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	03/17/2002	23:00	CST	Flash Flood		0	0	0.00K	0.00K
SOUTH PORTION	MONTGOMERY CO.	TN	03/20/2002	06:00	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/28/2002	04:00	CST	Thunderstorm Wind	55 kts. E	0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	05/13/2002	08:20	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/02/2002	12:45	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
SOUTH PORTION	MONTGOMERY CO.	TN	07/02/2002	23:19	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/02/2002	23:30	CST	Lightning		0	0	200.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	07/02/2002	23:35	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/03/2002	14:54	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	07/10/2002	12:35	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	09/27/2002	00:12	CST	Flood		1	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/10/2002	00:50	CST	Tornado	F0	0	0	0.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	11/10/2002	01:00	CST	Tornado	F1	2	0	100.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	11/10/2002	18:00	CST	Thunderstorm Wind	60 kts. E	0	0	0.00K	0.00K

MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/04/2002	06:00	CST	Winter Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/16/2003	11:00	CST	Heavy Snow		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/09/2003	21:00	CST	Heavy Snow		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2003	22:55	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2003	23:44	CST	Thunderstorm Wind	65 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2003	23:45	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2003	23:53	CST	Tornado	F3	0	1	750.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/05/2003	00:15	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/05/2003	13:54	CST	Hail	1.25 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/07/2003	00:25	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/07/2003	00:25	CST	Thunderstorm Wind	50 kts. EG	0	0	250.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/18/2003	03:30	CST	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	MONTGOMERY CO.	TN	06/18/2003	04:00	CST	Flash Flood		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/28/2003	17:25	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/28/2003	17:30	CST	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/28/2003	17:30	CST	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/29/2003	19:00	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

COUNTYWIDE	MONTGOMERY CO.	TN	03/20/2004	13:10	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/02/2004	18:53	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/02/2004	19:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/02/2004	19:05	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/02/2004	19:12	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/04/2004	14:25	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/06/2004	14:50	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/13/2004	20:15	CST	Thunderstorm Wind	78 kts. EG	0	0	5.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/04/2004	21:25	CST	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/04/2004	21:35	CST	Flash Flood		0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/04/2004	21:40	CST	Flash Flood		0	0	1.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	10/14/2004	16:16	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	10/14/2004	16:22	CST	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
SANGO	MONTGOMERY CO.	TN	10/14/2004	16:32	CST	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	12/07/2004	03:43	CST	Flash Flood		0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/22/2004	20:00	CST	Winter Storm		0	6	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/13/2005	07:30	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	04/22/2005	14:45	CST	Hail	0.88 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/19/2005	12:40	CST	Thunderstorm Wind	60 kts. EG	0	1	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/19/2005	12:52	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/19/2005	12:55	CST	Hail	1.00 in.	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	08/30/2005	01:00	CST	Strong Wind	35 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/06/2005	03:45	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	11/15/2005	16:35	CST	Tornado	F1	0	0	500.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	11/15/2005	16:36	CST	Tornado	F1	0	0	600.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	11/15/2005	16:37	CST	Tornado	F0	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/15/2005	16:44	CST	Tornado	F2	0	0	500.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/10/2006	22:00	CST	Heavy Snow		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	04/02/2006	19:14	CST	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
CUMBERLAND HGTS	MONTGOMERY CO.	TN	04/02/2006	19:14	CST	Thunderstorm Wind	55 kts. EG	0	0	2.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	04/02/2006	22:50	CST	Thunderstorm Wind	55 kts. EG	0	0	4.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/02/2006	22:55	CST	Thunderstorm Wind	55 kts. EG	0	0	2.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	04/02/2006	22:55	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/02/2006	23:00	CST	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	04/07/2006	20:45	CST	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/14/2006	20:00	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/14/2006	20:00	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	09/23/2006	02:50	CST	Thunderstorm Wind	65 kts. EG	0	0	50.00K	80.00K
CLARKSVILLE	MONTGOMERY CO.	TN	09/23/2006	03:00	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	09/23/2006	03:00	CST	Tornado	F0	0	0	40.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	09/27/2006	21:00	CST	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/20/2007	21:45	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/20/2007	21:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	04/24/2007	12:17	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	04/24/2007	12:17	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.20K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/24/2007	12:25	CST-6	Hail	2.50 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/24/2007	12:25	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/24/2007	12:29	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/24/2007	12:40	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	05/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/15/2007	18:45	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.30K	0.00K

MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	06/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	06/02/2007	16:15	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/24/2007	12:57	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.20K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	07/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	08/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	09/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	10/01/2007	00:00	CST-6	Drought		0	0	0.00K	0.00K
RINGGOLD	MONTGOMERY CO.	TN	10/18/2007	21:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.50K
WOODLAWN	MONTGOMERY CO.	TN	10/18/2007	21:34	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	1.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/10/2008	12:36	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/29/2008	18:10	CST-6	High Wind	50 kts. EG	0	0	0.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	01/29/2008	18:22	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/29/2008	18:45	CST-6	High Wind	40 kts. ES	0	0	60.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/05/2008	21:43	CST-6	Thunderstorm Wind	70 kts. EG	0	0	100.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/07/2008	18:00	CST-6	Winter Storm		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/10/2008	23:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
SHILOH	MONTGOMERY CO.	TN	05/02/2008	22:57	CST-6	Tornado	EF1	0	0	5.00K	0.00K

SHILOH	MONTGOMERY CO.	TN	05/02/2008	23:00	CST-6	Tornado	EF1	0	0	20.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	05/02/2008	23:05	CST-6	Tornado	EF1	0	3	20.00K	0.00K
CUMBERLAND HGTS	MONTGOMERY CO.	TN	05/02/2008	23:10	CST-6	Tornado	EF1	0	0	100.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/02/2008	23:15	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/12/2008	13:10	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.20K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/07/2008	15:25	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/22/2008	09:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	0.50K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/27/2009	00:00	CST-6	Ice Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/28/2009	06:00	CST-6	Winter Weather		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/18/2009	00:37	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	03/28/2009	15:53	CST-6	Funnel Cloud		0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	03/28/2009	15:55	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/28/2009	15:55	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
PARK LANE	MONTGOMERY CO.	TN	03/28/2009	16:01	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
PARK LANE	MONTGOMERY CO.	TN	03/28/2009	16:01	CST-6	Funnel Cloud		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/28/2009	16:05	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/28/2009	16:15	CST-6	Funnel Cloud		0	0	0.00K	0.00K
BRIARWOOD	MONTGOMERY CO.	TN	04/10/2009	10:44	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/08/2009	12:30	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	05/09/2009	00:30	CST-6	Thunderstorm Wind	60 kts. EG	0	0	100.00K	0.00K
ROUND POND	MONTGOMERY CO.	TN	05/09/2009	00:35	CST-6	Thunderstorm Wind	69 kts. EG	0	0	150.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/09/2009	01:40	CST-6	Flash Flood		0	0	300.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	06/16/2009	12:35	CST-6	Thunderstorm Wind	56 kts. EG	0	0	7.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/16/2009	18:57	CST-6	Funnel Cloud		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/17/2009	18:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/17/2009	19:19	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	06/17/2009	19:26	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
SALEM	MONTGOMERY CO.	TN	07/04/2009	18:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/12/2009	13:30	CST-6	Lightning		0	0	75.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/12/2009	17:35	CST-6	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	07/15/2009	14:04	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
HAMPTON STATION	MONTGOMERY CO.	TN	07/30/2009	21:18	CST-6	Flash Flood		0	0	5.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	08/04/2009	18:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
OAKRIDGE	MONTGOMERY CO.	TN	09/22/2009	11:00	CST-6	Flood		0	0	25.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/29/2010	08:00	CST-6	Heavy Snow		0	0	250.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/08/2010	17:00	CST-6	Heavy Snow		0	0	0.00K	0.00K

ST BETHLEHEM	MONTGOMERY CO.	TN	04/24/2010	15:52	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/24/2010	15:53	CST-6	Thunderstorm Wind	55 kts. EG	0	2	18.00K	0.00K
HAMPTON STATION	MONTGOMERY CO.	TN	04/24/2010	16:03	CST-6	Thunderstorm Wind	61 kts. EG	0	0	5.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	05/01/2010	09:25	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	05/01/2010	15:40	CST-6	Flood		1	0	1.900M	1.00K
PORT ROYAL	MONTGOMERY CO.	TN	05/01/2010	21:25	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/14/2010	10:25	CST-6	Hail	1.50 in.	0	0	0.00K	0.00K
SANGO	MONTGOMERY CO.	TN	05/14/2010	10:30	CST-6	Hail	2.00 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/20/2010	10:19	CST-6	Flash Flood		0	0	50.00K	10.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/17/2010	14:29	CST-6	Thunderstorm Wind	55 kts. EG	0	0	15.00K	0.00K
SALEM	MONTGOMERY CO.	TN	07/11/2010	16:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	08/04/2010	12:00	CST-6	Excessive Heat		0	0	0.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	10/26/2010	09:11	CST-6	Funnel Cloud		0	0	0.00K	0.00K
BELDON	MONTGOMERY CO.	TN	10/26/2010	10:15	CST-6	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	11/02/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	11/25/2010	15:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
HAMPTON STATION	MONTGOMERY CO.	TN	11/25/2010	15:45	CST-6	Thunderstorm Wind	70 kts. EG	0	0	100.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/01/2010	00:00	CST-6	Drought		0	0	0.00K	0.00K

MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/12/2010	05:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/24/2010	19:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/10/2011	00:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/20/2011	15:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/26/2011	01:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/01/2011	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/07/2011	09:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/09/2011	13:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
BELDON	MONTGOMERY CO.	TN	02/24/2011	21:15	CST-6	Thunderstorm Wind	60 kts. EG	0	0	10.00K	0.00K
KENWOOD	MONTGOMERY CO.	TN	02/24/2011	21:15	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	02/24/2011	22:15	CST-6	Flood		0	0	1.00K	0.00K
ROUND POND	MONTGOMERY CO.	TN	02/28/2011	06:15	CST-6	Funnel Cloud		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	02/28/2011	06:50	CST-6	Flash Flood		0	0	1.00K	1.00K
WOODLAWN	MONTGOMERY CO.	TN	04/19/2011	23:44	CST-6	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
SHADY GROVE	MONTGOMERY CO.	TN	04/19/2011	23:58	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
SANGO	MONTGOMERY CO.	TN	04/20/2011	00:10	CST-6	Thunderstorm Wind	52 kts. EG	0	0	11.00K	3.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/26/2011	00:04	CST-6	Thunderstorm Wind	52 kts. MG	0	0	0.00K	0.00K

ST BETHLEHEM	MONTGOMERY CO.	TN	04/26/2011	00:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/25/2011	21:20	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	06/28/2011	02:05	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
NEW PROVIDENCE	MONTGOMERY CO.	TN	08/21/2011	01:35	CST-6	Thunderstorm Wind	61 kts. EG	0	0	50.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/12/2012	15:00	CST-6	Winter Weather		0	0	25.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/23/2012	00:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/23/2012	00:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	25.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/02/2012	15:05	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	03/02/2012	15:10	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
BRIARWOOD	MONTGOMERY CO.	TN	03/08/2012	16:56	CST-6	Flash Flood		0	0	1.00K	1.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/06/2012	15:11	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
PARK LANE	MONTGOMERY CO.	TN	05/29/2012	15:50	CST-6	Thunderstorm Wind	73 kts. EG	0	0	30.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	05/29/2012	15:55	CST-6	Thunderstorm Wind	67 kts. EG	0	0	30.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/29/2012	16:00	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	05/29/2012	16:00	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	10.00K
SHILOH	MONTGOMERY CO.	TN	05/29/2012	16:15	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K

RINGGOLD	MONTGOMERY CO.	TN	06/11/2012	16:19	CST-6	Thunderstorm Wind	52 kts. EG	0	0	8.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	06/26/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	07/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
EXCELL	MONTGOMERY CO.	TN	07/04/2012	15:50	CST-6	Thunderstorm Wind	55 kts. EG	0	0	50.00K	0.00K
HICKORY PT	MONTGOMERY CO.	TN	07/04/2012	16:15	CST-6	Thunderstorm Wind	55 kts. EG	0	0	20.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/05/2012	15:55	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/06/2012	12:36	CST-6	Thunderstorm Wind	58 kts. MG	0	0	0.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/06/2012	13:04	CST-6	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/06/2012	13:05	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/08/2012	19:30	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
SANGO	MONTGOMERY CO.	TN	07/18/2012	15:35	CST-6	Lightning		0	0	175.00K	0.00K
SANGO	MONTGOMERY CO.	TN	07/18/2012	15:35	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
STRINGTOWN	MONTGOMERY CO.	TN	07/18/2012	15:40	CST-6	Lightning		0	0	35.00K	0.00K
MC ALLISTERS XRDS	MONTGOMERY CO.	TN	07/18/2012	16:15	CST-6	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
SANGO	MONTGOMERY CO.	TN	07/19/2012	20:00	CST-6	Lightning		0	0	175.00K	0.00K
KENWOOD	MONTGOMERY CO.	TN	07/19/2012	23:35	CST-6	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K

BRIARWOOD	MONTGOMERY CO.	TN	07/19/2012	23:40	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
ROUND POND	MONTGOMERY CO.	TN	07/19/2012	23:45	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	08/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
BELDON	MONTGOMERY CO.	TN	08/05/2012	18:50	CST-6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	08/13/2012	08:31	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/16/2012	20:20	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	09/01/2012	00:00	CST-6	Drought		0	0	0.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	09/07/2012	22:40	CST-6	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	09/07/2012	22:43	CST-6	Thunderstorm Wind	55 kts. EG	0	0	25.00K	0.00K
EXCELL	MONTGOMERY CO.	TN	09/07/2012	22:53	CST-6	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/14/2013	15:53	CST-6	Winter Weather		0	0	3.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/15/2013	17:00	CST-6	Ice Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/15/2013	17:00	CST-6	Winter Weather		0	0	10.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/15/2013	17:00	CST-6	Winter Weather		0	0	10.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/25/2013	01:00	CST-6	Winter Weather		0	0	5.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/25/2013	01:00	CST-6	Winter Weather		0	0	50.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/01/2013	18:00	CST-6	Winter Weather		0	0	0.00K	0.00K
STRINGTOWN	MONTGOMERY CO.	TN	03/10/2013	15:00	CST-6	Heavy Rain		0	0	0.00K	0.00K

CLARKSVILLE ARPT	MONTGOMERY CO.	TN	03/24/2013	11:20	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	04/27/2013	18:20	CST-6	Thunderstorm Wind	48 kts. EG	0	0	3.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	04/27/2013	19:00	CST-6	Flash Flood		0	0	1.000M	0.00K
OAKWOOD	MONTGOMERY CO.	TN	07/05/2013	20:15	CST-6	Flash Flood		0	0	2.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/18/2013	15:33	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/18/2013	15:38	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	07/18/2013	16:01	CST-6	Thunderstorm Wind	43 kts. EG	0	0	1.00K	0.00K
KENWOOD	MONTGOMERY CO.	TN	11/17/2013	17:41	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/06/2013	16:00	CST-6	Ice Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/07/2013	21:00	CST-6	Ice Storm		0	0	20.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	12/21/2013	20:19	CST-6	Thunderstorm Wind	52 kts. MG	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/02/2014	16:30	CST-6	Winter Weather		0	0	0.00K	0.00K
BRIARWOOD	MONTGOMERY CO.	TN	02/04/2014	08:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/07/2014	21:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/02/2014	16:00	CST-6	Winter Storm		0	0	0.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	06/04/2014	21:50	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	08/20/2014	15:21	CST-6	Thunderstorm Wind	62 kts. MG	0	0	0.00K	0.00K

CLARKSVILLE ARPT	MONTGOMERY CO.	TN	08/20/2014	15:23	CST-6	Thunderstorm Wind	65 kts. MG	0	0	0.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	08/20/2014	15:40	CST-6	Thunderstorm Wind	61 kts. EG	0	0	5.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/20/2014	15:44	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	10/13/2014	16:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
OAKRIDGE	MONTGOMERY CO.	TN	10/13/2014	16:50	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	10/13/2014	16:52	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
EXCELL	MONTGOMERY CO.	TN	10/13/2014	17:09	CST-6	Tornado	EF1	0	0	50.00K	0.00K
BEL AIR ESTATES	MONTGOMERY CO.	TN	10/13/2014	17:10	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	10/13/2014	17:10	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
SANGO	MONTGOMERY CO.	TN	10/13/2014	17:15	CST-6	Funnel Cloud		0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	10/13/2014	17:15	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	11/17/2014	04:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/23/2015	18:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/16/2015	00:00	CST-6	Winter Storm		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/18/2015	01:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/20/2015	12:00	CST-6	Winter Storm		0	0	10.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/04/2015	15:00	CST-6	Winter Storm		0	0	0.00K	0.00K

CLARKSVILLE	MONTGOMERY CO.	TN	04/19/2015	23:07	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	05/30/2015	16:10	CST-6	Thunderstorm Wind	52 kts. EG	0	0	5.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	05/30/2015	16:13	CST-6	Thunderstorm Wind	61 kts. EG	0	0	50.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/08/2015	12:00	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
SANGO	MONTGOMERY CO.	TN	06/08/2015	12:04	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MC ALLISTERS XRDS	MONTGOMERY CO.	TN	07/07/2015	15:31	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/28/2015	15:20	CST-6	Strong Wind	40 kts. EG	0	0	5.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/09/2016	22:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/20/2016	00:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/21/2016	21:00	CST-6	Winter Storm		0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/02/2016	15:55	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/08/2016	12:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	02/14/2016	07:00	CST-6	Winter Weather		0	0	0.00K	0.00K
OAKRIDGE	MONTGOMERY CO.	TN	04/27/2016	16:09	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	04/27/2016	16:25	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
SANGO	MONTGOMERY CO.	TN	05/01/2016	14:55	CST-6	Thunderstorm Wind	52 kts. EG	0	0	3.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	05/10/2016	19:15	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K

FT CAMPBELL	MONTGOMERY CO.	TN	05/25/2016	17:00	CST-6	Flood		0	0	0.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	06/15/2016	14:21	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/15/2016	14:22	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/28/2016	14:30	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	06/28/2016	14:35	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	07/06/2016	05:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
KENWOOD	MONTGOMERY CO.	TN	07/06/2016	14:13	CST-6	Thunderstorm Wind	52 kts. EG	0	0	10.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/07/2016	00:10	CST-6	Heavy Rain		0	0	0.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	07/07/2016	02:00	CST-6	Lightning		0	0	95.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	07/07/2016	02:00	CST-6	Flash Flood		0	0	1.000M	0.00K
STRINGTOWN	MONTGOMERY CO.	TN	07/08/2016	18:58	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/08/2016	19:09	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	07/19/2016	14:00	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
EXCELL	MONTGOMERY CO.	TN	07/19/2016	14:03	CST-6	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
BRIARWOOD	MONTGOMERY CO.	TN	07/27/2016	05:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
STRINGTOWN	MONTGOMERY CO.	TN	07/27/2016	06:00	CST-6	Heavy Rain		0	0	0.00K	0.00K
KENWOOD	MONTGOMERY CO.	TN	07/28/2016	03:00	CST-6	Flood		0	0	0.00K	0.00K

SAILORS REST	MONTGOMERY CO.	TN	08/01/2016	15:36	CST-6	Thunderstorm Wind	48 kts. EG	0	0	3.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	08/03/2016	12:55	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	09/10/2016	14:18	CST-6	Thunderstorm Wind	48 kts. EG	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	11/01/2016	00:00	CST-6	Drought		0	0	0.00K	0.00K
SHADY GROVE	MONTGOMERY CO.	TN	11/28/2016	17:17	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
HAMPTON STATION	MONTGOMERY CO.	TN	11/28/2016	17:29	CST-6	Thunderstorm Wind	43 kts. EG	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/01/2016	00:00	CST-6	Drought		0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	12/17/2016	20:26	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	12/18/2016	02:27	CST-6	Winter Weather		0	0	0.00K	0.00K
ROUND POND	MONTGOMERY CO.	TN	02/07/2017	21:11	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
BEL AIR ESTATES	MONTGOMERY CO.	TN	03/01/2017	06:28	CST-6	Thunderstorm Wind	65 kts. EG	0	2	40.00K	0.00K
CLARKSVILLE ARPT	MONTGOMERY CO.	TN	03/01/2017	06:31	CST-6	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	03/01/2017	06:33	CST-6	Thunderstorm Wind	56 kts. EG	0	0	2.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/01/2017	06:33	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
KENNEDY	MONTGOMERY CO.	TN	03/01/2017	06:34	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
ROUND POND	MONTGOMERY CO.	TN	03/01/2017	06:35	CST-6	Thunderstorm Wind	56 kts. EG	0	0	1.00K	0.00K

ST BETHLEHEM	MONTGOMERY CO.	TN	03/01/2017	06:35	CST-6	Thunderstorm Wind	56 kts. EG	0	0	2.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	03/01/2017	06:36	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
SANGO	MONTGOMERY CO.	TN	03/01/2017	06:41	CST-6	Thunderstorm Wind	52 kts. EG	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/09/2017	20:47	CST-6	Hail	1.00 in.	0	0	1.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	03/09/2017	20:53	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	03/11/2017	00:00	CST-6	Winter Weather		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	04/03/2017	01:08	CST-6	High Wind	51 kts. MG	0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	04/05/2017	16:46	CST-6	Strong Wind	40 kts. EG	0	0	1.00K	0.00K
STRINGTOWN	MONTGOMERY CO.	TN	05/27/2017	17:07	CST-6	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/27/2017	17:12	CST-6	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	06/04/2017	23:50	CST-6	Flash Flood		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	09/01/2017	00:00	CST-6	Strong Wind	43 kts. MG	0	0	10.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	09/01/2017	02:00	CST-6	Flash Flood		0	0	20.00K	0.00K
WALNUT GROVE	MONTGOMERY CO.	TN	09/02/2017	15:30	CST-6	Heavy Rain		0	0	0.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	11/18/2017	15:49	CST-6	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	12/23/2017	04:00	CST-6	Flash Flood		0	0	0.00K	0.00K
MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/12/2018	00:00	CST-6	Winter Storm		0	0	0.00K	0.00K

MONTGOMERY (ZONE)	MONTGOMERY (ZONE)	TN	01/15/2018	19:00	CST-6	Winter Storm		0	0	0.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	02/24/2018	20:50	CST-6	Tornado	EF1	0	0	1.000M	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	02/24/2018	21:00	CST-6	Thunderstorm Wind	61 kts. EG	0	0	25.00K	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	02/24/2018	21:03	CST-6	Tornado	EF2	0	2	7.000M	0.00K
Totals: (for 500 results above)								4	25	95.144M	107.50K
Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD

Location	County/Zone	St.	Date	Time	T.Z.	Type	Mag	Dth	Inj	PrD	CrD
Totals:								6	76	106.263M	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	11/18/1957	04:00	CST	Tornado	F1	0	0	2.50K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/25/1961	18:15	CST	Tornado	F2	0	2	25.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	04/27/1970	14:00	CST	Tornado	F4	0	0	2.500M	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	07/03/1970	18:50	CST	Tornado	F1	0	1	25.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/07/1971	21:15	CST	Tornado	F0	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/22/1973	19:15	CST	Tornado	F1	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	05/07/1984	13:00	CST	Tornado	F1	0	0	0.00K	0.00K
MONTGOMERY CO.	MONTGOMERY CO.	TN	08/30/1985	19:00	CST	Tornado	F1	0	0	0.25K	0.00K
FT CAMPBELL	MONTGOMERY CO.	TN	06/17/1997	18:13	CST	Tornado	F0	0	0	130.00K	0.00K
HILLTOP	MONTGOMERY CO.	TN	04/03/1998	14:10	CST	Tornado	F2	0	0	100.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	04/16/1998	09:18	CST	Tornado	F2	0	0	10.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	01/17/1999	19:28	CST	Tornado	F1	0	0	20.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	01/22/1999	04:15	CST	Tornado	F3	0	5	72.700M	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/05/1999	17:58	CST	Tornado	F0	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/27/2000	14:10	CST	Tornado	F0	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/10/2002	00:50	CST	Tornado	F0	0	0	0.00K	0.00K
PORT ROYAL	MONTGOMERY CO.	TN	11/10/2002	01:00	CST	Tornado	F1	2	0	100.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	05/04/2003	23:53	CST	Tornado	F3	0	1	750.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	11/15/2005	16:35	CST	Tornado	F1	0	0	500.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	11/15/2005	16:36	CST	Tornado	F1	0	0	600.00K	0.00K
CUNNINGHAM	MONTGOMERY CO.	TN	11/15/2005	16:37	CST	Tornado	F0	0	0	0.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	11/15/2005	16:44	CST	Tornado	F2	0	0	500.00K	0.00K
CLARKSVILLE	MONTGOMERY CO.	TN	09/23/2006	03:00	CST	Tornado	F0	0	0	40.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	05/02/2008	22:57	CST-6	Tornado	EF1	0	0	5.00K	0.00K
SHILOH	MONTGOMERY CO.	TN	05/02/2008	23:00	CST-6	Tornado	EF1	0	0	20.00K	0.00K
PALMYRA	MONTGOMERY CO.	TN	05/02/2008	23:05	CST-6	Tornado	EF1	0	3	20.00K	0.00K
CUMBERLAND HGTS	MONTGOMERY CO.	TN	05/02/2008	23:10	CST-6	Tornado	EF1	0	0	100.00K	0.00K
EXCELL	MONTGOMERY CO.	TN	10/13/2014	17:09	CST-6	Tornado	EF1	0	0	50.00K	0.00K
DOTSONVILLE	MONTGOMERY CO.	TN	02/24/2018	20:50	CST-6	Tornado	EF1	0	0	1.000M	0.00K
ST BETHLEHEM	MONTGOMERY CO.	TN	02/24/2018	21:03	CST-6	Tornado	EF2	0	2	7.000M	0.00K
MC ALLISTERS XRDS	MONTGOMERY CO.	TN	06/19/2019	17:10	CST-6	Tornado	EF0	0	0	15.00K	0.00K
OAKWOOD	MONTGOMERY CO.	TN	12/09/2023	13:29	CST-6	Tornado	EF0	0	0	50.00K	0.00K
WOODLAWN	MONTGOMERY CO.	TN	12/09/2023	13:41	CST-6	Tornado	EF3	4	62	20.000M	0.00K
Totals:								6	76	106.263M	0.00K

APPENDIX C: HAZUS/FIRM PANELS

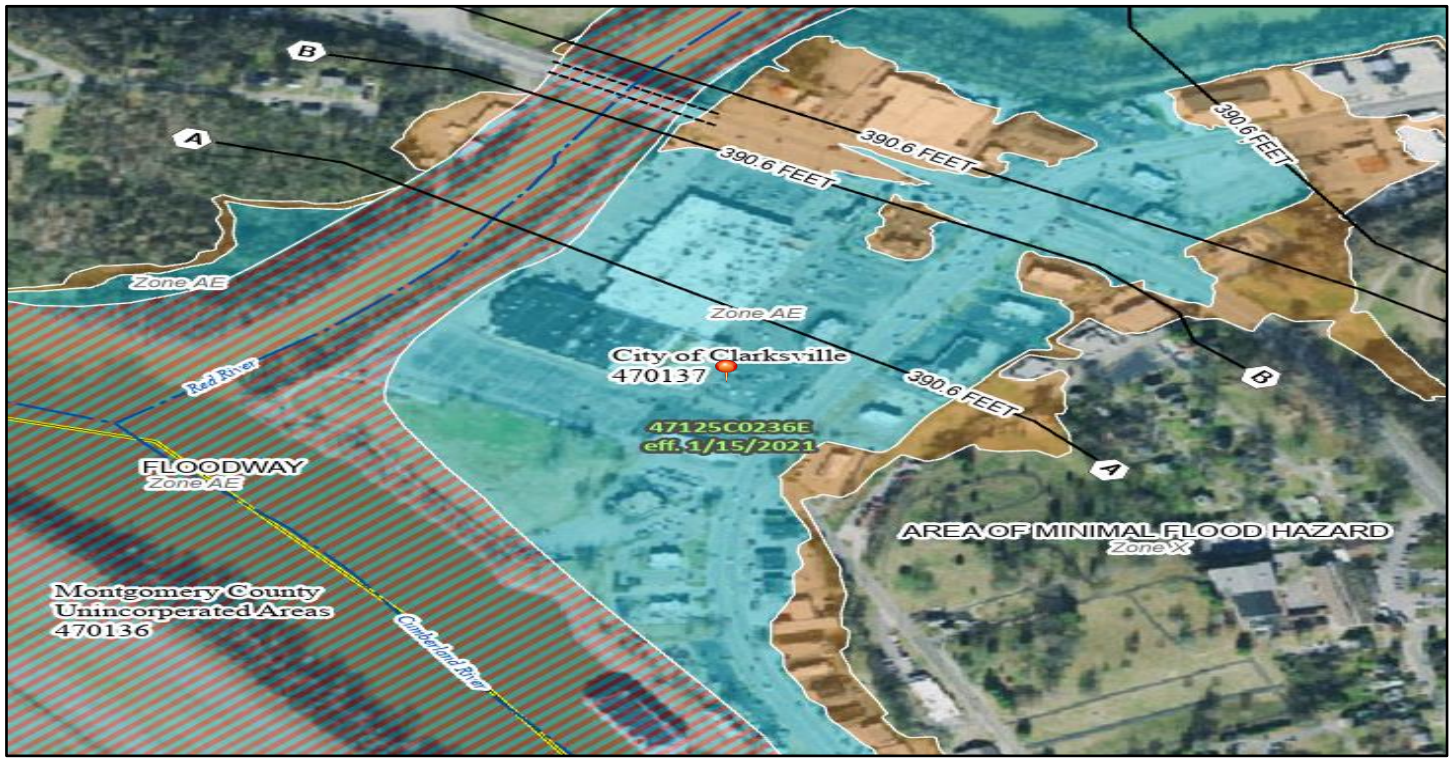
HAZUS/FIRM Panels

City of Clarksville

APPENDIX C: HAZUS/FIRM PANELS

APPENDIX C: HAZUS/FIRM PANELS

MONTGOMERY COUNTY




Montgomery County
Unincorperated Areas
470136
City of Clarksville
470137
AREA OF MINIMAL FLOOD HAZARD
Zone X
47125C0235D
eff. 3/18/2008
Zone A


City of Clarksville
470137
Zone A
47125C0235D
eff. 3/18/2008
Montgomery County
Unincorperated Areas
470136
AREA OF MINIMAL FLOOD HAZARD
Zone X

APPENDIX D: References

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