

**February 2024**

## **Kansas Region H Hazard Mitigation Plan**

**Allen County**

**Bourbon County**

**Cherokee County**

**Crawford County**

**Elk County**

**Greenwood County**

**Labette County**

**Montgomery County**

**Wilson County**

**Woodson County**



**Prepared By:**

**Blue Umbrella Solutions**

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- A Participating Jurisdiction Adoption Documentation and FEMA Region VII Approval Documentation
- B Community Feedback
- C FEMA National Risk Index Census Tract Data
- D Jurisdiction Hazard Mitigation Actions

## List of Commonly Used Acronyms

<b>Acronym</b>	<b>Meaning</b>
ASCE	American Society of Civil Engineers
BRIC	Building Resilient Infrastructure and Communities
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CRS	Community Rating System
DMA	Disaster Mitigation Act
EAL	Estimated Annual Loss
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance
GIS	Geographic Information System
HHPD	Rehabilitation Of High Hazard Potential Dam Grant Program
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
IBC	International Building Code
LEPC	Local Emergency Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRI	National Risk Index
NWS	National Weather Service
RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
MPC	Mitigation Planning Committee
SRL	Severe Repetitive Loss
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	United States Geologic Survey
WUI	Wildland/Urban Interface

# Section 1 – Introduction, Assurances, and Adoption

## 1.1 Introduction

Mitigation is commonly defined as sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. Hazard mitigation planning provides communities with a roadmap to aid in the creation and revision of policies and procedures, and the use of available resources, to provide long-term, tangible benefits to the community. A well-designed hazard mitigation plan provides communities with realistic actions that can be taken to reduce potential vulnerability and exposure to identified hazards.

This Multi-Jurisdictional Natural Hazard Mitigation Plan (HMP) was prepared to provide sustained actions to eliminate or reduce risk to people and property from the effects of natural and man-made hazards. This plan documents the Kansas Region H and its participating jurisdictions planning process and identifies applicable hazards, vulnerabilities, and hazard mitigation strategies. This plan will serve to direct available community and regional resources towards creating policies and actions that provide long-term benefits to the community. Local and regional officials can refer to the plan when making decisions regarding regulations and ordinances, granting permits, and in funding capital improvements and other community initiatives.

Specifically, this hazard mitigation plan was developed to:

- Update the 2019 HMP
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize, and mitigate against hazards
- Assist with sensible and effective planning and budgeting
- Educate citizens about hazards, mitigation, and preparedness
- Comply with relevant federal requirements

This plan has been designed to be a living document, a document that will evolve to reflect changes, correct any omissions, and constantly strive to ensure the safety of all citizens.

## 1.2 Assurances

In an effort to reduce natural disaster losses, the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). DMA 2000 amended the Stafford Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). Section 322 of the DMA makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for Federal mitigation grant funds. This HMP was prepared to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 Code of Federal Regulations (CFR) Part 201.4).

All adopting jurisdictions certify that they will comply with all applicable Federal statutes and regulations during the periods for which they receive grant funding, in compliance with 44 CFR 13.11(c), and will amend this plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

This hazard mitigation plan was prepared to comply with all relevant requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the Disaster Mitigation Act of 2000. This plan complies with all the relevant requirements of:

- Code of Federal Regulations (44 CFR) pertaining to hazard mitigation planning
- Federal Emergency Management Agency (FEMA) planning directives and guidelines
- Interim final, and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives
- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

### **1.3 Authorities**

The HMP relies on the authorities given to participating jurisdictions by its citizens and encoded in local and state law. This plan is intended to be consistent with all policies and procedures that govern activities related to the mitigation programming and planning. In all cases of primacy, State of Kansas and local laws, statutes, and policies will supersede the provisions of the plan.

### **1.4 Plan Adoption**

Upon review and approved pending adoption status by FEMA Region VII, adoption resolutions will be signed by the participating jurisdictions. FEMA approval documentation may be found in Appendix A. Jurisdictional adoption resolutions may be found in Appendix B.

Administration and oversight of the hazard mitigation program is the responsibility of the Kansas Division of Emergency Management (KDEM) Mitigation Bureau and local county Emergency Management Departments. The plan will be reviewed annually and will be updated every five years, or as required by changing hazard mitigation regulations or guidelines.

## Section 2 – Documentation of the Planning Process

### 2.1 Planning Process

The process established for this planning effort is based on the Disaster Mitigation Act of 2000 planning and update requirements and the FEMA associated guidance for local hazard mitigation plans. To accomplish this, the following planning process methodology was followed:

- Inform, invite, and involve other mitigation plan stakeholders throughout the state, including federal agencies, state agencies, regional groups, businesses, non-profits, underserved communities, and local emergency management organizations.
- Conduct a thorough review of all relevant current and historic planning efforts.
- Collect data on all related state plans and initiatives, local plans' hazard risk, local plans' mitigation strategies and actions, state owned facilities, flood plains, Repetitive Loss/Severe Repetitive Loss properties, hazard events, on-going and completed mitigation actions, and mitigation program changes since the development of the previous plan.
- Conduct a review of all related and relevant state and local plans for integration and incorporation.
- Develop the planning and project management process, including methodology, review procedures, details about plan development changes, interagency coordination, planning integration, and the organization and contribution of stakeholders.
- Develop and update the profile of Kansas Region H.
- Complete a risk and vulnerability assessment using a Geographic Information System (GIS) driven approach using data from the FEMA and other federal and state agency resources. Analyses were conducted at the state level, county by county, of state-owned facilities, and county by county drawing on local assessments.
- Develop a comprehensive mitigation strategy effectively addressing Kansas Region H's hazards and mitigation program objectives. This included identifying state and local capabilities, reviewing pre and post disaster policies and programs, identifying objectives and goals, identifying mitigation actions and projects, and assessing mitigation actions and projects.
- Determination and implementation of a plan maintenance cycle, including a timeline for plan upgrades and improvements.
- Submission of the plan to FEMA for review and approval.

### 2.2 Hazard Mitigation Planning Equity

Planning equity refers to the principle of fairness and justice in planning and development processes. It emphasizes the equitable distribution of resources, opportunities, and benefits among all members of a community, particularly those who have historically been marginalized or disadvantaged. The concept of planning equity recognizes that planning decisions can have significant impacts on different groups of people and aims to ensure that these decisions promote social justice and inclusivity. It involves addressing spatial inequalities, such as disparities in access to housing, transportation, public services, green spaces, and employment opportunities.

Planning equity entails involving diverse stakeholders in decision-making processes, including community members, advocacy groups, and underrepresented populations. It seeks to empower marginalized communities by giving them a voice in shaping the development and planning policies that directly affect their lives.

Planning equity and hazard mitigation planning are closely related, as both aim to create more resilient and inclusive communities. As part of this planning effort, the following intersections were considered between planning equity and hazard mitigation planning:

- **Vulnerability assessment:** Planning equity recognizes that certain communities, particularly marginalized and disadvantaged populations, may be more vulnerable to hazards due to social, economic, and environmental factors. When conducting a vulnerability assessment as part of hazard mitigation planning, it is important to consider equity issues and identify areas or groups that may experience disproportionate impacts.
- **Engaging marginalized communities:** Planning equity emphasizes the inclusion and participation of diverse stakeholders, including marginalized communities, in decision-making processes. In hazard mitigation planning

it is crucial to engage these communities to understand their unique needs, concerns, and perspectives regarding hazards.

- Addressing social disparities: Hazard mitigation planning can help address social disparities by considering the unequal distribution of resources and opportunities in the context of hazards. This can involve implementing mitigation measures that specifically target vulnerable populations, such as affordable housing in safer areas or improved access to emergency services and transportation for underserved communities.
- Equitable distribution of resources: Planning equity promotes the equitable distribution of resources, and this principle can be applied to hazard mitigation planning. It involves ensuring that mitigation measures and investments are allocated fairly, with consideration given to communities that have historically received less attention or investment. This can help reduce existing disparities and enhance the resilience of marginalized communities.

By integrating planning equity into hazard mitigation planning, it becomes possible to develop strategies and actions that not only reduce the risks associated with hazards but also promote social justice, inclusivity, and resilience for all members of the community.

As part of this planning process, the MPC considered potential inequities within the region and encouraged the participation of potentially vulnerable citizens and communities. This process began with recognizing that disparities exist within the region, including health outcomes and living conditions for people of color, people with disabilities, and historically disadvantaged communities. It was recognized that these populations may be at greater risk to the hazards identified in this plan and may be limited in their ability to adapt, respond, and recover if an event were to occur.

### **2.3 2024 Plan Update**

In undertaking this planning effort, the KDEM determined that wide variances in planning format and data do not allow for effective continuous planning. To provide planning continuity every effort was made during this plan update to adhere as closely as possible to elements of the 2019 HMP. As such, the level of analysis and detail included in this risk assessment is cumulative, allowing participating jurisdictions to have a robust base to further mold and improve their mitigation strategies over the next five years.

As part of this planning effort, each section of the previous mitigation plan was reviewed and revised based on current and available data. The plan was reviewed and revised against the following elements:

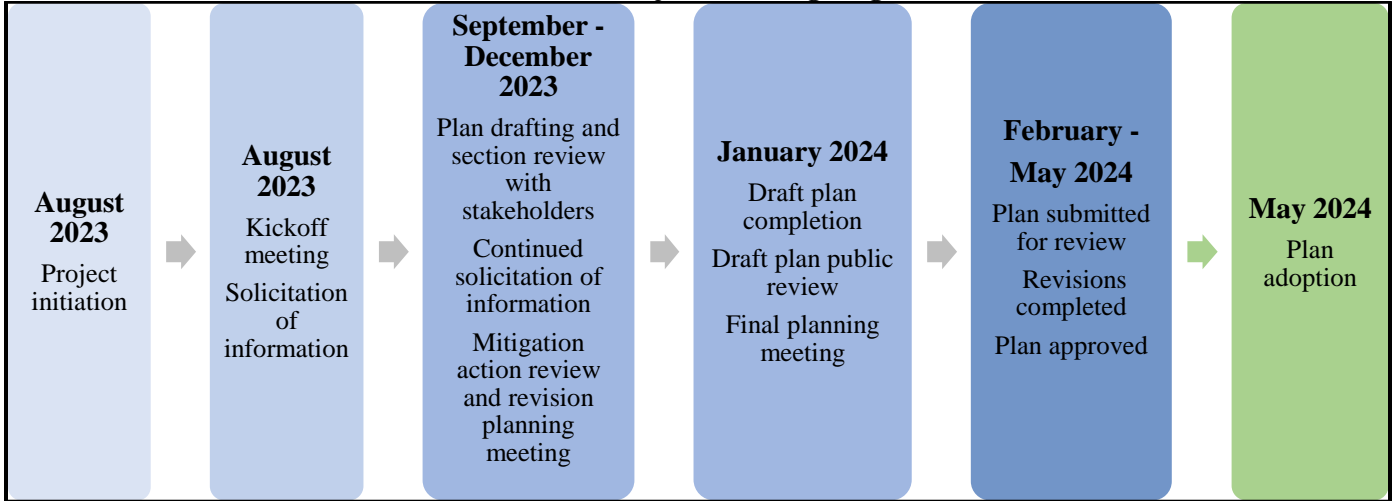
- Compliance with the current regulatory environment
- Completeness of data
- Correctness of data
- Capability differentials
- Current regional environment

Based on the above criteria, each section of the 2019 HMP was reviewed and revised as required. In addition to data revisions, the format and sequencing of the previous plan was updated for ease of use and plan clarity. Additionally, during this process, and after a thorough review and discussion with all stakeholders, it was determined that the priorities of the Kansas Region H in relation to hazard mitigation planning have not changed during the five years of the previous planning cycle.

The Kansas Region H HMP review and revision process began in August 2023, with the first public meeting held in August 2023. The following chart indicates the planning stages completed as part of this process:



**Chart 1: Project Planning Stages**



## 2.4 Planning Document Resources

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various other jurisdictional plans. In creating this plan, all the planning documents identified below were consulted and reviewed, often extensively. In turn, when each of these other plans is updated, they will be measured against the contents of the hazard mitigation plan.

Below is a list of the various planning efforts, sole or jointly administered programs, and documents reviewed and included in this hazard mitigation plan. While each plan can stand alone, their review and functional understanding was pivotal in the development of this plan and further strengthens and improves a jurisdiction's resilience to disasters.

- **Kansas Region H 2019 Multi-Jurisdictional Natural Hazard Mitigation Plan**  
The previous HMP has been reviewed and is incorporated throughout this plan per FEMA requirements.
- **Jurisdictional Comprehensive Plans**  
These plans, as available, set policies that help the jurisdiction address critical issues facing the community, achieve goals based on priority, and coordinate public and private efforts for mutual success. They also provide the historical context, background, and current data necessary to understand issues and choose solutions as well as seek various forms of funding.
- **Participating Jurisdictions Master and/or Comprehensive Plans:**  
These plans, as available, help jurisdictions set policies that help address critical issues facing the community, achieve goals based on priority, and coordinate public and private efforts for mutual success. They also provide the historical context, background, and current data necessary to understand issues and choose solutions as well as seek various forms of funding.
- **Participating Jurisdiction Critical Facilities List**  
The MPC compiled a list of critical facilities and pertinent information on those facilities. This list is used throughout the plan and is the basis for the vulnerability assessments and loss estimates. The complete list is posted in Appendix E.
- **Jurisdictional Emergency Operations Plans**  
These plans are used by jurisdictions to develop procedures for the protection of personnel, equipment, and critical records to help determine existing established policies that ensure the continuity of government and essential services during and after disasters.
- **State of Kansas Hazard Mitigation Plan**  
The State of Kansas Hazard Mitigation Plan is intended to provide the framework for hazard mitigation. This plan set a baseline for standards and practices for hazard mitigation planning and was used as a resource for information and data.
- **Participating Jurisdiction Planning and Zoning Documents and Ordinances**  
These documents were reviewed, assessed, and cataloged to compile each participating jurisdiction's capabilities.

## 2.5 Technical Resources

The MPC employed a variety of technical resources during plan development. These technical resources were instrumental in completing an accurate vulnerability and risk assessment, and include:

- **Kansas Emergency Operations Plan Mapping Program:** Assisted with the development of maps for this plan.
- **FEMA Digital Flood Insurance Rate Maps:** FEMA’s National Flood Hazard Layer data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.
- **FEMA National Risk Index (NRI):** An online mapping application that identifies communities most at risk to natural hazards. The mapping service visualizes natural hazard risk metrics and includes data about expected annual losses from natural hazards, social vulnerability, and community resilience. The NRI's interactive web maps are at the county and Census tract level and made available via GIS services for custom analyses.
- **National Oceanic and Atmospheric Administration (NOAA)/National Centers for Environmental Information (NCEI):** Weather data and historical events were primarily provided by NCEI.
- **U.S. Army Corps of Engineers (USACE):** Levee and flood control data.
- **U.S. Department of Agriculture (USDA):** Drought and agricultural data.
- **U.S. Geological Survey:** Geologic hazard occurrence and probability data.
- **National Weather Service (NWS):** Storm event occurrence and probability data.
- **KDEM:** Dam safety program and hazardous material data.

## 2.6 Mitigation Planning Committee

Project initiation began with the selection of a Mitigation Planning Committee (MPC), consisting of each participating county emergency manager from Kansas Region H and KDEM Mitigation Bureau staff. From project inception to completion, the MPC was notified at each major plan development milestone through a combination of meetings and electronic communication.

In general, all MPC members were asked to participate in the following ways:

- Attend and participate in meetings
- Assist with the collection of data
- Assure the accuracy and completeness of data
- Assist with the revision and development of mitigation actions
- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms

As an additional responsibility as part of the MPC, KDEM members helped establish project operating procedures and timelines, and assisted with the establishment of project milestones.

The following table represents members of the MPC:

**Table 1: MPC Members**

County	Representative	Title
Allen County	Jason Trego	Emergency Manager
Bourbon County	Will Wallis	Emergency Manager
Cherokee County	Jared Glover	Emergency Manager
Crawford County	Rusty Akins	Emergency Manager
Elk County	Erica Cordell	Emergency Manager
Greenwood County	Levi Vinson	Emergency Manager
Labette County	Charles Morse	Emergency Manager
Montgomery County	Rick Whitson	Emergency Manager
Neosho County	Melanie Kent-Culp	Emergency Manager
Wilson County	Terry Lyons	Emergency Manager

**Table 1: MPC Members**

County	Representative	Title
Woodson County	Tim Dimick	Emergency Manager
KDEM	Stephanie Goodman	State Hazard Mitigation Officer
KDEM	Dirk Christian	Planning and Mitigation Bureau Director
KDEM	Mike Ahlf	Mitigation Plan
KDEM	Jim Leftwich	Southcentral Regional Coordinator
KDEM	Joshua Smith	Southcentral Regional Coordinator

Repeated outreach efforts were made to equity partners extending opportunities to have a representative on the MPC. Additionally, please note that Chautauqua County elected not to participate in this planning effort following a historical and political trend. However, to help gain a regional understanding, data concerning Chautauqua County is included in this plan.

## 2.7 Stakeholders

All eligible jurisdictions were invited to participate in the organization, drafting, completion and adoption of this plan. Invited jurisdictions included, but were not limited to, elected officials, relevant State of Kansas agencies, counties, cities, school districts, non-profit agencies, and businesses.

In order to have an approved hazard mitigation plan, DMA 2000 requires that each jurisdiction participate in the planning process. Each jurisdiction choosing to participate in the development of the plan were required to meet detailed participation requirements, which included the following:

- When practical and affordable, participation in planning meetings
- Provision of information to support the plan development
- Identification of relevant mitigation actions
- Review and comment on plan drafts
- Formal adoption of the plan

Based on the above criteria, the following jurisdictions participated in the planning process, and will individually as a jurisdiction adopt the approved hazard mitigation plan:

**Table 2: Plan Stakeholders**

Jurisdiction	Participation Requirements Met	Name	Title
Allen County	x	Jason Trego	Emergency Manager
Gas	x	Rhonda Hill	City Clerk
Elsmore	x	Brenda Boyle	Mayor
Humboldt	x	Cole Herder	City Administrator
Iola	x	Matt Rehder	City Administrator
La Harpe	x	Michelle Altis	City Clerk
Moran	x	Lori Evans	City Clerk
Savonburg	x	David Janssen	Mayor
Allen County Community College	x	Cynthia Jacobson	VP for Student Affairs
USD 256 – Moran Public Schools	x	Kim Ensminger	Superintendent
USD 257 - Iola Public Schools	x	Katelyn Young	Operations Assistant
USD 258 – Humboldt Public Schools	x	Tyrone Wooden	School Resource Officer
Heartland Electric	x	Dan Avery	Director of Operations
Community Health Center of SE Kansas	x	Krista Postai	CEO
Bourbon County	x	Brian Allen	Emergency Manager
Bronson	x	Danielle Minor	Clerk
Fort Scott	x	Brad Matkin	City Manager
Fulton	x	Misty Adams	Mayor
Mapleton	x	Ronald Burton	Mayor
Redfield	x	Beth Guss	Clerk

**Table 2: Plan Stakeholders**

Jurisdiction	Participation Requirements Met	Name	Title
Uniontown	x	Sally Johnson	Clerk
Fort Scott Community College	x	Luke Demco	Safety Director
USD 234 - Fort Scott	x	Destry Brown	Superintendent
USD 235 - Uniontown	x	Vance Eden	Superintendent
Bourbon County Rural Fire District #3	x	Lou Howard	Fire Chief
Community Health Center of SE Kansas	x	Krista Postai	CEO
4 Rivers Electric	x	Dennis Duft	Operations Manager
<b>Chautauqua County</b>	Did not participate	Did not participate	Did not participate
Cedar Vale	x	Oscar Mattocks	Mayor
USD 285 – Cedar Vale	x	Lance Rhodd	Superintendent
Big Caney Watershed #31	x	Dale Steward	President
4 Rivers Electric	x	Dennis Duft	Operations Manager
<b>Cherokee County</b>	x	Matt Haviland	Emergency Manager
Scammon	x	Jerry Grant	Mayor
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electrical	x	Ted Mieth	Manager
<b>Crawford County</b>	x	Rusty Atkins	Emergency Manager
Pittsburg	x	Taylor Cerne	Fire Chief
USD 247 - Cherokee	x	Brad Miner	Superintendent
USD 248 - Girard	x	Todd Ferguson	Superintendent
USD 249 - Frontenac	x	Rick Simoncic	Superintendent
USD 250 Pittsburg	x	Richard Proffitt	Superintendent
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electric	x	Ted Mieth	Manager
Big Caney Watershed #31	x	Dale Steward	President
Girard Medical Center	x	Mindi Garner	Director
Labette Health	x	Neil Springer	Director of Security
Community Health Center of SE Kansas	x	Krista Postai	CEO
<b>Elk County</b>	x	Erica Cordell	Emergency Manager
Elk Falls	x	Charlene Weakley	City Clerk
Grenola	x	Jessica Norris	City Clerk
Howard	x	Joanna Hunter	City Clerk
Longton	x	Bonnie Foged	City Clerk
Moline	x	Lisa Townsley	City Clerk
USD 282 - West Elk	x	Martin Burke	Superintendent
USD 283 - Elk Valley	x	Megan Gaston	Superintendent
Caney Valley Electric	x	Chris Kelley	President
4 Rivers Electric	x	Larry Felts	President
Elk County Rural Fire Districts (all)	x	Todd Winscher	Chief
Rural Water District #1	x	Shari Kaminski	Staff
Rural Water District #2	x	Ron Dellinger	Owner
Big Caney Watershed #31	x	Dale Steward	Operations Supervisor
Public Wholesale Water Supply District #2	x	Erica Cordell	Emergency Manager
Public Wholesale Water Supply District #33	x	Erica Cordell	Emergency Manager
<b>Greenwood County</b>	x	Levi Vinson	Emergency Manager
Eureka	x	Renee Burk	City Clerk
Fall River	x	Paul Coogan	Mayor
Hamilton	x	Amber Woodie	City Clerk
Madison	x	Alice Grimm	City Clerk
Severy	x	Tessa Riggs	City Clerk
USD 389 - Eureka	x	Scott Hoyt	Superintendent
USD 390 - Hamilton	x	Mike Ronen	Superintendent
Greenwood County RFD #1	x	Steve Holmes	Fire Chief

**Table 2: Plan Stakeholders**

Jurisdiction	Participation Requirements Met	Name	Title
Butler Electric Cooperative	x	Timothy Lindahl	CEO
4 Rivers Electric	x	Dennis Duft	Operations Manager
<b>Labette County</b>	x	Charlie Morse	Emergency Manager
Altamont	x	LeeAnn Myers	City Administrator
Chetopa	x	Toni Crumrine	City Clerk
Edna	x	Joyce Rosson	City Clerk
Mound Valley	x	Tammy Logan	City Clerk
Oswego	x	Jennifer Hine	City Clerk
Parsons	x	Darrell Moyer	City Engineer
USD 506 - Altamont	x	D. Wyrick	Superintendent
Community Health Center of SE Kansas	x	Conner Copper	Safety Manager
Labette Health	x	Neil Springer	Director of Security
Divita Dialysis Center	x	Lisa Winger	Site Manager
Great Plains Industrial Park	x	Tim Peoples	Maintenance Director
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electric	x	Ted Mieth	Manager
<b>Montgomery County</b>	x	Rick Whitson	Director EM
Caney	x	Kelley Zellner	City Administrator
Cherryvale	x	Jonathon Booe	City Administrator
Coffeyville	x	Tim Wilson	City Manager
Havana	x	Donnie Hodges	Mayor
Independence	x	David Cowan	Assistant City Manager
Liberty	x	Paul Hawley	Mayor
Coffeyville Community College	x	Marlon Thornburg	President
Independence Bible School	x	Matthew Brewer	Principal
Independence Community College	x	Vince Bowhay	President
St. Andrews Catholic School	x	Angela Renfro	Principal
The Holy Name Catholic School	x	Lisa Payne	Principal
Tyro Christian School	x	Tim Heflin	Principal
USD 436 - Caney	x	Blake Vargas	Superintendent
USD 445 - Coffeyville	x	Dr. Craig Correll	Superintendent
USD 446 - Independence	x	Jason McAfee	Superintendent
USD 447 – Cherryvale/Thayer	x	Travis Githens	Superintendent
Zion Lutheran School	x	Eric Pralle	Principal
4 Rivers Electric	x	Larry McVey	Operations Manager
Caney Valley Electric	x	Craig Lampson	Supervisor
Coffeyville Regional Medical Center	x	Brian Lawrence	CEO
Labette Health	x	Brian Williams	CEO
Community Health Center of SE Kansas	x	Krista Postai	CEO
<b>Neosho County</b>	x	Melanie Kent-Culp	Emergency Manager
Erie	x	Jake Tromsness	City Superintendent
Galesburg	x	Adam Tromsness	Mayor
St. Paul	x	Jeri Giefer	City Clerk
USD 101 - Erie	x	Scott Palser	Superintendent
USD 413 - Chanute	x	Matt Koester	Superintendent
Labette Health	x	Neil Springer	Director of Security
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electric	x	Ted Mieth	Manager
<b>Wilson County</b>	x	Terry Lyons	Emergency Manager
Altoona	x	Chris Bauman	City Clerk
Buffalo	x	Jerry Robinson	Mayor
Fredonia	x	Allen Miller	Mayor
Neodesha	x	Stephanie Fyfe	City Clerk

**Table 2: Plan Stakeholders**

Jurisdiction	Participation Requirements Met	Name	Title
USD 387 - Altoona-Midway	x	John West	Superintendent
USD 461 - Neodesha	x	Juanita Erickson	Superintendent
USD 484 - Fredonia	x	Brian Smith	Superintendent
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electric	x	Ted Mieth	Manager
Freedonia Regional Hospital	x	Josh Durrett	CEO
Wilson Medical Center	x	Tom Hood	CEO
<b>Woodson County</b>	x	Timothy Dimick	Emergency Manager
Neosho Falls	x	Heather Elsworth	Clerk
4 Rivers Electric	x	Dennis Duft	Operations Manager
Heartland Electric	x	Ted Mieth	Manager

The Kansas Region H MPC provided the opportunity for additional HMP stakeholders, including jurisdictional National Flood Insurance Program (NFIP) coordinators, agencies involved in regulating and overseeing development, neighboring communities, agencies, businesses, academia, non-profits, underserved or marginalized communities, and other interested parties to be involved in the mitigation planning process. Stakeholders were notified of the process through direct communication with the Kansas Region H MPC members, who were provided with details on who to invite at the beginning of the planning process, jurisdictional website notices, and advertisements on social media.

As recommended in FEMA’s “Guide to Expanding Mitigation” Kansas Region H took a whole community approach to this planning effort, including:

- Inviting historically underserved populations to participate in the planning and decision-making processes.
- Inviting faith based and community organizations, nonprofit groups, schools, academia, and tribal partners to be plan stakeholders.

As indicated in the above stakeholder list, success was had in engaging faith-based organizations, particularly religious schools, Unified School Districts, and universities. No tribal organizations were identified in the region.

Local building departments played a critical role in creating and reviewing this HMP. Their expertise was used to help identify local vulnerabilities and develop building-related mitigation measures (please see section 5.3)

Jurisdictional NFIP coordinators played a key role in mitigation planning at the community level. These coordinators were actively engaged and for their expertise on flood risk, mitigation strategies, and NFIP compliance (please see Section 5.4).

**2.8 Community Outreach**

As part of the overall planning process, the community was provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. These opportunities included:

- Advertised meeting invitations
- Comment period upon completion of draft plan
- Online survey

Experience has indicated that public meetings, no matter how well advertised, generally do not generate either participation or interest in the planning process. Even so, three open meetings were held at an easily accessible community locations. To help generate community interest and participation, a parallel online outreach strategy was undertaken. An online HMP survey was created, the Kansas Region H Hazard Mitigation Plan Update Survey. This online survey portal allowed community members to provide feedback and input on the HMP update using a series of guided questions and open comment fields. Community members commented through this survey, and these comments are both incorporated in this HMP and are included in Appendix B

Input from the general public provided the MPC with a clearer understanding of local concerns, increased the likelihood of citizen buy-in concerning proposed mitigation actions, and provided elected officials with a guide and tool to set regional ordinances and regulations. Additionally, as citizens were made more aware of potential hazards and the local process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.

## **2.9 Planning Meetings**

Three in-person meetings were conducted for the 2024 HMP update. All of the meetings were held in a publicly accessible location and advertised as open to the public. These meetings were conducted to discuss the mitigation planning process as well as gain public support and input for the plan update. The following is a brief synopsis of those meetings.

- **HMP Update Kick-Off and Public Information Meeting – August 16, 2023:** Kansas Region H hosted an in person and online kick-off meeting for the MPC, stakeholders, and the public. At the meeting, MPC members, plan stakeholders, and the public were invited to voice any concerns, ask questions, and provide input on the mitigation plan update. Additionally, MPC members were tasked with collecting contact information, hazard history, facility information, and other pertinent information from participating jurisdictions.
- **HMP Plan Review, Capability Review, and Mitigation Strategy Review Meeting – December 12, 2023:** Kansas Region H hosted a mid-term planning meeting for the MPC. Attendees met to review and revise, as necessary, the region’s hazards list and vulnerability assessment. MPC members also reviewed the proposed and revised mitigation strategy to ensure it was in-line with the current planning environment.
- **HMP Update Final Review Meeting – January 30, 2024:** Kansas Region H hosted an in person and online public final plan review meeting for the MPC, stakeholders, and the public. At the meeting, MPC members, jurisdictional representatives, plan stakeholders, and the public were invited to voice any concerns, ask questions, and provide input on the mitigation plan update. Additionally, members of the public were invited to review a draft copy of the HMP update posted to jurisdictional and county websites for two weeks prior to the final meeting, and prior to its submission to FEMA Region VII.

Additionally, there were monthly situation reports provided to the State Hazard Mitigation Officer (SHMO) to provide updates concerning the phases of plan development.

## Section 3 – Regional Profile and Development Trends

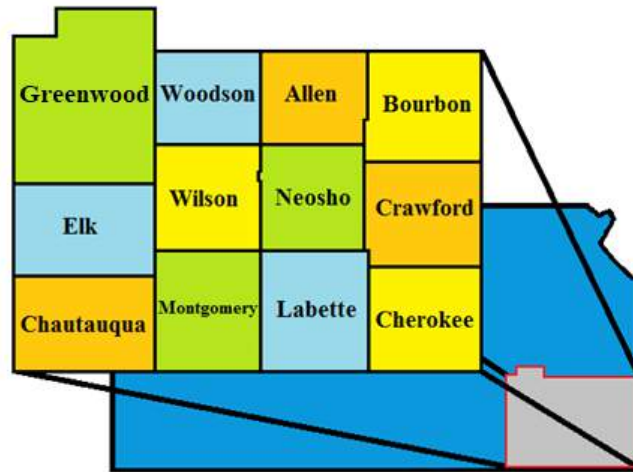
### 3.1 Introduction

Data concerning development trends and conditions is of great importance in determining regional and local risk and vulnerability to identified hazards, especially in locations which are susceptible to identified hazards. In general, any increase in population or development in hazard susceptible areas tends to increase both the risk and the vulnerability to that hazard. As such, the information presented in this chapter details relevant population and building statistics for the region on a local level basis. This data will then be used to determine and refine potential hazard vulnerability in succeeding sections.

### 3.2 Regional Maps

The following map details the locations of Kansas Region H relative to the State of Kansas:

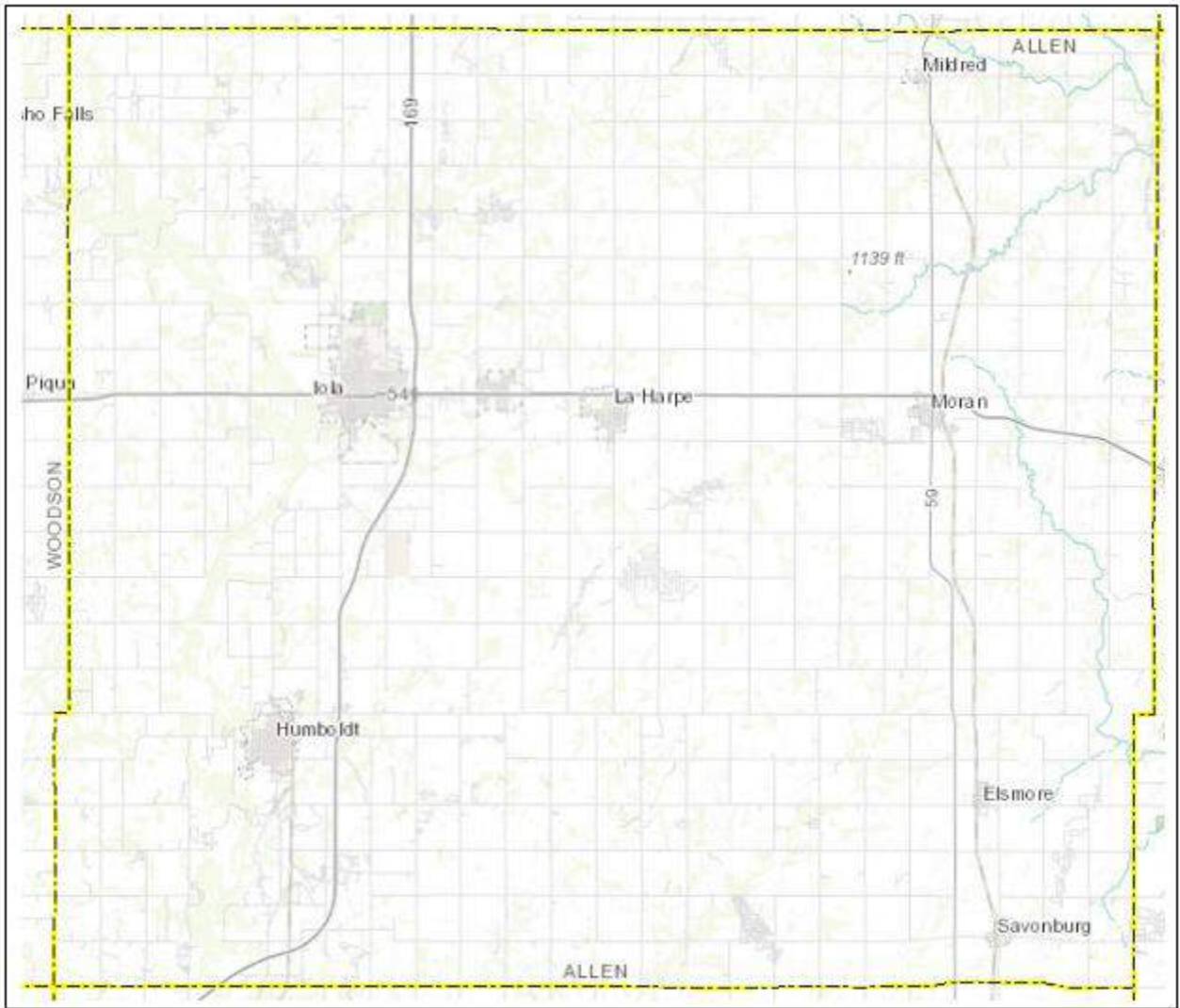
**Map 1: Kansas Region H**



The following maps, provided by the Kansas Department of Transportation, provide county level detail:

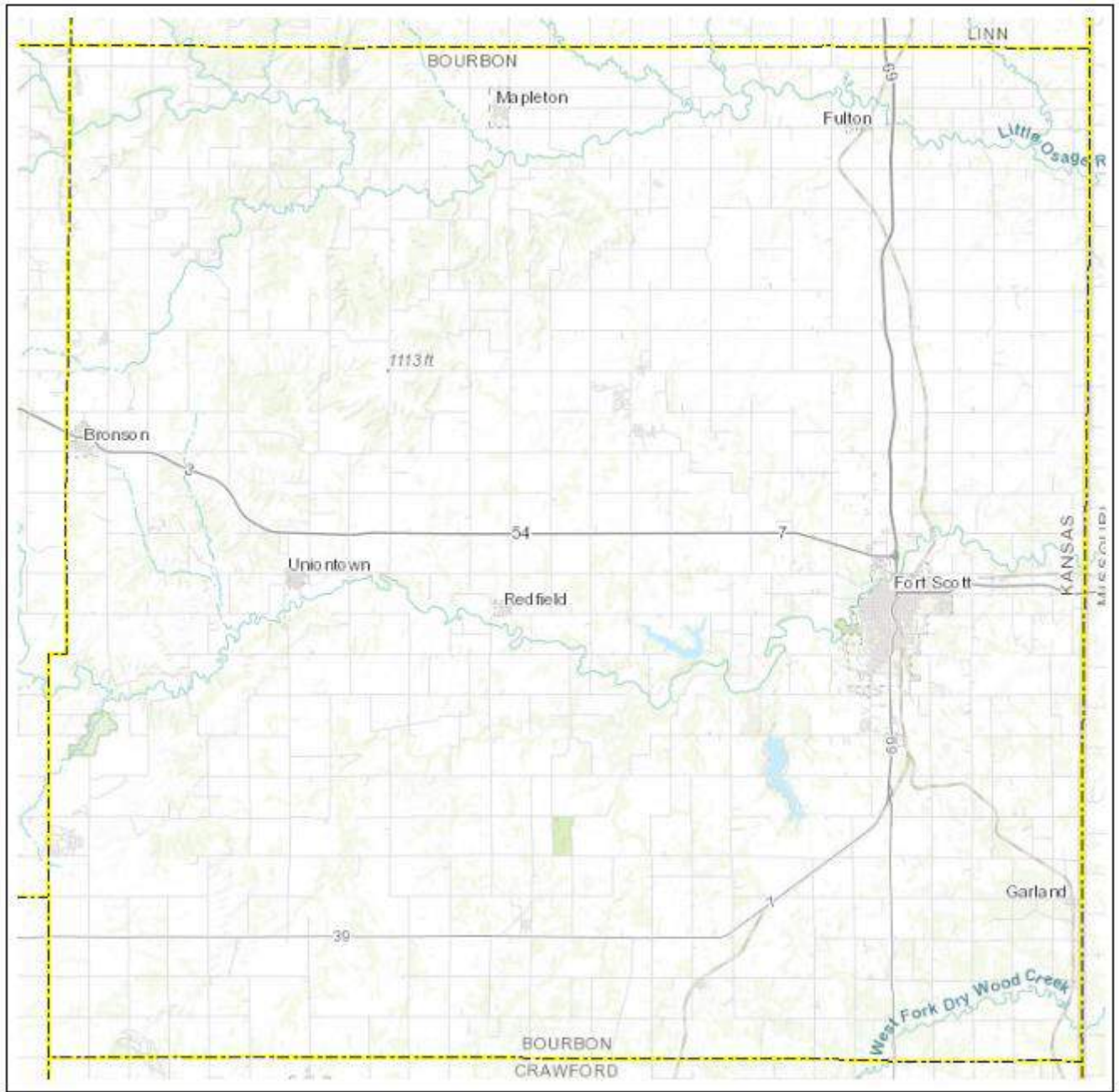


## Map 2: Allen County



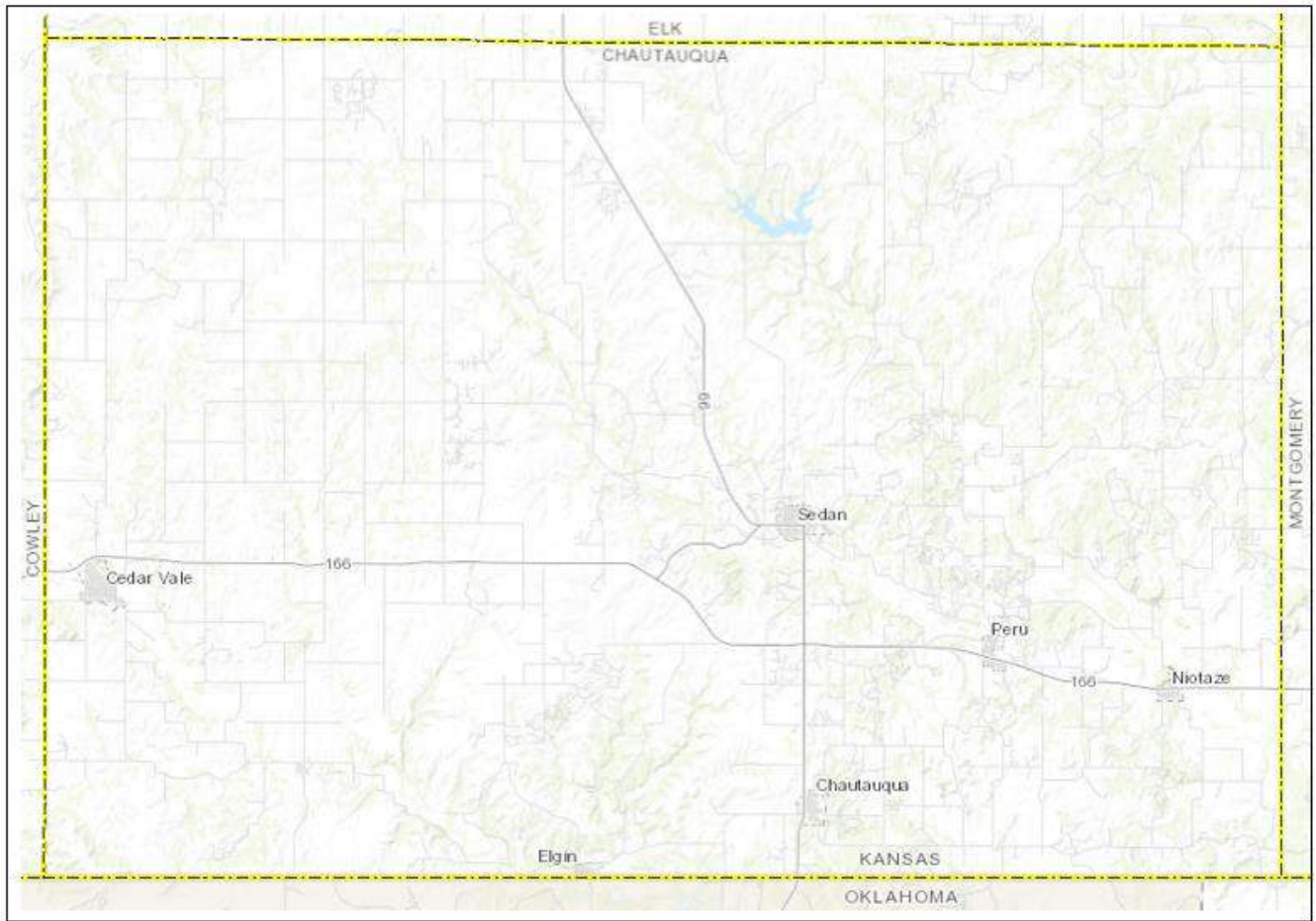
Source: Kansas Department of Transportation

### Map 3: Bourbon County



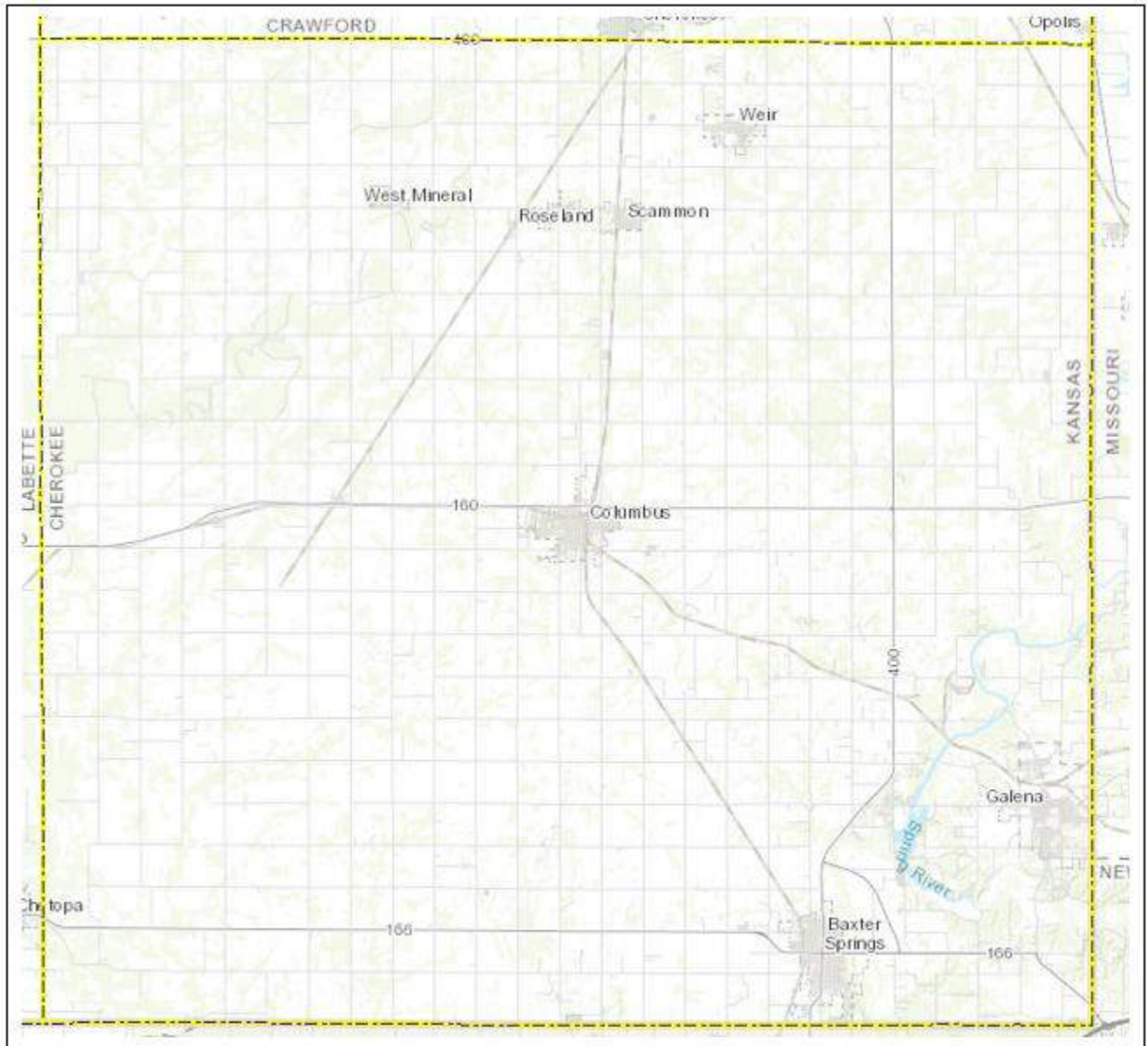
Source: Kansas Department of Transportation

### Map 4: Chautauqua County



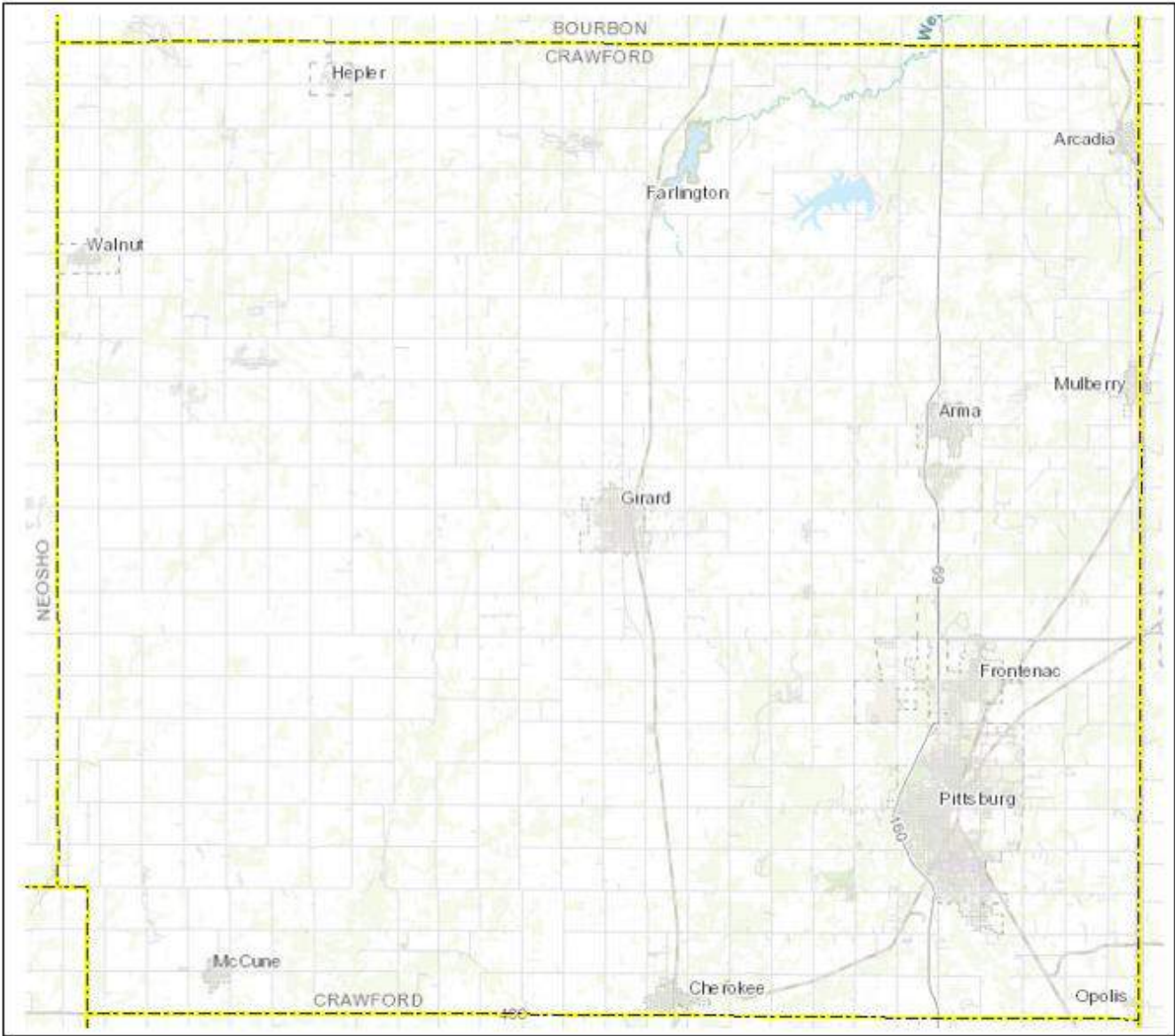
Source: Kansas Department of Transportation

### Map 5: Cherokee County



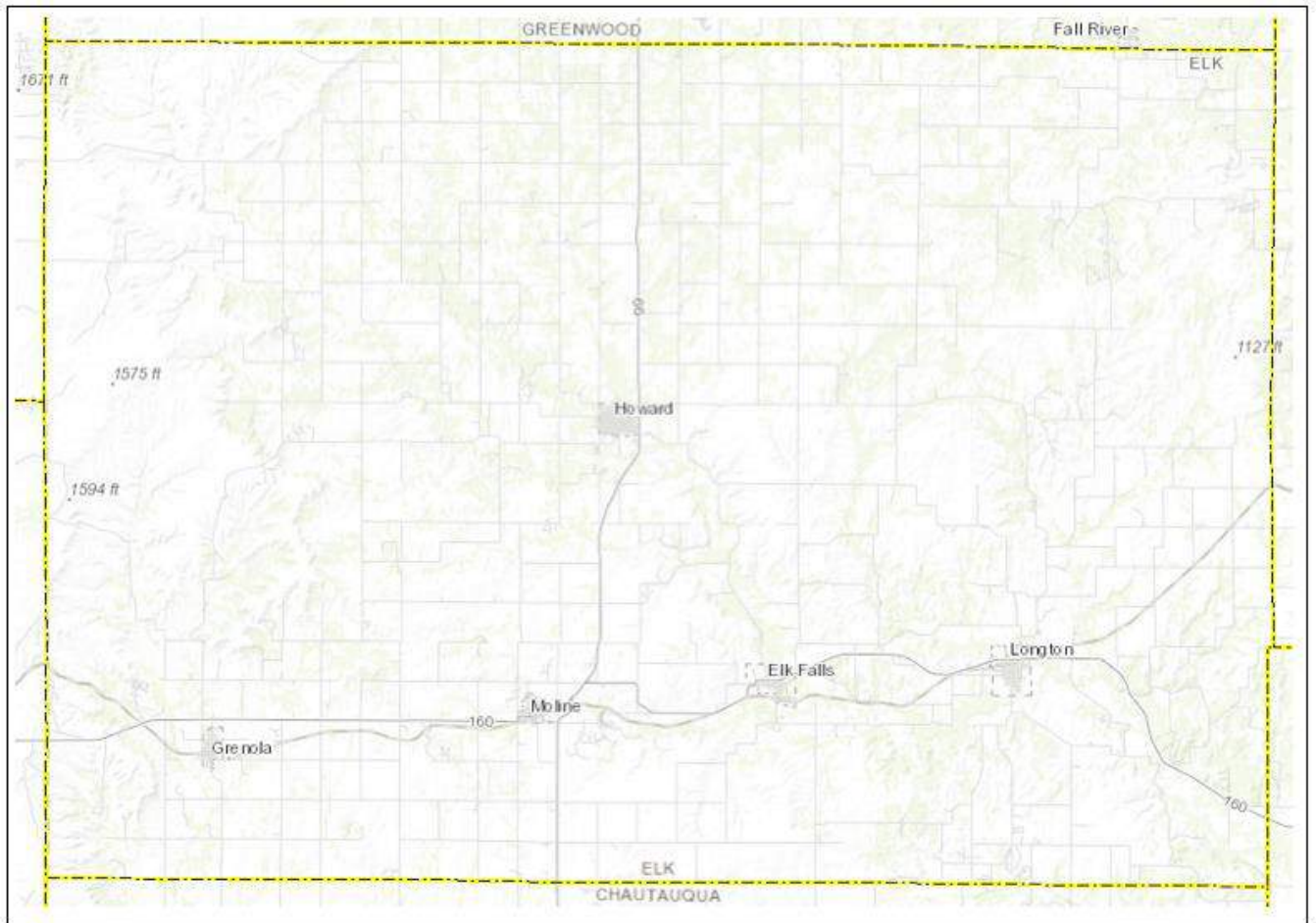
Source: Kansas Department of Transportation

**Map 6: Crawford County**



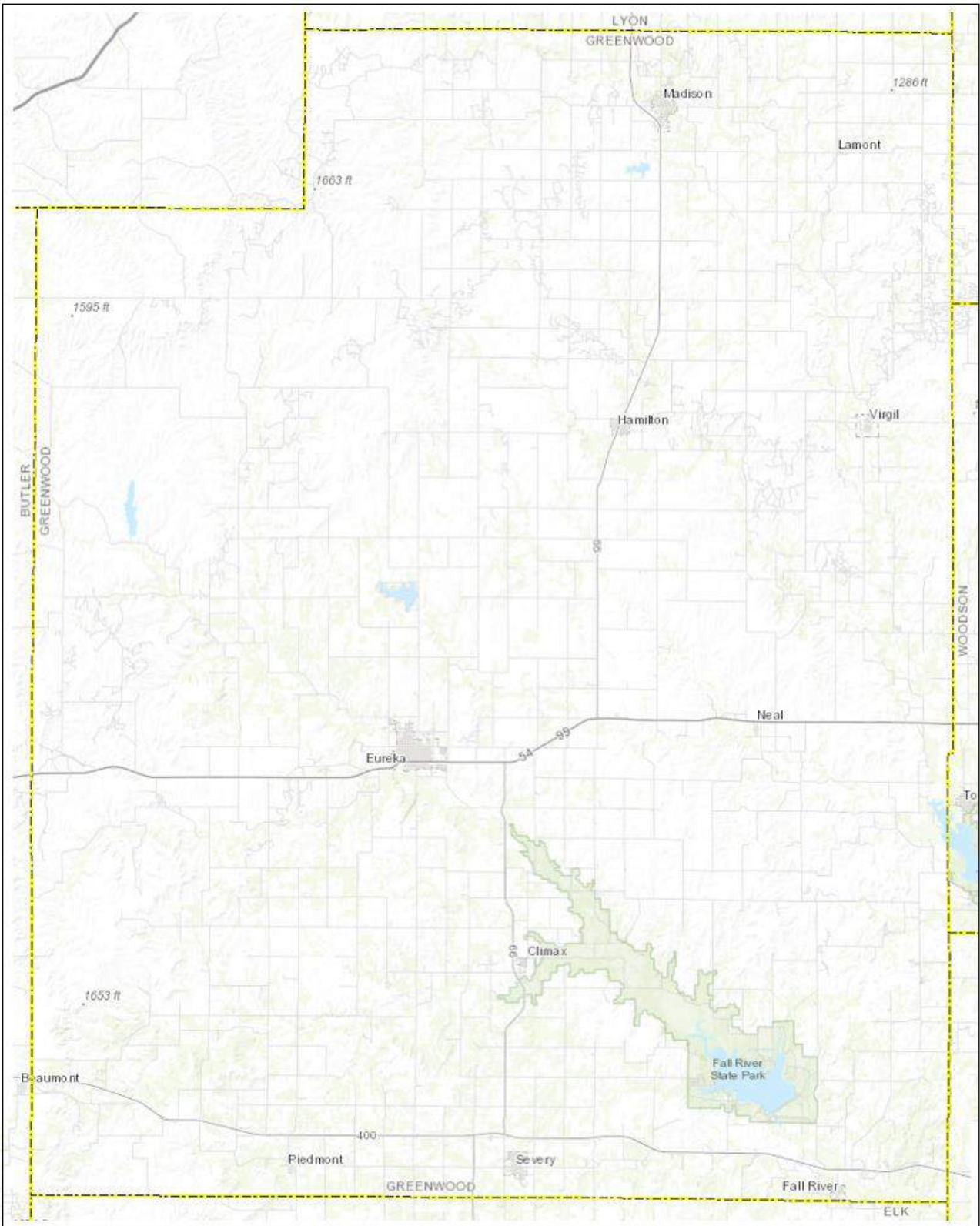
Source: Kansas Department of Transportation

### Map 7: Elk County



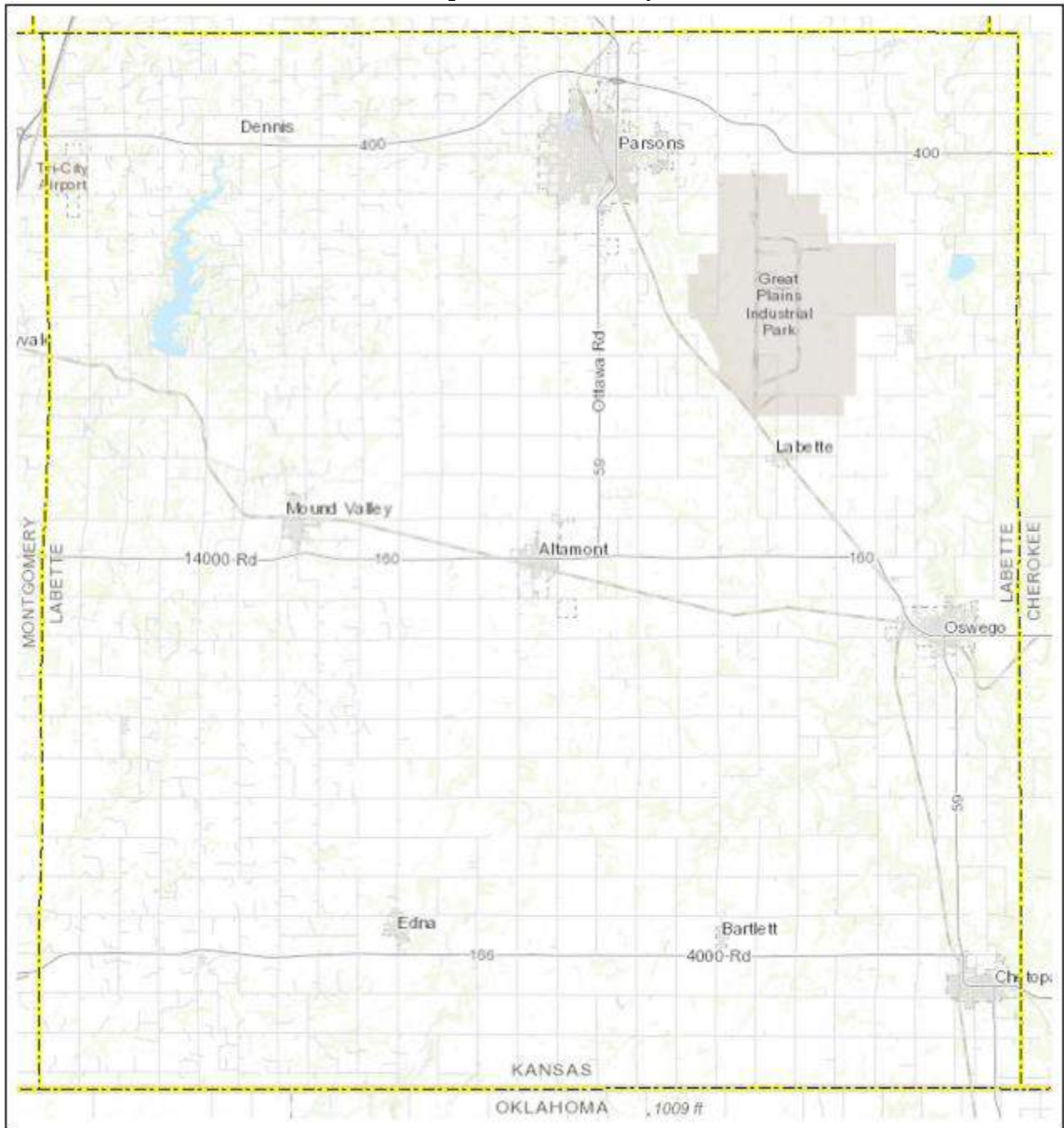
Source: Kansas Department of Transportation

### Map 8: Greenwood County



Source: Kansas Department of Transportation

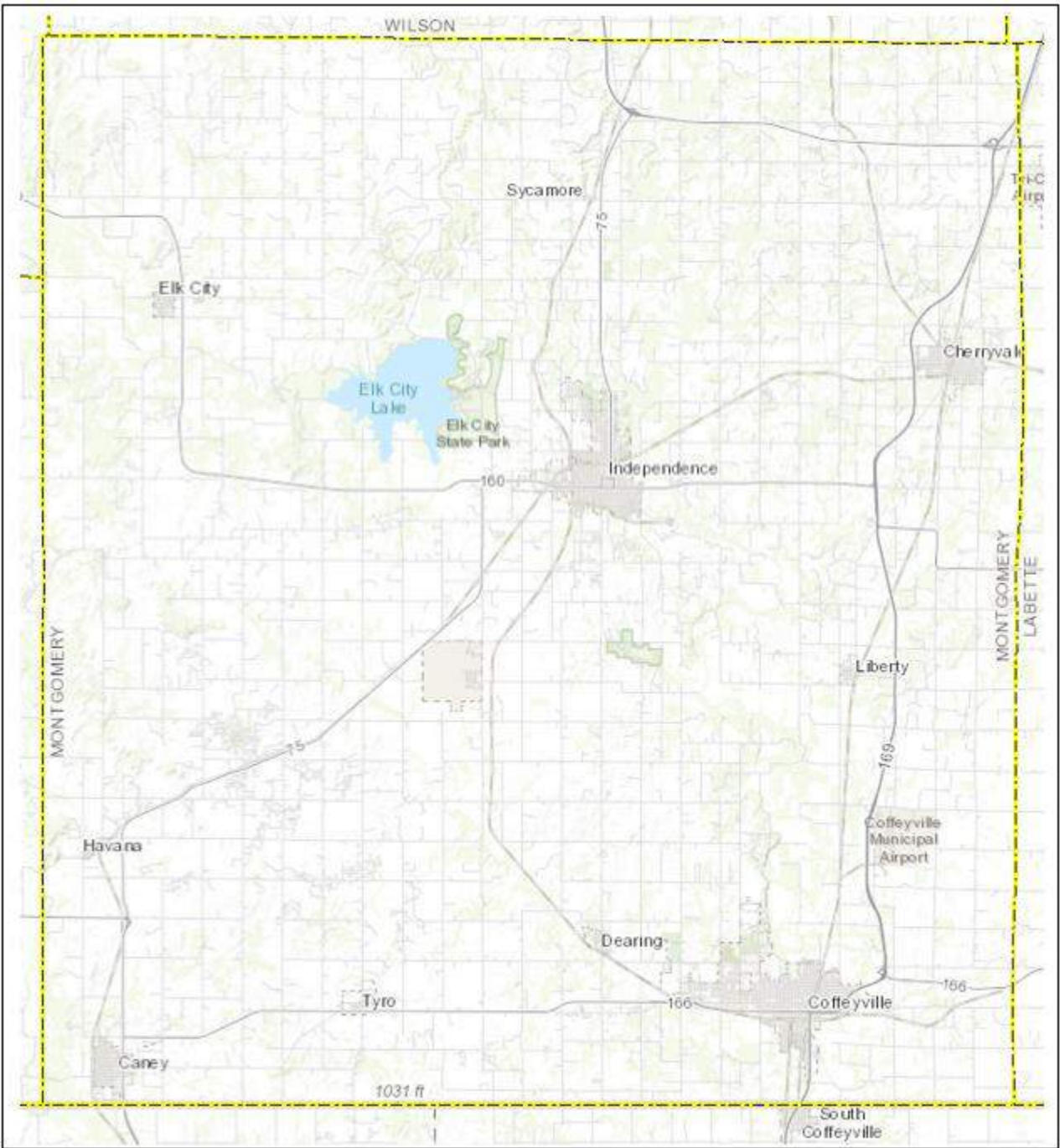
### Map 9: Labette County



Source: Kansas Department of Transportation



### Map 10: Montgomery County



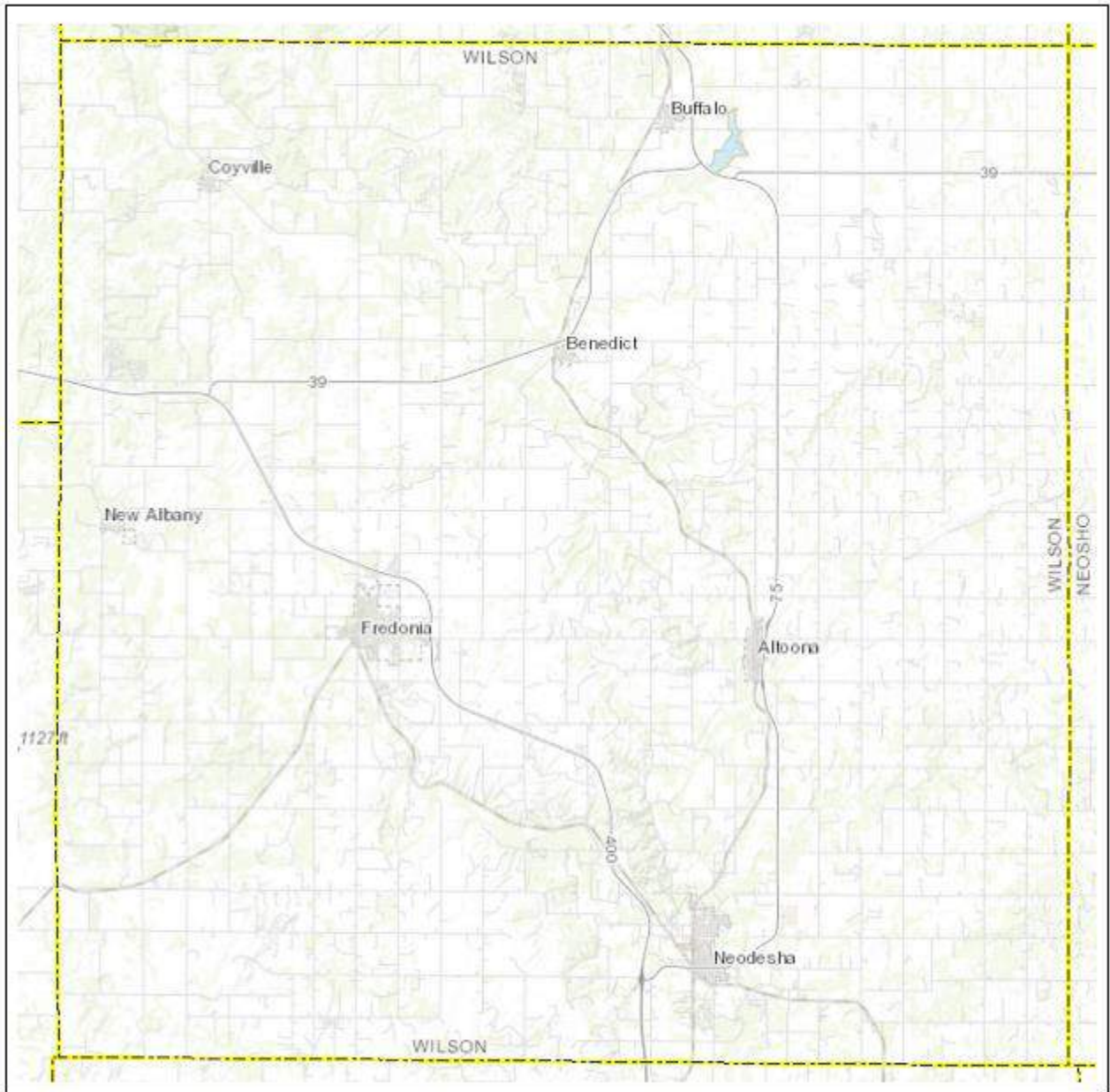
Source: Kansas Department of Transportation

### Map 11: Neosho County



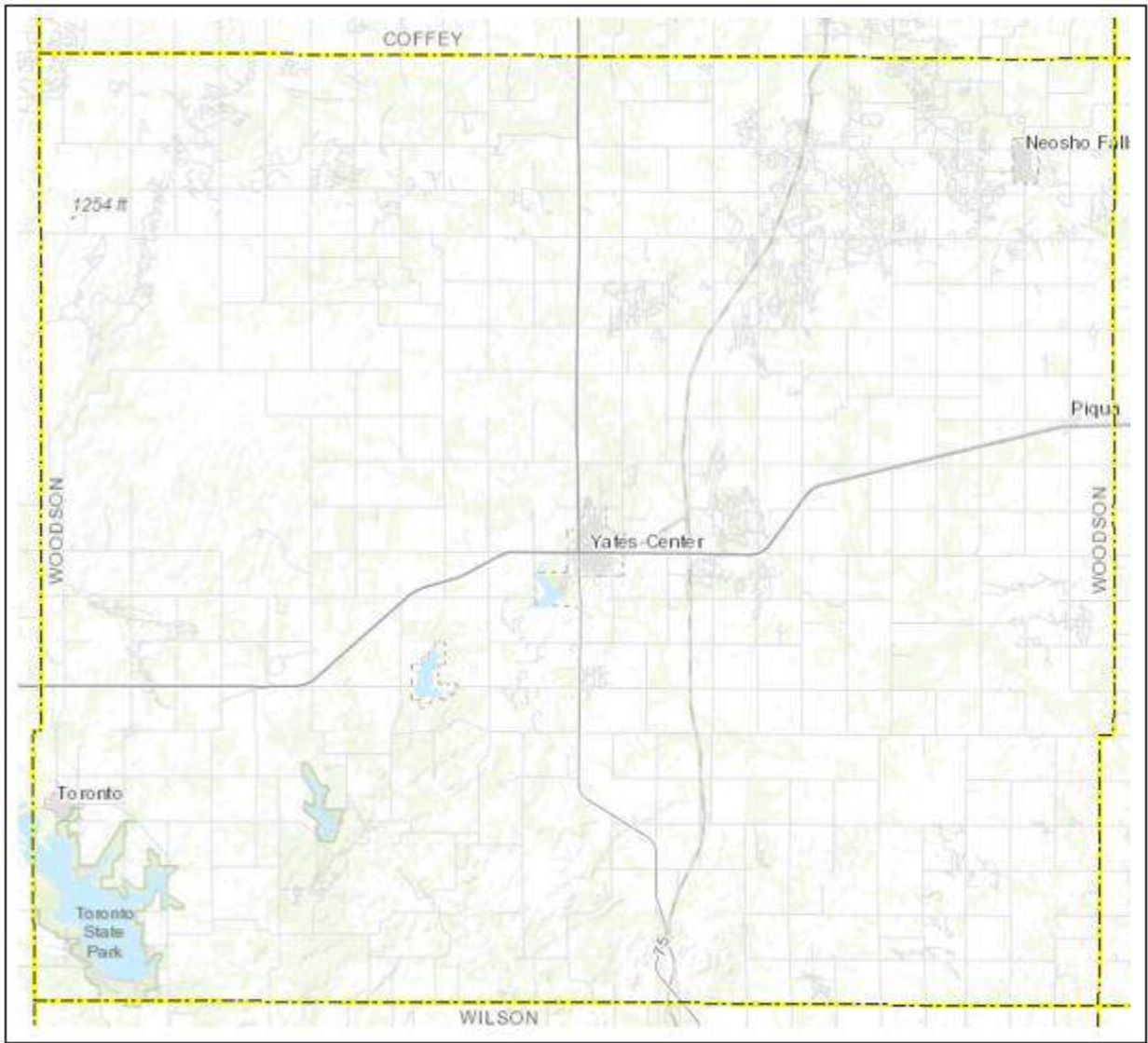
Source: Kansas Department of Transportation

### Map 12: Wilson County



Source: Kansas Department of Transportation

**Map 13: Woodson County**



Source: Kansas Department of Transportation

### 3.3 Regional Population Data

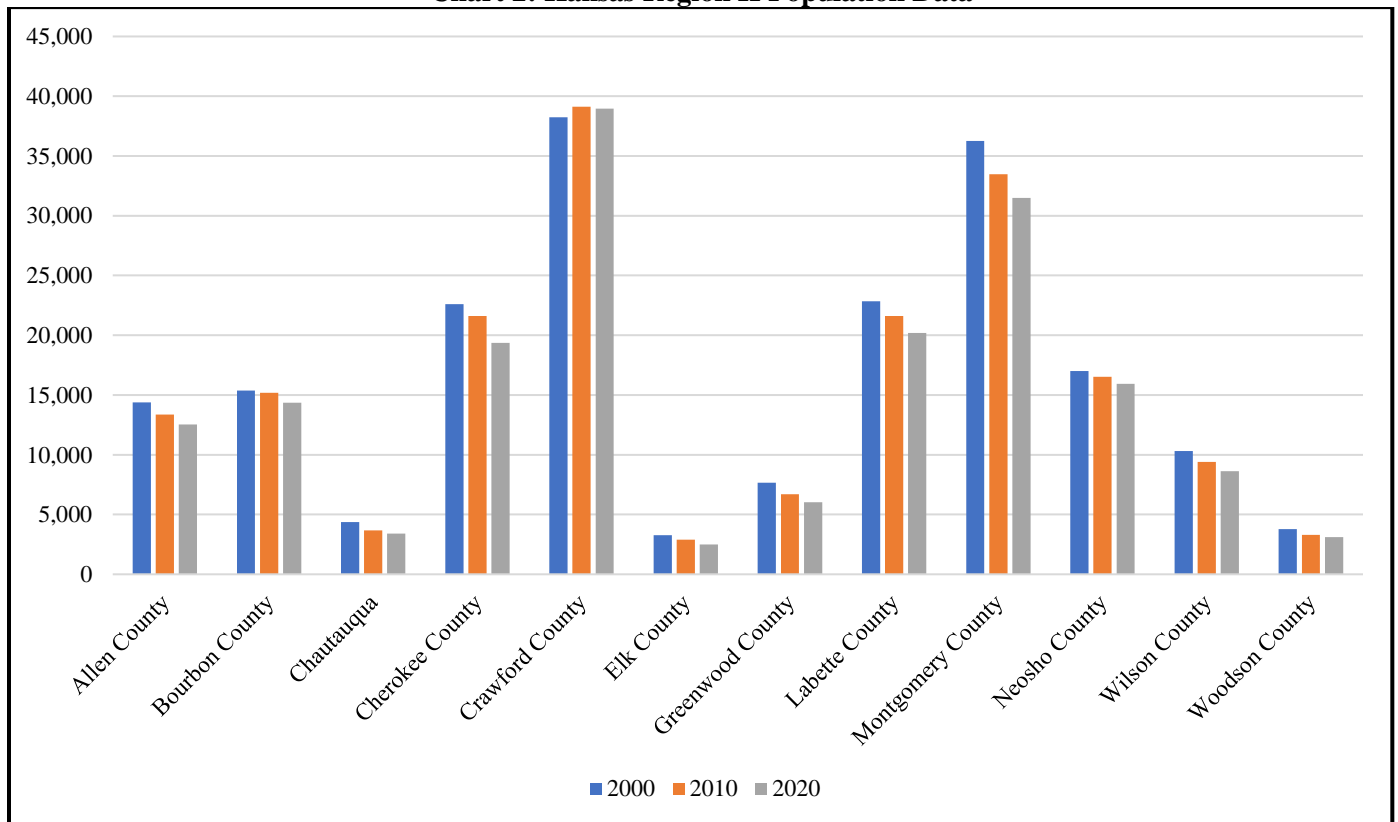
Kansas Region H has seen slight population growth in Crawford County, and declining populations in the remaining counties over the 20-year period from 2000 to 2020, as indicated by data collected from the United State Census Bureau. The following table, and associated chart, presents population data for Kansas Region H counties.

**Table 3: Kansas Region H Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Allen County	14,385	13,371	12,526	-12.9%	505.00	25
Bourbon County	15,379	15,173	14,360	-6.6%	639.00	22
Chautauqua County	4,359	3,669	3,394	-22.1%	645.00	5
Cherokee County	22,605	21,603	19,362	-14.3%	591.00	33
Crawford County	38,242	39,134	38,972	1.9%	595.00	65
Elk County	3,261	2,882	2,483	-23.9%	650.00	4
Greenwood County	7,673	6,689	6,016	-21.6%	1,153.00	5
Labette County	22,835	21,607	20,184	-11.6%	653.00	31
Montgomery County	36,252	33,471	31,486	-13.1%	651.00	48
Neosho County	16,997	16,512	15,926	-6.3%	578.00	28
Wilson County	10,322	9,409	8,624	-16.5%	575.00	15
Woodson	3,788	3,309	3,115	-17.8%	505.00	6

Source: US Census Bureau

**Chart 2: Kansas Region H Population Data**



Source: US Census Bureau

The following tables present population data on a city level, broken down by county.

**Table 4: Allen Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Allen County	14,385	13,371	12,526	-12.9%	505.0	25
Elsmore	73	77	50	-31.5%	0.2	333
Gas	556	564	475	-14.6%	0.7	651
Humboldt	1,999	1,953	1,847	-7.6%	1.5	1,274
Iola	6,302	5,704	5,396	-14.4%	4.8	1,122
LaHarpe	706	578	480	-32.0%	0.9	558
Moran	562	558	466	-17.1%	0.4	1,110
Savonburg	91	109	74	-18.7%	0.2	370

Source: US Census Bureau

**Table 5: Bourbon County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Bourbon County	15,379	15,173	14,360	-6.6%	639.0	22
Bronson	346	323	304	-12.1%	0.4	774
Fort Scott	8,297	8,087	7,552	-9.0%	5.6	1,399
Fulton	184	163	165	-10.3%	0.2	632
Mapleton	98	84	96	-2.0%	0.5	158
Redfield	140	146	90	-35.7%	0.1	1,060
Uniontown	288	272	293	1.7%	0.2	1,760

Source: US Census Bureau

**Table 6: Chautauqua County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Chautauqua County	4,359	3,669	3,394	-22.1%	645.0	5
Cedar Vale	723	579	476	-34.2%	0.8	595
Chautauqua (city)	113	111	108	-4.4%	0.4	270
Niotaze	122	82	90	-26.2%	0.4	225
Peru	183	139	101	-44.8%	0.3	337
Sedan	1,342	1,124	1,000	-25.5%	0.8	1,250

Source: US Census Bureau

**Table 7: Cherokee County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Cherokee County	22,605	21,603	19,362	-14.3%	591.0	33
Baxter Springs	4,602	4,238	3,888	-15.5%	3.2	1,215
Columbus	3,396	3,312	2,929	-13.8%	2.4	1,220
Galena	3,287	3,085	2,761	-16.0%	4.6	600
Roseland	101	77	76	-24.8%	0.8	95
Scammon	496	482	376	-24.2%	0.6	627
Treece	149	138	135	-9.4%	0.1	1,350
Weir	780	686	569	-27.1%	0.3	1,897
West Mineral	243	185	154	-36.6%	0.3	513

Source: US Census Bureau

**Table 8: Crawford County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Crawford County	38,242	39,134	38,972	1.9%	595.0	65
Arcadia	391	310	254	-35.0%	0.4	635
Arma	1,529	1,481	1,407	-8.0%	1.1	1,279
Cherokee	722	714	590	-18.3%	0.7	843
Franklin	355	375	473	33.2%	0.3	1,577
Frontenac	2,996	3,437	3,382	12.9%	5.1	663
Girard	2,773	2,789	2,496	-10.0%	2.4	1,040
Hepler	154	132	90	-41.6%	0.8	113
McCune	426	405	370	-13.1%	0.3	1,233
Mulberry	577	520	409	-29.1%	0.5	818
Pittsburg	19,243	20,233	20,464	6.3%	12.90	1,586

Source: US Census Bureau

**Table 9: Elk County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Elk County	3,261	2,882	2,483	-23.9%	650.0	4
Grenola	231	216	151	-34.6%	0.5	302
Howard	808	687	570	-29.5%	0.7	814
Longton	394	348	288	-26.9%	1.2	240
Moline	457	371	345	-24.5%	0.4	863

Source: US Census Bureau

**Table 10: Greenwood County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Greenwood County	7,673	6,689	6,016	-21.6%	1153.0	5
Climax	64	72	45	-29.7%	0.1	450
Eureka	2,914	2,633	2,332	-20.0%	2.3	1,014
Fall River	156	162	131	-16.0%	0.2	655
Hamilton	334	268	182	-45.5%	0.3	607
Madison	857	701	689	-19.6%	0.6	1,148
Severy	359	259	205	-42.9%	0.5	410

Source: US Census Bureau

**Table 11: Labette County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Labette County	22,835	21,607	20,184	-11.6%	653.0	31
Altamont	1,092	1	1,061	-2.8%	1.7	624
Chetopa	1,281	1,125	929	-27.5%	1.4	664
Edna	423	442	388	-8.3%	0.4	970
Labette (city)	68	78	50	-26.5%	0.2	250
Mound Valley	418	407	348	-16.7%	0.7	497
Oswego	2,046	1,829	1,668	-18.5%	2.3	725
Parsons	11,514	10,500	9,600	-16.6%	10.7	897

Source: US Census Bureau

**Table 12: Montgomery County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Montgomery County	36,252	33,471	31,486	-13.1%	651.0	48
Caney	2,092	2,203	1,788	-14.5%	1.4	1,277
Cherryvale	2,386	2,367	2,192	-8.1%	1.9	1,154
Coffeyville	11,021	10,295	8,826	-19.9%	7.4	1,193
Dearing	415	431	382	-8.0%	1.5	255
Elk City	305	325	260	-14.8%	0.3	867
Havana	86	104	84	-2.3%	0.1	840
Independence	9,846	9,483	8,548	-13.2%	7.8	1,096
Liberty	95	123	99	4.2%	0.3	330

Source: US Census Bureau

**Table 13: Neosho County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Neosho County	16,997	16,512	15,926	-6.3%	578.0	28
Chanute	9,411	9,119	8,722	-7.3%	7.2	1,211
Erie	1,211	1,150	1,047	-13.5%	1.2	873
Galesburg	150	126	149	-0.7%	0.2	745
St. Paul	646	629	614	-5.0%	1.2	512
Thayer	500	497	432	-13.6%	0.8	540

Source: US Census Bureau

**Table 14: Wilson County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Wilson County	10,322	9,409	8,624	-16.5%	575.0	15
Altoona	485	414	354	-27.0%	0.6	590
Benedict	103	73	85	-17.5%	0.2	425
Buffalo	284	232	217	-23.6%	0.3	723
Fredonia	2,600	2,482	2,151	-17.3%	2.5	860
Neodesha	2,848	2,486	2,275	-20.1%	1.4	1,625
New Albany	73	56	57	-21.9%	0.2	285

Source: US Census Bureau

**Table 15: Woodson County Population Data**

County	Population			Percentage Population Change 2000-2020	Total Land Area (Sq. Mi.)	Population Density
	2000	2010	2020			
Woodson County	3,788	3,309	3,115	-17.8%	505.0	6
Neosho Falls	178	141	134	-24.7%	0.6	223
Toronto	312	281	206	-34.0%	0.4	515
Yates Center	1,599	1,417	1,352	-15.4%	3.1	436

Source: US Census Bureau



### 3.4 Social Vulnerability

As a subset of the population data, Kansas Region H has socially vulnerable and at-risk populations, populations that may have difficulty with medical issues, poverty, extremes in age, and communications due to language barriers. Several principles may be considered when discussing potentially at-risk populations, including:

- Not all people who are considered at risk are at risk
- Outward appearance does not necessarily mark a person as at risk
- The hazard event will, in many cases, affect at risk population in differing ways

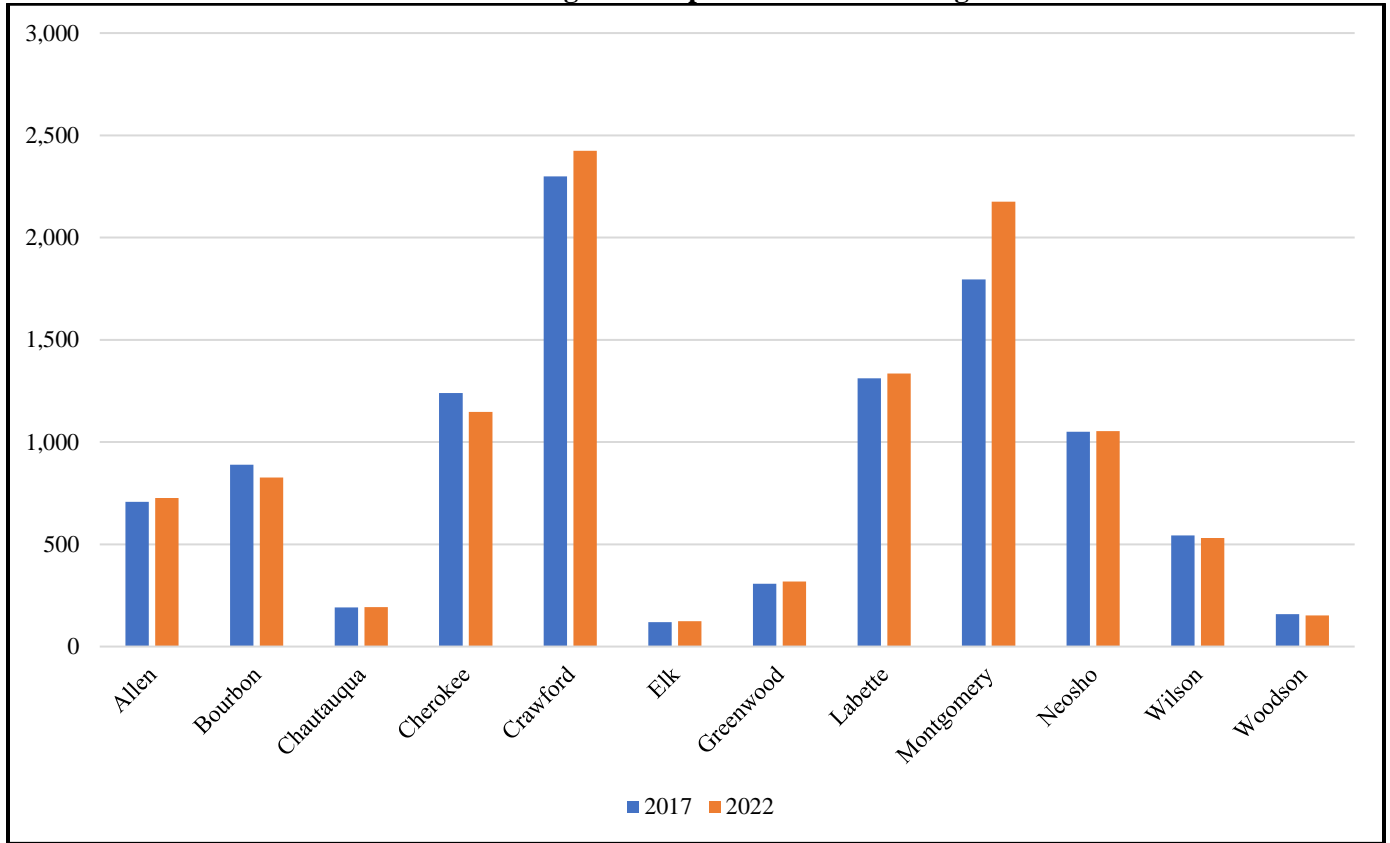
The National Response Framework defines at risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care." The following tables, and associated charts, present information on potential at risk populations within Kansas Region H on a county level for the five-year period 2017 to 2022 (latest available data).

**Table 16: Kansas Region H Population Under the Age of Five**

<b>Jurisdiction</b>	<b>2017</b>	<b>2022</b>
Allen County	708	727
Bourbon County	890	826
Chautauqua County	192	193
Cherokee County	1,239	1,148
Crawford County	2,299	2,424
Elk County	119	124
Greenwood County	307	318
Labette County	1,312	1,336
Montgomery County	1,795	2,175
Neosho County	1,051	1,054
Wilson County	543	531
Woodson County	159	153

Source: US Census Bureau

**Chart 3: Kansas Region H Population Under the Age of Five**



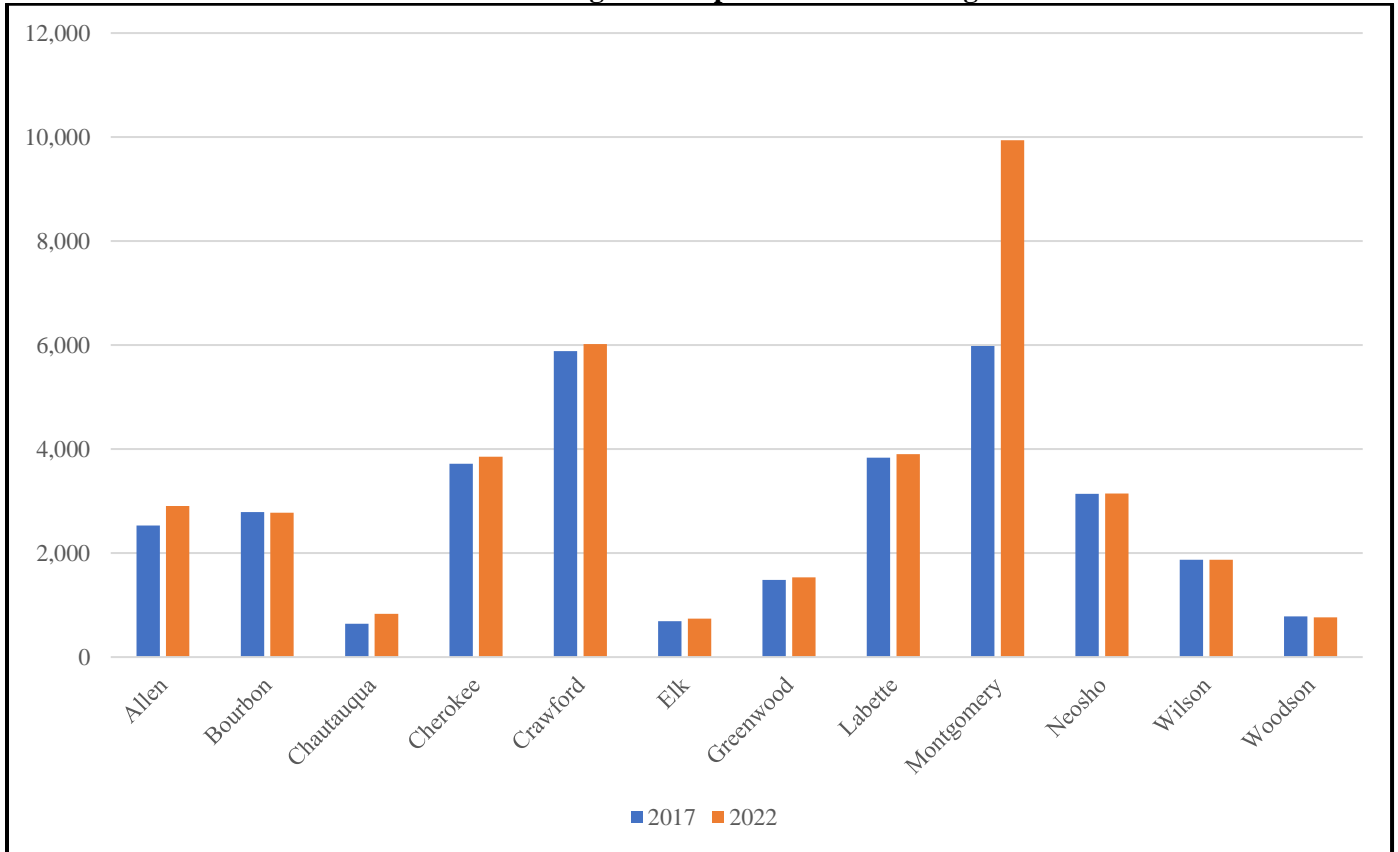
Source: US Census Bureau

**Table 17: Kansas Region H Population Over the Age of 65**

Jurisdiction	2017	2022
Allen County	2,530	2,907
Bourbon County	2,786	2,774
Chautauqua County	644	832
Cherokee County	3,718	3,854
Crawford County	5,885	6,021
Elk County	693	741
Greenwood County	1,486	1,532
Labette County	3,835	3,905
Montgomery County	5,982	9,939
Neosho County	3,137	3,145
Wilson County	1,871	1,869
Woodson County	785	766

Source: US Census Bureau

**Chart 4: Kansas Region H Population Over the Age of 65**



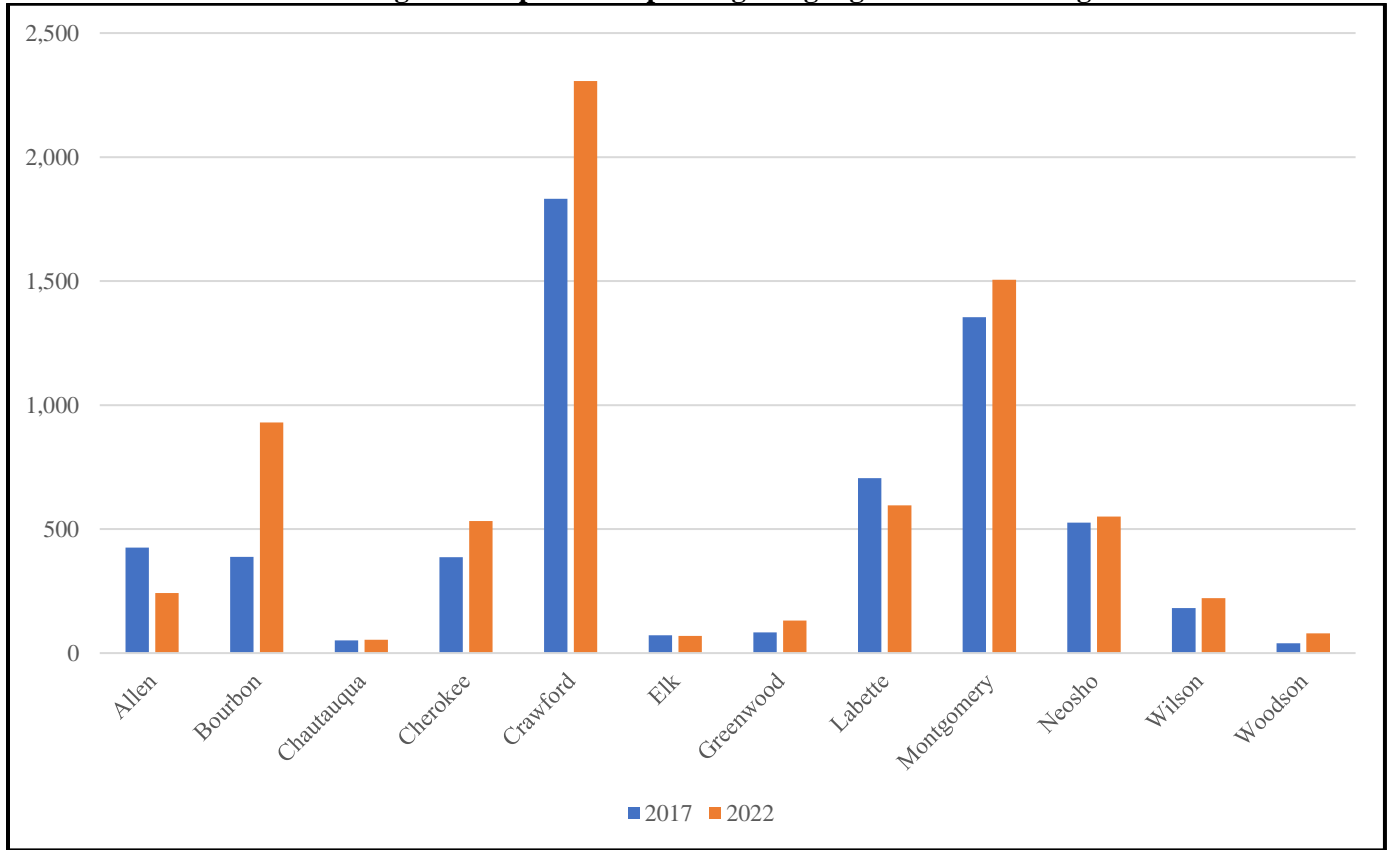
Source: US Census Bureau

**Table 18: Kansas Region H Population Speaking Language Other Than English at Home**

Jurisdiction	2017	2022
Allen County	426	242
Bourbon County	388	930
Chautauqua County	51	54,304
Cherokee County	387	533
Crawford County	1,832	2,307
Elk County	72	70
Greenwood County	84	131
Labette County	706	596
Montgomery County	1,354	1,506
Neosho County	526	551
Wilson County	181	221
Woodson County	40	79

Source: US Census Bureau

**Chart 5: Kansas Region H Population Speaking Language Other Than English at Home**



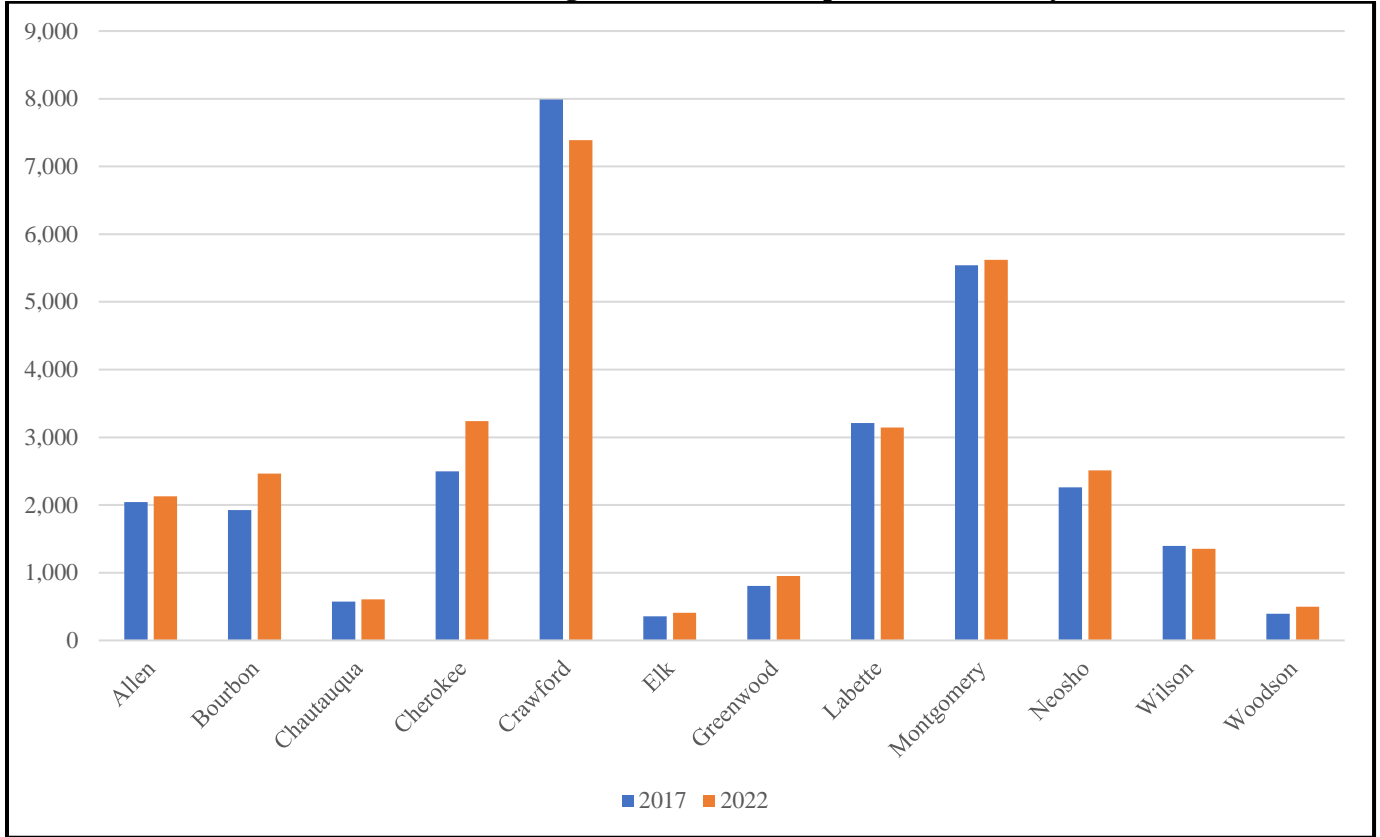
Source: US Census Bureau

**Table 19: Kansas Region H Estimated Population in Poverty**

Jurisdiction	2017	2022
Allen County	2,042	2,130
Bourbon County	1,924	2,464
Chautauqua County	575	608
Cherokee County	2,498	3,239
Crawford County	7,989	7,390
Elk County	355	408
Greenwood County	806	953
Labette County	3,209	3,145
Montgomery County	5,542	5,622
Neosho County	2,261	2,512
Wilson County	1,397	1,355
Woodson County	396	496

Source: US Census Bureau

**Chart 6: Kansas Region H Estimated Population in Poverty**



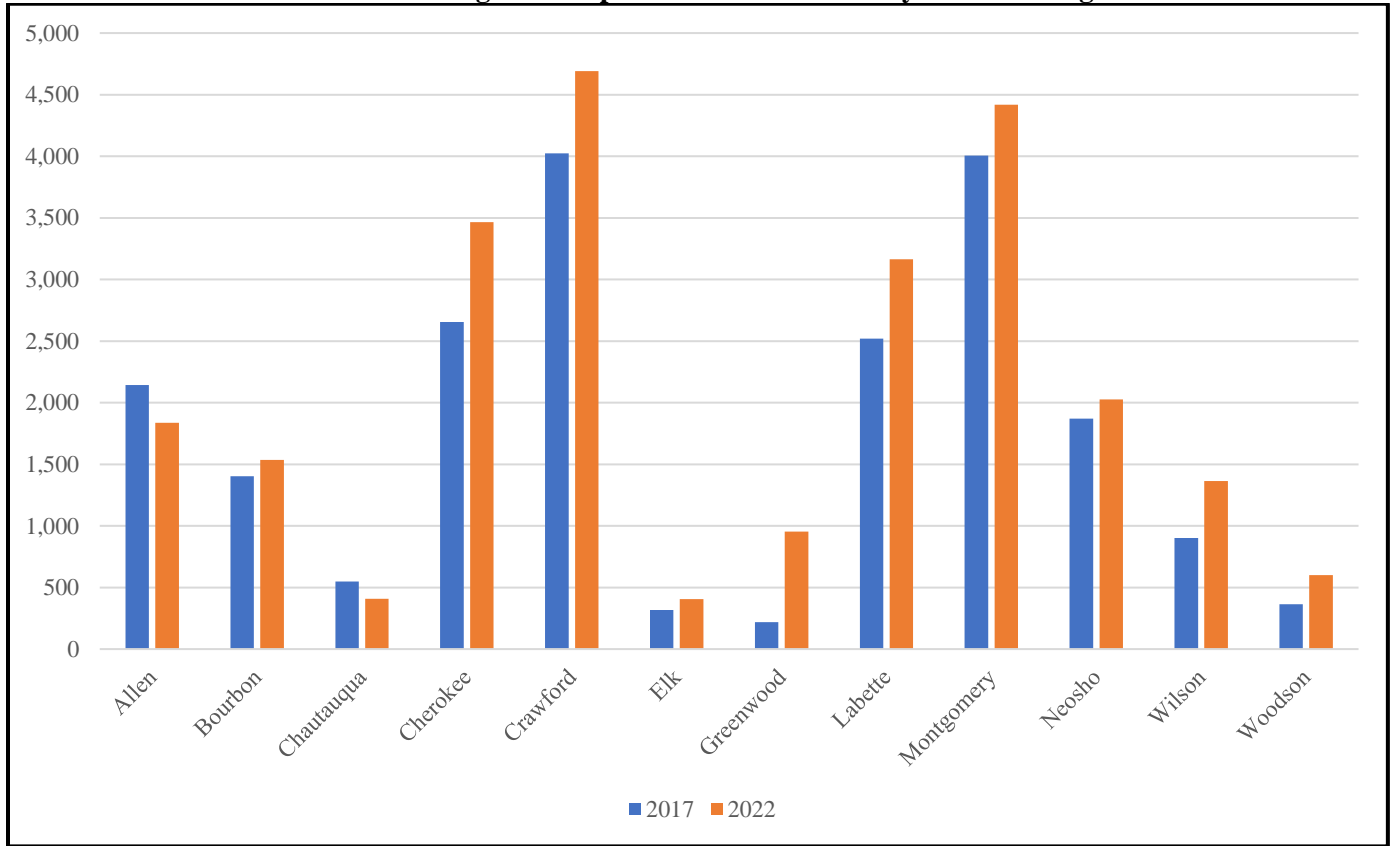
Source: US Census Bureau

**Table 20: Kansas Region H Population with a Disability Under the Age of 65**

Jurisdiction	2017	2022
Allen County	2,142	1,836
Bourbon County	1,403	1,535
Chautauqua County	548	409
Cherokee County	2,654	3,465
Crawford County	4,023	4,692
Elk County	317	405
Greenwood County	218	953
Labette County	2,521	3,165
Montgomery County	4,005	4,417
Neosho County	1,871	2,026
Wilson County	901	1,364
Woodson County	365	601

Source: US Census Bureau

**Chart 7: Kansas Region H Population with a Disability Under the Age of 65**



Source: US Census Bureau

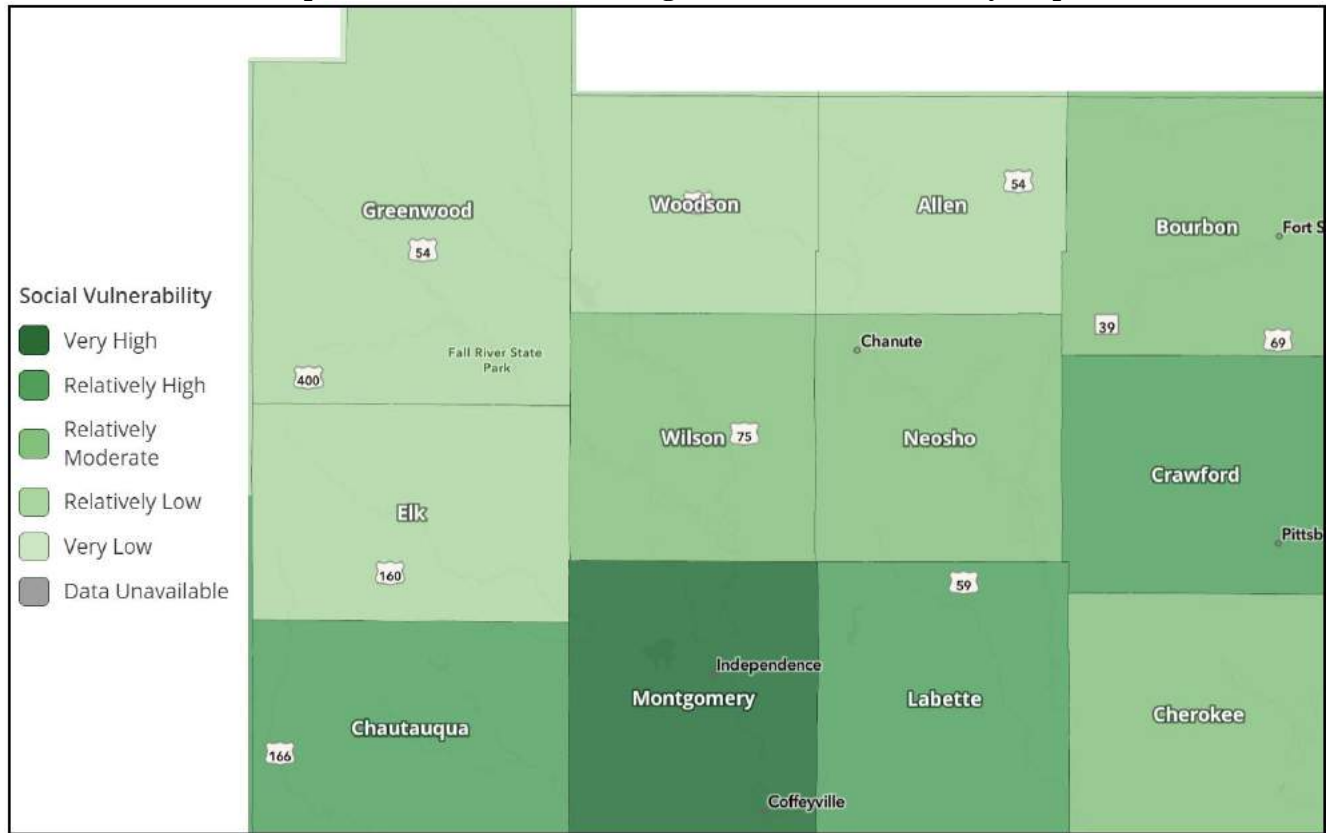
Using data from the Centers for Disease Control and Prevention (CDC)/Agency for Toxic Substances and Disease Registry Social Vulnerability Index FEMA’s NRI creates and maps a Social Vulnerability score. In this context, social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. This score represents the relative level of a community’s social vulnerability compared to all other communities at the same level. A qualitative rating that describes the community in comparison to all other communities at the same level, ranging from “Very Low” to “Very High” is used to quantify Social Vulnerability. Census tracts with the social vulnerability score highest qualify for designation as a community disaster resilience zone. Census tracts designated as a community disaster resilience zone may receive special technical assistance, planning assistance, and a 90% federal funding match (as opposed to the standard 75% federal match) for mitigation projects.

Currently there is one designated community disaster resilience zone in Kansas Region H, as follows:

- Census tract 964600, encompassing all of Chautauqua County.

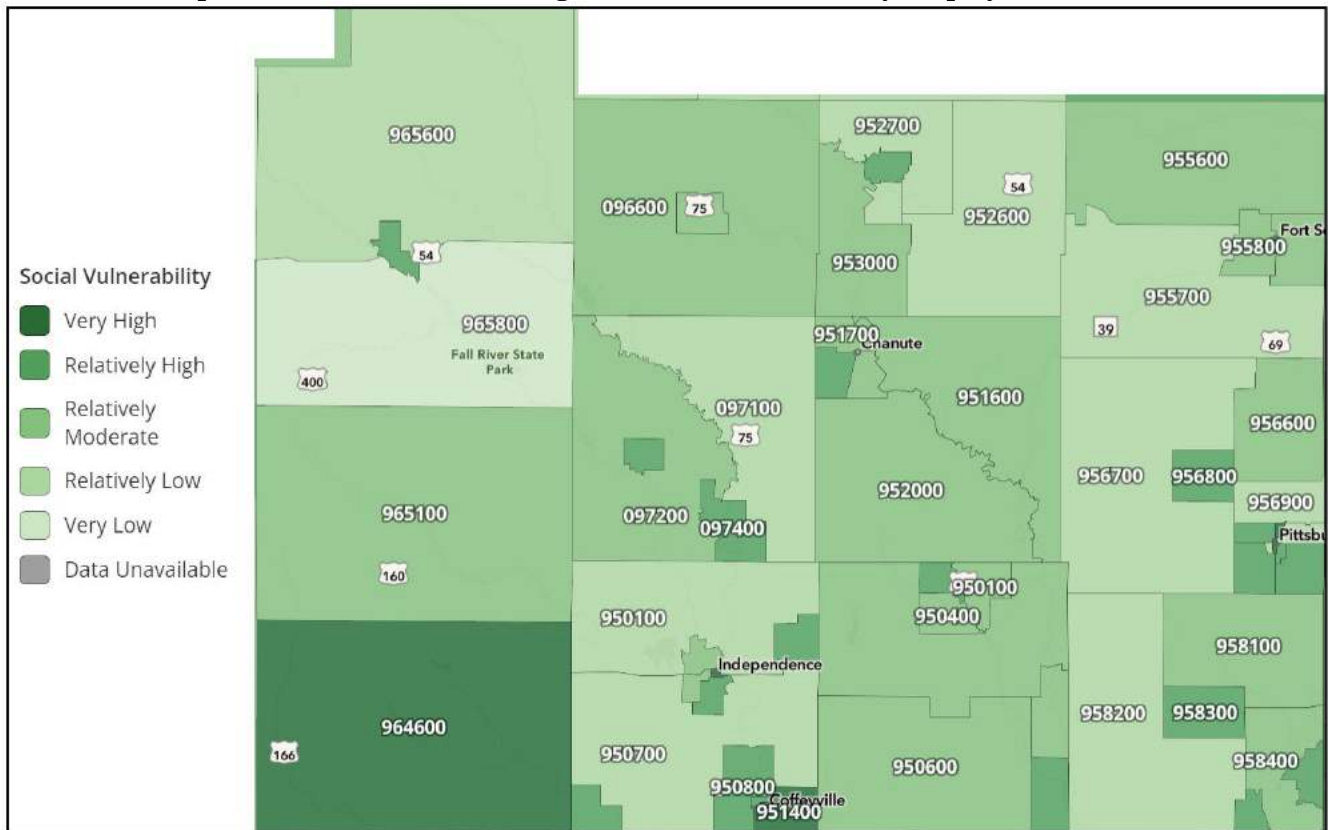
Data concerning social vulnerability is reported by county and by census tract, which can be analogous with jurisdictions. The following details the social vulnerability both county and census tract for Kansas Region H:

**Map 14: FEMA NRI Kansas Region H Social Vulnerability Map**



Source: FEMA

**Map 15: FEMA NRI Kansas Region H Social Vulnerability Map by Census Tract**



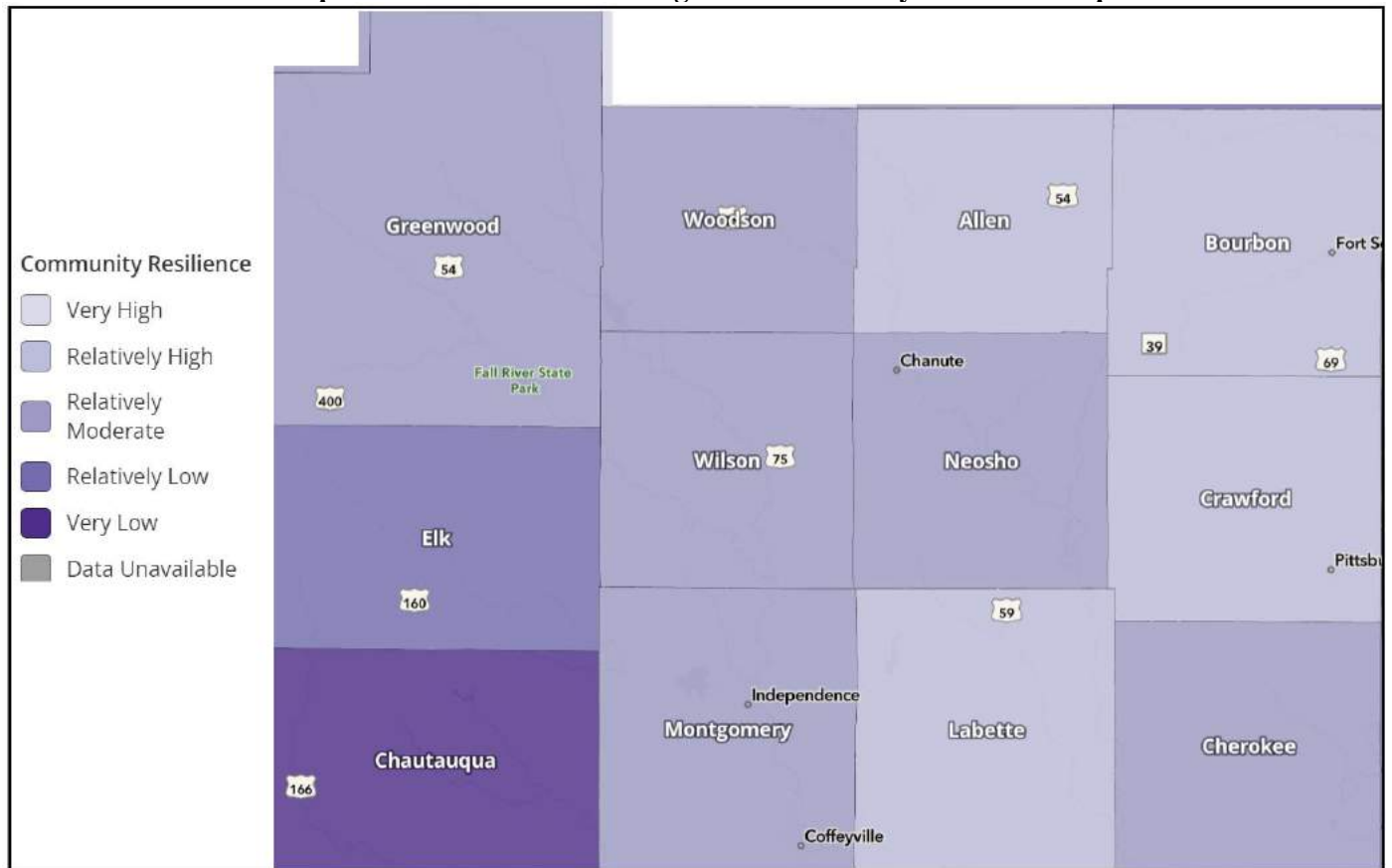
Source: FEMA

Augmenting these maps, full NRI census tract data is available in Appendix C detailing specific information for each census tract in each Kansas Region H county.

Community resilience is the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Factors that are considered when calculating community resilience include governance, infrastructure, education, and other capabilities that help communities deal with hazards on their own. As a consequence reduction risk component of the NRI, a community resilience score and rating represent the relative level of a community’s resilience compared to all other communities at the same level. A community resilience score is inversely proportional to a community’s risk. The following map indicates the community resilience scores for Kansas Region H counties:

Data concerning community resilience is reported on the county level and by census tract, which can be analogous with jurisdictions. The following maps detail community resilience by both county and census tract for Kansas Region H:

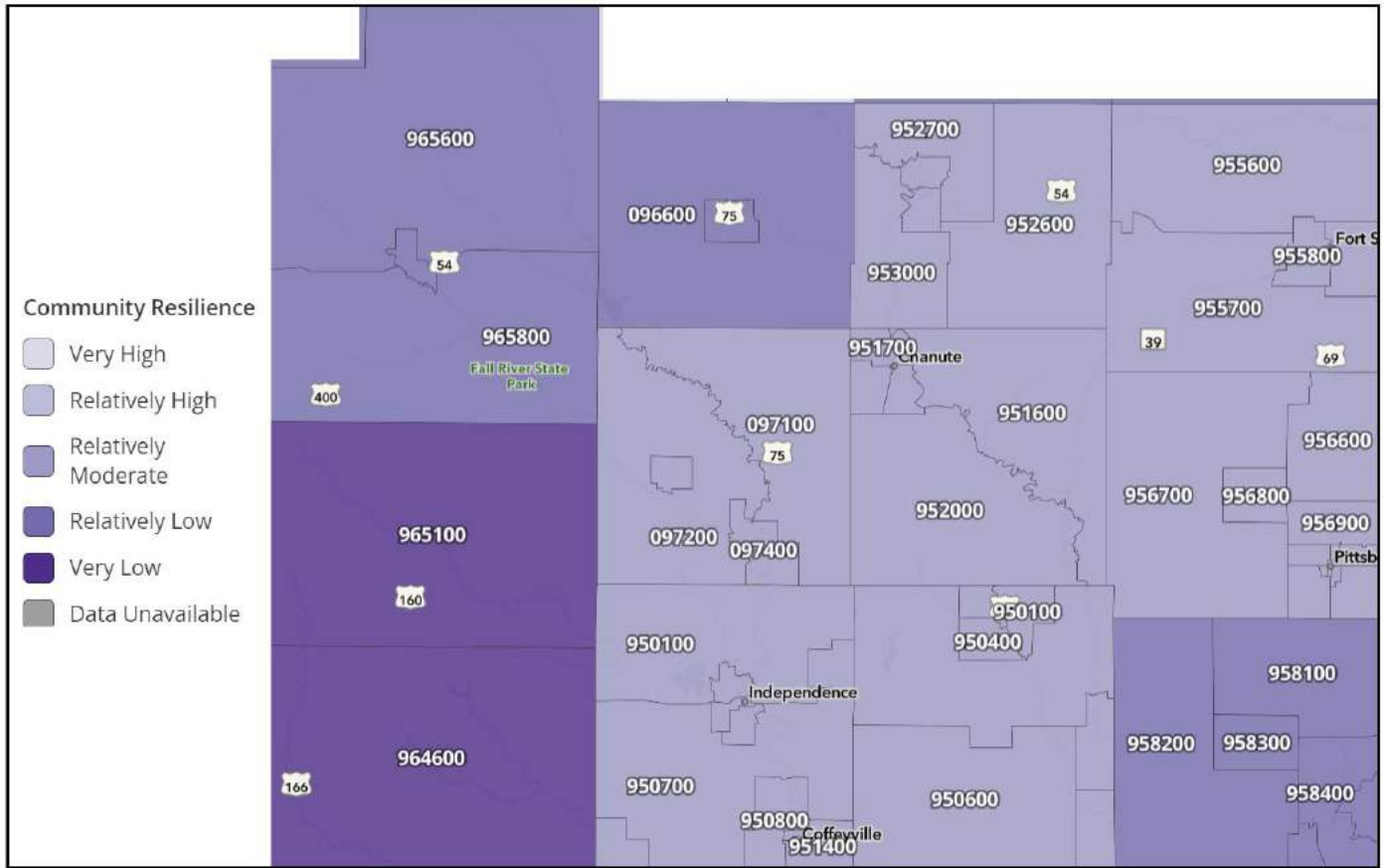
**Map 16: FEMA NRI Kansas Region H Community Resilience Map**



Source: FEMA



**Map 17: FEMA NRI Kansas Region H Community Resilience Map by Census Tract**



Source: FEMA

Augmenting these maps, full NRI census tract data is available in Appendix C detailing specific information for each census tract in each Kansas Region H county.

### 3.5 Regional Population Migration

Kansas Region H, an area of the state known for its agricultural heritage and close-knit rural communities, is experiencing a significant population movement as people increasingly migrate from rural areas to urban centers. This transformation reflects broader demographic trends witnessed across the United States. Demographic research indicates that this migration is occurring due to the following factors:

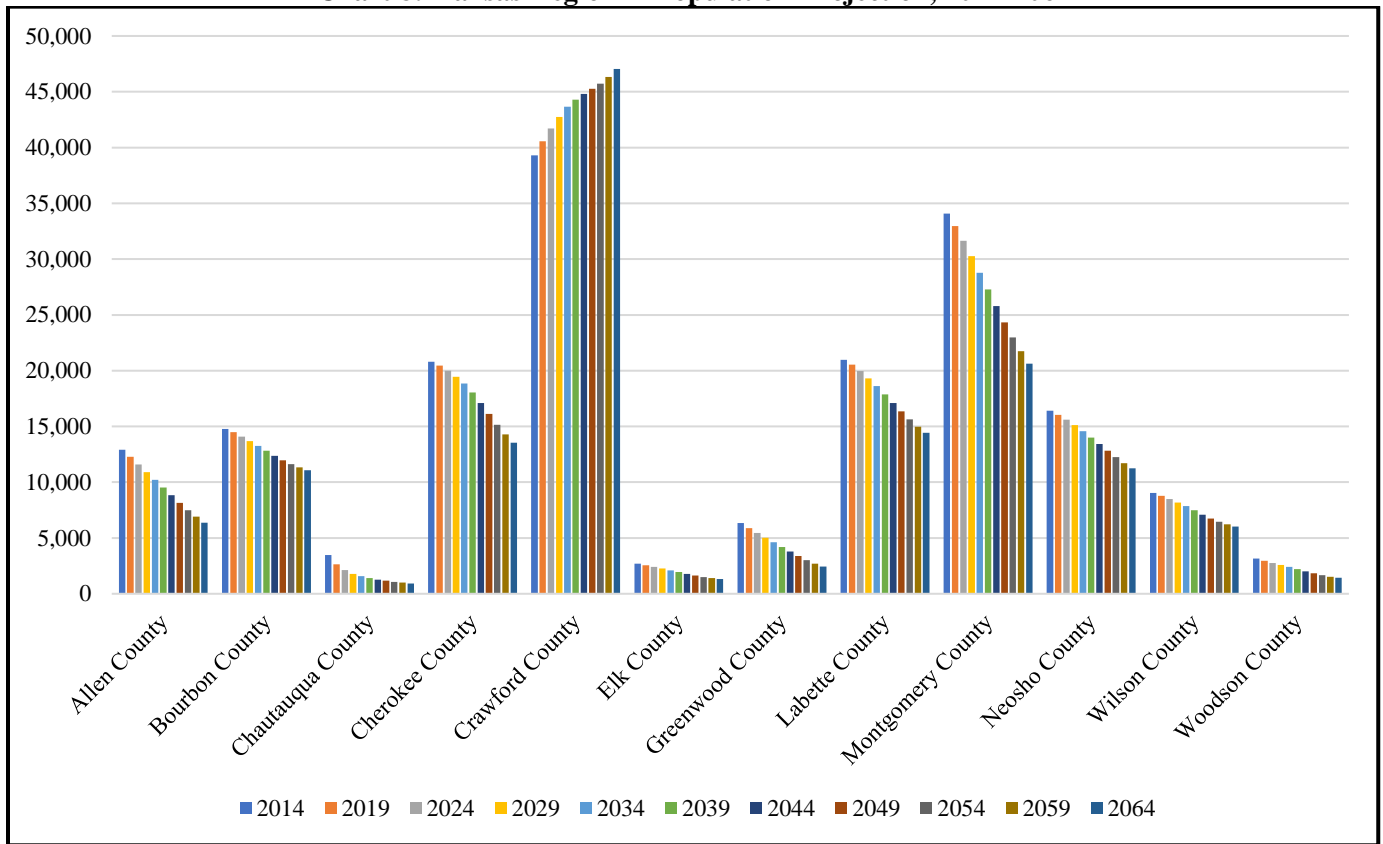
- **Economic Opportunity:** A primary driver of the population movement from rural to urban areas is the quest for better economic prospects. Urban centers such as Wichita, the largest city in the region, offer a diverse range of employment opportunities in sectors like manufacturing, healthcare, finance, and technology. These opportunities often come with higher wages and better access to educational and healthcare facilities compared to rural locales.
- **Technological Advancements in Agriculture:** The modernization of agriculture has led to increased mechanization and efficiency, reducing the demand for manual labor on farms. As a result, rural residents whose livelihoods were traditionally tied to farming are increasingly seeking employment in urban areas.
- **Access to Education and Training:** Urban centers are often home to educational institutions, including colleges, universities, and vocational schools. Young people from rural areas often migrate to these urban settings to pursue higher education and vocational training. This educational mobility is a key factor in the rural-to-urban population shift.

The rural-to-urban population movement has significant implications for both rural and urban areas in Kansas Region H. Rural communities may experience declining populations, school closures, and reduced economic activity.

Meanwhile, urban centers may undergo growth, requiring increased investment in housing, infrastructure, and public services to accommodate the influx of new residents.

The following chart, using data from the Wichita State University Center for Economic Development and Business Research Kansas Population Forecast, indicates population projections (potentially due to rural-to-urban migration) for Kansas Region H. As indicated in the report, all counties, with the exception of Crawford County, are indicated to have either a generally static or decreasing populations over the next 40 years.

**Chart 8: Kansas Region H Population Projection, 2014-2064**



Source: Wichita State University Center for Economic Development and Business Research Kansas Population Forecast

### 3.6 Regional Housing Data

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing demographics and growth. The following table and associated chart, using data from the U.S. Census, present occupied housing unit information for the 11 Region H counties.

**Table 21: Kansas Region H Housing Data**

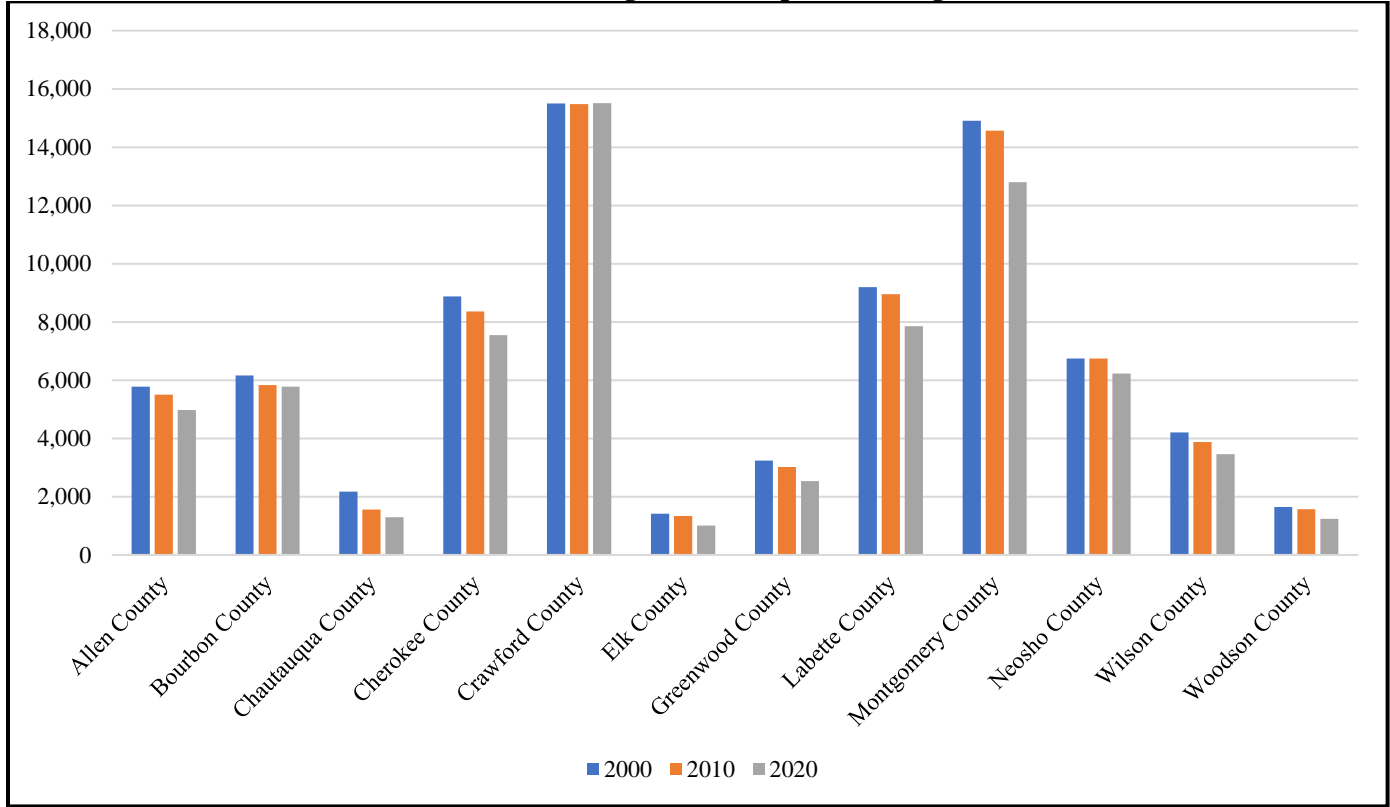
County	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Allen County	5,775	5,505	4,976	-799	-13.80%
Bourbon County	6,161	5,833	5,773	-388	-6.30%
Chautauqua County	2,169	1,554	1,294	-875	-40.34%
Cherokee County	8,875	8,362	7,543	-1,332	-15.00%
Crawford County	15,504	15,484	15,512	8	0.10%
Elk County	1,412	1,340	1,005	-407	-28.80%
Greenwood County	3,234	3,020	2,537	-697	-21.60%
Labette County	9,194	8,952	7,857	-1,337	-14.50%
Montgomery County	14,903	14,564	12,793	-2,110	-14.20%
Neosho County	6,739	6,742	6,232	-507	-7.50%

**Table 21: Kansas Region H Housing Data**

County	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Wilson County	4,203	3,872	3,461	-742	-17.70%
Woodson County	1,642	1,574	1,237	-405	-24.70%

Source: US Census Bureau

**Chart 9: Kansas Region H Occupied Housing Units**



Source: US Census Bureau

FEMA’s Hazus is a nationally standardized risk modeling methodology that uses GIS-based data to identify areas with high risk for natural hazards. Hazus also details the number of buildings and the replacement value of those buildings within the defined area. The following data, from Hazus, indicates the total number of buildings, the replacement valuation (excluding contents), and the percentage of buildings identified as residential properties for Kansas Region H:

**Table 22: Kansas Region H Hazus Structure Information**

Jurisdiction	Number of Buildings	Replacement Value	Percentage Residential
Allen County	6,692	\$1,603,000,000	74.0%
Bourbon County	7,450	\$1,752,000,000	72.4%
Chautauqua County	2,344	\$503,000,000	70.6%
Cherokee County	10,318	\$2,211,000,000	75.9%
Crawford County	17,827	\$4,308,000,000	73.2%
Elk County	1,803	\$352,000,000	84.2%
Greenwood County	4,309	\$795,000,000	79.6%
Labette County	10,493	\$2,385,000,000	75.4%
Montgomery County	16,716	\$4,077,000,000	72.4%
Neosho County	7,997	\$1,833,000,000	68.8%
Wilson County	4,966	\$1,155,000,000	69.4%
Woodson	2,161	\$370,000,000	79.3%

Source: FEMA Hazus

Augmenting this data, full NRI census tract data including census tract building valuation is available in Appendix C.

The following tables present occupied housing unit data on a jurisdictional level, broken down by county.

**Table 23: Allen Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Allen County	5,775	5,505	4,976	-799	-13.8%
Elsmore	35	34	21	-14	-40.0%
Gas	213	230	208	-5	-2.3%
Humboldt	829	790	783	-46	-5.5%
Iola	2,593	2,349	2,156	-437	-16.9%
La Harpe	298	229	258	-40	-13.4%
Moran	236	178	189	-47	-19.9%
Savonburg	29	30	27	-2	-6.9%

Source: US Census Bureau

**Table 24: Bourbon County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Bourbon County	6,161	5,833	5,773	-388	-6.3%
Bronson	141	127	120	-21	-14.9%
Fort Scott	3,509	3,068	3,349	-160	-4.6%
Fulton	74	71	42	-32	-43.2%
Mapleton	46	31	64	18	39.1%
Redfield	55	30	32	-23	-41.8%
Uniontown	120	163	96	-24	-20.0%

Source: US Census Bureau

**Table 25: Chautauqua County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Chautauqua County	2,169	1,554	1,294	-875	-40.3%
Cedar Vale	344	212	256	-88	-25.6%
Chautauqua (city)	72	41	29	-43	-59.7%
Niotaze	55	35	41	-14	-25.5%
Peru	101	70	91	-10	-9.9%
Sedan	652	577	352	-300	-46.0%

Source: US Census Bureau

**Table 26: Cherokee County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Cherokee County	8,875	8,362	7,543	-1,332	-15.0%
Baxter Springs	1,807	1,659	1,542	-265	-14.7%
Columbus	1,410	1,239	1,281	-129	-9.1%
Galena	1,300	1,208	1,098	-202	-15.5%
Roseland	33	57	13	-20	-60.6%
Scammon	199	237	171	-28	-14.1%
Treece	57	58	36	-21	-36.8%
Weir	305	311	189	-116	-38.0%
West Mineral	121	91	41	-80	-66.1%

Source: US Census Bureau

**Table 27: Crawford County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Crawford County	15,504	15,484	15,512	8	0.1%
Arcadia	151	132	141	-10	-6.6%
Arma	673	582	658	-15	-2.2%
Cherokee	238	233	222	-16	-6.7%
Franklin	122	128	102	-20	-16.4%
Frontenac	1,227	1,319	1,326	99	8.1%
Girard	1,055	1,112	1,040	-15	-1.4%
Hepler	54	67	44	-10	-18.5%
McCune	171	169	130	-41	-24.0%
Mulberry	250	216	214	-36	-14.4%
Pittsburg	8,013	7,987	8,210	197	2.5%

Source: US Census Bureau

**Table 28: Elk County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Elk County	1,412	1,340	1,005	-407	-28.8%
Grenola	113	93	81	-32	-28.3%
Howard	349	304	274	-75	-21.5%
Longton	167	157	139	-28	-16.8%
Moline	207	159	115	-92	-44.4%

**Table 29: Greenwood County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Greenwood County	3,234	3,020	2,537	-697	-21.6%
Climax	21	27	21	0	0.0%
Eureka	1,290	1,167	946	-344	-26.7%
Fall River	79	87	62	-17	-21.5%
Hamilton	138	159	118	-20	-14.5%
Madison	360	372	389	29	8.1%
Severy	151	139	96	-55	-36.4%

Source: US Census Bureau

**Table 30: Labette County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Labette County	9,194	8,952	7,857	-1,337	-14.5%
Altamont	458	464	403	-55	-12.0%
Chetopa	557	575	447	-110	-19.7%
Edna	193	153	150	-43	-22.3%
Labette (city)	28	25	16	-12	-42.9%
Mound Valley	168	163	151	-17	-10.1%
Oswego	788	766	721	-67	-8.5%
Parsons	4,760	4,380	3,724	-1,036	-21.8%

Source: US Census Bureau

**Table 31: Montgomery County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Montgomery County	14,903	14,564	12,793	-2,110	-14.2%
Caney	856	716	645	-211	-24.6%
Cherryvale	977	1,019	829	-148	-15.1%
Coffeyville	4,685	4,309	3,605	-1,080	-23.1%
Dearing	175	203	170	-5	-2.9%
Elk City	123	153	96	-27	-22.0%
Havana	45	49	25	-20	-44.4%
Independence	4,115	3,976	3,796	-319	-7.8%
Liberty	52	72	43	-9	-17.3%

Source: US Census Bureau

**Table 32: Neosho County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Neosho County	6,739	6,742	6,232	-507	-7.5%
Chanute	3,866	3,593	3,452	-414	-10.7%
Erie	499	448	418	-81	-16.2%
Galesburg	57	55	32	-25	-43.9%
St. Paul	220	305	230	10	4.5%
Thayer	180	162	181	1	0.6%

Source: US Census Bureau

**Table 33: Wilson County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Wilson County	4,203	3,872	3,461	-742	-17.7%
Altoona	194	164	144	-50	-25.8%
Benedict	41	39	33	-8	-19.5%
Buffalo	114	110	101	-13	-11.4%
Fredonia	1,142	1,136	897	-245	-21.5%
Neodesha	1,152	987	914	-238	-20.7%
New Albany	41	46	43	2	4.9%

Source: US Census Bureau

**Table 34: Woodson County Occupied Housing Unit Data**

Jurisdiction	Occupied Housing Units			Numeric Change 2000-2020	Percentage Change 2000-2020
	2000	2010	2020		
Woodson County	1,642	1,574	1,237	-405	-24.7%
Neosho Falls	77	79	34	-43	-55.8%
Toronto	161	177	86	-75	-46.6%
Yates Center	714	656	626	-88	-12.3%

Source: US Census Bureau

Of particular concern when considering housing data is mobile home residences. Data from the NOAA National Severe Storms Laboratory reports that people living in mobile homes are especially at risk for injury and death as even anchored mobile homes can be seriously damaged when winds gust over 80 miles per hour. Additionally, study data from Michigan State University reported that the two biggest factors related to wind event fatalities were housing quality (measured by mobile homes as a proportion of housing units) and income level. When a tornadic wind strikes, a county with double the number of mobile homes as a proportion of all homes will experience 62% more fatalities than a county

with fewer mobile homes, according to the study data. The following indicates the percentage of mobile homes for each Region H County:

**Table 35: Kansas Region H Mobile Home Data**

Jurisdiction	2010 Percentage Mobile Homes	2020 Percentage Mobile Homes	Percentage Change, 2010 to 2020
Allen County	9.6%	9.6%	0.0%
Bourbon County	7.3%	7.8%	0.5%
Chautauqua County	8.4%	12.8%	4.4%
Cherokee County	14.2%	8.3%	-5.9%
Crawford County	6.7%	4.8%	-1.9%
Elk County	6.6%	11.8%	5.2%
Greenwood County	7.9%	5.5%	-2.4%
Labette County	6.6%	4.2%	-2.4%
Montgomery County	7.8%	7.1%	-0.7%
Neosho County	7.2%	6.3%	-0.9%
Wilson County	8.9%	11.1%	2.2%
Woodson County	12.5%	6.5%	-6.0%

Source: United States Census Bureau

### 3.7 School District Data

Each participating county is served by multiple Unified School Districts (USDs). The following table presents USD enrollment information for 2018 (data compiled from the last plan), and 2023 (the most recent available data):

**Table 36: USD Enrollment Information**

USD #	District Name	County	2018 Enrollment	2023 Enrollment	2018 -2023 Enrollment Change
256	Marmaton Valley	Allen	282	267	-15
257	Iola	Allen	1,264	1,136	-128
258	Humboldt	Allen	602	641	39
234	Fort Scott	Bourbon	1,852	1,810	-42
235	Uniontown	Bourbon	445	467	23
285	Cedar Vale	Chautauqua	183	140	-43
286	Chautauqua Community	Chautauqua	375	382	7
404	Riverton	Cherokee	735	699	-36
493	Columbus	Cherokee	962	930	-32
499	Galena	Cherokee	810	793	-17
508	Baxter Springs	Cherokee	1,008	833	-175
246	Northeast	Crawford	469	467	-2
247	Cherokee	Crawford	521	455	-66
248	Girard	Crawford	1,019	1,013	-6
249	Frontenac Public Schools	Crawford	933	904	-29
250	Pittsburg	Crawford	3,004	3,325	321
282	West Elk	Elk	343	366	23
283	Elk Valley	Elk	114	107	-7
386	Madison-Virgil	Greenwood	230	235	5
389	Eureka	Greenwood	640	544	-96
390	Hamilton	Greenwood	77	102	26
503	Parsons	Labette	1,279	1,329	50
504	Oswego	Labette	451	496	45
505	Chetopa-St. Paul	Labette	438	373	-65
506	Labette County	Labette	1,539	1,500	-39

**Table 36: USD Enrollment Information**

USD #	District Name	County	2018 Enrollment	2023 Enrollment	2018 -2023 Enrollment Change
436	Caney Valley	Montgomery	757	768	12
445	Coffeyville	Montgomery	1,731	1,698	-33
446	Independence	Montgomery	1,994	2,037	43
447	Cherryvale	Montgomery	813	683	-130
101	Erie-Galesburg	Neosho	521	408	-113
413	Chanute Public Schools	Neosho	1,808	1,789	-19
387	Altoona-Midway	Wilson	186	144	-42
461	Neodesha	Wilson	716	749	34
484	Fredonia	Wilson	655	649	-6
366	Woodson	Woodson	451	397	-54

Source: Kansas State Department of Education

### 3.8 Regional Land Use

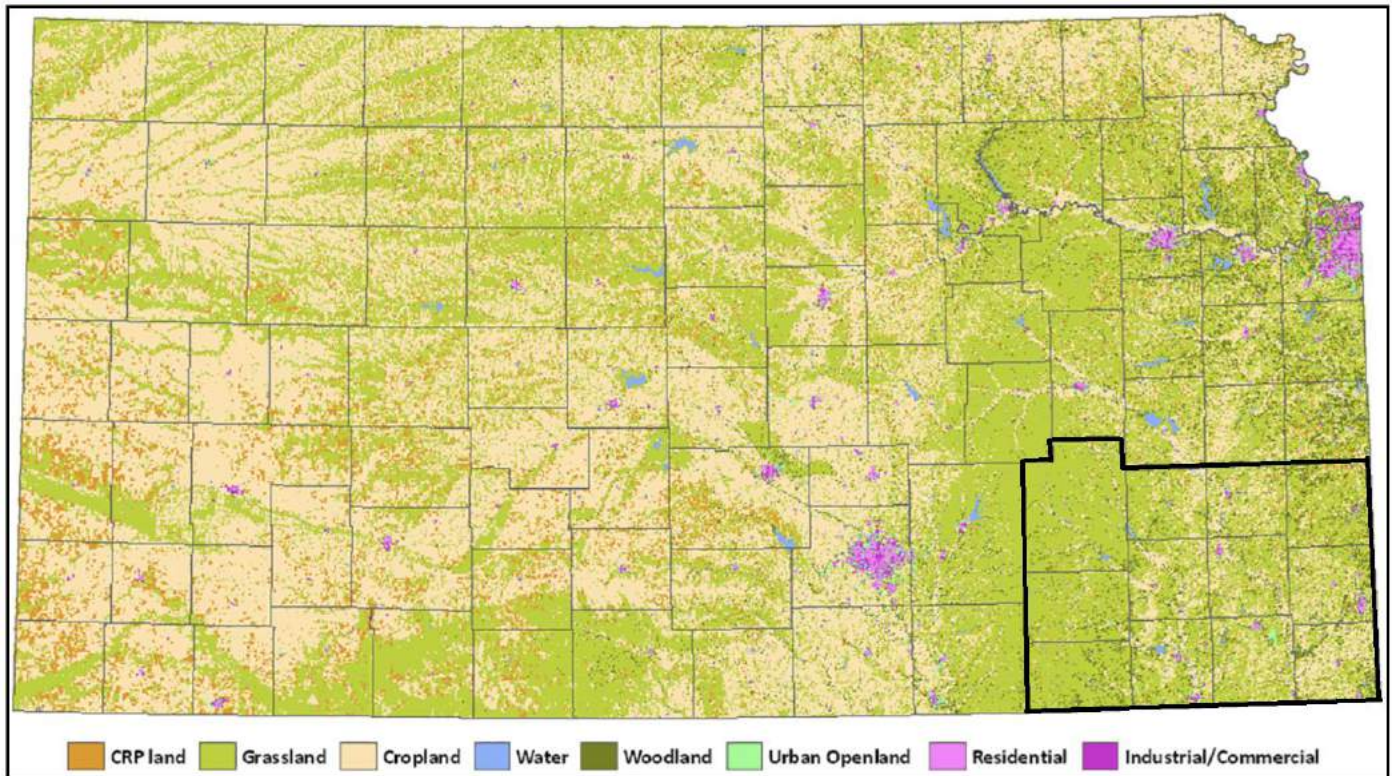
Land use in a region has a profound and lasting impact on future development. The way land is allocated and utilized can shape the economic, social, and environmental aspects of a region for decades. Land use affects that can impact future development include:

- **Economic Development:** Land use decisions influence the location and type of economic activities in a region. Zoning regulations that encourage the development of industrial zones can attract manufacturing businesses, while zoning for commercial and residential areas can promote retail and housing development. These decisions can have long-term implications for job creation, revenue generation, and the overall economic health.
- **Transportation and Infrastructure:** Land use planning is closely tied to transportation infrastructure. The location of road and other transportation facilities is determined in part by land use decisions. Well-planned land use can lead to efficient transportation networks, reducing congestion, and improving mobility. Poorly planned land use, on the other hand, can result in traffic congestion and increased infrastructure costs.
- **Housing and Urbanization:** Land use policies influence the availability and affordability of housing in a region. Zoning regulations, for example, can determine the density of residential areas and the types of housing permitted. Inadequate or restrictive land use policies can lead to housing shortages and higher costs, while well-planned policies can support diverse housing options and affordability.
- **Resilience to Climate Change:** Land use planning plays a critical role in a region's ability to adapt to climate change. Smart land use decisions can reduce vulnerability to natural disasters, such as flooding and wildfires, by avoiding high-risk areas and implementing resilient building codes and infrastructure.
- **Long-Term Costs:** Land use decisions can affect the long-term costs of development. Efficient land use planning can reduce the need for costly infrastructure extensions and maintenance, while inefficient or sprawling development can strain municipal budgets.

As indicated by the following Kansas Herpetofaunal Atlas map from Fort Hays State University, land use in Kansas Region H is largely rural and agricultural:



**Map 18: Kansas Land Cover**



Source: Fort Hays State University

Rural and agricultural areas in Kansas tend to retain their rural and agricultural nature over time, but there are several factors that can influence the evolution of these areas, including:

- **Economic Conditions:** The economic viability of agriculture can vary significantly over time due to factors like crop types, weather patterns, and changes in agricultural technology. Economic challenges may lead some farmers to sell their land for non-agricultural uses or to consolidate their operations, potentially affecting the rural landscape.
- **Urbanization and Development:** In some cases, rural areas in Kansas may experience suburbanization or the expansion of nearby urban centers. This can result in residential and commercial development encroaching on agricultural land. However, the extent of this development depends on local zoning and land use regulations.
- **Infrastructure Development:** The construction of new transportation infrastructure, such as highways or railroads, can influence land use patterns. Improved infrastructure may make it easier to transport agricultural products to markets or to access rural areas for development.
- **Government Policies:** Government policies, including agricultural subsidies, land use regulations, and conservation programs, can impact the way rural and agricultural land is used. For example, conservation programs may encourage farmers to preserve land for wildlife habitat rather than development.
- **Local Planning and Zoning:** Local governments play a key role in land use planning and zoning regulations. These policies can determine whether agricultural land can be converted to non-agricultural uses, such as residential or commercial development. Some areas may have strict zoning that preserves agricultural character, while others may allow more flexibility.
- **Population Trends:** Demographic trends, including population growth or decline, can influence the demand for land in rural areas. If there is an influx of new residents seeking a rural lifestyle, it can drive demand for residential development in formerly agricultural areas.

### 3.9 Regional Infrastructure Development

Infrastructure repair can have a significant impact on regional development, both positive and negative. The specific effects depend on the scale of the repair projects, the quality of the infrastructure, and the overall economic and social context of the region, and may include:

- **Improved Connectivity:** Repairing and upgrading infrastructure, such as roads, bridges, and ports, can enhance connectivity within and between regions. This improved connectivity can reduce transportation costs, facilitate the movement of goods and people, and attract businesses and investments to the region.
- **Economic Growth:** Functional infrastructure supports economic activities. When infrastructure is repaired, it can create jobs directly in the construction and maintenance sectors. Additionally, it can indirectly stimulate economic growth by providing a reliable foundation for businesses to operate and expand, leading to increased production and trade.
- **Enhanced Productivity:** Well-maintained infrastructure can increase productivity by reducing downtime and transportation delays. This, in turn, can make regional industries more competitive and efficient.
- **Attracting Investment:** Regions with modern and well-maintained infrastructure are often more attractive to investors. Businesses are more likely to invest in regions with reliable transportation, utilities, and communication networks, as it reduces operational risks and costs.
- **Quality of Life:** Infrastructure repair can enhance the quality of life for residents by providing access to essential services such as clean water, sanitation, healthcare, and education. This can contribute to improved human development indicators and overall well-being.
- **Resilience and Disaster Mitigation:** Infrastructure repair can include upgrades to make infrastructure more resilient to natural disasters and climate change impacts. This can help protect communities and assets and reduce the long-term costs of recovery and reconstruction.
- **Social Equity:** Infrastructure repair can address disparities in access to essential services. It can benefit marginalized communities by providing them with equal access to transportation, utilities, and public facilities.

However, it is important to note that there can be negative impacts as well, including:

- **Disruption During Construction:** Repair projects can disrupt communities and businesses during the construction phase, leading to short-term challenges.
- **Costs and Budget Constraints:** Large-scale infrastructure repair projects can be costly, and they may strain regional budgets or lead to increased taxes or debt.
- **Environmental Concerns:** If not done carefully, infrastructure repair projects can have adverse environmental impacts, such as habitat disruption or water pollution.

Recent significant state, county, and local infrastructure projects within Region H include:

- **Allen County**
  - The Kansas Department of Commerce Building a Stronger Economy program grant will provide \$2,905,095 for infrastructure buildout to support industrial development at the Allen County Airport.
  - \$1,730,255 extension of road and utilities in Iola for potential future development
- **Bourbon County**
  - K-7 rehabilitation and shoulder widening project in Bourbon and Crawford counties.
  - Heartland Electric solar arrays at 135th and Range Roads in the northern part of the county.
  - NextEra Energy solar energy production at four locations in the southwest part of the county.
- **Cherokee County**
  - The Kansas Department of Transportation awarded \$54,800,000 project to expand a five-mile section of U.S. 166.
  - The Kansas Department of Transportation awarded a mill and overlay project on U.S. 69 from the Oklahoma-Kansas state line to the U.S. 69/U.S. 160/K-7 junction.
- **Crawford**

- K-7 rehabilitation and shoulder widening project in Bourbon and Crawford counties.
- Completion of a FedEx Ground distribution center that brought 165 jobs to the region.
- Silverback Landing will bring 133 new homes to Pittsburg.
- Kansas Department of Commerce Building a Stronger Economy program grant will provide \$1,260,000 for Employee Housing Infrastructure at Frontenac Regional Industrial Park
- Elk County
  - Kansas Department of Commerce Building a Stronger Economy program grant will provide \$227,311 for the Elk County Industrial Park.
- Greenwood County
  - Kansas Department of Transportation project to add passing lanes to both sides of U.S. 400. The two-mile project area begins west of the west K-99 junction
  - Rural Water District No. 1 will use volunteer labor from the community and a \$399,550 Kansas Department of Commerce grant to replace aging water lines near Eureka.
- Labette County
  - Great Plains Industrial Park will complete approximately 39,000 track feet of surfacing and regulation, 8,800 tons of ballast replacement, and 5,350 industrial grade tie replacements. This project is being supported, in whole or in part, by Coronavirus State and Local Recovery Funds, federal awarded to Great Plains Development Authority by the U.S. Department of Treasury, the State of Kansas, the Kansas Department of Commerce.
  - Labette County, Neosho County, and the Kansas Department of Transportation will replace the Neosho River bridge south of Erie as well as the railroad crossing bridge just north of U.S. 400 in Labette County, both on U.S. 59.
  - The Kansas Department of Transportation will conduct a bridge replacement project on U.S. 59/U.S. 160 approximately six miles northwest of Oswego.
- Montgomery County
  - Kansas Department of Commerce Building a Stronger Economy program grant will provide \$2,600,000 to the City of Independence for a housing and water extension project.
  - Construction of a \$375,000,000 soybean crushing facility in Cherryvale will create about 50 permanent jobs.
- Neosho County
  - Kansas Department of Commerce Building a Stronger Economy program grant will provide \$500,000 for the Chanute Business Expansion and Supporting Residential Development Project.
  - Kansas Department of Commerce Building a Stronger Economy program grant will provide \$820,373 for the Southeast Kansas Impact Center Parking /Completion Project.
  - Neosho County, Labette County, and the Kansas Department of Transportation will replace the Neosho River bridge south of Erie as well as the railroad crossing bridge just north of U.S. 400 in Labette County, both on U.S. 59.
  - Kansas Department of Transportation project on U.S. 169 to construct passing lanes on both sides of the highway and extend the Elk Creek bridge.
- Wilson County
  - Every replacing electrical distribution towers throughout the county, on the El Dorado to Altona line
  - Fredonia is conducting work on underground utilities throughout the city.
  - 4 Rivers Electric is currently surveying power throughout the county and treating these poles with and anti-rot agent.
- Woodson County
  - The Kansas Department of Commerce has awarded a \$300,000 KAN STEP grant to Woodson County to construct a new fire station in Yates Center.

- Regional
  - Construction of a new 345 kV electrical transmission line by NextEra across Coffey, Anderson, Allen, Bourbon, and Crawford counties, connecting Wolf Creek nuclear power plant to the Blackberry Substation in Missouri.
  - The Kansas Office of Broadband is installing a 682-mile fiber optic network to connect Liberal to Garden City, Pratt to Wichita, Kismet to Minneola, Wichita to Pittsburg, and Pittsburg to Overland Park.
  - The Capital Project Funds Broadband Infrastructure Program awarded the Craw-Kan Telephone Cooperative (Allen County) \$4,584,590 to bring broadband connectivity.
  - The Capital Project Funds Broadband Infrastructure Program awarded Total Communications (Montgomery and Chautauqua Counties) \$3,244,793 to bring broadband connectivity.

Detailed information concerning development trends may be found in the Jurisdictional Comprehensive Plans. These plans, and on ground observations suggest that Kansas Region H’s development continues to follow development described by planners in the previous HMP, specifically small-scale development projects over small areas. On average, the majority of undeveloped land has remained so over the life of the previous HMP and is expected to do so over the life of this plan. In some of the Regions’ more rapidly developing communities, such as Wichita, building activity has increased proportionally to match the incoming population. This data is reflected in both the previously presented population and housing data.

All current and future development is potentially vulnerable to the hazards identified in this plan. However, many of the participating jurisdictions of Kansas Region H have taken steps to reduce the potential impacts through the utilization of building codes and comprehensive plans. A comprehensive plan outlines the long-term vision and goals for the development of a city or municipality. It serves as a strategic guide for future growth, land use, infrastructure, and community development. Comprehensive plans are typically created through a collaborative process involving local government officials, city planners, residents, and various stakeholders. A key component of a comprehensive plan is land use planning, which defines how land will be used, including residential, commercial, industrial, recreational, and green spaces.

Finally, there have been no major changes in existing jurisdictional facilities, either through construction or renovation. Additionally, a review of jurisdictional budgets, as possible, does not indicate any future projects related to increasing the resilience of any existing facilities or of construction facilities. As such, it is expected that the vulnerability of jurisdictional facilities is generally the same as during the life of the previous plan and will remain generally the same during the life of this plan.

### 3.10 Agricultural Data

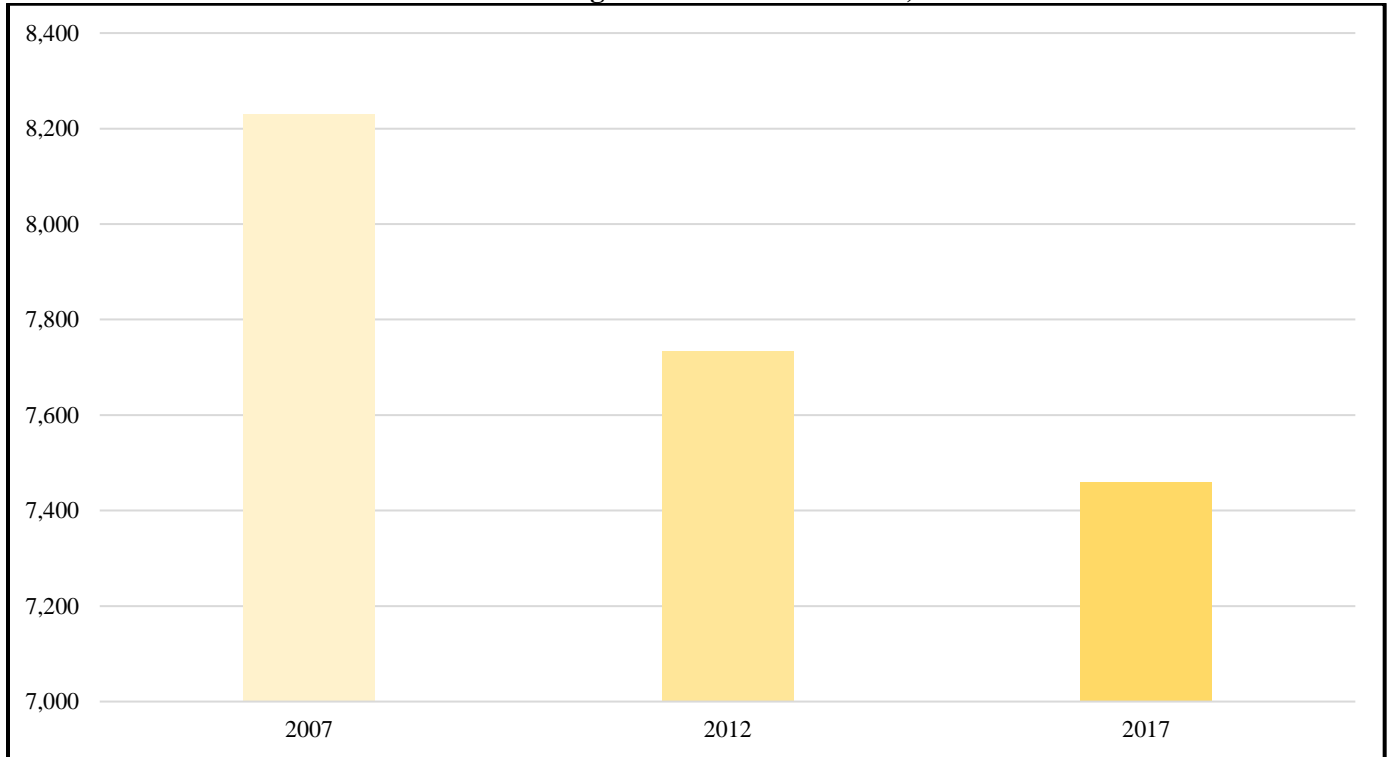
Agriculture forms a very important part of both the economic and social fabric of Kansas Region H. USDA National Agricultural Statistics Service data from 2007, 2012, and 2017 (the latest available data) was used to develop agricultural information for the region, as detailed in the following table and charts:

**Table 37: Kansas Region H Regional Agricultural Data**

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
Kansas Region H	2007	8,231	4,096,896	\$624,384,000
	2012	7,735	4,102,442	\$801,032,000
	2017	7,459	4,039,645	\$996,734,000

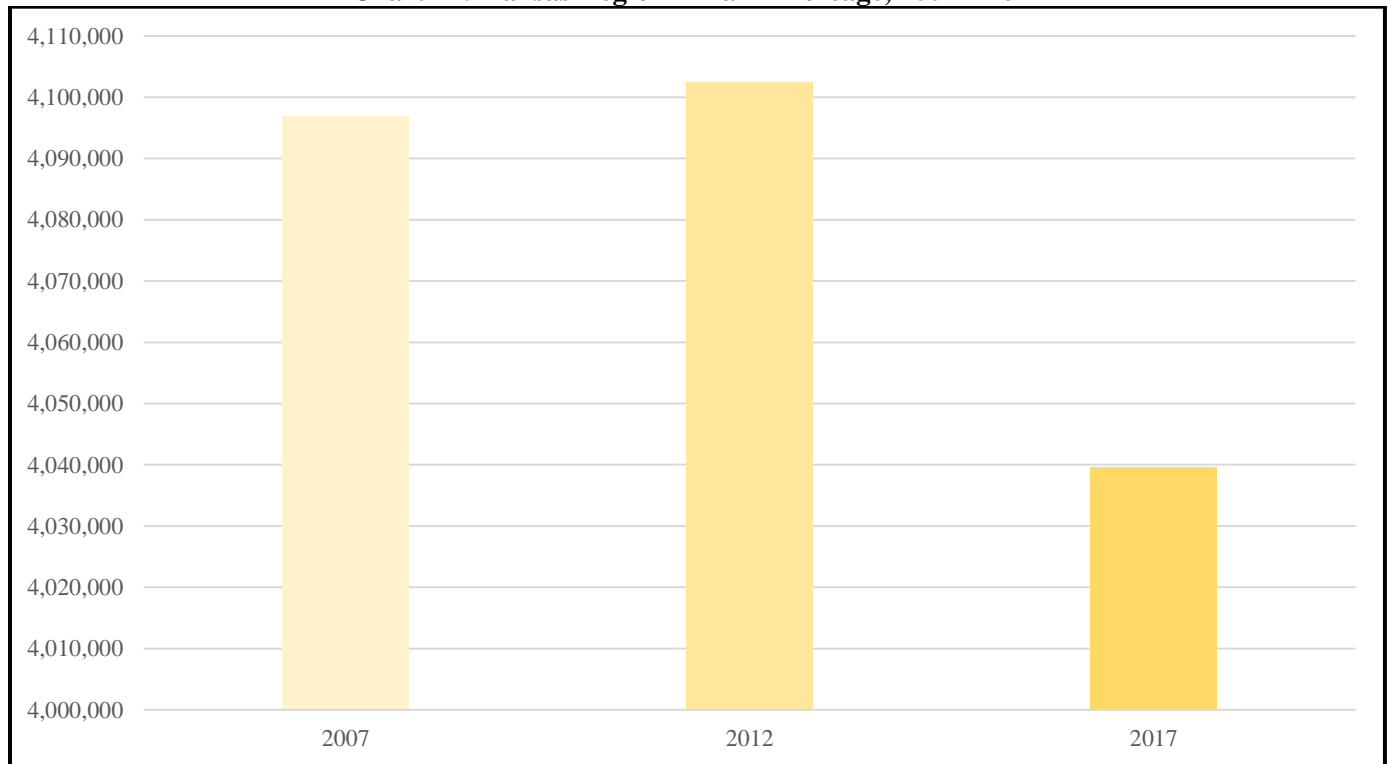
Source: USDA National Agricultural Statistics Service

**Chart 10: Kansas Region H Number of Farms, 2007 – 2017**



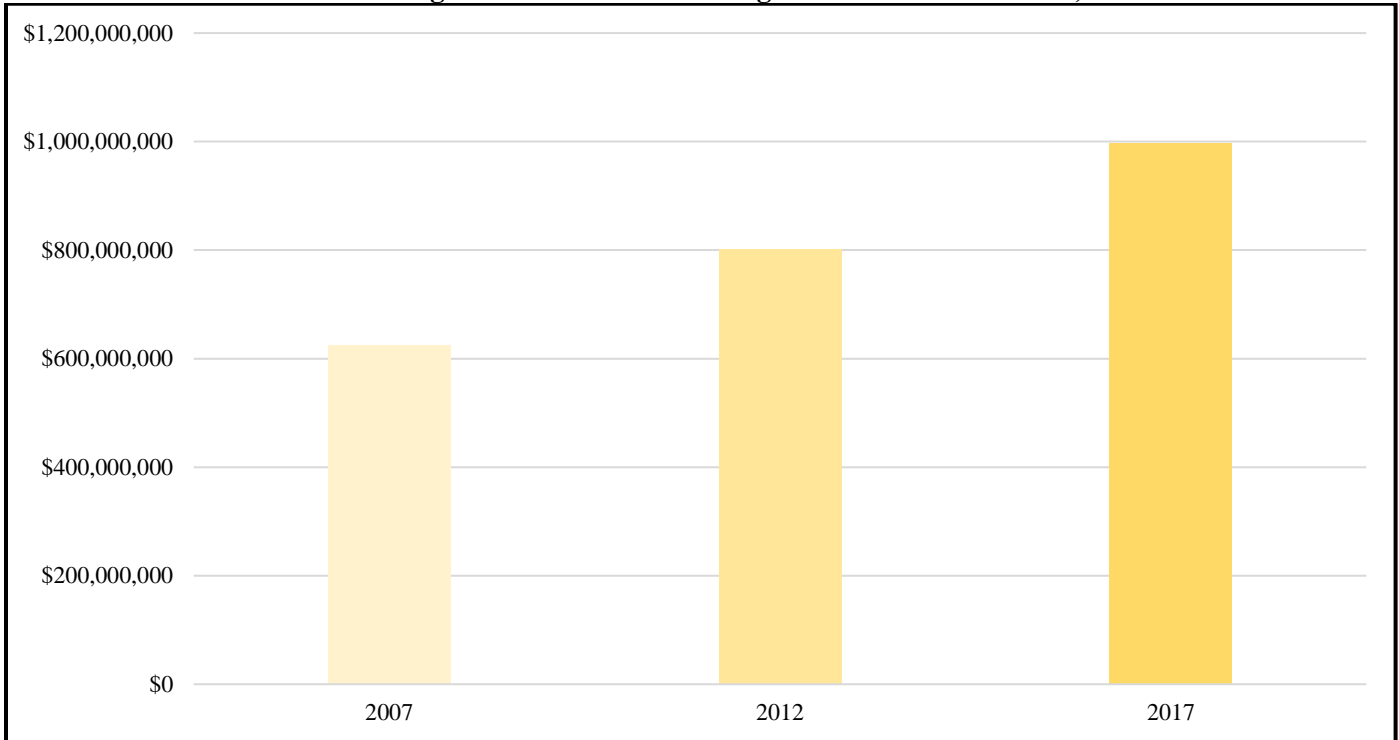
Source: USDA

**Chart 11: Kansas Region H Farm Acreage, 2007 – 2017**



Source: USDA

**Chart 12: Kansas Region H Market Value of Agricultural Products Sold, 2007 – 2017**



Source: USDA

The following table breaks down USDA National Agricultural Statistics Service data from 2007, 2012, and 2017 (the latest available data) on a county level:

**Table 38: Kansas Region H County Level Agricultural Data**

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
Allen County	2007	611	267,409	\$30,993,000
	2012	650	245,315	\$38,156,000
	2017	505	239,906	\$47,935,000
Bourbon County	2007	928	327,534	\$42,649,000
	2012	903	334,301	\$53,376,000
	2017	813	336,045	\$78,934,000
Chautauqua County	2007	359	308,232	\$27,529,000
	2012	312	310,310	\$35,195,000
	2017	351	288,421	\$31,333,000
Cherokee County	2007	809	324,383	\$88,499,000
	2012	729	308,233	\$86,906,000
	2017	756	319,315	\$141,476,000
Crawford County	2007	911	342,349	\$57,371,000
	2012	846	323,222	\$75,594,000
	2017	777	335,118	\$85,940,000
Elk County	2007	361	316,707	\$29,857,000
	2012	315	316,385	\$42,070,000
	2017	318	246,933	\$37,660,000
Greenwood County	2007	539	608,891	\$87,664,000
	2012	551	701,012	\$89,554,000
	2017	540	616,017	\$105,468,000

**Table 38: Kansas Region H County Level Agricultural Data**

Jurisdiction	Year	Number of Farms	Farm Acreage	Market Value of Products Sold
Labette County	2007	1,052	371,115	\$89,935,000
	2012	977	370,531	\$122,778,000
	2017	997	399,292	\$176,035,000
Montgomery County	2007	994	313,947	\$39,916,000
	2012	1,012	335,669	\$79,420,000
	2017	1,006	365,696	\$95,251,000
Neosho County	2007	775	321,520	\$48,227,000
	2012	702	308,150	\$67,958,000
	2017	687	323,092	\$81,868,000
Wilson County	2007	553	333,202	\$44,376,000
	2012	423	254,671	\$55,422,000
	2017	420	286,824	\$62,284,000
Woodson County	2007	339	261,607	\$37,368,000
	2012	315	294,643	\$54,603,000
	2017	289	282,986	\$52,550,000

Source: USDA National Agricultural Statistics Service

### 3.11 Potential Impacts of Climate Change

There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events including longer and hotter heat waves (and by correlation, an increased risk of wildfires), higher wind speeds, greater rainfall intensity, and increased tornado activity. Where applicable, and with proper scientific evidence, potential climate change factors will be addressed in subsequent sections for relevant identified hazards.

Data from the NOAA NCEI Kansas 2022 State Climate Summary indicates the following concerning the climate change in the state:

- Temperatures have risen approximately 1.5° Fahrenheit since the beginning of the 20<sup>th</sup> century.
- Recent multiyear periods have been among some of the warmest on record for Kansas, comparable to the extreme heat of the Dust Bowl era of the 1930s.
- Greater warming has occurred in the winter and spring months.
- The frequency of extreme precipitation events has been highly variable but shows a general increase, with the number of 2-inch precipitation events was well above average during the 2015–2020 period.
- Although projections of overall annual precipitation are uncertain, summer precipitation is projected to decrease across the state while winter precipitation is projected to increase.
- The increase in extreme precipitation events has been more pronounced in the eastern part of the state.
- The intensity of future droughts is projected to increase.
- Drought, combined with the extreme summer heat, is expected to have significant negative impacts on crop yields, livestock production, and pasture conditions.
- The frequency and severity of wildfires is projected to increase.

## Section 4 – Hazard Identification and Risk Assessment

### 4.1 Introduction

The goal of this hazard mitigation is to reduce the future impacts of hazards, including deaths and injuries, property damage, and disruption to local and county economies, and to further reduce the amount of public and private funds spent to assist recovery. To complete this goal, hazard mitigation decision-making in this plan has been based on a robust risk assessment, completed to identify natural, human caused, and technological hazards that represent a risk to Kansas Region H. The following provide a definition of the risk assessment terms used during this assessment:

- **Hazard:** An act or phenomenon that has the potential to produce harm or other undesirable consequences to a person or thing.
- **Exposure:** The people, property, systems, or functions that could be lost to a hazard. Generally, exposure includes what lies in the area the hazard could affect.
- **Vulnerability:** Vulnerability is susceptibility to physical injury, harm, damage, or economic loss. It depends on an asset’s construction, contents, and economic value of its functions.
- **Risk:** A function of hazard, vulnerability, and exposure. It refers to the likelihood of an event resulting in an adverse condition that causes injury or damage.

In order to accomplish this assessment, all relevant natural, human caused, and technological hazards, potential vulnerabilities, and exposures were identified. As potential hazards, vulnerabilities, and exposure are identified Kansas Region H can continue to develop a strategy to identify and prioritize mitigation action to defend against these potential risks.

### 4.2 Declared Federal Disasters

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. §§ 5121-5206) provides for the Federal support of State and local governments and their citizens when impacted by an overwhelming disaster. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, establishes the process for requesting a Presidential disaster declaration and defines the type of assistance available.

If it is apparent that a Presidential disaster declaration may be necessary to assist in the recovery of an impacted area, Counties within Kansas Region H and FEMA Region VII will conduct a Preliminary Damage Assessment (PDA). This assessment is used to determine:

- The extent of the event.
- The impact of the event on individuals and public facilities.
- The types of federal assistance that may be needed.

Once the PDA is complete, and if a determination is made that the damages exceed available State of Kansas resources, the Governor may submit through FEMA Region VII a declaration request to the President.

A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work. Not all programs, however, are activated for every disaster. The determination of which programs are authorized is based on the types of assistance specified in the Governor’s request and the needs identified during the initial and subsequent PDAs. FEMA disaster assistance programs may include:

- Individual Assistance
- Public Assistance
- Hazard Mitigation

To recognize and encourage mitigation, FEMA considers the extent to which mitigation measures contributed to the reduction of disaster damages. This could be especially significant in those disasters where, because of mitigation, the estimated public assistance damages fell below the per capita indicator.



Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The MPC reviewed the historical federal disaster declarations to assist in hazard identification. The following table details Disaster Declarations for Kansas Region H:

**Table 39: Kansas Region H Presidentially Declared Disasters**

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4747-KS	10/26/2023	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Allen, Woodson	-
DR-4504-KS	3/29/2020	Covid-19	All Kansas Counties	\$447,055,679
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Allen, Chautauqua, Cherokee, Elk, Greenwood, Montgomery, Neosho, Wilson, Woodson	\$51,157,548
DR-4417-KS	3/20/2019	Severe Storms, Straight-Line Winds, and Flooding	Greenwood	\$3,509,374
DR-4319-KS	6/16/2017	Severe Winter Storm, Snowstorm, Straight-Line Winds, and Flooding	Cherokee, Crawford, Neosho	\$40,146,036
DR-4287-KS	10/20/2016	Severe Storms and Flooding	Greenwood, Woodson	\$6,745,588
DR-4230-KS	7/20/2015	Severe Storms, Tornadoes, Straight-Line Winds and Flooding	Chautauqua, Cherokee, Elk, Greenwood, Neosho	\$11,018,053
DR-4150-KS	10/22/2013	Severe Storms, Straight-Line Winds, Tornadoes	Bourbon, Cherokee, Crawford, Elk, Greenwood, Montgomery, Wilson, Woodson	\$10,135,201
DR-1932-KS	8/10/2010	Severe Storms, Flooding and Tornadoes	Elk, Greenwood, Wilson, Woodson	\$7,384,786
DR-1885-KS	3/9/2010	Severe Winter Storms and Snowstorm	Allen, Bourbon, Cherokee, Crawford, Elk, Greenwood, Labette, Neosho, Wilson, Woodson	\$15,069,228
DR-1860-KS	9/30/2009	Severe Storms and Flooding	Bourbon,	\$3,143,581
DR-1849-KS	6/25/2009	Severe Storms, Flooding, Straight-Line Winds, and Tornadoes	Bourbon, Cherokee, Crawford, Elk, Greenwood, Labette, Neosho, Wilson	\$11,534,818
DR-1848-KS	6/24/2009	Severe Winter Storm and Record and Near Record Snow	Chautauqua, Elk, Greenwood, Woodson	\$12,436,207
DR-1808-KS	10/31/2008	Severe Storms, Flooding, and Tornadoes	Greenwood	\$3,364,325
DR-1776-KS	7/9/2008	Severe Storms, Flooding, and Tornadoes	Bourbon, Chautauqua, Cherokee, Crawford, Elk, Montgomery, Wilson	\$55,300,511
DR-1741-KS	2/1/2008	Severe Winter Storms	Cherokee, Crawford, Labette, Woodson	\$227,086,533
DR-1711-KS	7/2/2007	Severe Storms and Flooding	Allen, Bourbon, Chautauqua, Cherokee, Crawford, Elk, Greenwood, Labette, Montgomery, Neosho, Wilson, Woodson	\$50,737,322
DR-1699-KS	5/6/2007	Severe Storms, Tornadoes, and Flooding	Cherokee	\$98,286,095
DR-1579-KS	2/8/2005	Severe Winter Storm, Heavy Rains, and Flooding	Chautauqua, Crawford, Elk, Greenwood, Woodson	\$82,381,461
DR-1535-KS	8/3/2004	Severe Storms, Flooding, and Tornadoes	Cherokee, Labette, Woodson	\$10,223,840
DR-1402-KS	2/6/2002	Ice Storm	Allen, Bourbon, Chautauqua, Cherokee, Crawford, Elk, Greenwood, Labette, Montgomery, Neosho, Wilson, Woodson	\$45,020,240
DR-1327-KS	5/3/2000	Severe Storms and Tornado	Crawford, Labette, Neosho	\$619,592

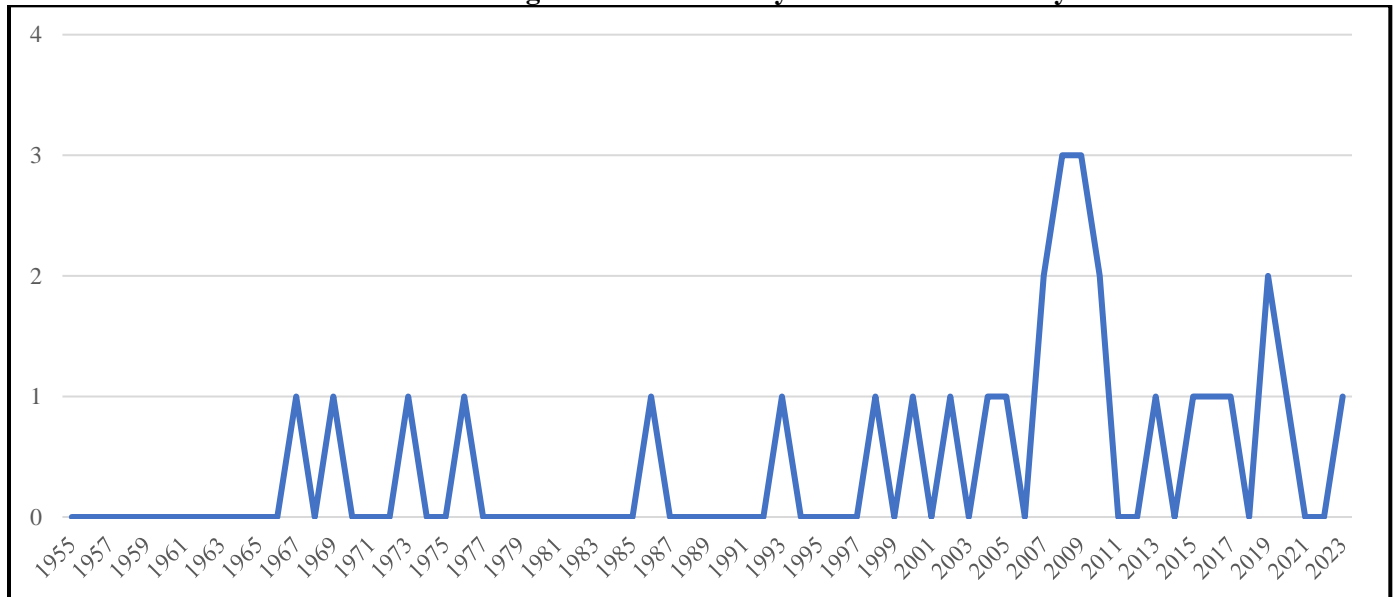
**Table 39: Kansas Region H Presidentially Declared Disasters**

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-1258-KS	11/5/1998	Severe Storms and Flooding	Neosho, Wilson	\$9,574,047
DR-1000-KS	7/22/1993	Flooding, Severe Storms	Cherokee, Crawford	-
DR-780-KS	10/22/1986	Severe Storms, Flooding	Allen, Bourbon, Chautauqua, Labette, Montgomery, Neosho, Wilson	-
DR-514-KS	7/13/1976	Severe Storms, High Winds, Flooding	Cherokee, Crawford, Elk, Greenwood, Labette, Montgomery, Neosho, Wilson	-
DR-378-KS	5/2/1973	Severe Storms, Flooding	Bourbon, Chautauqua, Cherokee, Crawford, Greenwood, Labette, Montgomery, Woodson	-
DR-267-KS	7/15/1969	Tornadoes, Severe Storms, Flooding	Allen, Bourbon, Crawford, Neosho, Woodson	-
DR-229-KS	7/18/1967	Tornadoes, Severe Storms, Flooding	Crawford	-
DR-201-KS	6/23/1965	Flooding	Greenwood	-

Source: FEMA

The following chart represents Presidentially Declared Disasters in the Kansas Region H by year, starting in 1955:

**Chart 13: Kansas Region H Presidentially Declared Disasters by Year**



Source: FEMA

The President can declare an emergency for any occasion or instance when the President determines federal assistance is needed. Emergency Declarations supplement State and local or Indian tribal government efforts in providing emergency services, such as the protection of lives, property, public health, and safety, or to lessen or avert the threat of a catastrophe. The total amount of assistance provided for in a single emergency may not exceed \$5,000,000. The following types of assistance are available under an Emergency Declaration:

- Public Assistance, Categories A (debris removal) and B (emergency protective measures)
- Individual Assistance, the Individuals and Households Program

The MPC reviewed the historical federal disaster declarations to assist in hazard identification. The following table details Emergency Declarations for Kansas Region H.

**Table 40: Kansas Region H Emergency Declarations**

Designation	Declaration Date	Incident Type	Counties	Public Assistance
EM-3481-KS	03/13/2020	Kansas Covid-19	All	-
EM-3412-KS	05/28/2019	Flooding	Allen, Chautauqua, Cherokee, Crawford, Elk, Greenwood, Montgomery, Wilson, Woodson	-
EM-3282KS	12/12/2007	Kansas Winter Storms	All	-
EM-3236-KS	09/10/2005	Hurricane Katrina Evacuation	All	-

Source: FEMA

Note: -: Data unavailable

The Governor, or the Governor's Authorized Representative, may submit a request for a fire management assistance declaration as required. FEMA will approve declarations for fire management assistance when it is determined that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster. There have been no fire management declarations for Kansas Region H.

The Governor of the State of Kansas has declared one Kansas Disaster Declaration during the past five years for Region H. On April 20, 2020 a declaration was issued for the COVID-19 pandemic.

**4.3 Identified Potential Hazards**

One of the first steps in developing a hazard assessment is to identify the hazards that have a reasonable risk of occurring. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and cascading impacts of an incident. Furthermore, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard incidents overall.

The MPC met to discuss previously identified hazards and deliberate on any changes or additions to the regional hazard profile. A thorough and comprehensive revision of data for each hazard was completed as part of this plan update. Additionally, this plan has worked, as per FEMA recommendations, to merge similar hazards together with the aim of both simplifying the usage of the plan and reducing duplication of effort.

The MPC confirmed the following natural hazards that may impact the Kansas Region H:

**Table 41: Kansas Region H Identified Natural Hazards**

Hazard	Included in 2019 HMP	Notes
Agricultural Infestation	Yes	-
Dam or Levee Failure	Yes	-
Drought	Yes	-
Extreme Temperatures	Yes	-
Flood	Yes	-
Severe Weather	Yes	Combined hail, lightning, and high and thunderstorm winds
Severe Winter Weather	Yes	Renamed from Winter Storm
Tornado	Yes	-
Wildfire	Yes	Renamed with greater focus on wildfires

The MPC confirmed the following human caused and technological hazards that may impact the Kansas Region H, as listed below:

**Table 42: Kansas Region H Identified Human Caused and Technological Hazards**

Hazard	Included in 2019 HMP	Notes
Cybersecurity Incident	No	New

**Table 42: Kansas Region H Identified Human Caused and Technological Hazards**

<b>Hazard</b>	<b>Included in 2019 HMP</b>	<b>Notes</b>
Hazardous Materials Incident	Yes	Renamed from chemical incident
Infrastructure Failure	Yes	Renamed from Utility/Infrastructure Failure
Radiological Incident	Yes	-
Terrorism	Yes	Now includes active shooter
Transmissible Disease	Yes	Renamed from Major Disease Outbreak

Based on discussion with the MPC, a lack of identified risk or history, and/or geographic improbability, civil unrest, expansive soils, landslide, land subsidence, soil erosion and dust, and radiological incident (hazards identified in the State of Kansas Hazard Mitigation Plan) were not included in the scope of this plan.

#### **4.4 Hazard Planning Significance**

For the purposes of this plan, hazard planning significance refers to the relevance of the identified hazard to the jurisdictions of Kansas Region H when calculating risk and vulnerability. In order to help quantify the planning significance for a hazard, data was reviewed on two levels, federal (National Risk Index data) and local (researched plan data relevant to occurrence and vulnerability on a county and local level). This allowed for a comparison between data sets for each hazard type and allowed for a summation at the county level. It is recognized that inconsistencies in methodologies and data make it difficult to make a direct comparison across all data levels. However, as possible, collected data was translated into a unified model that accounted for any variability in data and methodologies.

The result of this assessment provides a larger scale snapshot of how the Kansas Region H jurisdictions view risk and allowed for integration of hazard data in to the HMP.

For natural hazards, data from this plan was vetted by local Emergency Managers and participating jurisdictions to ensure it matched local conditions. Additionally, the Kansas Region H utilized FEMA’s National Risk Index (NRI) which provides a method of understating high and local level jurisdictional vulnerability. FEMA’s NRI dataset and online tool was used to help determine local community risk for identified natural hazards in this HMP.

The risk equation behind the Risk Index includes three components, Expected Annual Loss (EAL), social vulnerability (previously discussed), and community resilience (previously discussed). The dataset supporting EAL provides estimates measured in 2022 U.S. dollars. The datasets supporting the social vulnerability and community resilience components have been standardized using a minimum-maximum normalization approach prior to being incorporated into the NRI risk calculation.

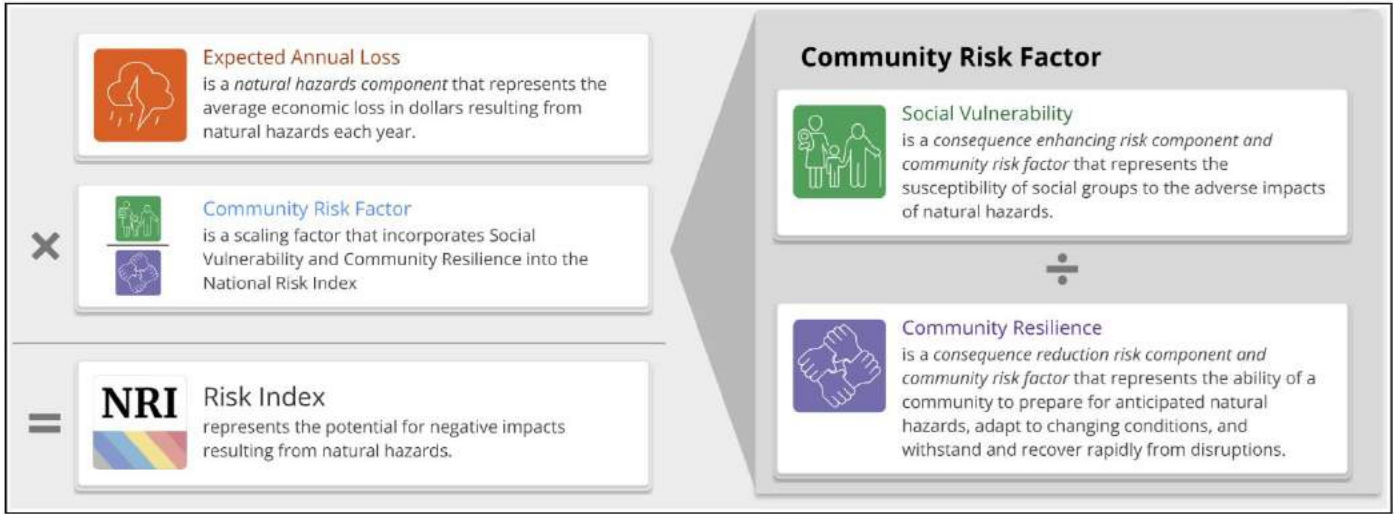
As part of the NRI, EAL represents the average economic loss in dollars resulting from a hazard each year. It quantifies loss for relevant consequence types, buildings, people, and agriculture. An EAL score and rating represent a community's relative level of expected losses each year when compared to all other communities at the same level. EAL is calculated using an equation that includes exposure, annualized frequency, and historic loss ratio risk factors. Exposure is a factor that measures the building value, population, and agriculture value potentially exposed to a natural hazard occurrence. Annualized frequency is a factor that measures the expected frequency or probability of a hazard occurrence per year. Historic loss ratio is a factor that measures the percentage of the exposed consequence type value (building, population, or agriculture) expected to be lost due to an occurrence. EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk.

To calculate Risk Index values, the NRI generates a Community Risk Adjustment to scale EAL values up or down, depending on their community risk factors, increasing with social vulnerability and decreases with community resilience. For a jurisdiction, a higher social vulnerability results in a higher Risk Index value while higher community resilience results in a lower Risk Index value.

Using these three components, Risk Index values are calculated for each jurisdiction (county and Census tract). The calculated Risk Index values form an absolute basis for measuring Risk within the NRI, and they are used to generate Risk Index percentiles and ratings across communities.

The risk equation behind the NRI is as follows:

**Figure 1: FEMA NRI**



For both the Risk Index and EAL there is a qualitative rating that describes the nature of a community’s score in comparison to all other communities at the same level, ranging from “Very Low” to “Very High.” Because all ratings are relative, there are no specific numeric values that determine the rating.

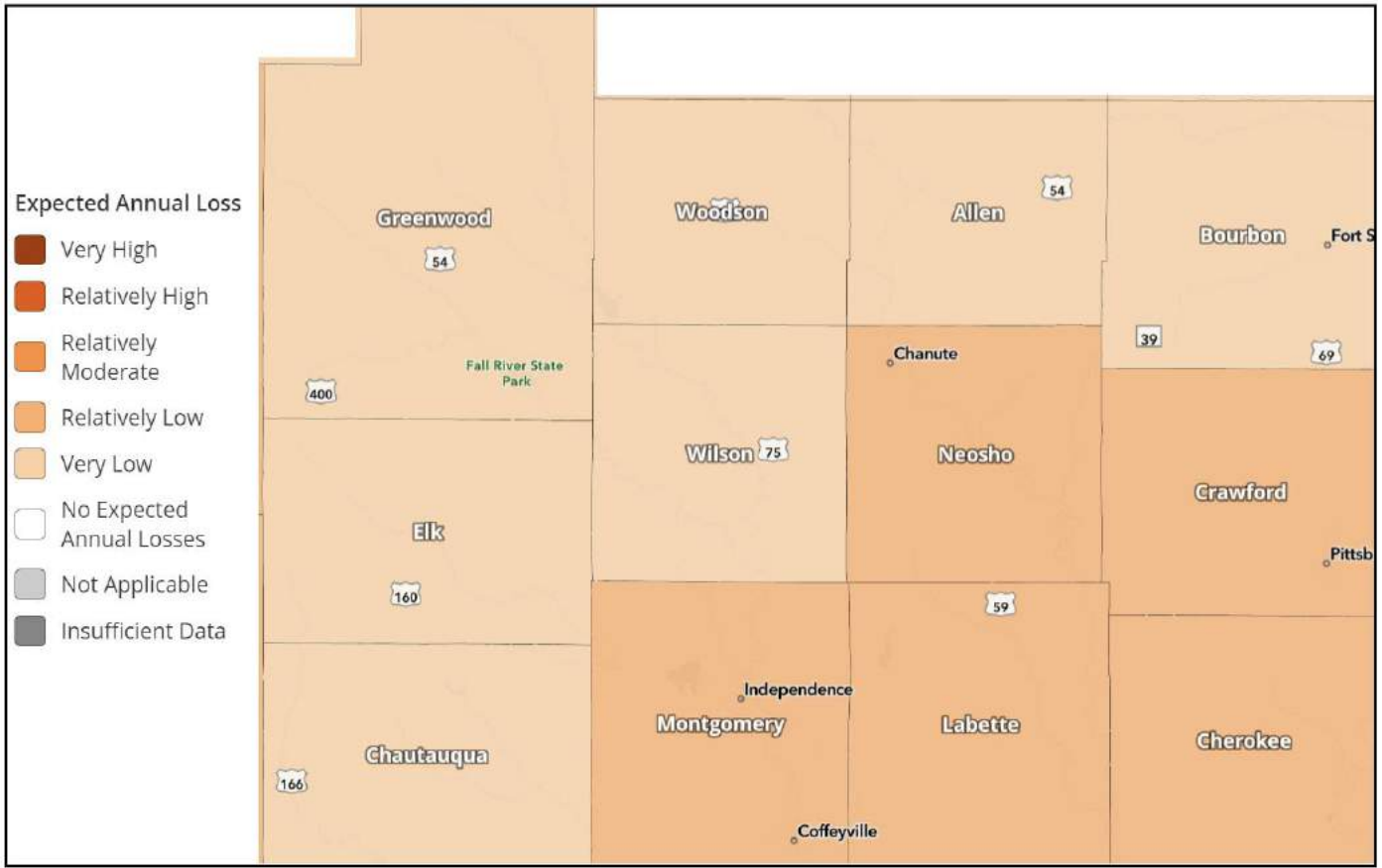
The following maps indicate the natural hazard composite NRI and EAL for Kansas Region H counties:

**Map 19: Kansas Region H FEMA NRI**



Source: FEMA NRI

**Map 20: Kansas Region H FEMA EAL**



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for all identified natural hazards:

**Table 43: Kansas Region H FEMA NRI and EAL for All Natural Hazards**

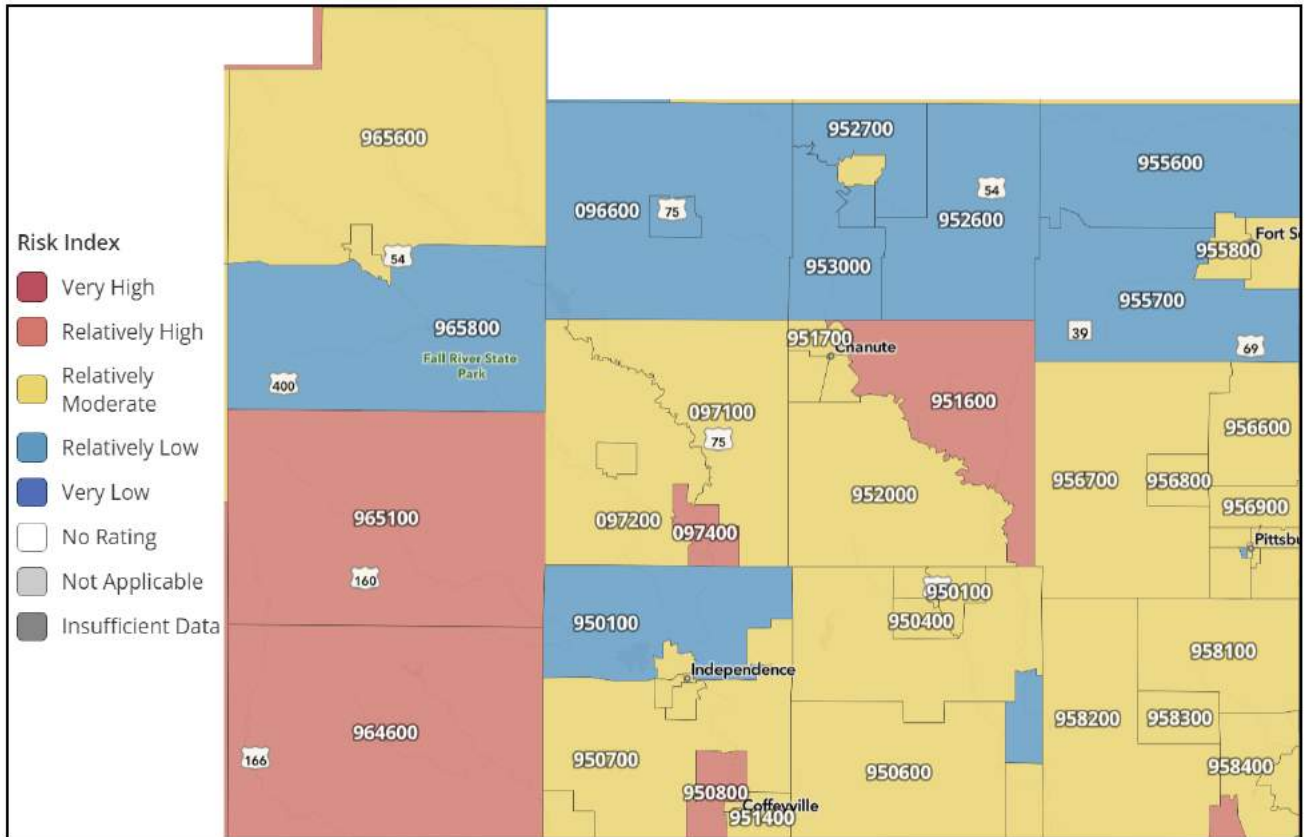
County	Risk Index	EAL
Allen	Very Low	Very Low
Bourbon	Very Low	Very Low
Chautauqua	Very Low	Very Low
Cherokee	Relatively Low	Relatively Low
Crawford	Relatively Low	Relatively Low
Elk	Very Low	Very Low
Greenwood	Very Low	Very Low
Labette	Relatively Moderate	Relatively Moderate
Montgomery	Relatively Low	Relatively Low
Neosho	Relatively Low	Relatively Low
Wilson	Very Low	Very Low
Woodson	Very Low	Very Low

Source: FEMA NRI

To help understand the risk and vulnerability to the identified hazards in this HMP for participating jurisdictions, risk index and EAL mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

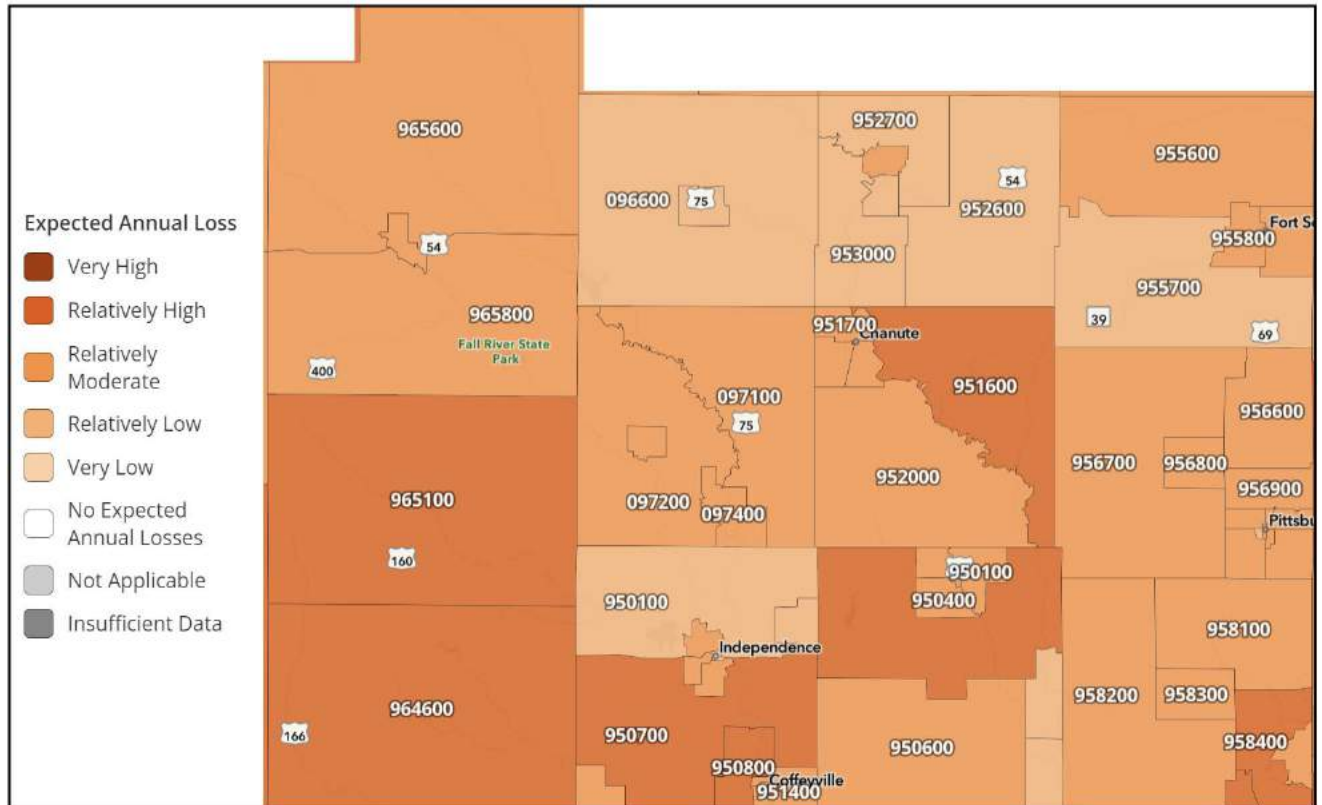
The following maps indicate the composite NRI and EAL for Kansas Region H census tracts:

**Map 21: Kansas Region H Jurisdiction FEMA NRI**



Source: FEMA NRI

**Map 22: Kansas Region H Jurisdiction FEMA NRI**



Source: FEMA NRI

The FEMA NRI provides relative Risk Index percentiles and ratings based on data for Expected Annual Loss due to natural hazards, Social Vulnerability, and Community Resilience. Separate percentiles and ratings are also provided for each component: Expected Annual Loss, Social Vulnerability, and Community Resilience. For the Risk Index and Expected Annual Loss, percentiles and ratings can be viewed as a composite score for all hazards or individually for each of the 18 hazard types.

A community's score is represented by its percentile ranking among all other communities at the same level for Risk, Expected Annual Loss, Social Vulnerability and Community Resilience. For example, if a given Census tract's Risk Index percentile for a hazard type is 84.32 then its Risk Index value is greater than 84.32% of all US Census tracts. These scores are then assigned a qualitative rating that describes the community in comparison to all other communities at the same level, ranging from “Very Low” to “Very High.” To determine Risk and Expected Annual Loss ratings, a methodology known as k-means clustering or natural breaks is applied to each value. This approach divides all communities into five groups such that the communities within each group are as similar as possible (minimized variance) while the groups are as different as possible (maximized variance). A cubed root transformation is applied to both Risk and Expected Annual Loss values before k-means clustering. Without the transformation, these values are heavily skewed by an extreme range of population and building value densities between urban and rural communities. By applying a cube root transformation, the National Risk Index controls for this characteristic and provides ratings with greater differentiation and usefulness.

As the FEMA NRI does not provide data concerning human caused and technological caused hazards the hazard rating methodology used on the 2019 Kansas Region H HMP was followed to help determine hazard planning significance for the county level. A standardized methodology, which allows for greater flexibility and room for subject matter expertise, was developed to compare different hazards’ risk. Where possible, this method prioritizes hazard risk based on a blend of quantitative factors extracted from available data sources. These factors include:

- Probability of occurrence (expected frequency)
- Probable magnitude of impact (estimated strength, magnitude, onset, duration, and damage potential)
- Warning time of hazard occurrence (what type of warning can be expected)
- Duration of event (how long will hazard conditions exist)

The scores for the four hazard rating factors (probability of hazard occurrence, magnitude, warning time, and duration) were given a criticality rating from one to four (four being the highest concern or impact) and summed at a county level for each natural hazard using the following formula:

$$\text{(Probability x 0.45)} + \text{(Magnitude x 0.30)} + \text{(Warning Time x 0.15)} + \text{(Duration x 0.10)}$$

The numerical result of the formula for each hazard allowed for an assignment of a planning significance. The following table details planning significance ranges.

**Table 44: Planning Significance Rating Range**

Planning Significance	Score Range	
	Low Score	High Score
High	3.0	4.0
Moderate	2.0	2.9
Low	1.0	1.9

The terms high, moderate, and low indicate the level of planning significance for each hazard, and do not indicate the potential impact of a hazard occurring. Hazards rated with moderate or high planning significance were more thoroughly investigated and discussed due to the availability of data and historic occurrences, while those with a low planning significance were generally addressed due to lack of available data and historical occurrences.

The result of this assessment provides a larger scale snapshot of how participating counties view risk and allowed for integration of hazard data in to this HMP. This allowed for a comparison between counties for each human caused and



technological hazard type. It is recognized that inconsistencies in methodologies and data make it difficult to make a direct comparison, however, as possible, collected data was translated into a unified model that accounted for any variability in data and methodologies.

The following tables show the hazard planning significance of natural hazards and technological and human caused hazards for Kansas Region H.

**Table 45: Kansas Region H Technical and Human Caused Hazard Planning Significance**

County	Cybersecurity Incident	Hazardous Materials Incident	Infrastructure Failure	Radiological Incident	Terrorism	Transmissible Disease
Allen	High	Moderate	Moderate	Low	Low	Moderate
Bourbon	High	Moderate	Moderate	Low	Low	Moderate
Chautauqua	High	Moderate	Moderate	Low	Low	Moderate
Harvey	High	Moderate	Moderate	Low	Low	Moderate
Crawford	High	Moderate	Moderate	Low	Low	High
Elk	High	Moderate	Moderate	Low	Low	Moderate
Greenwood	High	Moderate	Moderate	Low	Low	Moderate
Labette	High	Moderate	Moderate	Low	Low	Moderate
Montgomery	High	Moderate	Moderate	Low	Low	Moderate
Neosho	High	Moderate	Moderate	Low	Low	Moderate
Wilson	High	Moderate	Moderate	Low	Low	Moderate
Woodson	High	Moderate	Moderate	Low	Low	Moderate

Calculations for the planning significance for each human caused and technological hazard on a county basis are presented in the corresponding hazard section.

Based on discussion with the MPC, a lack of identified risk or history, and geographic improbability, numerous FEMA identified hazards such as coastal erosion and hurricane were not included in the scope of this plan. Additionally, the following natural hazards included in the State of Kansas HMP were not included for the enumerated reasons:

- **Earthquake:** Information from the Kansas Geological Society indicates that Kansas Region H has had no recorded earthquake above Richter Scale Magnitude 3.0, with effects resembling vibrations caused by heavy traffic. Additionally, FEMA seismic risk maps indicate that the region is in the low-risk category. As such, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Expansive Soils:** Information from the United States Geological Service (USGS) Swelling Clays Map of the Conterminous United States indicates that the majority of Kansas Region H has soils with slight swelling potential. As such, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Land Subsidence:** A review by the MPC of available mapping indicates that there are areas of subsurface voids due to mining activity along with subsurface Karst topography (a known contributor to subsidence). To assist with potential problems from historic mining, federal funds are available through the office of Surface Mining Reclamation and Enforcement for the reclamation of past mining problems which are hazardous to the health, safety, and general welfare of the public. Due to a lack of documented history, and the general lack of funding for mitigation projects and associated funding available through alternate federal programs, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Landslide:** There have been no recorded damaging landslide events in Kansas Region H. Due to a lack of documented history and indicated risk, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Soil Erosion and Dust:** The larger concern of soil erosion, and the associated dust caused by this erosion, is an issue that is managed by the Kansas Department of Agriculture on a statewide basis. As such, the MPC elected to remove this hazard from the plan.

#### **4.5 Hazard Occurrence and Assessment Data**

NOAA's NCEI Storm Events Database was used as the primary source of information for previous occurrences of storm events. Twenty-year data sets from were used, where applicable, for hazard occurrence and impact data. Where data sets were unavailable for a hazard, local reporting from participating jurisdictions was relied upon.

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or National Weather Service (NWS) office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Most of the events from NCEI are not associated with a federal emergency or disaster. If the event occurred at the same time as an event that was later determined to be a federal emergency or disaster, it is included with the NCEI data even if it occurred in a county not included in the federal declaration.

Data was also obtained and utilized using Hazus-MH, Version 2.2 SP1, a program administered by the FEMA used to model losses. Modelling for hazards uses Hazus analysis to estimate losses and projected impacts from historical and annualized hazard events. Hazus default data was used in the analysis, including the 2020 Census and other State and Federal government facility databases.

#### **4.6 Jurisdictional Critical Facilities and Assets and Community Lifelines**

Certain facilities and assets such as infrastructure and community lifelines, have a net positive value on the community as they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some infrastructure and facilities are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits these definitions will vary slightly from community to community, but the definitions remain as a guideline for identifying critical facilities and infrastructure. Kansas Region H maintains critical facility details under separate cover for security purposes. For this HMP, it is assumed that all critical facilities are at equal risk to non-point hazard occurrence but may have varying risk to point hazard occurrence (dam and levee failure and flood). Data concerning critical facilities potentially impacted by these point hazards, as available, is detailed under the respective hazard section.

Each hazard section provides a discussion on potentially vulnerable community lifelines. Community lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security, and include safety, health, energy, communication, transportation, and water systems.

#### **4.7 Hazard Profiles**

Each identified hazard is profiled in the subsequent sections, with the level of detail varying based on available information. Sources of information are cited in the detailed hazard profiles below. For hazards that have a higher chance of occurrence for specific jurisdictions throughout Kansas Region H, a discussion is provided as to the differing levels of potential vulnerability. All other hazards have been determined to have an equal chance of occurrence for all participating jurisdictions.

The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference. Please note that natural hazards are presented in order first, followed by human caused and technological hazards.

## 4.8 Agricultural Infestation

### 4.9.1 Hazard Description

Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin (to include lice, roaches, mice, coyote, fox, fleas, etc.), or diseases that render the crops or livestock unfit for consumption or use. The levels and types of agricultural infestation will vary according to many factors, including cycles of heavy rains and drought. A certain level of agricultural infestation is normal; however, infestation becomes an issue when the level of an infestation escalates suddenly, or a new infestation appears, overwhelming normal control efforts. Infestation of crops or livestock can pose a significant risk to state and local economies due to the dominance of the agricultural industry.



The onset of agricultural infestation can be rapid. Controlling an infestation's spread is critical to limiting impacts through methods including quarantine, culling, premature harvest and/or crop destruction when necessary. Duration is largely affected by the degree to which the infestation is aggressively controlled but is generally more than one week. Maximizing warning time is also critical for this hazard and is most affected by methodical and accurate monitoring and reporting of livestock and crop health and vigor, including both private individuals and responsible agencies.

### 4.8.2 Location & Extent

Of key concern regarding this hazard is the potential introduction of a rapid and economically devastating foreign animal disease, including Foot and Mouth disease and Bovine Spongiform Encephalopathy disease. Because Kansas is a major cattle state, with cattle raised locally as well as imported into the state, the potential for highly contagious diseases such as these is a continuing, significant threat. The loss of production, death of animals, and other lasting problems resulting from an outbreak could cause continual and severe economic losses, as well as widespread unemployment.

Of particular concern are Confined Animal Feeding Operations (CAFOs) facilities, defined as facilities with 300 or more animal units. The CAFO facilities are regulated by the Kansas Department of Health & Environment, Bureau of Water, and Livestock Waste Management. The CAFO includes beef, dairy, sheep, swine, chicken, turkey, and horses. The following is a list of the number of CAFOs per county, using the latest available data, in Kansas Region H:

- Allen County: 13
- Bourbon County: 32
- Chautauqua County: No data
- Cherokee County: 10
- Crawford County: 8
- Elk County: 7
- Greenwood County: 24
- Labette County: 38
- Montgomery County: 43
- Neosho County: 21
- Wilson County: 12
- Woodson County: 10

Knowing where diseased and at-risk animals are, where they've been and when, is important to ensuring a rapid response when animal disease events take place. The Kansas Department of Agriculture (KDA), Division of Animal Health monitors and reports on animal reportable diseases. Producers are required by state law to report any of the reportable animal diseases.

Kansas Region H is also susceptible to various forms of crop infestations and disease. The following major crops are particularly susceptible to infestation:

- Wheat: Kansas Region H is part of the Great Plains Wheat Belt. Wheat is susceptible to infestations by pests including insects like the Hessian fly, aphids, and wheat stem sawflies, as well as diseases like wheat rust.
- Corn and Sorghum: Staple crops, they are susceptible to infestations by pests such as corn rootworms, corn borers, and aphids. Sorghum may also be affected by sugarcane aphids.
- Cotton: Can be susceptible to infestations by pests like cotton bollworms and spider mites.
- Soybeans: Susceptible to infestations by pests such as soybean aphids, soybean cyst nematodes, and various caterpillar species.

The region’s farmers also lose a significant amount of crops each year as a result of wildlife foraging. This can be particularly problematic in areas where natural habitat has been diminished or in years where weather patterns such as early/late frost deep snow, or drought has caused the wild food sources to be limited.

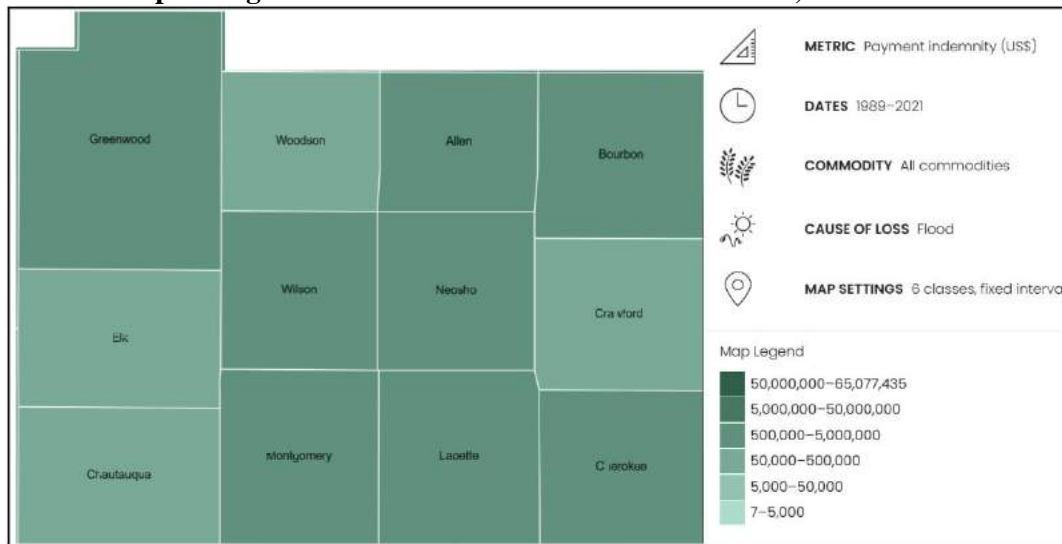
Trees within Kansas Region H are also susceptible to a variety pest and disease including:

- Emerald Ash Borer
- Pine Wilt
- Oak Wilt
- Dutch Elm Disease

### 4.8.3 Previous Occurrences

Infestation events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to infestation conditions from 1989 to 2021:

**Map 23: Agricultural Losses Due to Infestation Events, 1989 to 2021**



Source: USDA

### 4.8.4 Probability of Future Incidents

The probability of agricultural infestation in Kansas Region H can vary depending on a variety of factors. These factors include:

- Crop Types: The types of crops grown in Southeast Kansas play a significant role in determining the probability of infestation. Different crops are susceptible to different pests and diseases.
- Climate: Climate conditions, including temperature and humidity, can influence the prevalence of pests and diseases. Warmer and wetter conditions may be more conducive to certain infestations, while dry conditions may reduce the risk.

- **Geography:** Geographic features, such as proximity to bodies of water, forests, or neighboring agricultural regions, can affect the likelihood of infestations. Certain pests and diseases may be more prevalent in specific geographical areas.
- **Crop Management Practices:** The adoption of pest management practices, including crop rotation, the use of resistant crop varieties, and the application of pesticides, can impact the probability of infestation. Sustainable and integrated pest management practices can help mitigate infestation risks.
- **Seasonal Variability:** Infestation risks can vary from season to season. Some years may see higher infestation levels due to factors like weather patterns or the cyclical nature of pest populations.
- **Migration of Pests:** The movement of pests from other regions or neighboring states can introduce infestation risks. Monitoring and surveillance are essential to detect and respond to potential threats.
- **Disease Vectors:** The presence of disease vectors, such as certain insects or animals that can transmit diseases to crops or livestock, can increase the likelihood of infestations.
- **Biosecurity Measures:** Measures taken to prevent the introduction and spread of pests and diseases, such as quarantine procedures and biosecurity protocols, can help reduce the probability of infestation.

The Kansas Forest Service and Kansas Department of Agriculture have identified the following as emerging agricultural infestation threats:

- **Thousand Cankers Disease of Walnut:** Caused by a combination of a fungus (*Geosmithia morbida*) and the walnut twig beetle (*Pityophthorus juglandis*). The walnut twig beetles carry fungal spores, and when they tunnel through the outer bark into the tree the fungus is transmitted during gallery construction. The fungus kills an area under the bark and the areas of dead tissue are called cankers. When the walnut twig beetles are abundant, numerous cankers can form and coalesce to girdle twigs and branches, restricting movement of water and nutrients. Black walnut (*Juglans nigra*), the most valuable native species to the state, is the most susceptible of the *Juglans* species to this disease.
- **Asian Longhorned Beetle:** Feeds on a wide variety of hardwood tree species that are native or planted in Kansas. It kills trees by creating large tunnels as larvae causing branches or stems to break and eventually lead to tree death. Because this beetle is not native to North America, it has no known natural enemies, and Kansas trees have low resistance to this pest. It has not been detected in Kansas. It has been stated that if the beetle were to become established in the US, it could become one of the most destructive and costly pests ever to industry, urban neighborhoods, and natural forests.
- **Gypsy Moth:** Moth has been infested the northeast, resulting in massive defoliation of shade, fruit, and ornamental trees as well as hardwood forests. Caterpillars devour the leaves of many hardwood tree species and shrubs that can turn a usually lush summer scene into one of winter.
- **Asian Gypsy Moth:** A native species of Asia, first detected in Washington in 1991. Ongoing and completed eradication of various sites in the U.S. have so far prevented the establishment of this generalist feeder. This moth is much more destructive if it became established and spread east because of its broad host range and the females are active fliers due to their larger wingspan.
- **Sudden Oak Death:** In June 2019, the causal agent of Sudden Oak Death, *Phytophthora ramorum*, was detected in rhododendrons originating from Park Hill Plants nursery in Oklahoma, and plants from that nursery were shipped to 60 Walmart stores across Kansas and one Home Depot store in Pittsburg, Kansas. Sudden Oak Death is caused by *Phytophthora ramorum*, a water mold pathogen. The pathogen is also the cause of the Ramorum Leaf Blight, Ramorum Dieback and *Phytophthora* Canker Diseases. This pathogen is considered especially dangerous because it affects a wide variety of trees, shrubs and plants and there is no known cure.
- **Tomato Brown Rugose Fruit Virus:** Tomato Brown Rugose Fruit Virus is a newly discovered tobamovirus that has been found, but not yet established, in the United States. Its two main hosts are tomatoes and peppers, causing concern for growers of these plants. The virus is mechanically transmitted, meaning it can be transmitted from one plant to the next on contaminated tools and equipment, and workers handling many plants in a greenhouse.

It's important to note that agricultural infestations are a dynamic and complex issue, and the probability of infestation can vary from year to year. Farmers and agricultural professionals in Kansas Region H typically rely on agricultural extension services, research institutions, and government agencies to provide information, guidance, and resources for managing and mitigating infestation risks. Proactive pest monitoring and management practices are essential for minimizing the impact of infestations on crop yields and agricultural productivity in the region.

#### 4.8.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

Climate change can have several impacts on agricultural infestation in Kansas Region H, affecting the types and prevalence of pests and diseases that farmers face, and can include:

- **Increased Pest Populations:** Warmer temperatures and milder winters can promote the survival and reproduction of certain pests. In Kansas Region H, this may include insects like aphids, corn borers, and various types of beetles. Higher pest populations can lead to more frequent and severe infestations, potentially reducing crop yields.
- **Altered Pest Behavior:** Changes in temperature and climate patterns can influence the behavior and life cycles of pests. Some insects may emerge earlier in the season or have more generations per year, increasing the likelihood of damage to crops.
- **Extended Growing Seasons:** Longer growing seasons, a consequence of warming temperatures, can provide pests with additional time to feed on crops. This extension can lead to greater crop damage if effective pest management strategies are not in place.
- **Shifts in Pest Distribution:** Climate change can result in shifts in the geographic distribution of pests. Pests that were once uncommon in Kansas Region H may become more prevalent as temperatures become more suitable for their survival and reproduction.
- **Altered Disease Dynamics:** Climate change can influence the prevalence and distribution of plant diseases. Warmer and wetter conditions can create favorable environments for certain pathogens, such as fungi and bacteria, increasing the risk of disease outbreaks in crops.
- **Increased Risk of Invasive Species:** Changes in temperature and climate patterns can facilitate the introduction and establishment of invasive species. These species may outcompete native pests and diseases, posing new challenges for farmers.
- **Water Stress:** Climate change can result in more variable precipitation patterns, including more frequent droughts. Water-stressed crops may be more susceptible to pest infestations, as their natural defenses may be compromised.
- **Pesticide Resistance:** As pest populations adapt to changing conditions, they may develop resistance to pesticides more rapidly. This can reduce the effectiveness of chemical pest control methods.
- **Impact on Beneficial Organisms:** Climate change can also affect the populations and behaviors of beneficial organisms, such as natural predators and parasites of pests. Disruptions in these natural control mechanisms can exacerbate infestation problems.

#### 4.8.6 Vulnerability and Impact

As illustrated by the following table from the USDA 2017 Census of Agriculture, Kansas Region H has a large agricultural base susceptible to disease and pest infestation:

**Table 46: Kansas Region H County Level Agricultural Data**

County	Year	Number of Farms	Land (Acres) in Farms	Market Value of Agricultural Products Sold
Allen County	2017	505	239,906	\$47,935,000
Bourbon County	2017	813	336,045	\$78,934,000
Chautauqua County	2017	351	288,421	\$31,333,000
Cherokee County	2017	756	319,315	\$141,476,000
Crawford County	2017	777	335,118	\$85,940,000
Elk County	2017	318	246,933	\$37,660,000

**Table 46: Kansas Region H County Level Agricultural Data**

County	Year	Number of Farms	Land (Acres) in Farms	Market Value of Agricultural Products Sold
Greenwood County	2017	540	616,017	\$105,468,000
Labette County	2017	997	399,292	\$176,035,000
Montgomery County	2017	1,006	365,696	\$95,251,000
Neosho County	2017	687	323,092	\$81,868,000
Wilson County	2017	420	286,824	\$62,284,000
Woodson County	2017	289	282,986	\$52,550,000

Source: USDA National Agricultural Statistics Service

Agricultural vulnerabilities can vary depending on the type of infestation, the crops or livestock affected, and instituted control measures, and include:

- **Crop and Livestock Losses:** One of the most immediate and significant vulnerabilities is the potential for crop and livestock losses. Pests, diseases, and invasive species can cause substantial damage to crops, resulting in reduced yields and economic losses.
- **Financial Losses:** Infestations can lead to increased production costs, including expenses for pest control measures, pesticides, and treatments. These added costs can strain the financial resources of farmers and agricultural businesses.
- **Food Insecurity:** Crop and livestock losses due to infestations can threaten food security by reducing the availability of food products.
- **Economic Instability:** Agricultural infestations can lead to economic instability in rural communities heavily dependent on farming. Reduced incomes for farmers can have cascading effects on local economies, impacting businesses and jobs in related industries.

Potential impacts on the agricultural community include:

- **Reduced Crop Yields:** One of the most direct impacts of infestation is a decrease in crop yields. Pests, diseases, and invasive species can damage or destroy plants, resulting in smaller harvests.
- **Crop Quality Reduction:** Infestations can also reduce the quality of crops by causing physical damage, deformities, or contamination. This can affect the marketability and value of agricultural products.
- **Livestock Health Issues:** Infestations can lead to health problems in livestock, including weight loss, reduced productivity, and increased susceptibility to diseases. Livestock infestations can also impact meat and dairy quality.
- **Trade Barriers:** Agricultural infestations can lead to trade restrictions and barriers. Countries may impose import bans or stringent regulations on products from regions affected by certain pests or diseases to prevent their spread.
- **Increased Chemical Use:** To combat infestations, farmers may resort to increased pesticide or chemical use. This can have adverse effects on the environment and human health, as well as contribute to pesticide resistance.
- **Disruption of Farming Practices:** Infestations can disrupt normal farming practices, leading to delays in planting or harvesting, increased labor requirements, and a need for specialized pest management.

Efforts to mitigate the vulnerabilities and impacts of infestations include integrated pest management strategies, research and monitoring, early detection systems, education and training for farmers, and sustainable farming practices. Addressing infestations requires a multi-faceted approach that considers economic, environmental, and food security factors.

In addition, an agricultural infestation can have significant impacts on the people in an impacted agricultural community, affecting their livelihoods, health, and well-being, and include:

- **Reduced Income:** For farmers and agricultural workers, the most immediate impact of infestations is often reduced income due to crop or livestock losses.
- **Increased Health Risks:** Infestations involving disease vectors can increase the risk of vector-borne diseases.
- **Migration:** In some cases, people may be forced to migrate in search of better economic opportunities due to infestation-related job losses.
- **Increased Healthcare Costs:** Infestations that result in human health issues can lead to increased healthcare costs for individuals and communities, putting additional financial strain on affected populations.
- **Psychological Stress:** Infestations can cause psychological stress and anxiety, particularly for farmers and agricultural workers who face uncertainty and financial pressures due to crop or livestock losses.

Agricultural infestations can have several environmental impacts, often interconnected with agricultural practices, and can include:

- **Pesticide Use:** To combat infestations, farmers may resort to increased pesticide use. The application of pesticides can result in chemical runoff into nearby water bodies, leading to water pollution. This pollution can harm aquatic ecosystems, affecting fish and other aquatic species.
- **Loss of Biodiversity:** Infestations can alter the composition of plant and animal species in agricultural areas. The introduction of invasive species or the suppression of native vegetation can lead to reduced biodiversity, impacting the health of ecosystems.
- **Soil Erosion:** In some cases, infestations can weaken or kill plants, leaving soil exposed to erosion by wind and water. Soil erosion can degrade soil quality, reduce agricultural productivity, and contribute to sedimentation in water bodies.
- **Habitat Changes:** Changes in land use and agricultural practices prompted by infestations can lead to alterations in habitat structure and availability. These changes can affect wildlife populations, including species that rely on specific habitats within agricultural landscapes.
- **Water Quality Impacts:** Infestations can indirectly affect water quality through their influence on land management. Runoff from infested areas, along with pesticide residues and sediment, can compromise water quality and lead to issues such as algal blooms and oxygen depletion in water bodies.
- **Impact on Pollinators:** Some agricultural pests and diseases can have detrimental effects on pollinators, including bees and butterflies. Reduced pollinator populations can harm the reproduction of flowering plants, including many agricultural crops.
- **Secondary Effects on Non-Target Species:** Pest control measures, such as the use of pesticides, may have unintended consequences by affecting non-target species, including beneficial insects, birds, and mammals.
- **Impact on Natural Pest Control:** Some infestations can disrupt natural pest control mechanisms by altering the populations and behaviors of beneficial organisms, such as predators and parasitoids. This can lead to increased reliance on chemical pest control.

### **Potentially Vulnerable Community Lifelines**

Agricultural infestation, whether caused by pests, diseases, or invasive species, would likely have minimal impact on community lifelines, such as safety, health, energy, communication, transportation, and water systems. It is possible that reduced crop yields could contribute to short term food shortages, affecting the overall food security of a community. This can lead to higher temporary dependence on external sources for food, which would likely be unimpacted by an infestation event.

### **Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.



**Table 47: Agricultural Infestation Consequence Analysis**

<b>Subject</b>	<b>Potential Impacts</b>
Health and Safety of the Public	Infestations involving disease vectors can increase the risk of disease transmission to humans.
Health and Safety of Responders	Impact would be minimal as no first response effort is anticipated.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Agricultural infestation is not expected to require a plan activation.
Property, Facilities, and Infrastructure	Impact would be minimal.
Impact on Environment	Loss of biodiversity, habitat changes water quality degradation, loss of pollinators, and secondary effects on non-target species from increased pesticide usage.
Economic Conditions	Impacts to the economy will depend on the severity of the infestation. The potential for economic loss to the community could be if the infestation is hard to contain, eliminate, or reduce. Impact could be minimized from crop insurance payments.
Public Confidence in Governance	Confidence could be in question depending on timeliness and steps taken to warn the producers and public and treat/eradicate the infestation.

**4.8.7 Jurisdictional Risk and Vulnerability**

In Kansas, agricultural infestation is considered a state concern due to the heavily agricultural nature of the economy. Data assessing agricultural infestation risk is often presented at the county or state level, and not by individual jurisdictions. As such, a local jurisdiction risk assessment could not be completed. It is worth noting that no jurisdictional critical facilities or assets are vulnerable to agricultural infestation, and no future facility or asset losses are expected from this hazard.

## 4.9 Dam or Levee Failure

### 4.9.1 Hazard Description

A dam is a barrier across flowing water that obstructs, directs, or slows down the flow, often creating a reservoir, lake, or impoundment. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously. Dams commonly come in two types, embankment (the most common) and concrete (gravity, buttress, and arch), as well as sizes. They also serve a number of purposes and provide essential benefits, including drinking water, irrigation, hydropower, flood control, and recreation.

Large or small, dams have a powerful presence that is frequently overlooked until a failure occurs. Dams fail in two ways, a controlled spillway release done to prevent full failure, or the partial or complete collapse of the dam itself. In each instance, an overwhelming amount of water, and potentially debris, is released. Dam failures are rare, but when they do occur, they can cause loss of life and immense damage to property, critical infrastructure, and the environment.

Possible reasons for dam failure include but are not limited to:

- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer, or design error
- Internal erosion, especially in earthen dams
- Earthquakes
- Terrorism

There are three classifications of dam failure, hydraulic, seepage, and structural. The following is an explanation of each these failure classifications:

- **Hydraulic:** This failure is a result of an uncontrolled flow of water over and around the dam structure as well as the erosive action on the dam and its foundation. The uncontrolled flow causing the failure is often classified as wave action, toe erosion, or gullyng. Earthen dams are particularly susceptible to hydraulic failure because earthen materials erode more quickly than other materials, such as concrete and steel. This type of failure constitutes approximately 40% of all dam failures.
- **Seepage:** Seepage is the velocity of an amount of water controlled to prevent failure. This occurs when the seepage occurs through the structure to its foundation, where it begins to erode within. This type of failure accounts for approximately 4% of all dam failures.
- **Structural:** A failure that involves the rupture of the dam or the foundation by water movement, earthquake, or sabotage. When weak materials construct dams (large, earthen dams) are the primary cause of this failure. Structural failure occurs with approximately 30% of dam failures.

A levee is a man-made structure built to control or prevent the overflow of water from rivers, lakes, or other bodies of water. Levees are typically earthen embankments or walls constructed along the banks of water bodies to provide protection against flooding. They serve as barriers to keep water within its natural or artificial channels, protecting



adjacent land areas from inundation. Levees typically have a sloping side that faces the water (riverside) and a steeper side facing away from the water (landside). They may also include features like berms, floodwalls, and floodgates to enhance their effectiveness in flood control. Levee failures can occur in various ways, and they are typically classified into different types based on the mechanism or cause of the failure, and include:

- **Overtopping:** Occurs when floodwaters rise above the crest or top of the levee. This can happen when the floodwater volume exceeds the levee's design capacity or when the levee has been poorly maintained or constructed. Overtopping can erode the levee's surface and eventually lead to breaches.
- **Erosion:** Occurs when the flowing water erodes the soil or materials comprising the levee. Erosion can result from the force of the water or from seepage of water through the levee's foundation, which can carry soil particles away and weaken the structure.
- **Seepage:** Occurs when water infiltrates the levee through the soil or the levee's foundation. Over time, seeping water can weaken the structural integrity of the levee. Piping, a type of seepage failure, is particularly concerning, as it involves the formation of tunnels or pipes within the levee through which water flows, further eroding the structure.
- **Slumping or Landslide:** Occurs when a portion of the levee's embankment or slope collapses. This can result from saturated soils, unstable materials, or rapid changes in water levels. Slumping or landslides can lead to breaches in the levee.
- **Breach:** A complete failure of the levee, resulting in a significant opening or hole through which floodwaters can freely flow into protected areas. Breaches can occur due to any combination of failure mechanisms, and they can be sudden and catastrophic.
- **Design or Construction Errors:** Levee failures can also occur due to inadequate height or width, poor materials, or improper compaction during construction. These errors may not become apparent until the levee is put to the test by a flood event.

#### 4.9.2 Location & Extent

The KDA Division of Water Resources (KDA-DWR) is responsible for the review and approval of plans for constructing new dams and for modifying existing dams, ensuring quality control during construction, and monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services. The KDA-DWR regulates the construction, operation, and maintenance of all dams or other water obstructions, with the exception of federal reservoirs.

The Obstructions in Streams Act (K.S.A 82a-303b) requires owners of high hazard (class C) and significant hazard dams (class B) dams to have a qualified engineer conduct periodic dam inspections. For high hazard dams, the inspection must be done every three years. For significant hazard dams, an inspection must be done every five years. Dam Hazard Classifications are detailed in the following table:

**Table 48: Dam Hazard Potential Classification**

Hazard Potential	Class	Definition	Inspection Timeline	Number of Regional Dams in Category
High	C	Failure or mis-operation will result in probable loss of life.	Three Years	44
Significant	B	Failure or mis-operation results in no probable loss of life but can cause major economic loss, disruption of lifeline facilities or impact the public's health, safety, or welfare.	Five Years	22
Low	A	Failure or mis-operation results in no probable loss of human life and low economic losses.	Not inspected, downstream conditions are reassessed to determine if conditions have changed to necessitate reclassification	571

Source: KDA-DWR

The following table details dams by county by hazard potential:

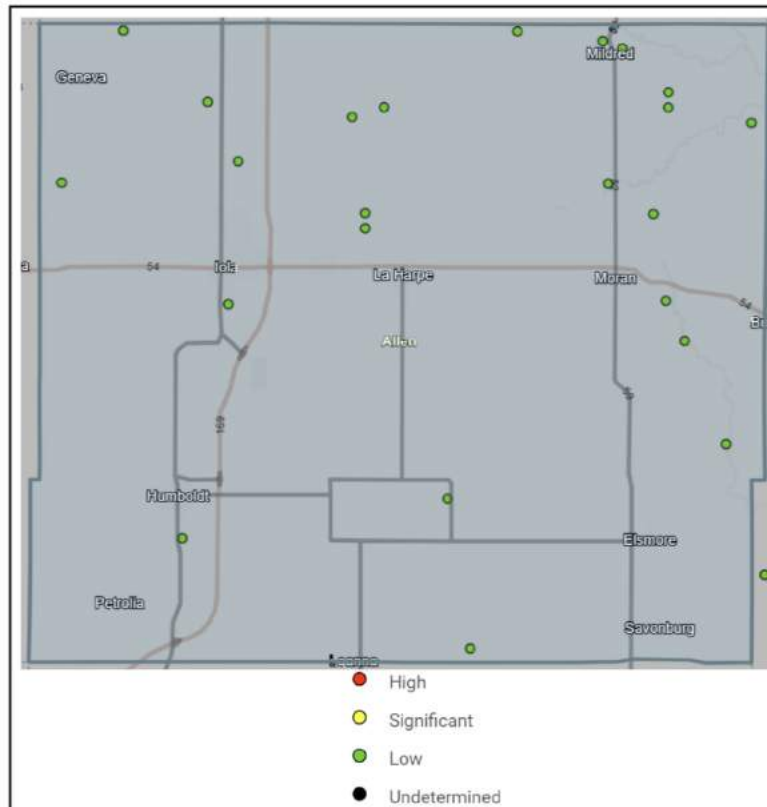
**Table 49: Kansas Region H Significant and High Hazard Dams by County**

County	Low	Significant	High
Allen	23	0	0
Bourbon	84	4	3
Chautauqua	79	1	5
Cherokee	8	0	0
Crawford	61	2	1
Elk	83	7	3
Greenwood	153	6	7
Labette	57	3	1
Montgomery	41	0	4
Neosho	64	1	1
Wilson	45	0	1
Woodson	41	1	2

Source: KDA-DWR

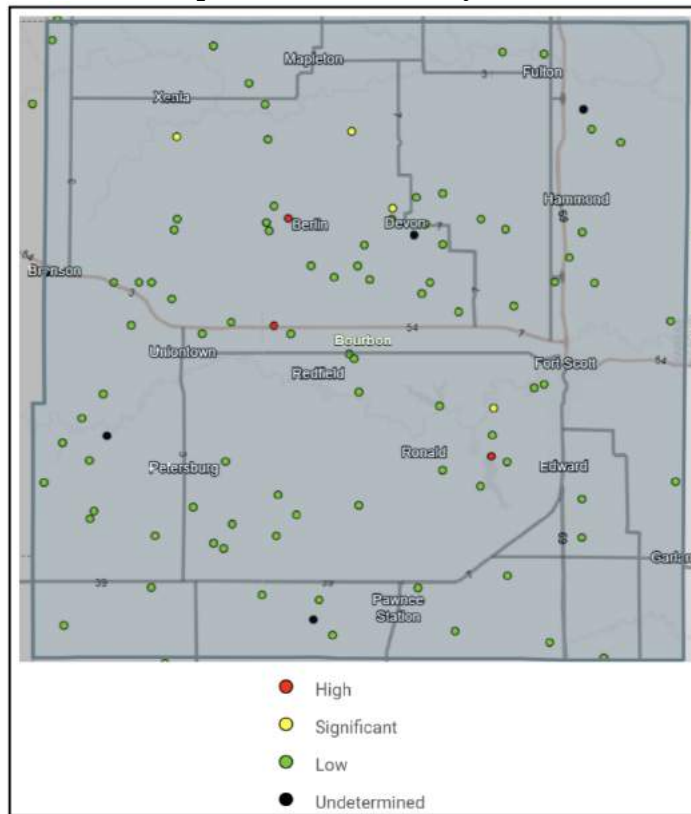
The following maps, from the National Inventory of Dams, indicates the location of high hazard dams within Kansas Region H:

**Map 24: Allen County Dams**



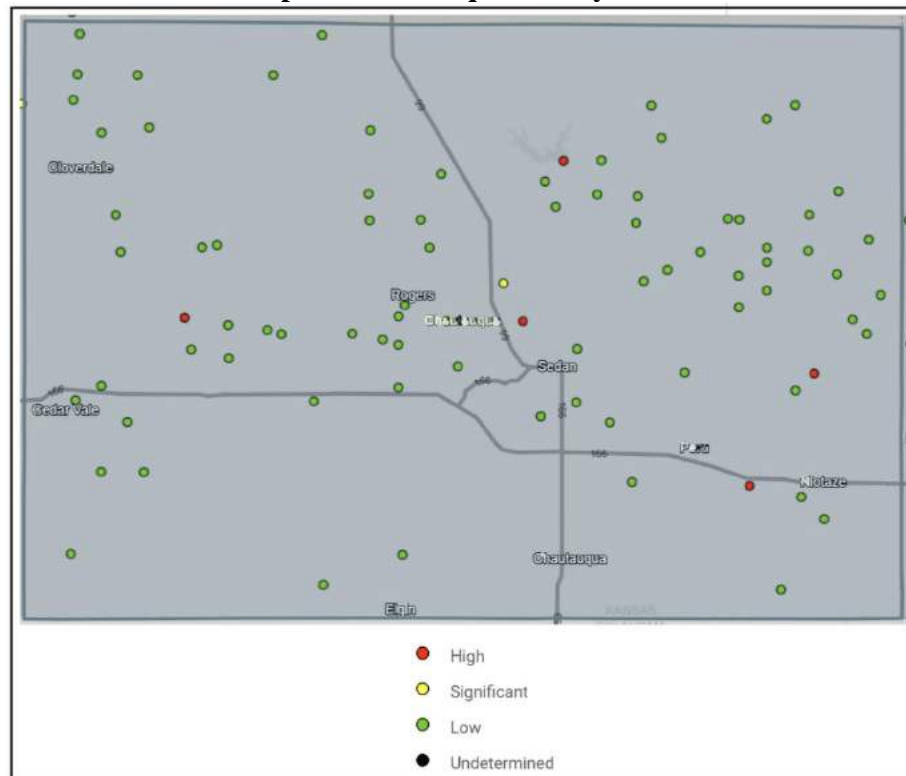
Source: National Inventory of Dams

**Map 25: Bourbon County Dams**



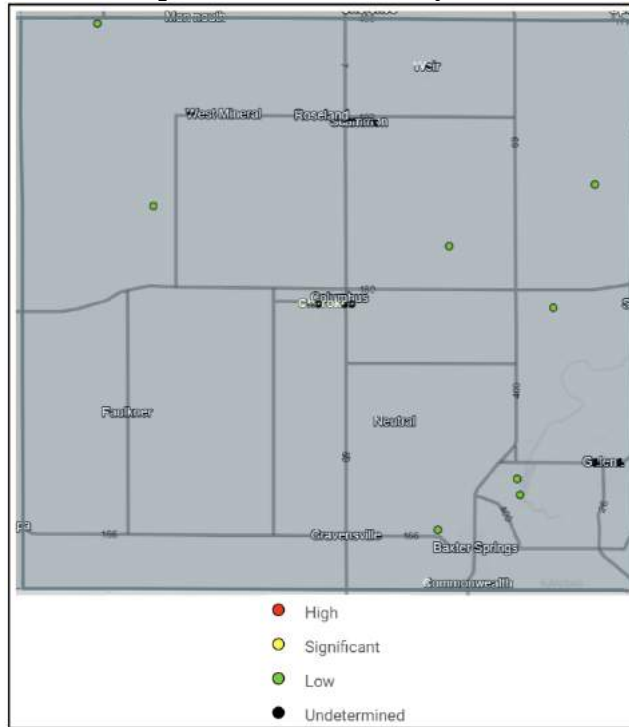
Source: National Inventory of Dams

**Map 26: Chautauqua County Dams**



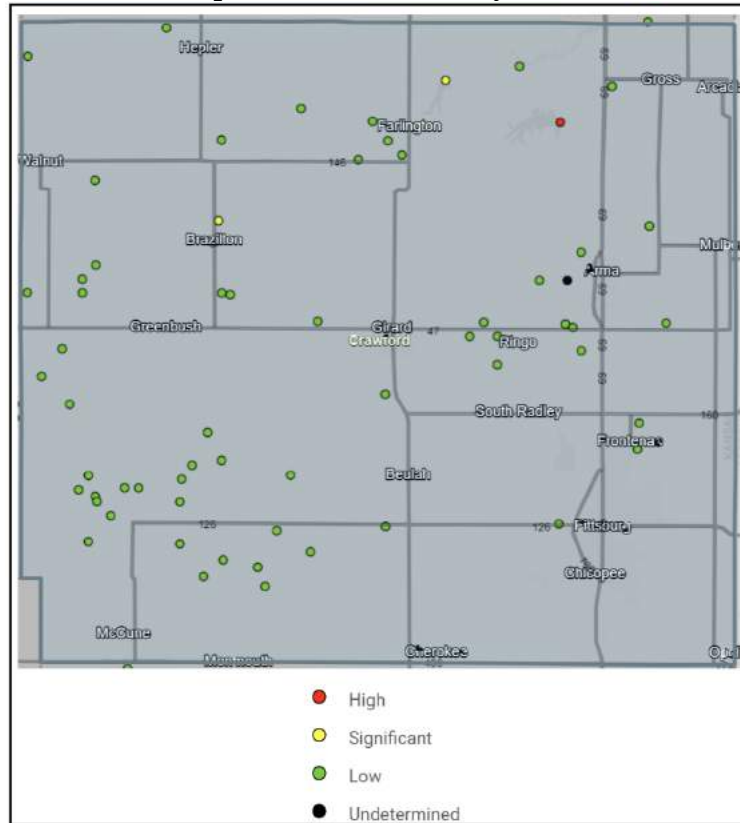
Source: National Inventory of Dams

### Map 27: Cherokee County Dams



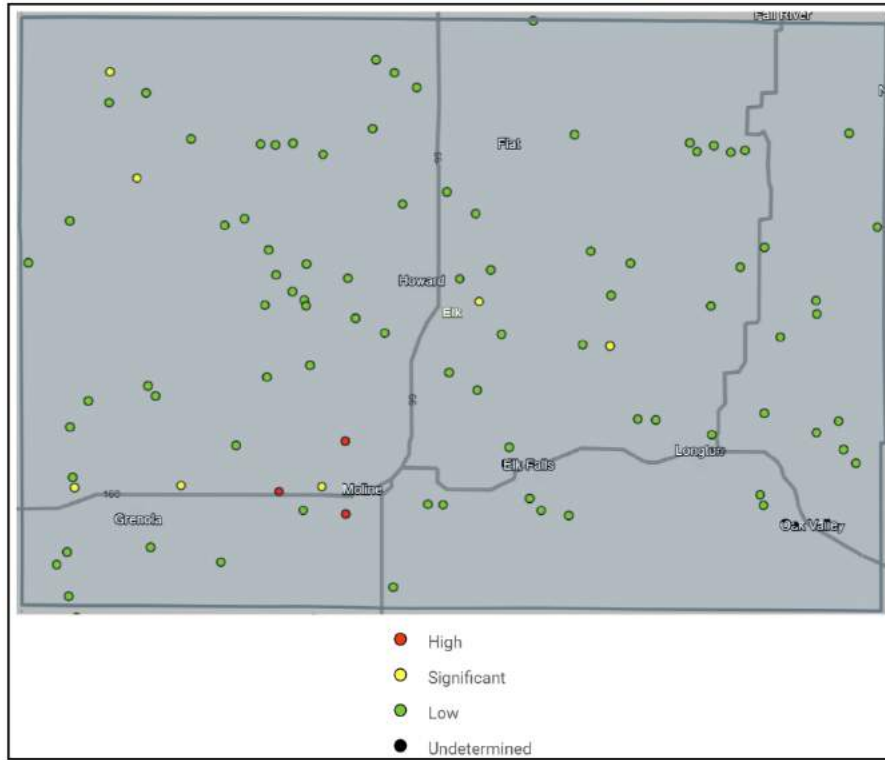
Source: National Inventory of Dams

### Map 28: Crawford County Dams



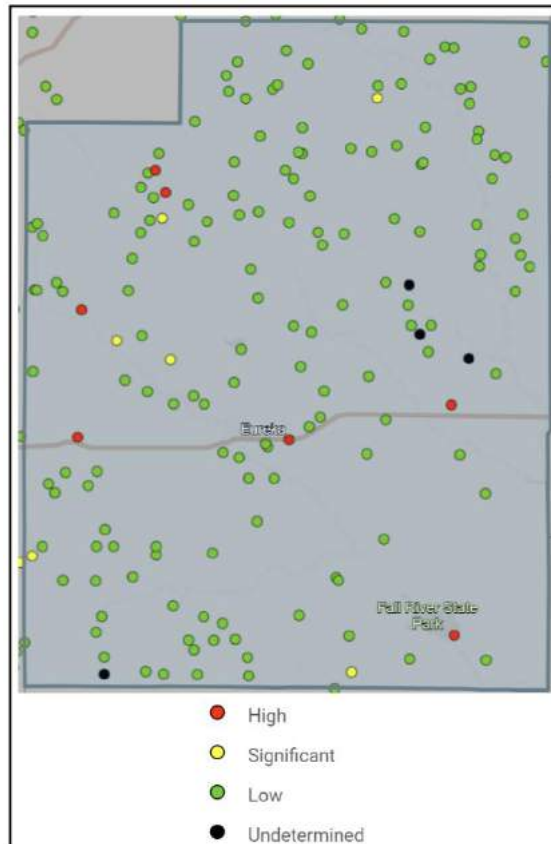
Source: National Inventory of Dams

**Map 29: Elk County Dams**



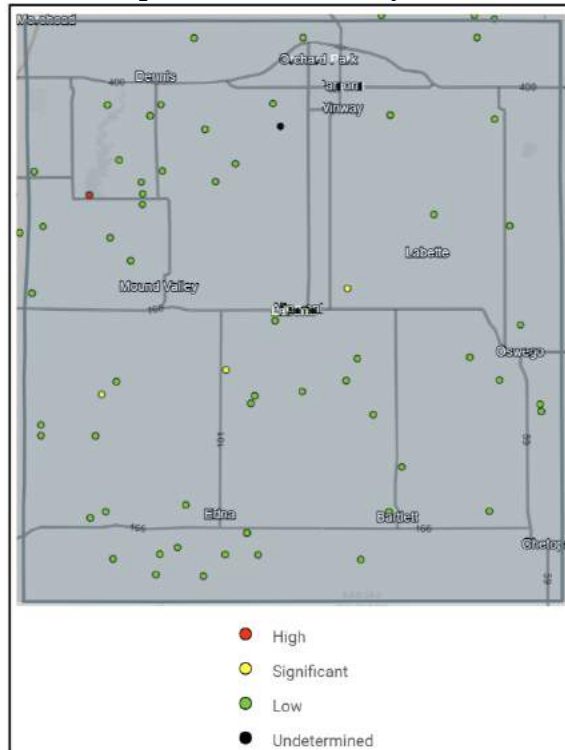
Source: National Inventory of Dams

**Map 30: Greenwood County Dams**



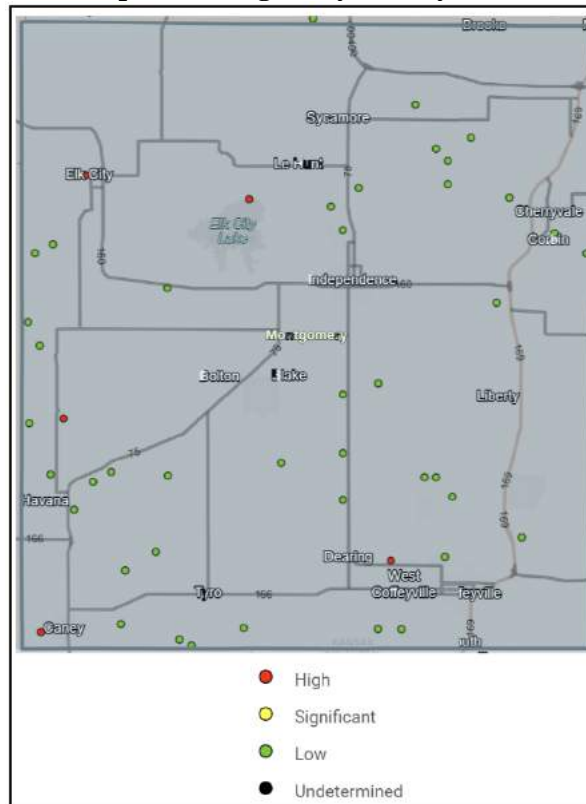
Source: National Inventory of Dams

**Map 31: Labette County Dams**



Source: National Inventory of Dams

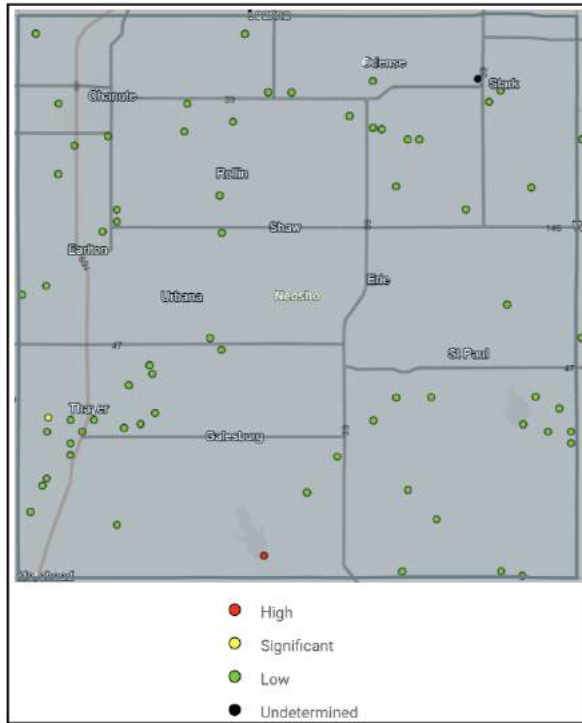
**Map 32: Montgomery County Dams**



Source: National Inventory of Dams



### Map 33: Neosho County Dams



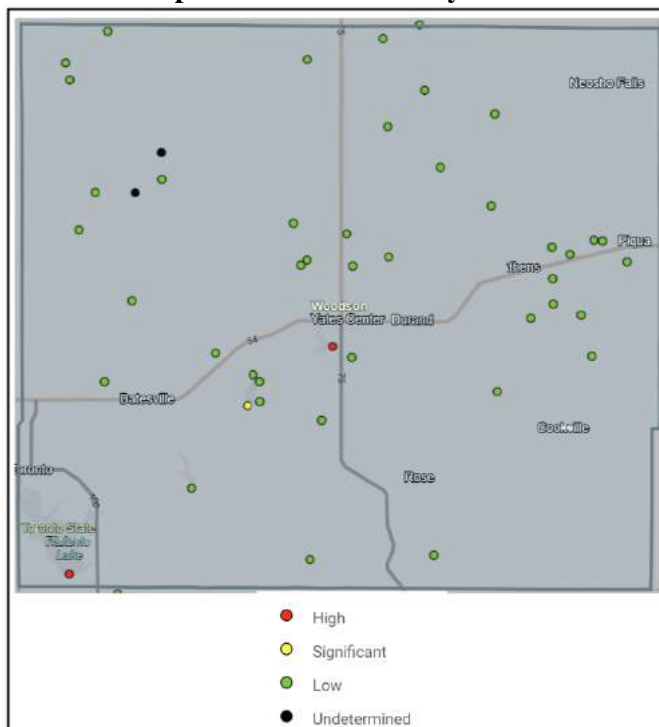
Source: National Inventory of Dams

### Map 34: Wilson County Dams



Source: National Inventory of Dams

### Map 35: Woodson County Dams



Source: National Inventory of Dams

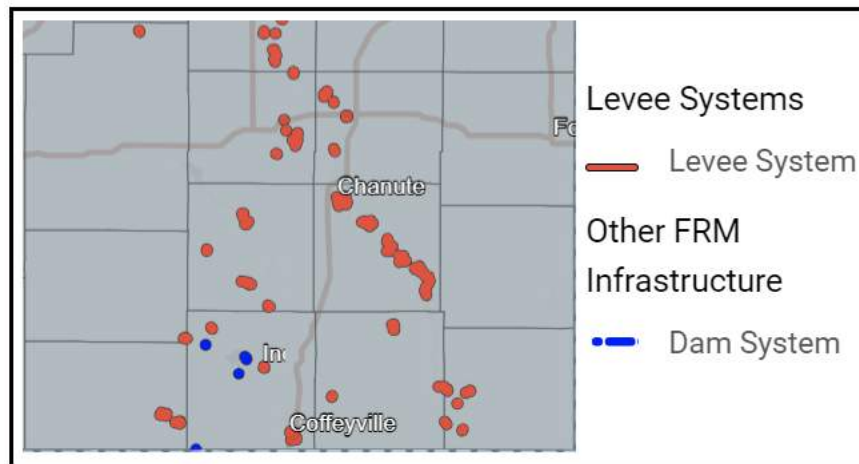
Regulation of levees in the United States involves multiple entities at different levels of government: These entities include:

- **Local Levee Districts:** In many cases, local levee districts or authorities are responsible for the construction, maintenance, and operation of levees. These districts are often formed by communities or landowners in areas prone to flooding, and they assess taxes or fees to fund levee projects.
- **Local Governments:** Local governments, such as city or county governments, may also have roles in regulating and overseeing levees. They may work in coordination with state and federal agencies to ensure that levees comply with applicable regulations and standards.
- **State Agencies:** State agencies play a role in regulating and overseeing levees within their jurisdictions. They may establish standards, guidelines, and regulations for levee construction, maintenance, and inspection. State agencies may also provide technical assistance to local levee districts.
- **Federal Agencies:** The U.S. Army Corps of Engineers (USACE) is a major federal agency involved in levee regulation. The USACE is responsible for evaluating and accrediting levees through the National Levee Safety Program. FEMA also plays a role in floodplain management and mapping. Levees that are accredited by the USACE may influence floodplain mapping and impact flood insurance requirements for communities.

The regulation of levees involves a combination of engineering standards, safety evaluations, and adherence to local, state, and federal regulations. Levee safety is a critical aspect of flood risk management, and ongoing inspection, maintenance, and potential upgrades are essential to their effectiveness.

The following map, from the USACE National Levee Database, details the location of major levee systems in Kansas Region H:

**Map 36: Kansas Region H Levee Systems**



Source: National Levee Database

As a subset of data, the following table details known information concerning levees within Kansas Region H identified as providing protection to a populations or structures:

**Table 50: Kansas Region H Levee Systems Protecting People and/or Properties**

County	Jurisdiction	Name	Waterway	Levee Miles	Leveed Area in Square Miles
Allen	Iola	Iola Levee	Grand River	0.91	0.086
Labette	Parsons	Labette Creek Levee	Labette Creek	1.73	0.36
Montgomery	Caney	Caney Levee	Copan Lake	3.21	1.12
	Coffeyville	Coffeyville Levee	Verdigris River	2.65	1.01
	Elk City	Elk City Lake-Levee A, B, C	Elk City Lake	2.57	0.6
	Elk City	Elk City Reservoir Levee	Elk City Lake	4.14	11.83
	Independence	LMG-102	Unnamed	0.52	0.057
Neosho	Chanute	Chanute Levee	Unnamed	1.19	0.41
	St. Paul	LNO-0026, LNO-0062, LNO-0020	Unnamed	4.03	0.97
	St. Paul	LNO-0059	Unnamed	1.58	0.44
	Chanute	Neosho River/Chanute Levee A	Neosho River	0.35	0.026
Woodson	Piqua	LWO-0009	Unnamed	1.14	0.41

**4.9.3 Previous Occurrences**

Data from the National Performance of Dams Program at Stanford University indicates Kansas Region H has had reported dam incidents as detailed below:

**Table 51: Kansas Region H Incidents**

County	Jurisdiction	Dam Name	Incident Type	Uncontrolled Release of Reservoir	Year	Deaths
Greenwood	Madison	Frd No 92	Inflow Flood - Hydrologic Event	No	1998	0
Greenwood	Madison	Frd No 91	Inflow Flood - Hydrologic Event	No	1998	0
Greenwood	Lamont	Frd No 77	Inflow Flood - Hydrologic Event	No	1998	0
Greenwood	Lamont-	Frd No 93	Inflow Flood - Hydrologic Event	No	1998	0

**Table 51: Kansas Region H Incidents**

County	Jurisdiction	Dam Name	Incident Type	Uncontrolled Release of Reservoir	Year	Deaths
Woodson	Yates Center	Woodson County State Lake	Seepage	No	1996	0

Source: National Performance of Dams Program

One levee failure has been recorded for the region for the 20-year period of 1994-2023, as follows:

- **2007:** During the night of June 30, 2007, the Verdigris River overflowed the levee around Coffeyville, Kansas. River levels rose rapidly and exceeded the height of the levee by 3.9 feet. As a result of this overtopping, flood waters entered the Coffeyville Refinery and caused a release of approximately 90,000 gallons of crude oil.

**4.9.4 Probability of Future Incidents**

Despite the infrequent historical occurrences of dam failure resulting in an uncontrolled release of the reservoir, there remains a significant concern due to the large number of significant and high hazard dams throughout the region. The probability of dam failure events is not easily measured, but may be aligned with:

- The probability of future flood events
- Preventative measure taken by dam owners and operators, maintenance and repair
- Frequent condition inspections
- Proper operating procedures

KDA-DWR conducts routine monitoring and inspection of dams within the state on the previously identified schedule, with priority placed on those dams which pose the greatest potential threat. However, to fully determine the probability of a future event, a full engineering inspection would need to be completed on each dam, something beyond the scope of this plan.

Dams undergoing repair and/or reconstruction are required to be designed to pass at least the 1%-annual-chance rainfall event with one foot of freeboard. The most critical and hazardous dams are required to meet a spillway design standard much higher than passing the runoff from a 1%-annual-chance rainfall event. Although not all the dams have been shown to withstand the 1%-annual-chance rainfall event, most of the dams meet this standard due to original design requirements or recent spillway upgrades.

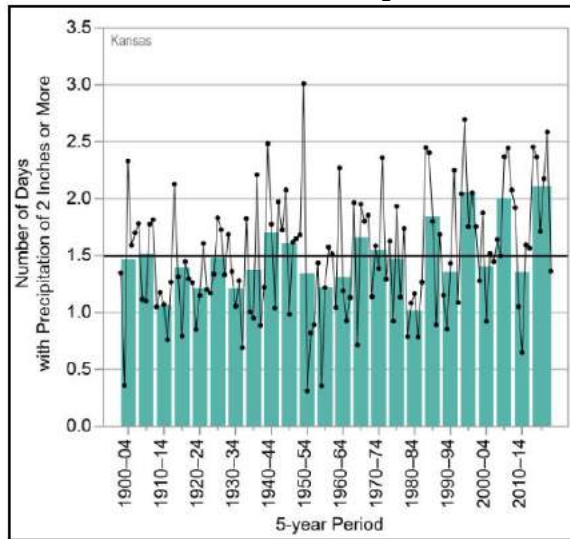
**4.9.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration**

The 2018 National Climate Assessment report indicates that much of the water infrastructure in the central portion of the United States, including dams, is nearing the end of its planned life expectancy. As indicated in the report: “Aging and deteriorating dams and levees also represent an increasing hazard when exposed to extreme or, in some cases, even moderate rainfall. Several recent heavy rainfall events have led to dam, levee, or critical infrastructure failures, including the Oroville emergency spillway in California in 2017, Missouri River levees in 2017, 50 dams in South Carolina in October 2015 and 25 more dams in the state in October 2016, and New Orleans levees in 2005 and 2015. The national exposure to this risk has not yet been fully assessed.”

A potential outcome of changing climate in Kansas Region H is an increase in extreme precipitation events which may lead to more severe floods and a greater risk of dam failure. Additional projected greater periods of drought conditions and high heat may result in ground cracking, a reduction of soil strength, erosion, and subsidence in earthen dams.

The NOAA NCEI State Climate Summary 2022 for Kansas suggests that the number of extreme precipitation events are projected to increase. These extreme events will likely place increased stress on dams within the State.

**Chart 14: Kansas Region H Number of Extreme Precipitation Events (Greater Than 2 Inches)**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

At present there is no comprehensive assessment of the climate-related vulnerability and risks to existing dams. Additionally, there are no common design standards concerning the repair or modification of existing dams nor for the designed and construction of new dams operated in the face of changing climate risk.

Land use trends can significantly impact a community's vulnerability to dam or levee failure. The way land is developed and used in proximity to dams and levees can influence the potential consequences of failure, affecting the safety of residents and infrastructure.

Development in flood-prone areas or behind levees without adequate consideration for flood risk increases vulnerability. Increased urbanization and population density near dams and levees can intensify the consequences of failure. Higher population density means more people and assets are at risk, leading to greater potential for loss of life and property damage.

The location of critical infrastructure, such as hospitals, schools, and emergency services, in close proximity to dams or levees can heighten vulnerability. Infrastructure assets may be at risk of damage or disruption, impacting the community's ability to respond effectively to a failure.

#### **4.9.5 Vulnerability and Impact**

The National Inventory of Dams documents all known dams in Kansas. The U.S. Army Corps of Engineers (USACE) is responsible for maintaining the National Inventory of Dams and works in close collaboration with federal and State of Kansas dam regulating agencies to obtain accurate and complete information about dams in the database. The database contains information about a dam's location and condition assessment. The condition assessment describes the condition of the dam based on available information, with the following ratings given:

- **Satisfactory:** No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions (static, hydrologic, seismic) in accordance with the minimum applicable state or federal regulatory criteria or tolerable risk guidelines.
- **Fair:** No existing dam safety deficiencies are recognized for normal operating conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency. Risk may be in the range to take further action.
- **Poor:** A dam safety deficiency is recognized for normal operating conditions which may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Investigations and studies are necessary.
- **Unsatisfactory:** A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

- **Not Rated:** The dam has not been inspected, is not under state or federal jurisdiction, or has been inspected but, for whatever reason, has not been rated.
- **Not Available:** Dams for which the condition assessment is restricted to approved government users.

The following table details the nearest jurisdiction, dam number, dam names, Emergency Action Plan (EAP) status, and condition assessment of all high hazard dams in Region H.

**Table 52: Kansas Region H High Hazard Dams**

County	Nearest Jurisdiction	Dam Number	Dam Name	EAP	Condition Assessment
Bourbon	Berlin	KS07902	Dd Iv-18	Yes	Fair
	Fort Scott	KS02455	Fort Scott Municipal Dam	Yes	Fair
	Uniontown	KS07852	Dd No G-4	Yes	Fair
Chautauqua	Cedar Vale	KS02161	Frd No 5	Yes	Poor
	Niotaze	KS02452	Dam No 2-6 (Timber Hill Lake	Yes	Not Rated
	Peru	KS02188	Frd No 2-26	Yes	Not Rated
	Sedan	KS02451	Dd No 6-28 Lower Dam (Sedan City Lake)	Yes	Fair
	Sedan	KS02201	Dam No 18-26 (Boy Scout Lake)	Yes	Fair
Crawford	Arma	KS07835	Bone Creek Reservoir	Yes	Fair
Elk	Moline	KS09290	Frd No 20	Yes	Satisfactory
	Moline	KS05314	Mpd No 21	Yes	Fair
	Moline	KS05251	Frd no 19	Yes	Fair
Greenwood	Eureka	KS03508	Fall River Dam	Yes	Fair
	Ivanpah	KS02301	Otis Creek Dam (Mpd no W-7)	Yes	Fair
	Lapland	KS02280	Frd No E-2	Yes	Satisfactory
	Neal	KS07208	Dd No 3	Yes	Fair
	Reece	KS02297	Frd No S-6	Yes	Not Rated
	Teterville	KS02279	Frd No E-1	Yes	Fair
Montgomery	Coffeyville	KS03893	Coffeyville C.C. Dam	Yes	Fair
	Havana	KS02395	Frd No I-1-25	Yes	Fair
Neosho	Parsons	KS02514	Lake Parsons Dam	Yes	Fair
Wilson	Buffalo	KS00899	Wilson County State Lake	Yes	Fair
Woodson	Yates Center	KS02535	Back-Up Water Supply	No	Not Rated

Source: National Inventory of Dams

Additionally, there are five federally operated high hazard dams within Kansas Region H. The following table details known information concerning the condition and risk assessment for all federally operated dams:

**Table 53: Kansas Region H Federally Operated Dam Condition and Risk Assessments**

County	Jurisdiction	Dam Number	Dam Name	EAP	Risk Assessment	Maximum People at Risk	Maximum Buildings at Risk	Maximum Economic Risk
Greenwood	Eureka	KS00003	Fall River Dam	Yes	Moderate	4,301	2,426	\$577,515,077
Labette	Cherryvale	KS00049	Big Hill Dam	Yes	Low	115	60	\$5,444,530
Montgomery	Independence	KS00002	Elk City Dam	Yes	Low	19,052	4,580	\$476,345,018
Montgomery	Independence	KS00002 S001	Elk City Dam/Levee	Yes	Low	322	183	\$16,978,918
Woodson	Toronto	KS00011	Toronto Dam	Yes	Low	2,309	1,243	\$241,841,144

Source: National Inventory of Dams

Following the metric established in the State of Kansas Hazard Mitigation Plan, an analysis of vulnerability to dam failure was completed by points being assigned to each type of dam and then aggregated for a total point score for each county. This analysis does not intend to demonstrate vulnerability in terms dam structures that are likely to fail, but rather provides a general overview of the counties that have a high number of dams, with weighted consideration given to dams whose failure would result in greater damages. Points were assigned as follows:

- Low Hazard Dams: 1 point
- Significant Hazard Dams: 2 point
- High Hazard Dams: 3 points
- High Hazard Dams without an EAP: 2 points
- Federal Reservoir Dams: 3 points.

Based on these categories, an awarded point total was determined for each participating county and a vulnerability rating assigned based on the following schedule.

**Table 54: Dam Vulnerability Rating Schedule**

	<b>Low</b>	<b>Medium-Low</b>	<b>Medium</b>	<b>Medium-High</b>	<b>High</b>
Awarded Point Range	0 – 26	27 – 50	51 – 100	101 – 200	201 - 327

The following table presents the dam failure vulnerability rating for each Kansas Region H participating county.

**Table 55: Kansas Region H County Vulnerability Assessment for Dam Failure**

<b>County</b>	<b>Low Hazard Dams</b>	<b>Significant Hazard Dams</b>	<b>High Hazard Dams</b>	<b>High Hazard Dams Without EAP</b>	<b>Federal Reservoirs</b>	<b>Vulnerability Rating</b>	<b>Vulnerability Level</b>
Allen	23	0	0	0	0	23	Low
Bourbon	84	8	9	0	0	101	Medium-High
Chautauqua	79	2	15	0	0	96	Medium
Cherokee	8	0	0	0	0	8	Low
Crawford	61	4	3	0	0	68	Medium
Greenwood	83	14	9	0	1	107	Medium-High
Elk	153	12	21	0	0	186	Medium-High
Labette	57	6	3	0	1	67	Medium
Montgomery	41	0	12	0	2	55	Medium
Neosho	64	2	3	0	0	69	Medium
Wilson	45	0	3	0	0	48	Medium-Low
Woodson	41	2	6	1	1	51	Medium

Source: Analysis by KDEM utilizing data from: Kansas Department of Agriculture, Division of Water Resources, Water Structures program; U.S. Army Corps of Engineers; Bureau of Reclamation; U.S. Army, U.S. Fish and Wildlife.

For the NFIP, FEMA will only recognize a levee system in its flood risk mapping effort that meet minimum design, operation, and maintenance standards as established by 44 CFR 65.10 – Mapping of Areas Protected by Levee Systems. In general, evaluated levees are assigned to one of these categories:

- Accredited Levee: Area behind the levee is mapped as a moderate risk, with no mandatory flood insurance requirement.
- To Be Accredited: A levee system that has been approved for accreditation.
- Provisionally Accredited Levee (PAL): Area behind the levee is mapped as a moderate risk, with no mandatory flood insurance requirement, for a two-year grace period while compliance with 44 CFR 65.10 is sought
- Non-Accredited Levee: Area behind the levee is mapped according to FEMA protocols, likely resulting in a high-risk area designation and associate flood insurance requirements

- To Be Non-Accredited: A levee system that no longer meets the requirements stipulated in 44 CFR 65.10 and is scheduled to lose accredited status

Additionally, each levee is assigned a risk classification to aid in hazard analysis. The following table details these classifications and suggested actions to be taken:

**Table 56: Levee Risk Classification Rating Definitions**

Class	Risk Characteristics	Suggested Actions
Very High	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very high risk.	Based on risk drivers, take immediate action to implement interim risk reduction measures. Increase frequency of levee monitoring, communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning systems and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as very high priority.
High	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in high risk.	Based on risk drivers, implement interim risk reduction measures. Increase frequency of levee monitoring; communicate risk characteristics to the community within an expedited timeframe; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as high priority.
Moderate	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in moderate risk.	Based on risk drivers, implement interim risk reduction measures as appropriate. Verify risk information is current and implement routine monitoring program; assure operations and maintenance is up to date; communicate risk characteristics to the community in a timely manner; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions as a priority.
Low	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in low risk.	Verify risk information is current and implement routine monitoring program and interim risk reduction measures if appropriate; assure operations and maintenance is up to date; communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance. Support risk reduction actions to further reduce risk to as low as practicable.
Very Low	Likelihood of inundation due to breach and/or system component malfunction in combination with loss of life, economic, or environmental consequences results in very low risk.	Continue to implement routine levee monitoring program, including operation and maintenance, inspections, and monitoring of risk. Communicate risk characteristics to the community as appropriate; verify emergency plans and flood inundation maps are current; ensure community is aware of flood warning and evacuation procedures; and recommend purchase of flood insurance.
No Verdict	-	Not enough information is available to assign Risk.

Source: USACE

The following table details, by county and jurisdiction, information from the USACE concerning levee failure risk:

**Table 57: Kansas Region H Levee Failure Consequence Analysis**

County	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Risk Classification	Levee System Status
Allen	Iola	Iola Levee	0	12	\$7,500,000	Low	Non-Accredited



**Table 57: Kansas Region H Levee Failure Consequence Analysis**

County	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Risk Classification	Levee System Status
Labette	Parsons	Labette Creek Levee	460	226	\$129,000,000	Not Screened	Non-Accredited
Montgomery	Caney	Caney Levee	470	233	\$142,000,000	Not Screened	Non-Accredited
	Coffeyville	Coffeyville Levee	173	67	\$102,000,000	Low	Provisionally Accredited
	Elk City	Elk City Lake-Levee A, B, C	399	197	\$59,900,000	Not Screened	Accredited
	Elk City	Elk City Reservoir Levee	1,649	277	\$437,000,000	Not Screened	Accredited
	Independence	LMG-102	57	5	\$1,340,000	Not Screened	Non-Accredited
Neosho	Chanute	Chanute Levee	1	1	\$175,000	Not Screened	Non-Accredited
	Chanute	Neosho River/Chanute Levee A	0	1	\$5,330,000	Not Screened	Non-Accredited
	St. Paul	LNO-0026, LNO-0062, LNO-0020	1	2	\$302,000	Not Screened	Non-Accredited
	St. Paul	LNO-0059	6	1	\$692,0000	Not Screened	Non-Accredited
Woodson	Piqua	LWO-0009	4	6	\$4,700,000	Not Screened	Not Enrolled

Source: USACE

The following table offers a summary of this data for each Kansas Region H county:

**Table 58: Kansas Region H Levee Failure Population and Structure Risk**

County	People	Structures	Value
Allen	0	12	\$7,500,000
Bourbon	0	0	\$0
Chautauqua	0	0	\$0
Cherokee	0	0	\$0
Crawford	0	0	\$0
Elk	0	0	\$0
Greenwood	0	0	\$0
Labette	460	226	\$129,000,000
Montgomery	2,748	779	\$742,240,000
Neosho	65	10	\$14,067,000
Wilson	0	0	\$0
Woodson	4	6	\$4,700,000

Source: USACE

A dam or levee failure event can have devastating and wide-ranging impacts on both people and communities. The severity of these impacts depends on the volume of water released and the location of the dam in relation to communities, and may include:

- **Loss of Life:** The sudden release of a large volume of water can result in flooding downstream, leading to drowning and casualties. The loss of life can be particularly high if a dam failure occurs in highly populated areas or when people are unable to evacuate in time.

- Long Term Displacement: People living downstream may be forced to evacuate their homes leading to displacement and requiring long-term shelter assistance.
- Economic Consequences: Both property damage and the disruption of transportation and utilities could affect local economies.
- Psychological Trauma: Survivors of dam failure events may experience psychological trauma, including post-traumatic stress disorder, anxiety, and depression. Witnessing the loss of lives and property can have long-lasting emotional effects on individuals and communities.

The environmental impact of dam or levee failures depends on the circumstances of the failure. After a failure occurs, the resulting flooding and moving debris can affect wildlife and natural habitats. The spread of pollution and hazardous materials can have negative impacts on the environment. Ecosystems and natural habitats may be destroyed, causing the migration or death of local wildlife. Depending on the timing and location of the failure, it can result in rapid changes in water temperature downstream. This can be harmful to temperature-sensitive aquatic species and ecosystems. Dam failures can disrupt natural ecological processes, such as nutrient cycling, sediment transport, and flow regimes. These disruptions can have cascading effects on ecosystems.

Any jurisdictional facility within an identified inundation zone of a dam or levee failure will be immediately impacted, potentially causing a cessation of all operations at that location. The extent of the impact depends on multiple factors concerning the extent of the failure, and may include:

- Structural Damage: Facilities located downstream could sustain severe structural damage. Floodwaters can inundate buildings, causing structural failures, collapsing walls, and damaging foundations. This can render facilities inoperable or unsafe for use.
- Equipment Damage: Critical facilities often house valuable and sensitive equipment that can be severely damaged or destroyed by floodwaters and debris carried by the flood. This can include electrical systems, machinery, data centers, and communication equipment.
- Disruption of Operations: The flooding caused by a dam failure can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, power plants, and water treatment plants. This disruption can have cascading effects on public services and infrastructure.
- Long-Term Recovery: The recovery process could be lengthy and resource intensive. It may involve rebuilding damaged infrastructure, restoring functionality, and implementing measures to prevent future vulnerabilities.

Government and emergency operations may be immediately impacted, especially if any major or critical facilities are within the inundation area of failure. The extent of the impact depends on multiple factors concerning the extent of the failure, and may include:

- Emergency Response and Management: Jurisdictional response agencies may be called upon to respond to a failure event. They must coordinate rescue operations, evacuations, and disaster response efforts to mitigate the immediate risks to human life and property.
- Public Health and Safety: Jurisdictional public health agencies would provide support for public health needs during and after a dam failure, including responding to injuries, managing emergency shelters, and addressing potential health risks from contaminants or waterborne diseases.
- Financial Impact: A dam failure event can strain state budgets due to the costs associated with emergency response, infrastructure repair, environmental cleanup, and long-term recovery efforts. Local governments may need to allocate additional funds to address these needs.

### **Potentially Vulnerable Community Lifelines**

A dam or levee failure can impact various community lifelines, critical systems and services that communities rely on for their functioning. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 59: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

<b>Category</b>	<b>Loss</b>
Loss of Electrical Service	\$199
Loss of Wastewater Services	\$66
Loss of Water Services	\$138
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

The failure of a dam or levee can have significant and wide-ranging impacts on transportation infrastructure, affecting roads, bridges, railways, and other critical components of transportation systems. However, it is important to note that, as of this plan, neither the State of Kansas or Kansas Region H planning participants have delineated community lifelines and their associated values in dam or levee failure inundation zones. As such, the following discussion does not allow for a determination of specifically vulnerable community lifelines. Potential impacts may include:

- **Flooding and Erosion:** Dam or levee failures can lead to rapid and extensive flooding, causing erosion of roadways and bridge foundations. This can result in the collapse or significant damage to roads and bridges, disrupting transportation routes.
- **Extended Downtime:** The repair of transportation infrastructure, especially major roads and bridges, can take a significant amount of time. During this period, transportation networks may be partially or entirely unavailable.

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was \$14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from \$1,000,000 to \$10,000,000 per mile.

Bridges crossing rivers can pose significant concerns during flooding events due to the increased risk of structural failure. Floodwater can exert powerful hydraulic forces on bridge structures, with the flow of water, debris, and floating objects impacting the bridge's substructure and foundation. Scouring, the removal of soil or sediment around bridge foundations can increase during a flood event increasing the risk of failure. Floodwater can also cause the deformation and misalignment of bridge components. As water levels rise and fall, the structural elements may undergo stress and strain, potentially leading to long-term damage and misalignment. Mapping concerning the locations of bridges with Kansas Region H may be found with the Kansas Department of Transportation. The following map provides a thumbnail overview of bridge location

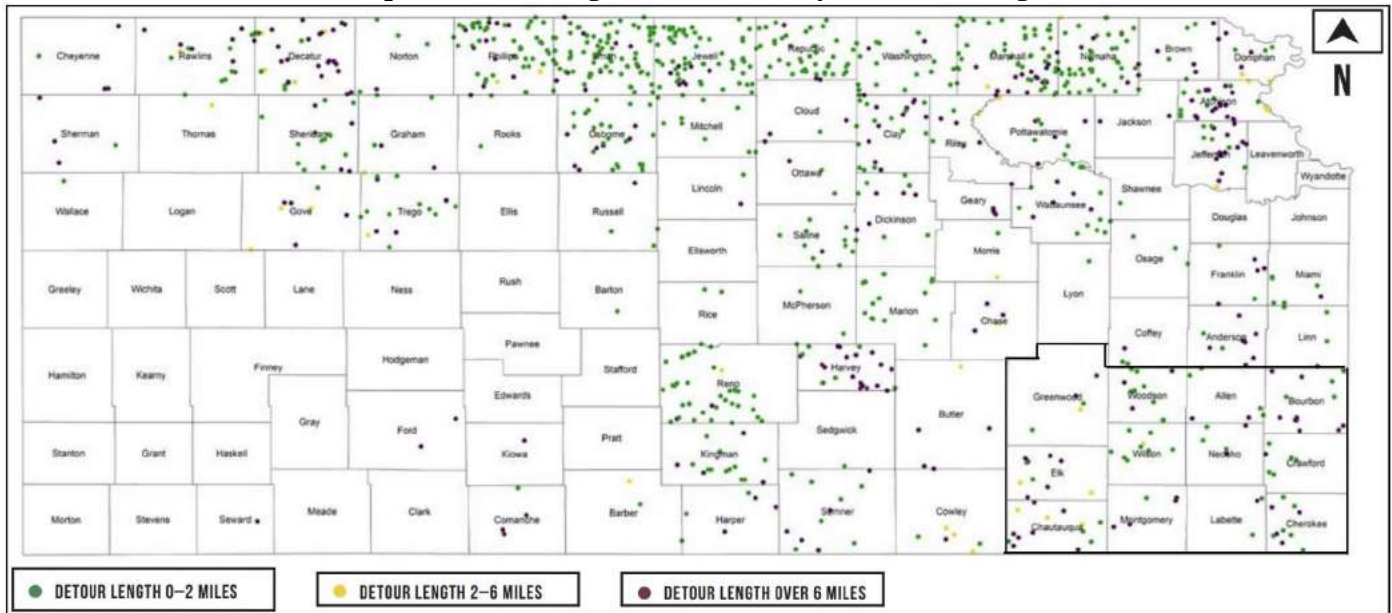
### Map 37: Kansas Region H Bridge Locations



Source: Kansas Department of Transportation

Of particular concern are structurally deficient bridges, which may be at increased risk of failure during an event. The following map, from the Kansas Department of Transportation, details Kansas Region H structurally deficient bridges:

**Map 38: Kansas Region H Structurally Deficient Bridges**



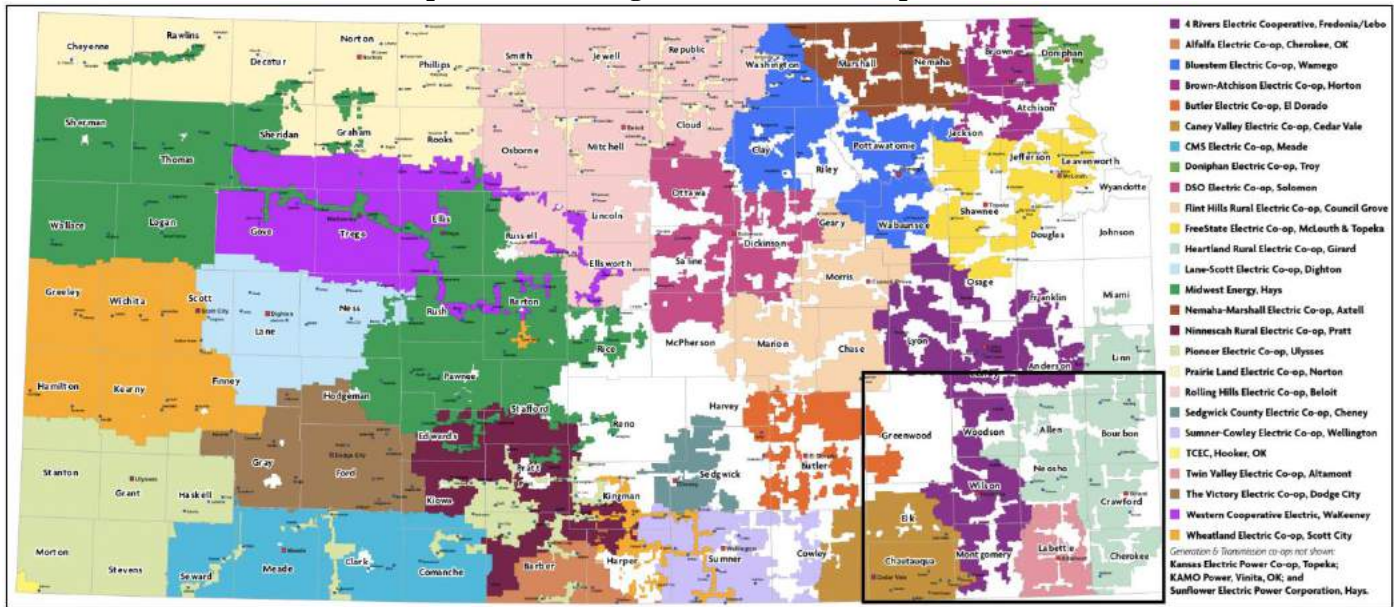
The Kansas Department of Transportation estimates that the cost to repair a structurally deficient bridge is on average \$150,000.

The failure of a dam or levee can have significant impacts on power utilities, affecting both the generation and distribution of electrical power. Here are some potential consequences:

- **Power Line Disruption:** Dam or levee failures can cause flooding and erosion, potentially damaging power lines and transmission towers. This can result in the disruption of electricity transmission from power generation facilities to distribution networks.
- **Substation Impact:** Substation Flooding: Flooding from a dam or levee failure can impact electrical substations, which play a crucial role in transforming and distributing electricity. Substation failures can lead to widespread power outages.
- **Grid Instability:** The sudden loss of a significant power source can lead to voltage and frequency fluctuations. This instability can affect the overall reliability of the power grid.
- **Emergency Shutdowns:** In the event of a dam or levee failure, power utilities may need to implement emergency shutdowns of affected power plants and electrical infrastructure to prevent further damage and ensure the safety of personnel.

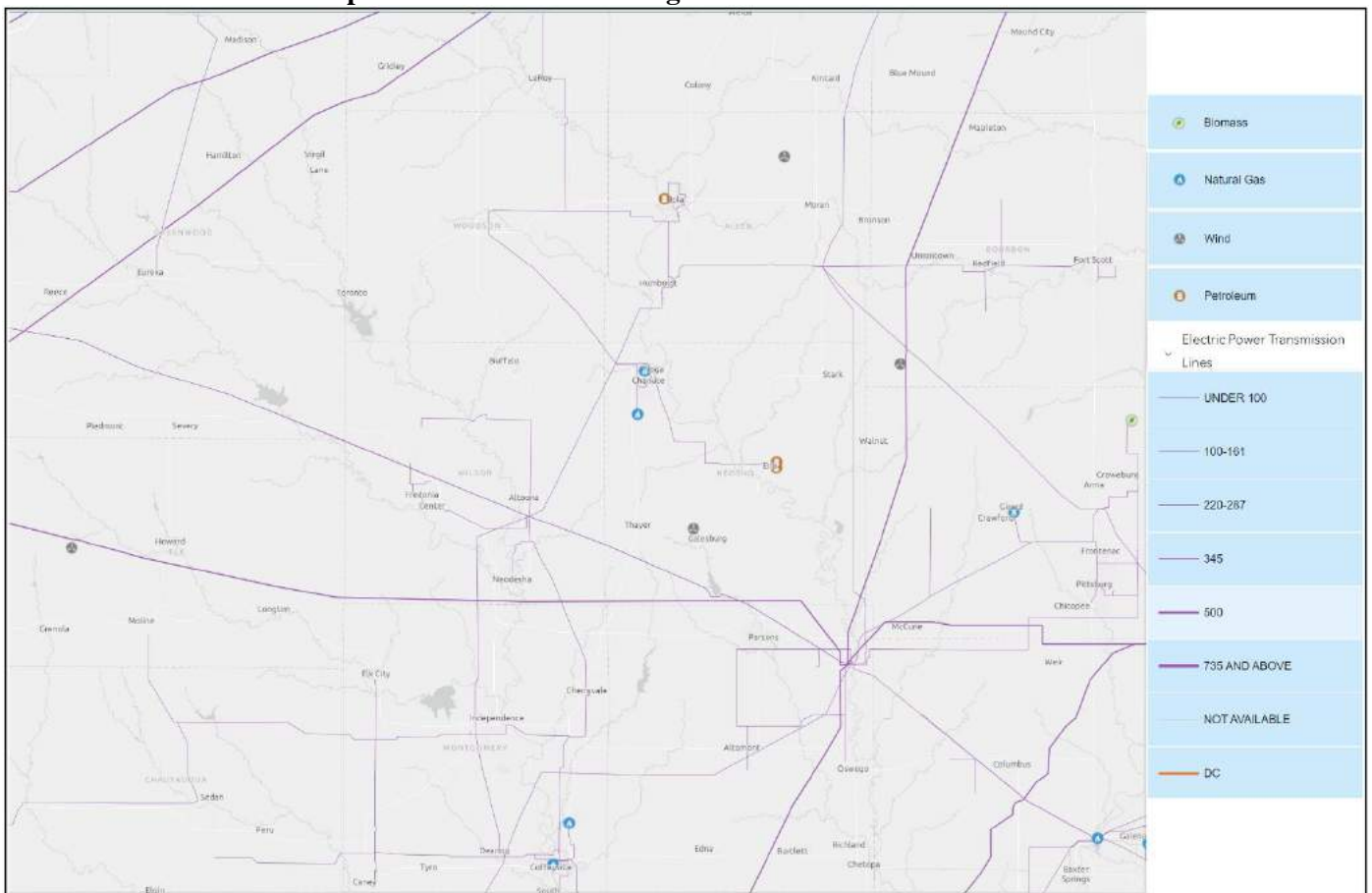
Kansas Region H and participating jurisdictions use the following electrical utility providers:

**Map 39: Kansas Region H Electrical Cooperatives**



Electricity is generated in Kansas Region H at 13 generation facilities, using biomass, natural gas, petroleum, and wind facilities. The following map, from the U.S. Energy Atlas, details the location of both electrical generating plants and high-capacity transmission lines within Kansas Region H:

**Map 40: Electrical Generating Plants and Transmission Lines**

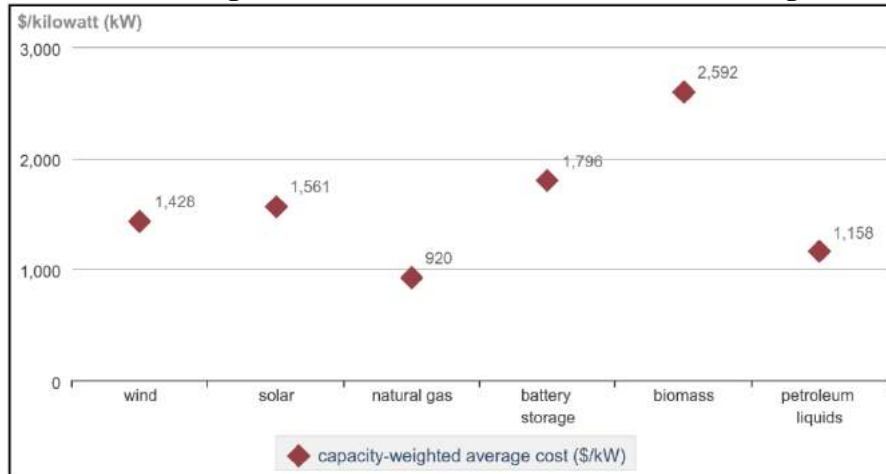


Source: U.S. Energy Atlas

The cost to replace electrical lines can vary widely based on several factors, including the type of electrical lines, the distance of the replacement, local labor and material costs, the complexity of the project, and any specific requirements or challenges involved. Additionally, costs can be significantly different for residential, commercial, or industrial projects. Additionally, urban and rural locations may have varying cost factors. As a rough estimate, the cost to replace electrical lines can range from a few thousand dollars to several thousand dollars per mile.

Data concerning the construction costs of electrical generating plants from the U.S. Energy Information Administration indicates the following average per kW cost, by generating plant type, for new construction:

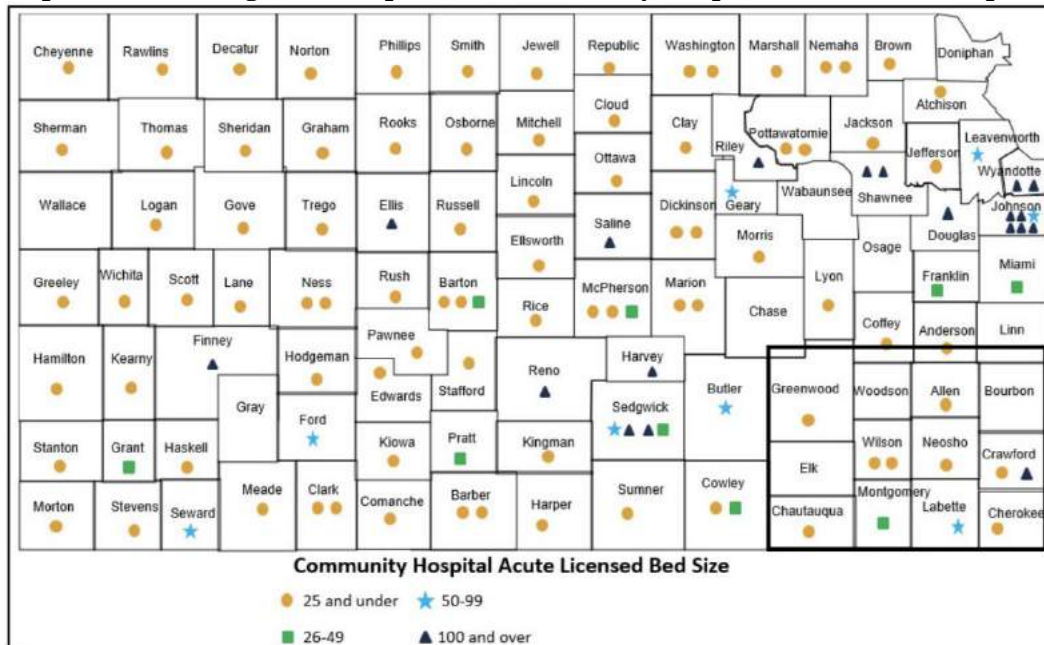
**Chart 15: Average Construction Cost of Electrical Generating Plants**



Source: U.S. Energy Information Administration

The following map, from the Kansas Hospital Association details the number of hospital beds by county for Kansas Region H:

**Map 41: Kansas Region H Hospital Bed Community Hospital Licensed Bed Capacity**



Source: Kansas Hospital Association

While these, and other smaller medical facilities, may see a rapid increase in dam or levee failure injuries during an event, it is considered unlikely that this increase will impact or overload the regional capacity except in the case of a catastrophic failure. In the event of a catastrophic failure, patients will need to be transported to adjacent regions to receive treatment.

### Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 60: Dam or Levee Failure Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Heavy flooding can cause power loss, property damage, injury, and death, and the displacement of populations. Standing water can also pose a public health risk due to the reproduction of disease vectors such as mosquitos.
Impact on Responders	Heavy flooding may cause inaccessibility of roadways for first responders as well as damage of materials and resources. First responders will also have to facilitate evacuation measures to move people from the flooded area.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Flooding caused by dam failure may create power outages, debris damage, and road closures.
Delivery of Services	Delivery of services may be disrupted due to flood-damaged bridges and roadways. Transit systems may face closures due to public safety concerns. The ability to deliver food, drinking water, and services will be heavily disrupted. Flooding may also interrupt communications and transportation due to power failure and accessibility challenges.
Property, Facilities, and Infrastructure	Flooding from failures impact roads and bridges, businesses, hospitals, and other critical entities. Water and sewer systems may also be damaged. Homes and businesses may be completely destroyed if situated close to the failure point.
Impact on Environment	Flooding and moving debris can affect natural areas and wildlife, spreading pollution and hazardous materials. Ecosystems and natural habitats may be completely destroyed, causing migration or death of wildlife.
Economic Conditions	There is a fiscal impact on the government after a failure due to disruption of travel and commerce routes and employee’s ability to travel to work. Recourses at all levels are utilized impacting the ability to access resources long-term.
Public Confidence in Governance	Direct, immediate, and effective actions must be taken in order to maintain public confidence. Response activities must include all levels of government.

#### 4.9.7 Jurisdictional Risk and Vulnerability

To help understand the risk and vulnerability to dam and levee failure events of participating jurisdictions the following tables were developed using available data:

**Table 61: Jurisdictional High Hazard Dam Totals**

County	Jurisdiction	Number High Hazard Dams	Number High Hazard Dams Without EAP	Lowest Rated Condition Assessment
Bourbon	Berlin	1	0	Fair
	Fort Scott	1	0	Fair
	Uniontown	1	0	Fair
Chautauqua	Cedar Vale	1	0	Poor
	Niotaze	1	0	Not Rated
	Peru	1	0	Not Rated
	Sedan	2	0	Fair
Crawford	Arma	1	0	Fair
Elk	Moline	3	0	Fair
Greenwood	Eureka	2	0	Fair
	Eureka	1	0	Federal – Medium Risk



**Table 61: Jurisdictional High Hazard Dam Totals**

County	Jurisdiction	Number High Hazard Dams	Number High Hazard Dams Without EAP	Lowest Rated Condition Assessment
	Ivanpah	1	0	Fair
	Lapland	1	0	Satisfactory
	Neal	1	0	Fair
	Reece	1	0	Not Rated
	Teterville	1	0	Fair
Labette	Cherryvale	1	0	Federal – Low Risk
Montgomery	Coffeyville	1	0	Fair
	Havana	1	0	Fair
	Independence	2	0	Federal – Low Risk
Neosho	Parsons	1	0	Fair
Wilson	Buffalo	1	0	Fair
Woodson	Toronto	1	0	Federal - Low Risk
	Yates Center	1	1	Not Rated

Source: National Inventory of Dams

The 2024 State of Kansas Hazard Mitigation Plan does include an addendum of High Hazard dams. However, data concerning inundation areas, the number of people, number of structures, infrastructure, and valuation in identified high hazard dams’ inundation areas was not available from either KDA-DWR or KDEM. A process is currently underway to compile this data and is expected to be available with the completion of the 2028 State of Kansas Hazard Mitigation Plan.

The following table details information from the USACE concerning levee failure consequence analysis for jurisdictions within Kansas Region H:

**Table 62: Kansas Region H Levee Failure Consequence Analysis**

County	Jurisdiction	People at Risk	Structures at Risk	Property Value
Allen	Iola	0	12	\$7,500,000
Cherokee	Parsons	460	226	\$129,000,000
Elk	City of Elk	517	296	\$180,000,000
	Florence	351	254	\$81,100,000
Labette	Caney	470	233	\$142,000,000
	Coffeyville	173	67	\$102,000,000
	Elk City	2,048	474	\$496,900,000
	Independence	57	5	\$1,340,000
Neosho	Chanute	1	2	\$5,505,000
	St. Paul	7	3	\$7,222,000
Wilson	Piqua	4	6	\$4,700,000

Source: USACE

## 4.10 Drought

### 4.10.1 Hazard Description

Drought is defined as an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and or underground water supply. It is, however, a normal, seasonal, and recurrent feature of climate that occurs in virtually all climate zones—typically in late spring through early fall. The duration of drought varies widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. The hydrological imbalance can be grouped into the following non-exclusive categories:



- Agricultural: When the amount of moisture in the soil no longer meets the needs of previously grown crops
- Hydrological: When surface and subsurface water levels are significantly below their normal levels
- Meteorological: When there is a significant departure from the normal levels of precipitation
- Socio-Economic: When the water deficiency begins to significantly affect the population

When below average, little or no rain falls, soil can dry out, and plants can die. If unusually dry weather persists and water supply problems develop the period is defined as a drought. Human activity such as over-farming, excessive irrigation, deforestation, and poor erosion controls can exacerbate a drought's effects. It can take weeks or months before the effects of below average precipitation on bodies of water are observed. Depending upon the region, droughts can happen more quickly, and be noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the faster the effects will be realized. A naturally dry region, which typically relies more on subsurface water will take more time to actualize its effects.

Periods of drought can have significant environmental, agricultural, health, economic, and social consequences. The effects vary depending upon vulnerability and regional characteristics. Droughts can also reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and increase contamination. The most common effects are diminished crop yield, increased erosion, dust storms, ecosystem damage, reduced electricity production due to reduced flow through hydroelectric dams, shortage of water for industrial production, and increased risk of wildland fires.

### 4.10.2 Location and Extent

All of Kansas Region H is susceptible to drought conditions. However, the specific susceptibility to drought depends on various factors, including climate patterns, land use practices, and water management strategies.

Kansas Region H generally has a semi-arid climate, characterized by relatively lower annual precipitation. This climatic condition makes the region more susceptible to drought, especially during periods of below-average rainfall. The demand for water for agricultural irrigation can also stress water resources in the region.

Kansas Region H is part of the Ogallala Aquifer region, a critical groundwater source. Excessive groundwater pumping during drought conditions can lead to aquifer depletion, posing long-term challenges for water availability. Kansas Region H also relies on reservoirs and rivers for water supply, and prolonged drought can lead to reduced water levels and increased competition for available water resources.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor. The U.S. Drought Monitor provides a summary of drought conditions across the United States, including all Kansas counties. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-based drought indices and indicators, along with local expert input, into a single composite drought indicator. The following table details the U.S. Drought Monitor categories:

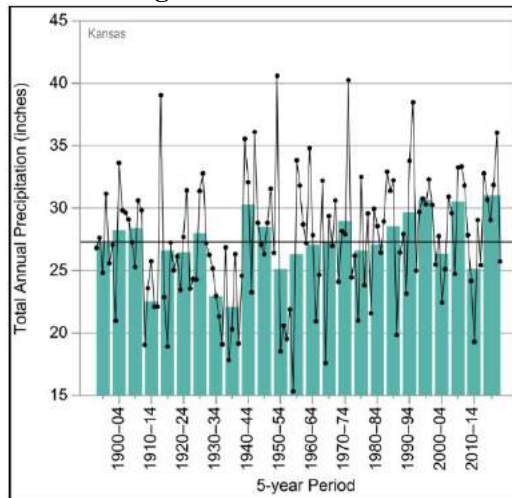
**Table 63: U.S. Drought Monitor Categories**

Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S. Drought Monitor

Precipitation data is collected by the NWS throughout the State of Kansas. Additional rainfall data is also collected by the NWS through citizen weather rainfall sites. The following chart indicates annual precipitation averages for Kansas from 1895 to 2020:

**Chart 16: Kansas Region H Observed Annual Precipitation**



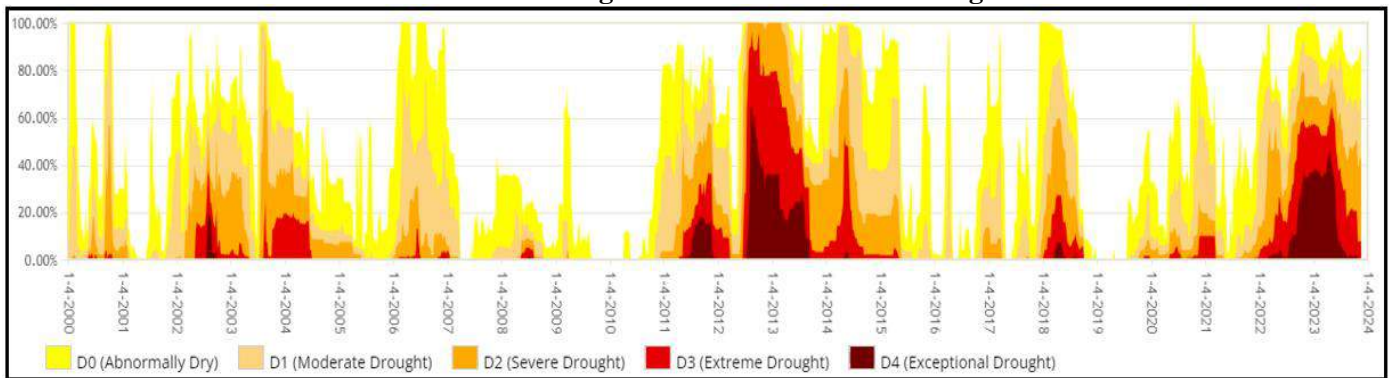
Source: NOAA NCEI State Climate Summary 2022 for Kansas

Current drought conditions, which change weekly basis, may be found on the U.S. Drought Monitor website.

**4.10.3 Previous Occurrences**

Drought is a normal climate pattern that has occurred in varying degrees of length, severity, and size. The following chart, from the U.S. Drought Monitor shows past drought conditions for Kansas Region H:

**Chart 17: Past Drought Conditions for Kansas Region H**



Source: U.S. Drought Monitor

Note: Represents averaged conditions

Comprehensive data on droughts, drought impacts, and drought forecasting is extremely limited and often inaccurate. Due to the complexity of drought monitoring and the large areas droughts impact, agencies have difficulty quantifying and standardizing drought data.

Historical data was gathered from the U.S. Drought Monitor weekly reports for the 10-year period between 2013 and 2022 (with the years 2013 and 2022 being full dataset years). This data was compiled and aggregated to provide a yearly estimate of the percentage of Kansas Region H in each Drought Monitor category.

**Table 64: Percentage Area in U.S. Drought Monitor Category**

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2022	28.5%	71.5%	48.9%	41.4%	34.4%	18.3%
2021	81.6%	17.0%	0.3%	0.0%	0.0%	0.0%
2020	54.8%	45.2%	19.7%	0.0%	0.0%	0.0%
2019	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	39.2%	60.8%	40.1%	2.2%	0.0%	0.0%
2017	60.3%	39.7%	11.5%	0.0%	0.0%	0.0%
2016	81.0%	19.0%	0.2%	0.0%	0.0%	0.0%
2015	57.8%	42.2%	14.2%	0.0%	0.0%	0.0%
2014	25.6%	74.4%	54.1%	9.6%	0.0%	0.0%
2013	35.6%	64.4%	35.4%	30.3%	2.4%	0.0%

Source: U.S. Drought Monitor

The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county. USDA Secretarial disaster designations must be requested of the Secretary of Agriculture by a governor or the governor’s authorized representative, and there is an expedited process for drought. The following table represents the total number of Secretarial Disaster Declarations, by county, for the Kansas Region H:

**Table 65: Secretarial Drought Disaster Declarations, 2019 -2022**

County	2022	2021	2020	2019
Allen	3	0	0	0
Bourbon	5	0	0	0
Chautauqua	3	1	0	0
Cherokee	5	0	2	0
Crawford	5	0	0	0
Elk	4	0	0	0
Greenwood	4	0	0	0
Labette	3	0	0	0
Montgomery	5	0	0	0
Neosho	4	0	0	0
Wilson	5	0	0	0
Woodson	4	0	0	0

Source: USDA Farm Service Agency

#### 4.10.4 Probability of Future Events

Historically, drought has affected Kansas Region H on a reoccurring basis. In reviewing historical data from the U.S. Drought Monitor weekly reports for Kansas Region H from 2013 through 2022 a weekly average can be created indicating the percentage time in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

**Table 66: Estimated Weekly Probability of Kansas Region H Being in U.S. Drought Monitor Category**

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
56.4%	43.4%	22.4%	8.3%	3.7%	1.8%

Data: U.S. Drought Monitor

Kansas Region H can experience rapid droughts, with a sudden onset of intense dry periods following a period of normal precipitation. While these conditions may last only a few months, they can result in agricultural losses, water supplies shortages, and low stream and river volume.

While predicting drought provides many challenges, NOAA’s National Integrated Drought Information System provides the Northeast Drought Early Warning System to improve drought early warning capacity. The system is a network of regional and national partners that share information and coordinate actions to help communities in the region cope with drought. Developing and implementing the system allows Kansas to quickly respond to emerging drought conditions. Through developing regional systems, the National Integrated Drought Information System is building the foundation for a nationwide system to improve drought forecasting.

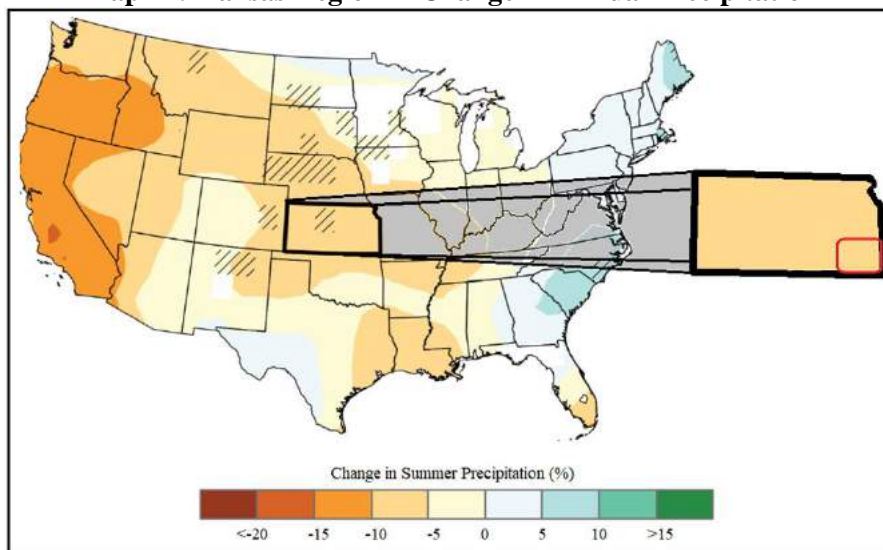
#### 4.10.5 Projected Changes in Hazard Location, Intensity, Frequency, and Duration

According to the National Institutes of Health National Center for Biotechnology Information publication Global Drought Trends and Future Projections “Drought is one of the most difficult natural hazards to quantify and is divided into categories (meteorological, agricultural, ecological and hydrological), which makes assessing recent changes and future scenarios extremely difficult.” However, using long term data estimates of future drought conditions can be determined through a combination of climate modeling, historical data analysis, and scientific assessments. This modelling takes into account factors such as temperature, precipitation, soil moisture, and other relevant variables.

Current modelling from the NOAA State Climate Summary 2022 for Kansas suggests that projections of overall annual precipitation are uncertain, summer precipitation is projected to decrease across the state, while winter precipitation is projected to increase. Winter precipitation increases could benefit winter wheat production, but summer drying would have negative impacts on rain-fed summer crops and rangeland. Although increased precipitation is projected, naturally occurring droughts are projected to be more intense because higher temperatures will increase evaporation rates.

The following map indicates the expected annual increase in precipitation for Kansas Region H:

**Map 42: Kansas Region H Change in Annual Precipitation**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The NOAA NCEI State Climate Summary 2022 for Kansas indicates that the intensity of future droughts is projected to increase. Although projections of overall precipitation are uncertain, higher temperatures will increase the rate of soil moisture loss during dry spells, leading to more serious conditions during future naturally occurring droughts, including an increase in the occurrence and severity of wildfires.

#### 4.10.6 Vulnerability and Impact

Droughts are rarely a direct cause of death, though the associated heat, dust, and stress can all contribute to increased mortality.

In general, critical facilities and infrastructure are not directly vulnerable to losses as a result of drought. However, there is a potential that operations could be impacted by power failures caused by either increased utility demand or damaged power delivery infrastructure. In addition, drinking water infrastructure may be specifically vulnerable to the impacts of drought. Any decrease in groundwater supplies would stress this infrastructure and may cause shortages or rationing.

Drought conditions can cause significant agricultural impacts. In addition to obvious losses in yields in both crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of wildfires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to drought conditions from 1989 to 2021:

**Map 43: Agricultural Losses Due to Drought Conditions, 1989 to 2021**



Source: USDA

Although environmental losses are difficult to quantify, increasing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects. Environmental losses are the result of damage to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from it if it is a temporary aberration. However, the degradation of landscape quality, with increased soil erosion, may lead to a more permanent loss of biological productivity of the landscape.

Governmental operations, facilities, and assets will likely experience no impacts from drought conditions, unless there is substantial power, communications, or water outages. However, reduced water availability would likely have an immediate impact on firefighting efforts in urban and suburban areas as fire suppression equipment requires a minimum level of water pressure to activate.

**Potentially Vulnerable Community Lifelines**

Water utilities are particularly vulnerable to drought conditions due to the direct impact on water availability and supply. The May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 67: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Wastewater Services	\$66
Loss of Water Services	\$138

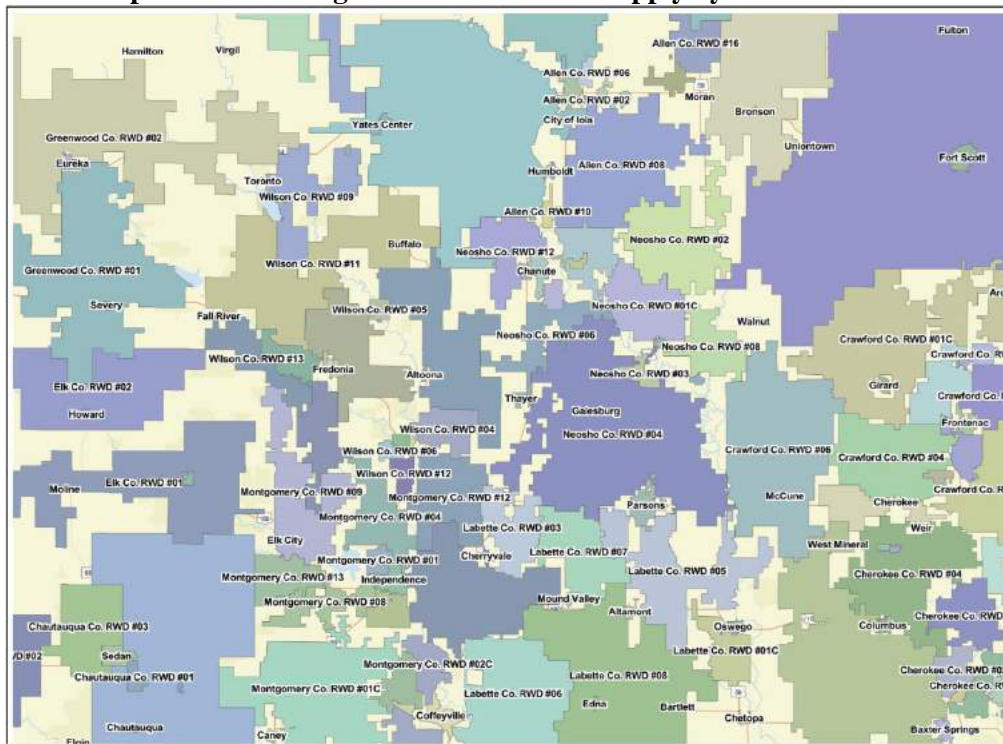
Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Water utilities can be affected by drought through:

- **Reduced Water Availability:** The reduction in water availability directly impacts the amount of water that water utilities can draw from local sources.
- **Lower Reservoir Levels:** Lower reservoir levels can affect the ability to meet water demand during periods of high usage.
- **Declining Groundwater Levels:** Lower groundwater levels make it more challenging for utilities to extract water.
- **Water Quality Challenges:** Lower water levels can lead to higher concentrations of contaminants, minerals, and sediments in the available water sources, requiring more extensive and costly treatment processes.
- **Increased Treatment Costs:** Treating water from depleted or lower-quality sources during drought conditions may require additional treatment steps, technologies, or chemicals, leading to increased operational costs for water utilities.
- **Competition for Water Resources:** During droughts, there is increased competition for limited water resources among various users, including agriculture, industry, and households. Water utilities may face challenges in securing sufficient water supplies amid this heightened competition.
- **Impact on Water Infrastructure:** Reduced water flow in rivers and streams can expose water infrastructure, such as pipelines, to the risk of corrosion.
- **Water Use Restrictions:** To conserve water during droughts, authorities may implement water use restrictions and conservation measures. These restrictions can impact water utilities' revenue and their ability to meet customer demand.

In Kansas Region H, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the Kansas Department of Health and Environment. Private domestic groundwater wells are not considered public water supply systems. Kansas Region H and participating jurisdictions are covered by the following domestic water suppliers:

**Map 44: Kansas Region H Public Water Supply System Boundaries**



Source: State of Kansas

Drought can severely challenge a public water supplier through depletion of the raw water supply and greatly increased customer water demand. Even if the raw water supply remains adequate, problems due to limited treatment capacity or limited distribution system capacity may be encountered. Water supply planning is the key to minimizing the effects of drought on the population. Public water suppliers should continue to work to identify vulnerabilities and develop infrastructure, conservation plans, and partnerships to reduce the likelihood of running out of water during a drought.

Communities and citizens served by private wells rather than water supply districts may be at higher risk to drought conditions, and may see the following impacts:

- Lowering of Water Table: Drought conditions can lead to a lowering of the water table, which is the level at which groundwater is located. Private wells that rely on groundwater may experience reduced yields or, in extreme cases, may run dry.
- Decreased Well Recharge: Drought reduces the amount of precipitation, leading to decreased recharge of groundwater. Private wells depend on a sustainable recharge rate to maintain a consistent and reliable water supply.
- Increased Competing Demands: During a drought, increased water demand for agricultural irrigation, municipal water supply, and other uses can create competition for the available groundwater. Private wells may face challenges due to this increased demand.
- Water Quality Concerns: Lower groundwater levels during droughts can lead to changes in water quality. Concentrations of minerals, contaminants, and pollutants may increase, affecting the suitability of water for drinking and other uses.

Should it be required to drill a private well deeper to accommodate for drought conditions impacting the level of the water table, on average, the cost to drill a private water well in the United States can range from \$15 to \$45 per foot. However, it's important to note that this is a general estimate, and actual costs can vary based on geological and hydrogeological conditions and well depth.

**FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from drought:

**Map 45: Kansas Region H FEMA NRI Drought Risk**



Source: FEMA NRI



As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for drought for participating counties within Kansas Region H:

**Map 46: Kansas Region H FEMA NRI Drought EAL**



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for drought:

**Table 68: Kansas Region H FEMA NRI and EAL for Drought by County**

County	Risk Index	EAL
Allen	Very Low	Very Low
Bourbon	Relatively Low	Relatively Low
Chautauqua	Very Low	Very Low
Cherokee	Relatively Moderate	Relatively Moderate
Crawford	Relatively Low	Relatively Low
Elk	Very Low	Very Low
Greenwood	Very Low	Very Low
Labette	Very Low	Very Low
Montgomery	Very Low	Very Low
Neosho	Very Low	Very Low
Wilson	Very Low	Very Low
Woodson	Very Low	Very Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 69: Drought Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	If the drought coincides with warmer months, vulnerable populations may face an increased risk of dehydration, death, heat-related illness, heat stroke. Lower quantities of water may also increase the likelihood of contamination due to higher

**Table 69: Drought Consequence Analysis**

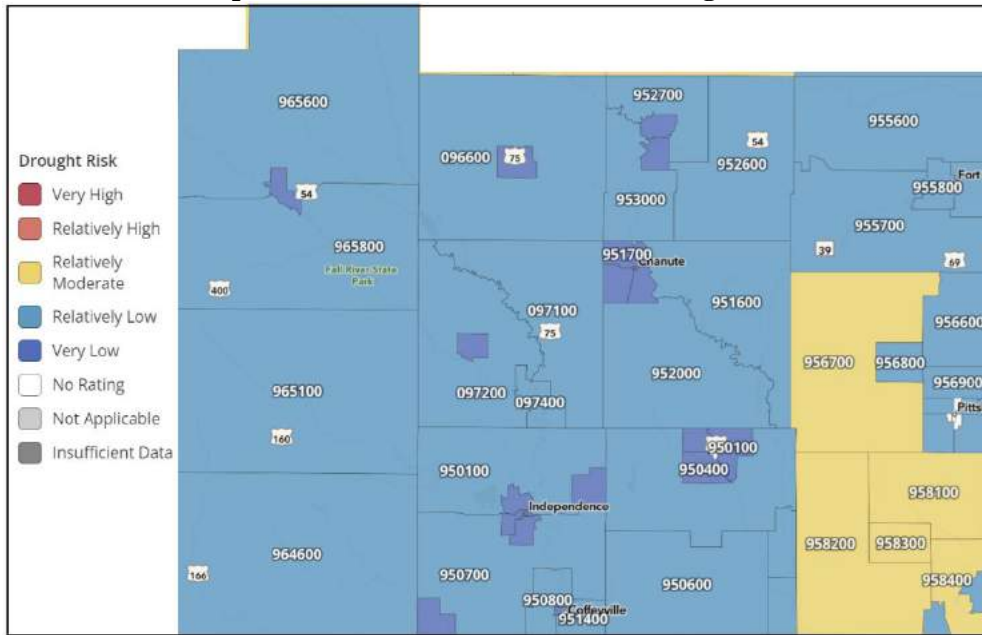
Subject	Potential Impacts
	concentrations of bacteria. During droughts, dry soils and wildfires increase the number of airborne particles, such as pollen and smoke, which can worsen chronic respiratory illnesses.
Impact on Responders	Reduced water availability would likely complicate firefighting efforts in urban and suburban areas where wildfire-fighting tactics such as chemical retardants and controlled burns are less suitable. Some fire suppression equipment requires a minimum level of water pressure to activate. If the drought coincides with warm months, first responders may face increased risk of heat-related injuries or death.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. While the expectation is minimal, this threat may impact an agency’s ability to implement their continuity plan based on the hazard’s potential to impact power, communications, or water outages. Critical life-saving activities and fire suppression will be directly impacted by these outages.
Delivery of Services	Droughts may impact the delivery of goods and services if there are shortages of raw materials.
Property, Facilities, and Infrastructure	Drought conditions may threaten levels or quality of municipal public water supplies or impact small communities and/or private potable water wells.
Impact on Environment	The potential of drought-related impacts could have significant impacts on supplies of animal feed, livestock, meat and dairy products, and processed grain products, and on crop production. Drought conditions may also increase the potential for fires. Drought is also associated with insect infestations, plant disease, wind erosion of soil, and decrease in levels of water produced by natural aquifers.
Economic Conditions	The economic impacts from a drought could be significant. Droughts have the potential to drain state, and local resources, which will have a significant fiscal impact on the local government.
Public Confidence in Governance	Droughts can adversely affect the public, first responders, infrastructure, agriculture, economy, and overall operations. Direct, effective, and timely response by all levels of government is required for public confidence in the state’s governance, especially in recognizing and mitigating economic impacts of the drought.

**4.10.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to drought conditions of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from drought:

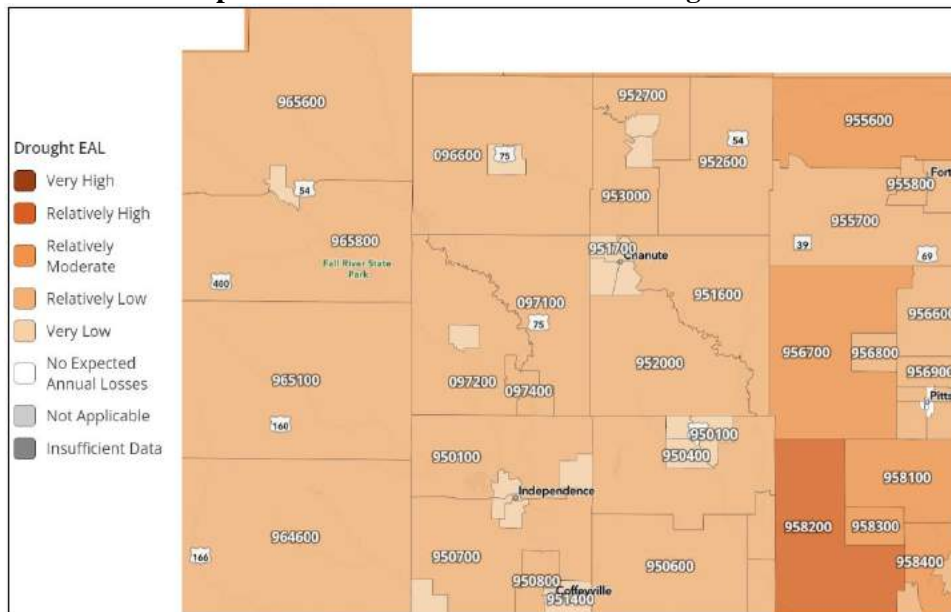
**Map 47: FEMA NRI Jurisdictional Drought Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for drought for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 48: FEMA NRI Jurisdictional Drought EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

At greater risk may be the vulnerable populations, including the especially young, the elderly, and those below the poverty level. Hazard occurrences can exacerbate existing vulnerabilities and create new challenges. Vulnerable populations may have pre-existing health conditions that make them more susceptible to heat-related illnesses and dehydration, both of which can be exacerbated during droughts. Persons on fixed incomes and with limited resources

may face difficulties in adapting their homes to withstand hazard conditions or may lack financial resources to cope with the increased costs of food, water, and energy.

The following table details potentially vulnerable populations by Kansas Region H county, along with the change in the populations:

**Table 70: Kansas Region H Drought Vulnerable Populations**

<b>County</b>	<b>Under Age of 5</b>	<b>Over age of 65</b>	<b>In Poverty</b>
Allen	727	2,907	2,130
Bourbon	826	2,774	2,464
Chautauqua	193	832	608
Cherokee	1,148	3,854	3,239
Crawford	2,424	6,021	7,390
Elk	124	741	408
Greenwood	318	1,532	953
Labette	1,336	3,905	3,145
Montgomery	2,175	9,939	5,622
Neosho	1,054	3,145	2,512
Wilson	531	1,869	1,355
Woodson	153	766	496

Source: US Census Bureau

Jurisdictional governmental operations, facilities, and assets will likely experience no impacts from drought conditions, unless there is substantial power, communications, or water outages. However, reduced water availability would likely have an immediate impact on firefighting efforts in urban and suburban areas as fire suppression equipment requires a minimum level of water pressure to activate.

## 4.11 Extreme Temperatures

### 4.11.1 Hazard Description

Extreme temperature events occur when climate conditions produce temperatures well outside of the predicted norm. These extremes can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors.

The Centers for Disease Control and Prevention (CDC) identifies the following six groups as being especially vulnerable to extreme temperatures:

- Older Adults (aged 65)
- Infants and Children
- Individuals with Chronic Conditions
- Low-income Individuals
- Athletes
- Outdoor workers



### 4.11.2 Location & Extent

The Midwest climate region is known for extremes in temperature. Specifically, Kansas lacks any mountain ranges that could act as a barrier to cold air masses from the north or hot, humid air masses from the south or any oceans or large bodies of water that could provide a moderating effect on the climate. The polar jet stream is often located over the region during the winter, bringing frequent storms and precipitation. Kansas summers are generally warm and humid due to the clockwise air rotation caused by Atlantic high-pressure systems bringing warm humid air up from the Gulf of Mexico.

All of Kansas Region H is vulnerable to both extreme heat and extreme cold, defined as follows.

- **Extreme Heat:** Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when an area of high atmospheric pressure traps moisture laden air near the ground.
- **Extreme Cold:** Although no specific definition exists for extreme cold, an extreme cold event can generally be defined as temperatures at or below freezing for an extended period of time. Extreme cold events are usually part of Winter Storm events but can occur during anytime of the year and can have devastating effects on agricultural production.

Data from the following High Plains Regional Climate Center weather stations from the first available date to present was obtained to illustrate regional temperature norms.

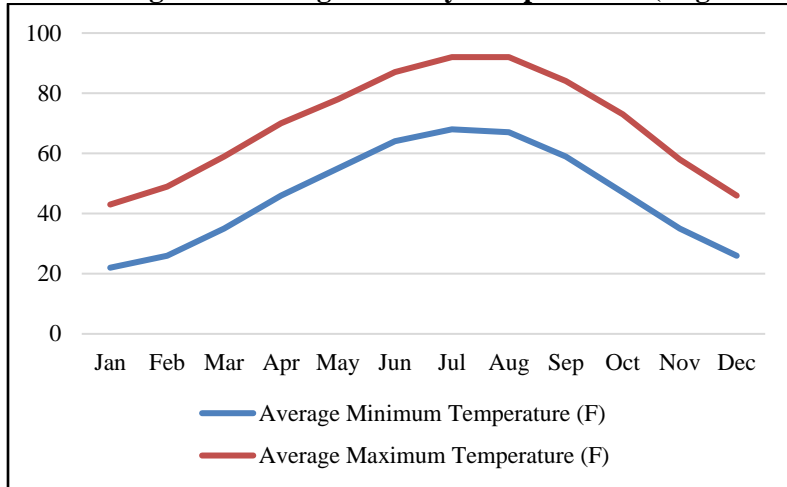
**Table 71: Regional Average Temperatures**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Minimum (F)	22°	26°	35°	46°	55°	64°	68°	67°	59°	47°	35°	26°	46°
Average Maximum (F)	43°	49°	59°	70°	78°	87°	92°	92°	84°	73°	58°	46°	69°

Source: High Plains Regional Climate Center

The following graph illustrates the above data.

**Chart 18: Kansas Region H Average Monthly Temperatures (Degrees Fahrenheit)**

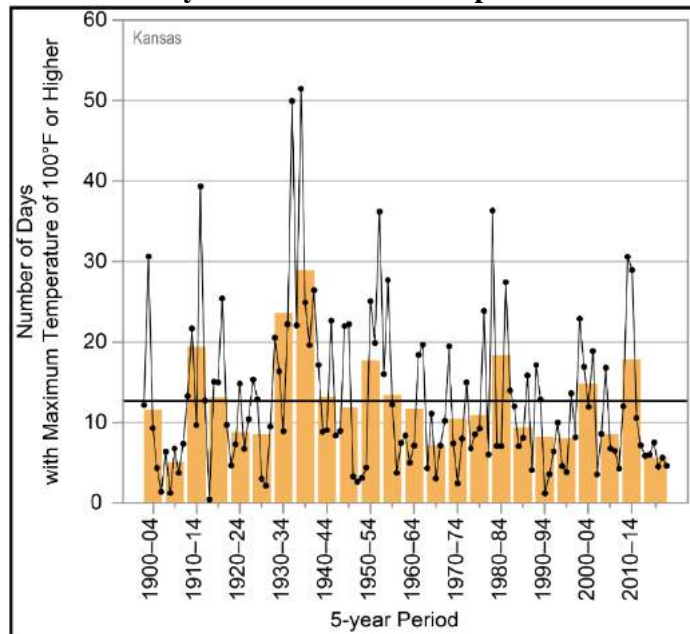


Source: NOAA

**4.11.3 Previous Occurrences**

The following chart details the annual number of hot days (maximum temperature of 100°F or higher) for Kansas from 1900 to 2020. Data indicates that since 2000, Kansas has experienced some of the highest springtime temperatures on record, while summer temperatures have been near to above average. The warmest summers on record were 1934 and 1936.

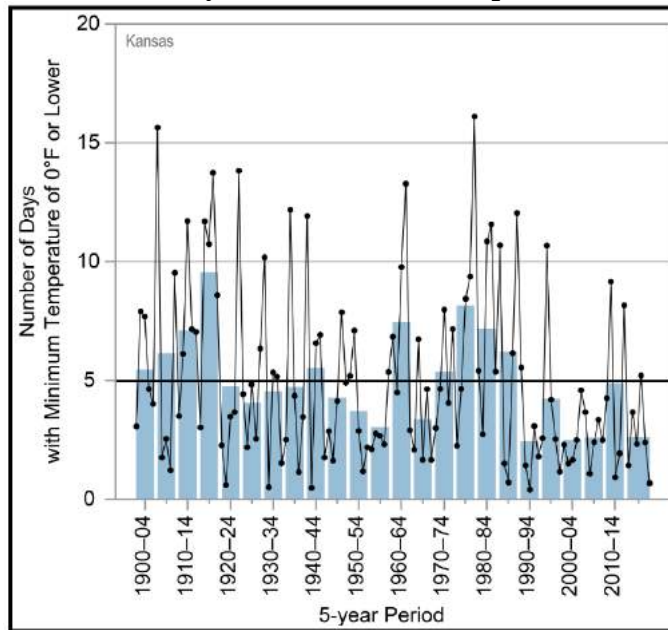
**Chart 19: Number of Days with Maximum Temperature of 100° F or Higher**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

The following chart details the annual number of very cold days (minimum temperature of 0°F or lower) for Kansas from 1900 to 2020. Since 1990, Kansas has experienced a near to below average number of very cold nights, indicative of overall winter warming in the region,

**Chart 20: Number of Days with Minimum Temperature of 0° F or Less**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

Data from the High Plains Regional Climate Center indicates the following historic high and low temperatures.

**Table 72: Kansas Region H Historic Temperatures**

County	Historic Low Temperature (F)	Historic High Temperature (F)
Allen	-24 (2011)	117 (1954)
Bourbon	-24 (1905)	120 (1954)
Chautauqua	-27 (1949)	118 (1936)
Cherokee	-28 (1905)	117 (1954)
Crawford	-12 (1951)	115 (1954)
Elk	-16 (1918)	111 (1923)
Greenwood	-22 (1943)	120 (1936)
Labette	-18 (1930)	115 (1954)
Montgomery	-23 (1949)	116 (1936)
Neosho	-23 (1949)	116 (1936)
Wilson	-20 (1949)	121 (1936)
Woodson	-28 (1899)	108 (1980)

Source: High Plains Regional Climate Center

Additionally, data from the NCEI from 2009 through 2023 indicates the following recorded extreme temperature events. As these events tend to cover large areas, they are reported as regional:

**Table 73: Kansas Region H NCEI Extreme Temperature Events, 2009 - 2023**

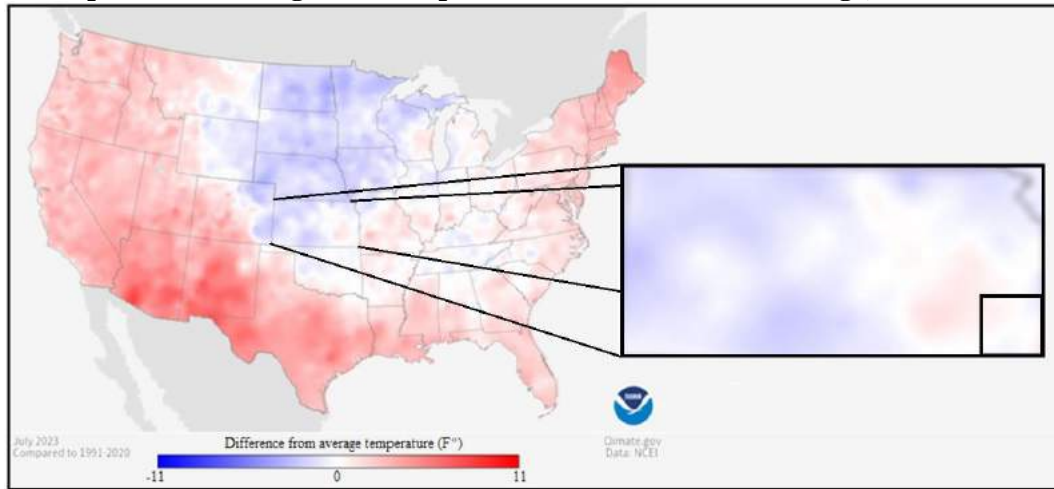
County	Event Type	Number of Events	Property Damage	Deaths	Injuries
Kansas Region H	Cold	1	\$0	0	0
	Heat	4	\$0	0	0

Source: NOAA NCEI

#### 4.11.4 Probability of Future Events

Predicting the probability of extreme temperature occurrences is tremendously challenging due to the large number of factors involved. Available data suggests that both the average high temperatures and the record high temperature will likely increase over the coming years as indicated by the following map:

**Map 49: Kansas Region H Temperature Difference from Average, 1990 – 2020**



Source: NOAA

Temperatures in Kansas Region H have risen by 1.5° F since the early 1900s, with the number of hot days above the long-term average since the 1990s. There is no long-term trend in very warm nights or extremely hot days, although both were slightly above average during the 2010–2014 period. Number of very cold nights has been mostly below average since 1990.

#### **4.11.5 Projected Changes in Location, Intensity, Frequency, and Duration**

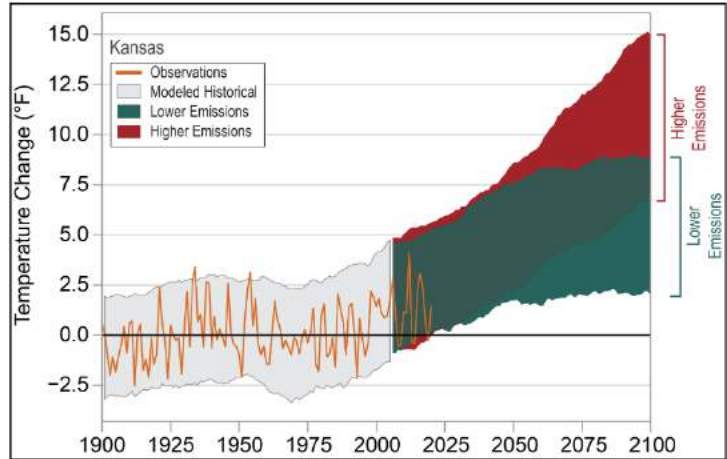
When discussing extreme temperatures, climate change should be considered as it may markedly change future events. Recent climate modeling results indicate that extreme temperature events may become more common for Kansas Region H, especially heat. Recent multiyear periods have been among some of the warmest on record for Kansas, comparable to the extreme heat of the 1930s, when intense drought exacerbated hot summer conditions. Recent spring temperatures have been above average, which may have implications for crop planting. Summer temperatures have been near or above average since 2000, but there is no long-term trend in very warm nights or extremely hot days, although both are trending slightly above average. The number of very cold nights has been mostly below average since 1990, and the freeze-free season has also lengthened, averaging about nine days longer in this century than the 20th century average.

Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events including longer and hotter heat waves. Additionally, rising temperatures can harm air quality and amplify existing threats to human health. Warmer weather can increase the production of ground-level ozone, a pollutant that causes lung and heart problems. Heat stress is expected to increase as climate change brings hotter summer temperatures and more humidity. Certain people are especially vulnerable, including children, the elderly, the sick, and those living below the poverty line.

The following chart indicates the projected temperature change for Kansas Region H utilizing two global climate models. One model utilizes information in which greenhouse gas emissions continue to increase (higher emissions), with the other model utilizing information in which greenhouse gas emissions increase at a slower rate (lower emissions). Temperatures in, detailed by the orange line, have risen 1.5° F since the beginning of the early 1900s. Based on both the higher emission and lower emission models, continued warming is projected throughout this century.



**Chart 21: Kansas Region H Observed and Projected Temperature Change Based on Greenhouse Gas Emissions**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

**4.11.6 Vulnerability and Impact**

While difficult to quantify, the impacts of future extreme temperature may have far reaching impacts. The incidence of wildfires increases substantially during extended periods of extreme heat, which in turn places both human and wildlife populations at higher levels of risk. Although environmental impacts are difficult to quantify, losses to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion may result from extended periods of extreme temperatures.

A primary concern with this hazard are human health safety issues, as extreme temperatures can be a direct cause of death. Specific at-risk groups include outdoor workers, farmers, young children, and senior citizens. Compounding these concerns is the potential loss of electric power due to increased strain on power generation and distribution due to increased air conditioning or heating needs.

Extreme temperature impacts on humans can be measured for both heat and cold. The following table discusses potential impacts on human health related to excessive heat.

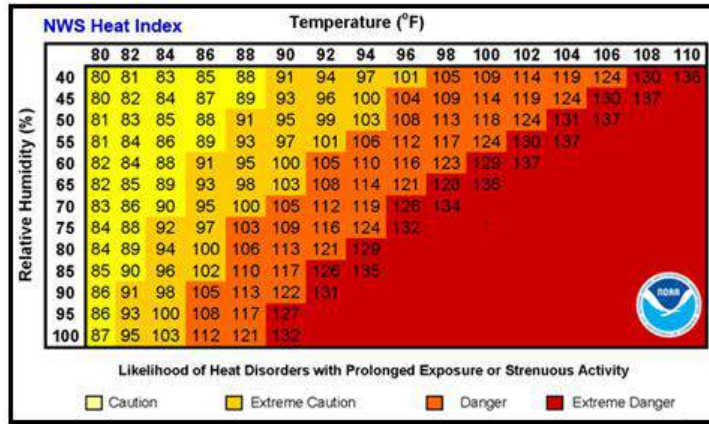
**Table 74: Extreme Heat Impacts on Human Health**

Heat Index Temperature	Potential Impact on Human Health
80-90° F	Fatigue possible with prolonged exposure and/or physical activity
90-105° F	Sunstroke, heat cramps, and heat exhaustion possible
105-130° F	Heatstroke/sunstroke highly likely with continued exposure

Source: National Weather Service Heat Index Program

Exposure to direct sun can increase Heat Index values by as much as 15°F. The zone above 105°F corresponds to a Heat Index that may cause increasingly severe heat disorders with continued exposure and/or physical activity. The following graph, from the NWS, indicates Heat Index values.

Chart 22: Heat Index



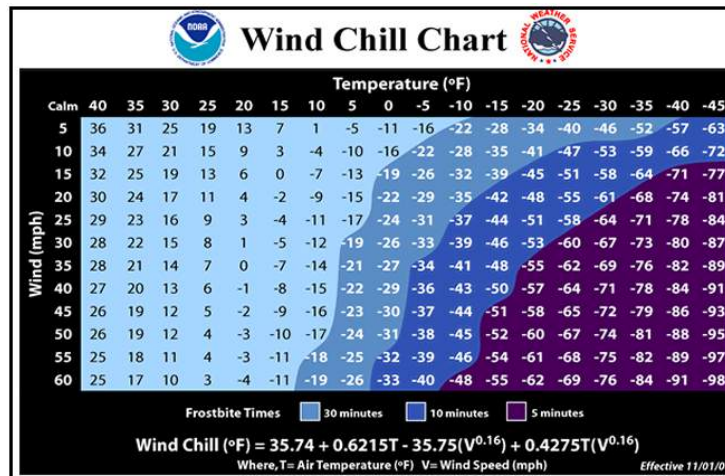
Source: NWS

Extreme cold temperatures can result in a variety of concerns, including:

- Frostbite: The freezing of skin and the body tissue just beneath it
- Hypothermia: Dangerously low body temperature (and the most common winter weather killer)

When extremely cold temperatures are accompanied by strong winds the result can be potentially lethal wind chills. Wind chill is the temperature your body feels when the air temperature is combined with the wind speed, and is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop. The wind chill chart shows the difference between the actual air temperature and the perceived temperature due to wind, and amount of time until frostbite occurs.

Chart 23: Wind Chill Chart



Source: NOAA

Extreme heat can cause significant damage to the local environment by dehydrating vegetation and wildlife, which may result in cascading effects to the surrounding environment, such as drought, wildfires, mudslides, or landslides. Extreme temperatures may severely decrease the yield of the agricultural sector. The yield of cash crops may be reduced, livestock may be adversely impacted by extreme heat, or grazing losses may be incurred by farmers or ranchers; potentially resulting in decreased food security. In the event of significant agricultural losses caused by extreme heat or drought, some assistance may be available to impacted farms or ranches.

Extreme heat conditions can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to extreme conditions from 1989 to 2021:

**Map 50: Agricultural Losses Due to Extreme Heat Conditions, 1989 to 2021**



Source: USDA

Extreme temperatures can pose various risks to local and county operations, and may include:

- **Health and Safety Risks:** High temperatures, especially during heatwaves, can pose significant health risks to government employees. Heat-related illnesses such as heat exhaustion and heatstroke can occur, potentially leading to hospitalizations or fatalities. Cold temperatures can also lead to cold-related illnesses and injuries, such as frostbite and hypothermia.
- **Emergency Response:** Government agencies may need to respond to extreme weather events, such as providing emergency shelter during heatwaves or responding to weather-related accidents and emergencies. These responses can strain resources and personnel.
- **Budgetary Impact:** The costs associated with responding to and mitigating the effects of extreme temperatures can strain state budgets. This includes expenses related to emergency response, infrastructure repairs, and healthcare.

**Potentially Vulnerable Community Lifelines**

Extreme temperatures, whether excessively hot or cold, can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that extreme temperatures place on infrastructure, resources, and operational processes. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 75: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Electrical Service	\$199
Loss of Wastewater Services	\$66
Loss of Water Services	\$138
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Extreme temperatures, whether excessively hot or cold, can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that extreme temperatures place on infrastructure, resources, and operational processes.

Extreme heat and extreme cold can have significant impacts on roads, leading to various issues and challenges. Extreme temperatures can cause the following impacts:

- Softening of Asphalt: High temperatures can cause asphalt to soften and become more susceptible to deformation. This leads to the development of ruts and potholes as the road surface loses its stability.
- Rutting and Raveling: The combination of high temperatures and heavy traffic loads can result in rutting, where depressions or grooves form in the road surface. Raveling, the disintegration of the asphalt surface, may also occur.
- Expansion and Contraction: Materials like concrete and asphalt expand in high temperatures and contract in cooler temperatures. This expansion and contraction can lead to cracking and deterioration of the road surface over time.
- Freeze-Thaw Cycles: Fluctuations between freezing and thawing can lead to the formation of ice within the road structure. The expansion of water as it freezes can result in cracks and damage to the road surface.
- Frost Heaving: During freeze-thaw cycles, moisture in the soil beneath the road can freeze, causing the ground to heave upward. This can result in uneven surfaces and damage to the road structure.

The following table, from the Kansas Department of Transportation, indicates the total road miles by county for Kansas Region H:

**Table 76: Kansas Region H Road Mileage by County**

County	Total Road Miles
Allen	1,099
Bourbon	1,249
Chautauqua	761
Cherokee	1,331
Crawford	1,433
Elk	811
Greenwood	1,531
Labette	1,392
Montgomery	1,516
Neosho	1,222
Wilson	1,103
Woodson	849

Source: Kansas Department of Transportation

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was \$14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from \$1,000,000 to \$10,000,000 per mile.

Extreme heat and extreme cold can impact electrical utilities in various ways, potentially leading to disruptions in service. These impacts include:

- Power Outages: High temperatures can strain electrical systems, leading to increased demand for cooling systems like air conditioners. This heightened demand can overload power grids, resulting in power outages.
- Transformer Overheating: Transformers, which are crucial components in power distribution, can overheat in extreme temperatures. This can lead to malfunctions, reduced efficiency, or even failures, causing power disruptions.
- Equipment Failure: Electrical equipment, such as cables and switches, may experience higher resistance and increased stress during extreme heat, increasing the likelihood of equipment failures.

- **Reduced Efficiency in Power Plants:** Power generation facilities may experience reduced efficiency during heatwaves due to elevated ambient temperatures. This can affect the output of power plants and potentially lead to supply shortages.
- **Icing on Power Lines:** Ice accumulation on power lines can lead to increased weight, potentially causing lines to sag or break. This can result in power outages and safety hazards.
- **Communication Disruptions:** Both extreme heat and cold can impact communication infrastructure. For example, extreme cold can affect the performance of fiber optic cables, while extreme heat can lead to equipment failures in communication systems.

In order to reduce plan duplication, mapping concerning electrical generation plants, high capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

Hospitals and other smaller medical facilities may see an increase in heat or cold related illness during an extreme temperature event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Section 4.10, Map 41. However, extreme temperatures can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

**FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from extreme heat and extreme cold:

**Map 51: Kansas Region H FEMA NRI Extreme Heat Risk**



Source: FEMA NRI

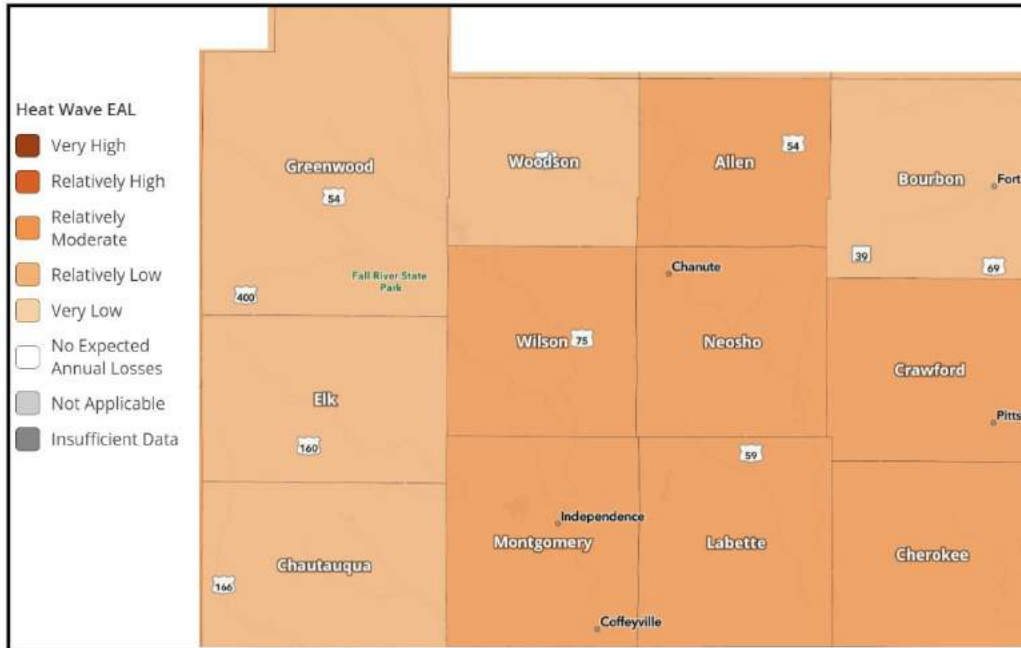
**Map 52: Kansas Region H FEMA NRI Extreme Cold Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for extreme heat and extreme cold for participating counties within Kansas Region H:

**Map 53: Kansas Region H FEMA NRI Extreme Heat EAL**



Source: FEMA NRI

**Map 54: Kansas Region H FEMA NRI Extreme Cold EAL**



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for extreme heat and extreme cold:

**Table 77: Kansas Region H FEMA NRI and EAL for Extreme Heat by County**

County	Risk Index	EAL
Allen	Relatively Low	Relatively Moderate
Bourbon	Relatively Low	Relatively Low
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively Moderate	Relatively Moderate
Crawford	Relatively Moderate	Relatively Moderate
Elk	Relatively Low	Relatively Low
Greenwood	Relatively Low	Relatively Low
Labette	Relatively Moderate	Relatively Moderate
Montgomery	Relatively Moderate	Relatively Moderate
Neosho	Relatively Moderate	Relatively Moderate
Wilson	Relatively Moderate	Relatively Moderate
Woodson	Relatively Low	Relatively Low

Source: FEMA NRI

**Table 78: Kansas Region H FEMA NRI and EAL for Extreme Cold by County**

County	Risk Index	EAL
Allen	Relatively Low	Relatively Low
Bourbon	Relatively Low	Relatively Low
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively Moderate	Relatively Moderate
Crawford	Relatively Moderate	Relatively Moderate
Elk	Relatively Low	Relatively Low
Greenwood	Very Low	Relatively Low
Labette	Relatively Moderate	Relatively Moderate
Montgomery	Relatively Moderate	Relatively Moderate
Neosho	Relatively Moderate	Relatively Low
Wilson	Relatively Moderate	Relatively Moderate

**Table 78: Kansas Region H FEMA NRI and EAL for Extreme Cold by County**

County	Risk Index	EAL
Woodson	Relatively Low	Relatively Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 79: Extreme Temperature Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Extreme temperatures can have severe consequences for health, particularly for the elderly and young. Loss of electricity may impact heating or air conditioning leading to poorly tolerated indoor temperatures. Physical effects of extreme temperatures can cause major health problems and may lead to injury or death.
Impact on Responders	Without proper mitigation efforts, responders may be susceptible to temperature related illness. Extreme temperatures may also damage instruments or equipment necessary for response activities. First responders may face dangerous road conditions leading to accidents and prolonged response times.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. This hazard may impact an agency’s ability to implement continuity operations due to power outages. If the activation of alternate facilities was required, continuity of operations may be difficult due to lack of computer/network access during power outages.
Delivery of Services	Extreme temperatures can impact efficient delivery or inability of goods or services due to potential health impacts on workers. Equipment and vehicles may be damaged, and the delivery of services may be delayed due to poor travel conditions
Property, Facilities, and Infrastructure	Facility integrity is at risk with regards to power cables and stations being overused and limiting operations. This could lead to limits on facility heating or cooling.
Impact on Environment	Extreme temperatures can cause significant damage to the local environment and result in habitat loss, invasive species, and changes in migration. Extreme temperatures may severely decrease the yield of cash crops. Livestock are adversely affected by extreme temperatures and may suffer medical problems or death.
Economic Conditions	Extreme temperatures may drain local resources. Under some conditions, some of the costs can be recouped through federal grant reimbursements .
Public Confidence in Governance	Governmental response, on all levels, requires direct actions that must be immediate and effective to maintain public confidence.

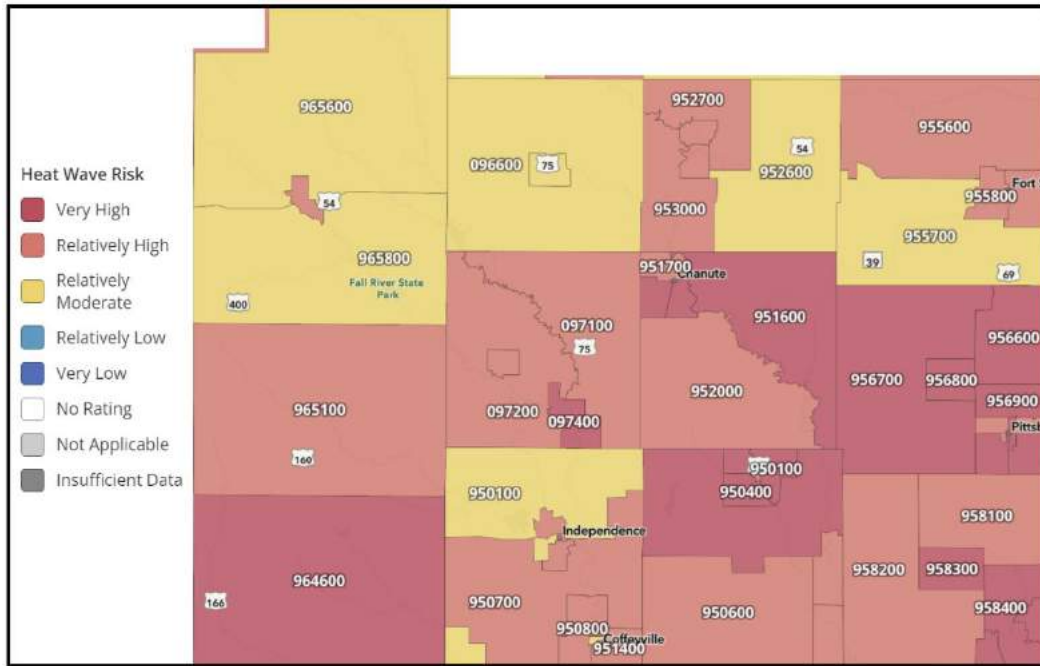
**4.11.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to extreme temperatures of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from extreme heat and extreme cold events:

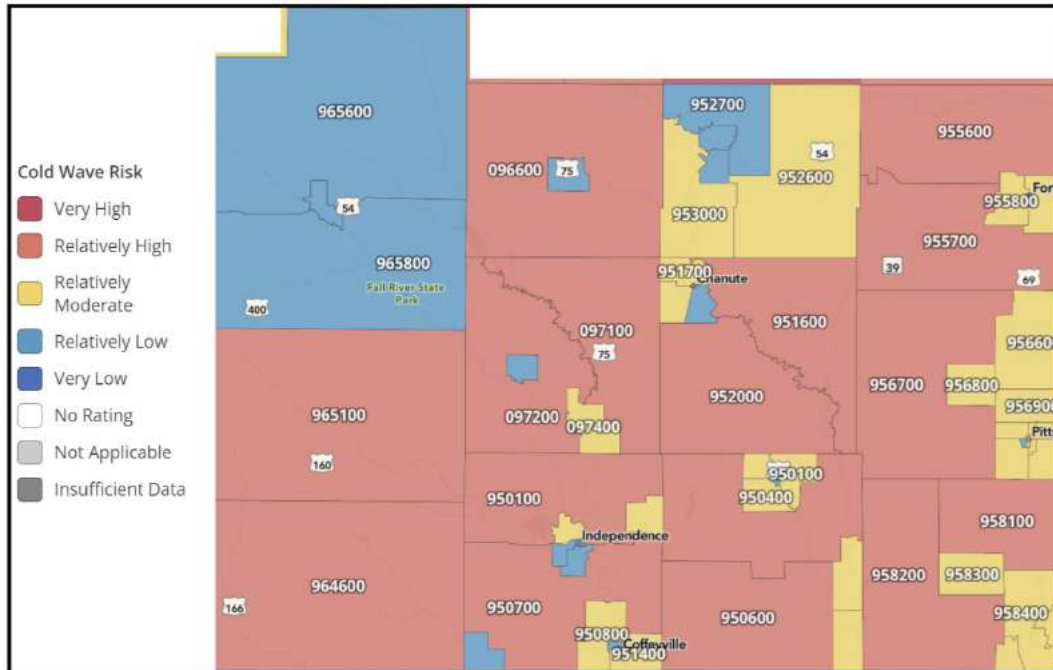


**Map 55: FEMA NRI Jurisdictional Extreme Heat Risk**



Source: FEMA NRI

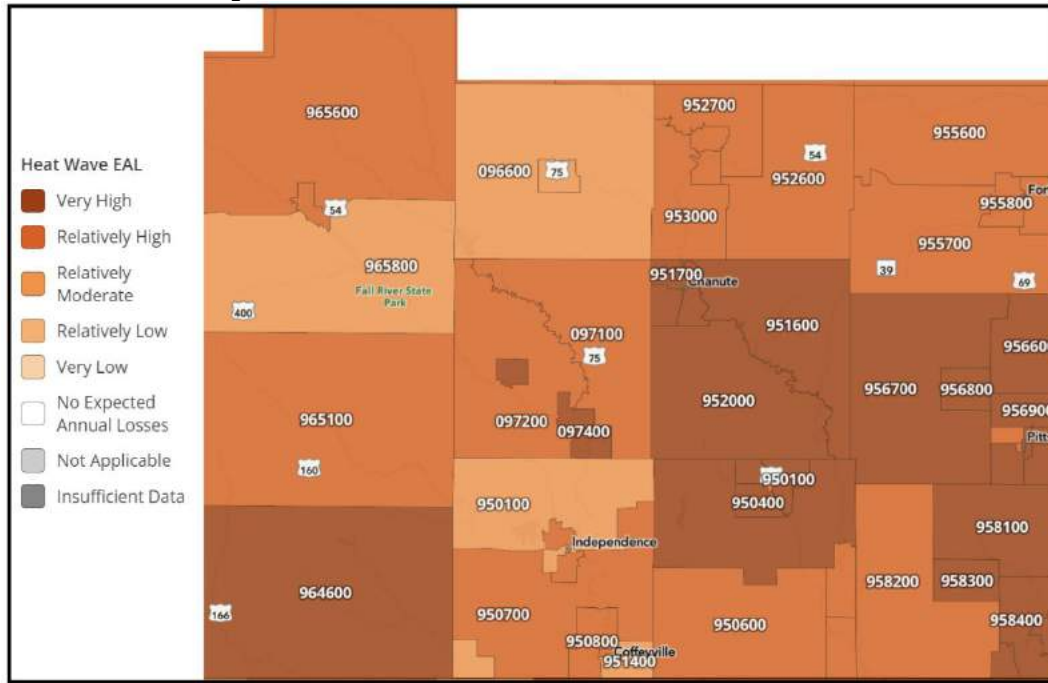
**Map 56: FEMA NRI Jurisdictional Extreme Cold Risk**



Source: FEMA NRI

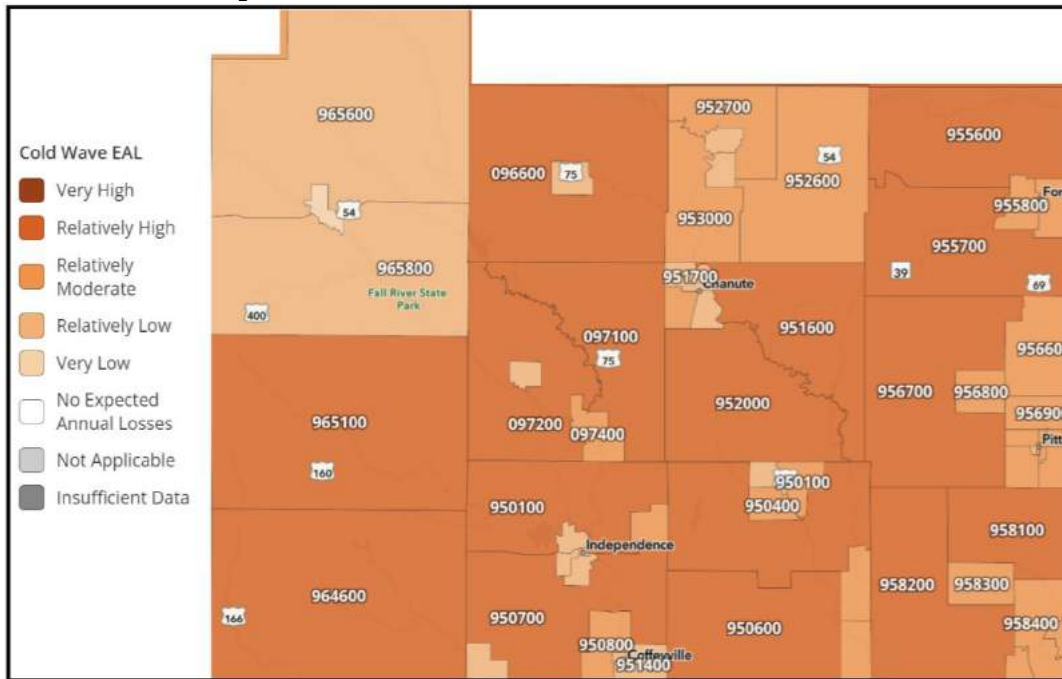
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for extreme heat and extreme cold for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 57: FEMA NRI Jurisdictional Extreme Heat EAL**



Source: FEMA NRI

**Map 58: FEMA NRI Jurisdictional Extreme Cold EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Extreme temperatures can pose various risks to local and county facilities and assets, and may include:

- **Power Grid Strain:** Extreme temperatures, whether hot or cold, can lead to increased demand for electricity. This can strain the power grid, potentially causing power outages, which can disrupt government operations, including the functioning of critical infrastructure such as hospitals, emergency services, and data centers.
- **Infrastructure Stress:** Buildings and infrastructure can suffer damage due to extreme temperatures. For example, prolonged exposure to high temperatures can lead to structural damage, such as cracking and warping. Extreme cold can freeze and damage pipes, leading to water leaks and flooding when temperatures rise.
- **Transportation Disruptions:** Extreme heat can cause pavement to soften and buckle, leading to road closures and transportation disruptions. Extreme cold can result in icy road conditions and reduce visibility, making travel hazardous.

Socially vulnerable populations may be more vulnerable to the effects of extreme temperature events due to extremes in age or the inability to heat and cool homes during an event. Please see Section 3.4 for details on vulnerable populations.

## 4.12 Flood

### 4.12.1 Hazard Description

Flooding is the overflow or accumulation of water on normally dry land, often caused by heavy rainfall, snowmelt, or the failure of natural or artificial barriers. Flooding can lead to the inundation of homes, roads, farmland, and other areas, causing damage to property, disruption of daily life, and potential threats to human safety and the environment.

A floodplain is a flat or gently sloping area adjacent to a river, stream, or other water body. These areas act as a buffer during periods of heavy rainfall or snowmelt, absorbing excess water and preventing it from rushing downstream too quickly. In its common usage, a floodplain refers to areas inundated by the 100-year flood, the flood that has a 1% chance of being equaled or exceeded in any given year, and the 500-year flood, the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the NFIP.



### 4.12.2 Location and Extent

A variety of factors affect the severity of flooding within Kansas Region H. These include topography, weather characteristics, development, and geology. Intense flooding will create havoc in any jurisdiction affected.

#### Flash Flooding

Flash flooding occurs during heavy or extended periods of rain, generally when the ground is unable to rapidly absorb the water. Most flash flooding in Kansas Region H is caused by intense and stationary thunderstorms. Heavy sustained rain can create rapid flooding very quickly, and flooding can occur miles away from where the rain fell. Factors that can contribute to the severity of flash flooding include rainfall intensity, duration, drainage condition, and ground conditions (paved or unpaved). Flash floods are particularly dangerous to people and property, as six inches of moving water can knock a person down and two feet can lift a vehicle. As there is often little warning of a flash flood event, they are the cause of most flood fatalities.

#### Riverine Flooding

Riverine flooding refers to the overflow of water from a river or a stream onto adjacent land areas. This type of flooding occurs when the water level in a river or stream rises significantly and exceeds its banks, inundating the surrounding areas. The severity of riverine flooding can be influenced by the amount and intensity of rainfall in the watershed, the size, shape, and slope of the river or stream channel, and the presence of dams on the river system.

#### Urban Flooding

FEMA defines urban flooding as “the inundation of property in a built environment, particularly in more densely populated areas, caused by rain falling on increased amounts of impervious surfaces and overwhelming the capacity of drainage systems.” In Kansas Region H, urban flooding has consistently increased due to a number of factors, including the filling for development of natural wetlands and waterways, the reduction of permeable surfaces, and the aging and insufficient capacity of stormwater systems.

To establish floodplains, FEMA adopted the Base Flood Elevation (BFE), which is the computed elevation that floodwater is anticipated to rise during a flood that has a 1% chance of occurring in any given year. The BFE establishes the regulatory requirement for the elevation or floodproofing of structures, and the relationship between the BFE and a given structure’s elevation determines the flood insurance premium through the NFIP.

FEMA, through the Risk Mapping, Assessment, and Planning (Risk MAP) program, works with partners to assess and map these flood risks producing Flood Insurance Rate Maps (FIRMs). As an additional benefit, the FIRMs serve as the basis for NFIP regulations and flood insurance purchase requirements.

SFHAs are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. The FIRM depicts the SFHA, including the 1%-annual-chance flood. These areas are labeled on the map as zone, as explained in the following table:

The following table details FEMA’s FIRM flood zone classifications.

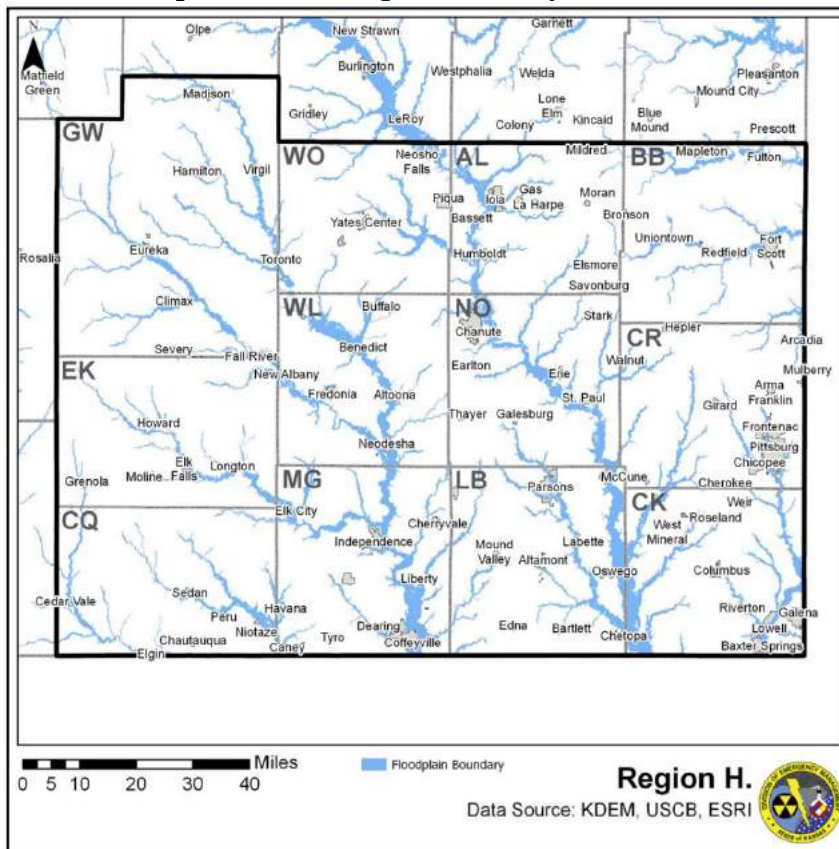
**Table 80: Flood Zone Classifications**

Zone	Description
A	The 1%-annual-chance or base floodplain. There are six (6) types of A Zones.
AE	The base floodplain where base flood elevations are provided.
AH	Shallow flooding base floodplain. BFEs are provided.
AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
AR	The base floodplain that results from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 1%-annual-chance or greater level of flood protection.
A99	Area to be protected from base flood by levees or Federal Flood Protection Systems under construction. BFEs are not determined.
B or Shaded X	Areas between the limits of the base flood and the 0.2% annual-chance (or 500-year) flood.
C or Unshaded X	Areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2% annual-chance flood

Source: FEMA

The following map uses FEMA FIRM data to depict the location of identified flood zones within Kansas Region H.

**Map 59: Kansas Region H County Flood Zones**



Source: KDEM

### 4.12.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. Kansas Region H has experienced two Presidential Disaster Declarations related to flooding in the five-year period since the previous HMP, reflected in the following table.

**Table 81: State of Kansas Region H Presidentially Declared Disasters, Flood**

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4499-KS	08/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Allen, Bourbon, Chautauqua, Cherokee, Crawford, Elk, Greenwood, Labette, Montgomery, and Wilson	\$51,157,548
DR-4417-KS	03/20/2019	Severe Storms, Straight-Line Winds, and Flooding	Bourbon, Crawford, Labette, and Wilson	\$3,509,374

Source: FEMA

Note: -: Data unavailable

In addition to the Presidentially Declared Disasters, the following table presents NCEI identified flood events in Kansas from 2009 to 2023:

**Table 82: Kansas Region H NCEI Flood Events, 2009 - 2023**

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Allen	Flood	23	\$12,500	0
	Flash Flood	11	\$745,800	1
Bourbon	Flood	4	\$0	0
	Flash Flood	27	\$125,000	0
Chautauqua	Flood	10	\$400	0
	Flash Flood	4	\$300	0
Cherokee	Flood	13	\$1,270,000	0
	Flash Flood	44	\$405,000	0
Crawford	Flood	7	\$0	0
	Flash Flood	29	\$267,000	0
Elk	Flood	5	\$500	0
	Flash Flood	7	\$200	0
Greenwood	Flood	17	\$16,600	1
	Flash Flood	10	\$20,600	0
Labette	Flood	17	\$500,400	0
	Flash Flood	15	\$10,400	0
Montgomery	Flood	21	\$40,600	1
	Flash Flood	19	\$170,800	2
Neosho	Flood	16	\$210,200	0
	Flash Flood	11	\$112,300	0
Wilson	Flood	11	\$400	0
	Flash Flood	14	\$151,000	0
Woodson	Flood	3	\$100	0
	Flash Flood	9	\$800	0

Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages.

The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county. USDA Secretarial disaster designations must be requested of the Secretary of Agriculture by a governor or the governor’s authorized representative, and there is an expedited process for drought. The following table represents the total number of Secretarial Disaster Declarations, by county, for the Kansas Region H:

**Table 83: Secretarial Flood Disaster Declarations, 2019 -2023**

County	2022	2021	2020	2019
Allen	0	0	0	1
Bourbon	0	0	0	1
Chautauqua	0	0	0	1
Cherokee	0	0	0	1
Crawford	0	0	0	1
Elk	0	0	0	1
Greenwood	0	0	0	1
Labette	0	0	0	1
Montgomery	0	0	0	1
Neosho	0	0	0	1
Wilson	0	0	0	1
Woodson	0	0	0	1

Source: USDA Farm Service Agency

#### 4.12.4 Probability of Future Incidents

Based on historical occurrences, Kansas Region H will continue to experience flood events on an annual basis. The definition of each flood zone’s classification is used for the purpose of calculating the yearly probability of a riverine flood. Jurisdictions with property in a 100-year floodplain can expect a 1% annual chance of flooding within the designated areas. Jurisdictions with property in a 500-year floodplain can expect a 0.2% annual chance of flooding within the designated areas. FEMA FIRMs can be consulted to provide assistance in determining flooding probability for jurisdictions within Kansas Region H.

The following tables, using data from the NCEI, indicate the yearly probability of a flood or flash flood event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region H.

**Table 84: Kansas Region H NCEI Flood Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	23	2	0	0	\$12,500	\$833
Bourbon	4	0	0	0	\$0	\$0
Chautauqua	10	1	0	0	\$400	\$27
Cherokee	13	1	0	0	\$1,270,000	\$84,667
Crawford	7	0	0	0	\$0	\$0
Elk	5	0	0	0	\$500	\$33
Greenwood	17	1	1	<1	\$16,600	\$1,107
Labette	17	1	0	0	\$500,400	\$33,360
Montgomery	21	1	1	<1	\$40,600	\$2,707
Neosho	16	1	0	0	\$210,200	\$14,013
Wilson	11	1	0	0	\$400	\$27
Woodson	3	0	0	0	\$100	\$7

Source: NCEI

**Table 85: Kansas Region H NCEI Flash Flood Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	11	1	1	<1	\$745,800	\$49,720
Bourbon	27	2	0	0	\$125,000	\$8,333
Chautauqua	4	0	0	0	\$300	\$20
Cherokee	44	3	0	0	\$405,000	\$27,000
Crawford	29	2	0	0	\$267,000	\$17,800
Elk	7	0	0	0	\$200	\$13
Greenwood	10	1	0	0	\$20,600	\$1,373
Labette	15	1	0	0	\$10,400	\$693
Montgomery	19	1	2	<1	\$170,800	\$11,387
Neosho	11	1	0	0	\$112,300	\$7,487
Wilson	14	1	0	0	\$151,000	\$10,067
Woodson	9	1	0	0	\$800	\$53

Source: NCEI

#### 4.12.5 Projected Changes in Location, Intensity, Frequency, and Duration

The location, intensity, frequency, and duration of flooding are influenced by a combination of natural and human-induced factors.

Continued urbanization, deforestation, and changes in land use can alter natural drainage patterns. The conversion of natural landscapes to impervious surfaces, such as roads and buildings, reduces the ability of the land to absorb water, leading to increased runoff and the potential for urban flooding. Alterations to river channels, including channelization and dam construction, can influence the flow of water. Modifications may lead to changes in river behavior, affecting the potential for both upstream and downstream flooding. Poorly planned infrastructure, inadequate stormwater management, and the lack of effective drainage systems in urban areas can contribute to localized flooding. The increase in impervious surfaces reduces natural infiltration, leading to more runoff during rainfall events.

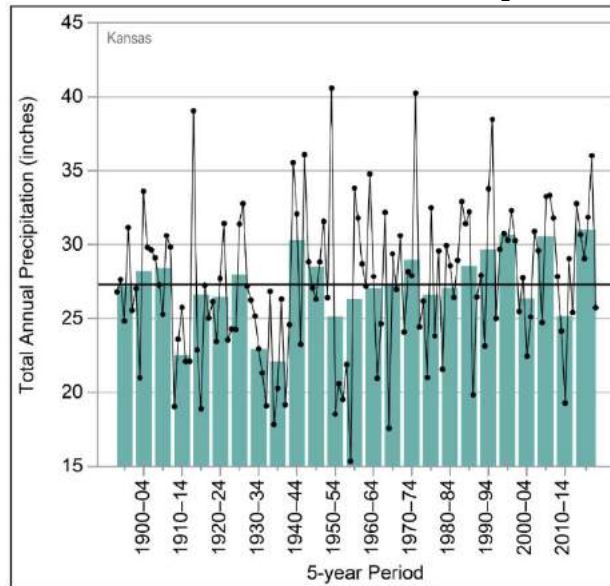
Potentially impacting the future of flood events, the NOAA NCEI State Climate Summary 2022 for Kansas indicates:

- Precipitation is highly variable from year to year.
- The majority of precipitation falls during the warm-season months.
- Throughout the period of record (1895–2020), total annual precipitation has generally been above average since 1985.
- The wettest consecutive 5-year interval was 2015–2019.
- The frequency of extreme precipitation events has been highly variable but shows a general increase.
- The number of 2-inch precipitation events was well above average during the 2015–2020 period.
- The increase in extreme precipitation events has been more pronounced in the eastern part of the state.

The flowing charts detail the annual precipitation and extreme precipitation events for Kansas Region H:



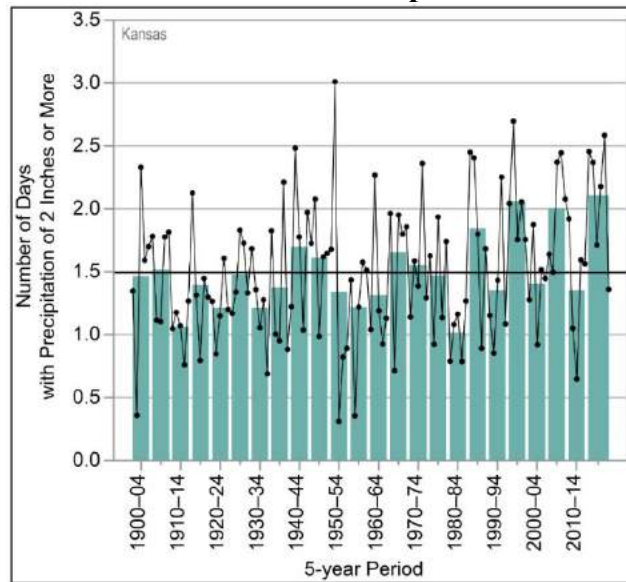
**Chart 24: Kansas Total Annual Precipitation**



Source: NOAA NCEI Summary 2022 for Kansas

Additionally, the NOAA NCEI State Climate Summary 2022 for Kansas suggests that the number of extreme precipitation events are projected to increase. These extreme events will likely increase the incidence of flooding within Kansas Region H.

**Chart 25: Kansas Region H Number of Extreme Precipitation Events (Greater Than 2 Inches)**



Source: NOAA NCEI State Climate Summary 2022 for Kansas

#### 4.12.6 Vulnerability and Impact

The results of the Hazus analysis were utilized to estimate potential losses for flooding. The intent of this analysis was to enable Kansas Region H to estimate where flood losses could occur and the degree of severity using a consistent methodology. The Hazus model helps quantify risk along known flood-hazard corridors as well as lesser streams and rivers that have a drainage area of ten square miles or more.

Hazus determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be a population vulnerable to displacement even if the structure is not vulnerable to damage. Individuals and households will be displaced from their homes even when the home has suffered little or no damage either because they were evacuated or there was no physical access to the property because of flooded roadways.

Flood sheltering needs are based on the displaced population, not the damage level of the structure. Hazus determines the number of individuals likely to use government-provided short-term shelters through determining the number of displaced households as a result of the flooding. To determine how many of those households and the corresponding number of individuals will seek shelter in government-provided shelters, the number is modified by factors accounting for income and age. Displaced people using shelters will most likely be individuals with lower incomes and those who do not have family or friends within the immediate area. Since the income and age factors are taken into account, the proportion of displaced population and those seeking shelter will vary from county to county.

Additionally, Hazus takes into account flood depth when modeling damage (based on FEMA’s depth-damage functions). Generated reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes include agriculture, commercial, education, government, industrial, religion, and residential. Damage percent classes are grouped by 10% increments up to 50%. Buildings that sustain more than 50% damage are considered to be substantially damaged.

The Hazus analysis also provides an estimate of the repair costs for impacted buildings as well as the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community by restricting a building’s ability to function properly. Income loss data accounts for losses such as business interruption and rental income losses as well as the resources associated with damage repair and job and housing losses. These losses are calculated by Hazus using a methodology based on the building damage estimates.

The damaged building counts generated by Hazus are susceptible to rounding errors and are likely the weakest output of the model due to the use of census blocks for analysis. Generated reports include this disclaimer: “Unlike the earthquake and hurricane models, the flood model performs its analysis at the census block level. This means that the analysis starts with a small number of buildings within each census block and applies a series of distributions necessary for analyzing the potential damage. The application of these distributions and the small number of buildings make the flood model more sensitive to rounding errors that introduces uncertainty into the building count results.” Additionally, losses are not calculated for individual buildings, but instead are based on the performances of entire classes of buildings obtained from the general building stock data. In the flood model, the number of grid cells (pixels) at each flood depth value is divided by the total number of grid cells in the census block. The result is used to weight the flood depths applied to each specific occupancy type in the general building stock. First floor heights are then applied to determine the damage depths to analyze damages and losses.

The following table provides the Hazus results for displaced households, damaged buildings, destroyed buildings, and total economic loss for Kansas Region H:

**Table 86: Kansas Region H Hazus Flood Scenario Displaced Population Building Damages**

County	Displaced Households	Damaged Buildings	Destroyed Buildings	Total Economic Loss
Allen	124	29	2	\$34,010,000
Bourbon	97	2	0	\$17,260,000
Chautauqua	47	7	2	\$10,070,000
Cherokee	176	16	1	\$38,420,000
Crawford	213	41	0	\$35,210,000
Elk	23	0	0	\$2,870,000
Greenwood	72	5	0	\$14,030,000
Labette	224	65	1	\$77,960,000
Montgomery	190	16	0	\$37,150,000
Neosho	100	17	0	\$15,020,000
Wilson	83	10	0	\$28,620,000
Woodson	27	3	0	\$2,520,000

Source: FEMA Hazus

Especially critical is timely evacuation orders, and adherence to those orders. If evacuation is not heeded, or flood waters rise quickly enough, citizens could drown or become trapped for extended periods of time with no access to

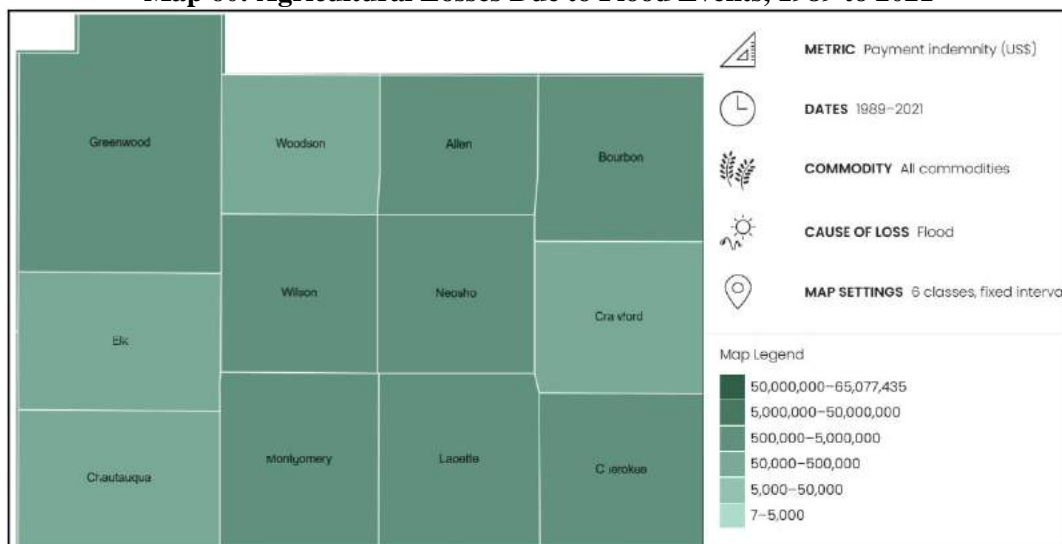
services or medical care. Of special concern are long term care and medical facilities where it can take longer to evacuate, or evacuation may be impossible. Additionally, lower income citizens may not have the means to relocate, whether it be lack of transportation or lack of resources to afford temporary shelter. Expected impacts of flooding on citizens may include:

- **Loss of Life:** Flooding is one of the leading causes of weather-related fatalities worldwide. Fast-rising floodwaters can lead to drowning and other water-related accidents, resulting in the tragic loss of lives.
- **Injuries:** Floods can cause injuries due to waterborne diseases, contaminated floodwaters, debris, and accidents during evacuation or rescue operations.
- **Displacement:** Many people may be forced to evacuate their homes during floods and will require emergency shelter or temporary housing. Prolonged displacement can be emotionally and economically challenging.
- **Health Risks:** Floodwaters often contain pollutants, sewage, and hazardous materials. Exposure to contaminated water can lead to waterborne diseases, infections, and other health risks.
- **Mental Health Effects:** Survivors of floods may experience a range of emotional and psychological challenges, including post-traumatic stress disorder, anxiety, depression, and grief.
- **Food and Water Shortages:** Floods can contaminate water supplies and disrupt the distribution of food. This can lead to shortages of clean drinking water and essential food items.
- **Impact on Vulnerable Populations:** Vulnerable populations, including the elderly, children, people with disabilities, and those living in poverty, are often disproportionately affected by floods due to limited resources and mobility challenges.
- **Long-Term Consequences:** Some flood impacts, such as mold growth, structural damage, and land degradation, can have long-term consequences that persist even after the floodwaters recede.

Environmental impacts from flooding can be far reaching. Of particular concern is flood related runoff, potentially carrying sewage, pesticides, or hazardous chemicals, which can cause long lasting environmental harm. Expected negative outcomes could include changes in habitat, a decrease of available food, and an increase in the spread of vector-associated disease due to standing water.

Flood events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to flood conditions from 1989 to 2021:

**Map 60: Agricultural Losses Due to Flood Events, 1989 to 2021**



Source: USDA

Floods can pose significant risks to local operations, as they can result in a wide range of immediate and long-term consequences including:

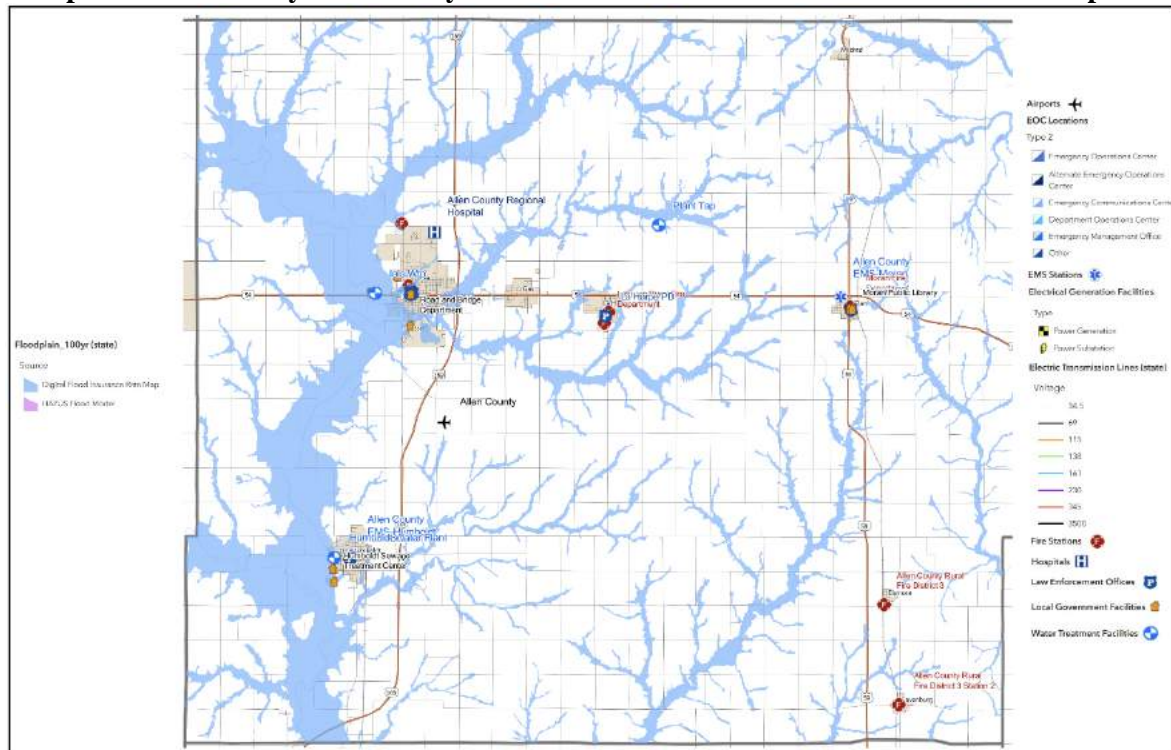
- **Emergency Response and Management:** Multiple counties and local jurisdictions may be mobilized to respond to floods. They would coordinate rescue operations, evacuations, and disaster response efforts to mitigate immediate risks to human life and property.
- **Infrastructure Damage and Maintenance:** Transportation and public works departments may need to assess and repair damage to roads, bridges, and other critical infrastructure affected by floodwaters and debris. This can strain resources and disrupt transportation networks.
- **Environmental Oversight and Regulation:** Health departments may be responsible for assessing the environmental impact of floods, monitoring water quality, and coordinating cleanup efforts. They may also be involved in addressing long-term environmental consequences.
- **Water Resource Management:** Water resource agencies may need to manage and allocate water resources differently in the aftermath of floods, especially if the flood affects water supplies, water quality, or flood control systems.
- **Public Health and Safety:** Public health departments may provide support for public health needs during and after a flood, managing emergency shelters and addressing potential health risks from contaminants or waterborne diseases.
- **Long-Term Recovery:** County emergency management agencies play a critical role in long-term recovery efforts, including securing federal disaster assistance, providing financial support to affected communities, and helping with the rebuilding and restoration of infrastructure.

### Potentially Vulnerable Community Lifelines

Flooding can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that flooding can place on infrastructure, resources, and operational processes.

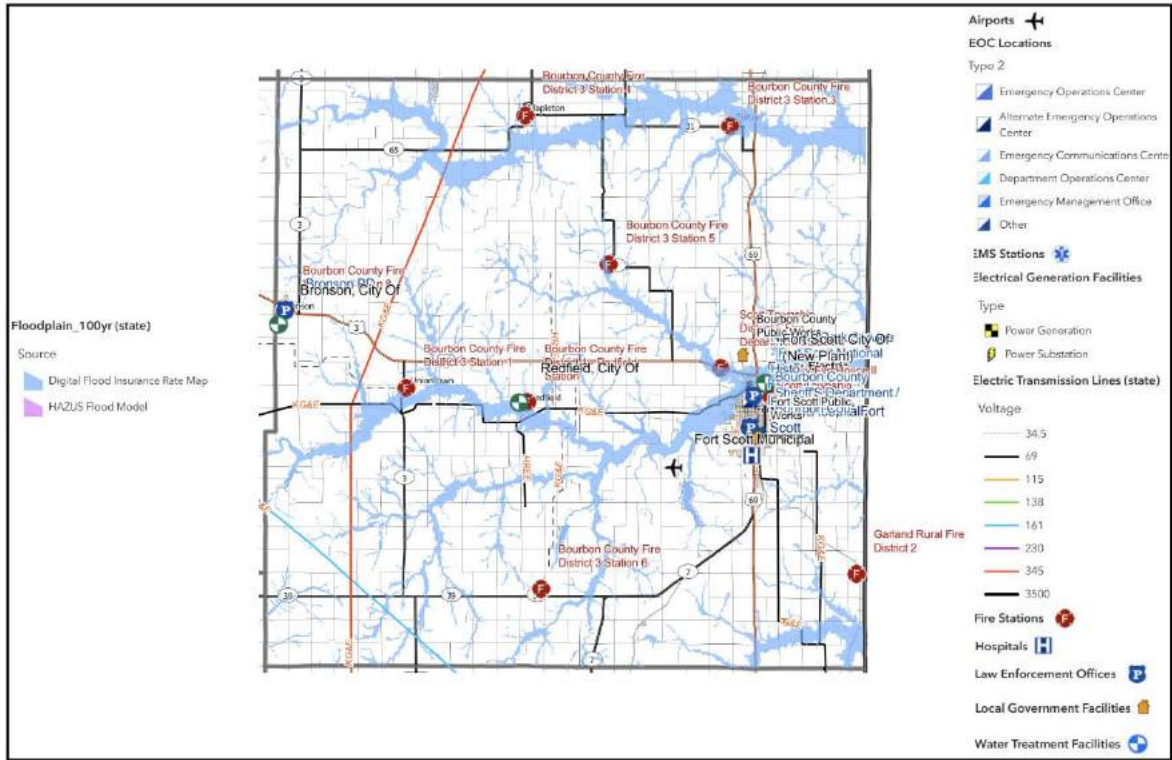
The following maps, generated using the State of Kansas EOPmapper system, detail the location of community lifelines and critical facilities in identified 100-year floodplains:

**Map 61: Allen County Community Lifelines and Critical Facilities in 100-Year Floodplains**



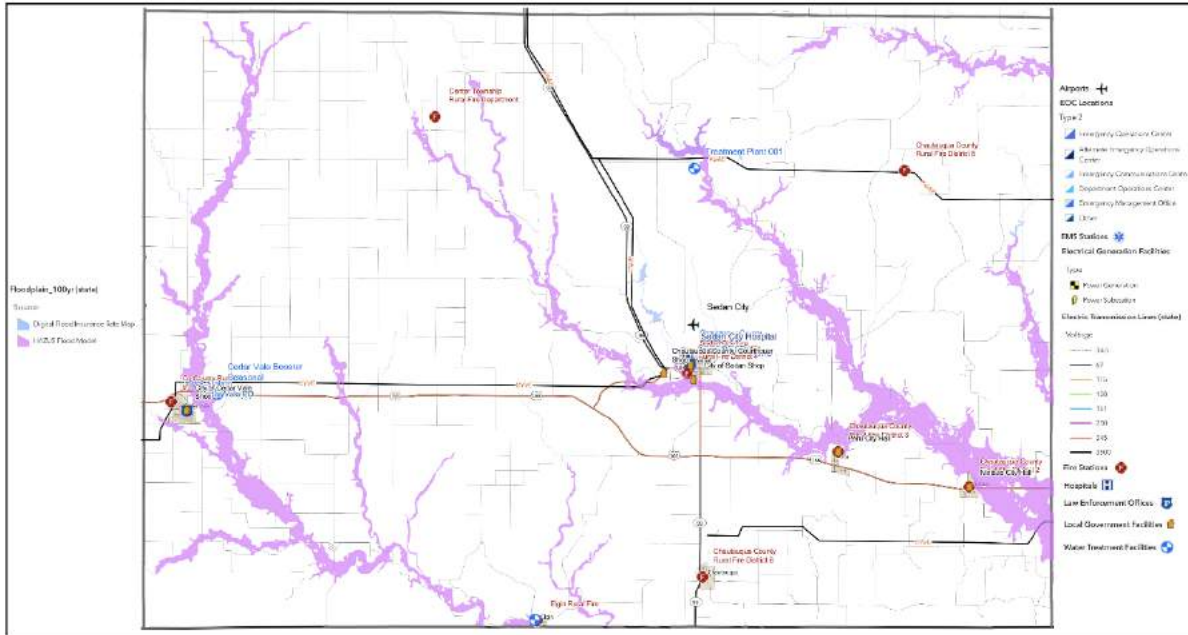
Source: KDEM

**Map 62: Bourbon County Community Lifelines and Critical Facilities in 100-Year Floodplains**



Source: KDEM

**Map 63: Chautauqua County Community Lifelines and Critical Facilities in 100-Year Floodplains**



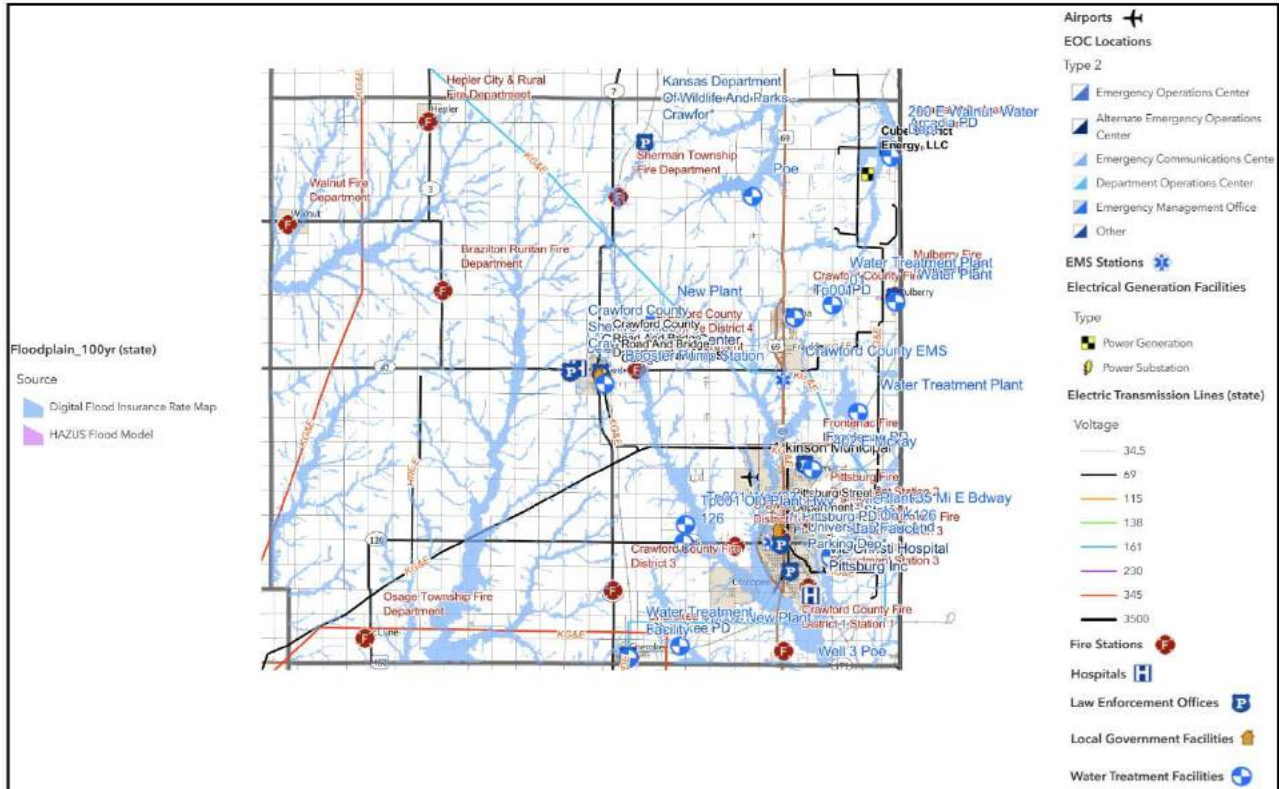
Source: KDEM

**Map 64: Cherokee County Community Lifelines and Critical Facilities in 100-Year Floodplains**



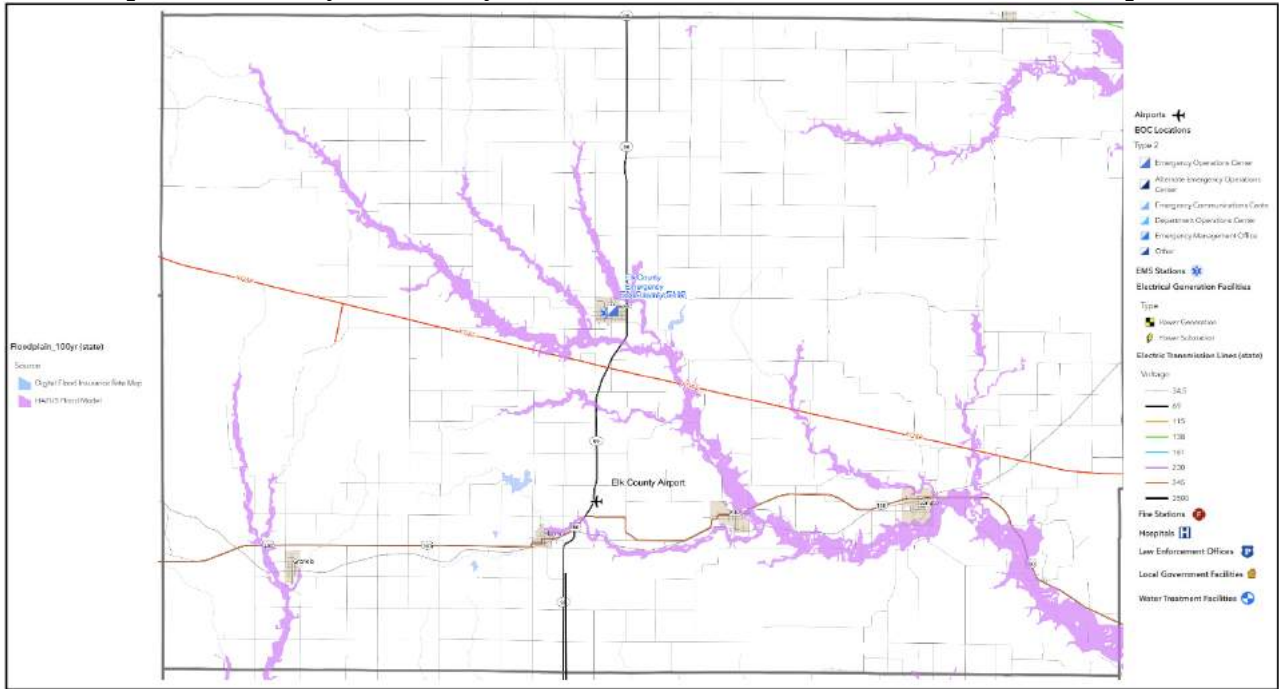
Source: KDEM

**Map 65: Crawford County Community Lifelines and Critical Facilities in 100-Year Floodplains**



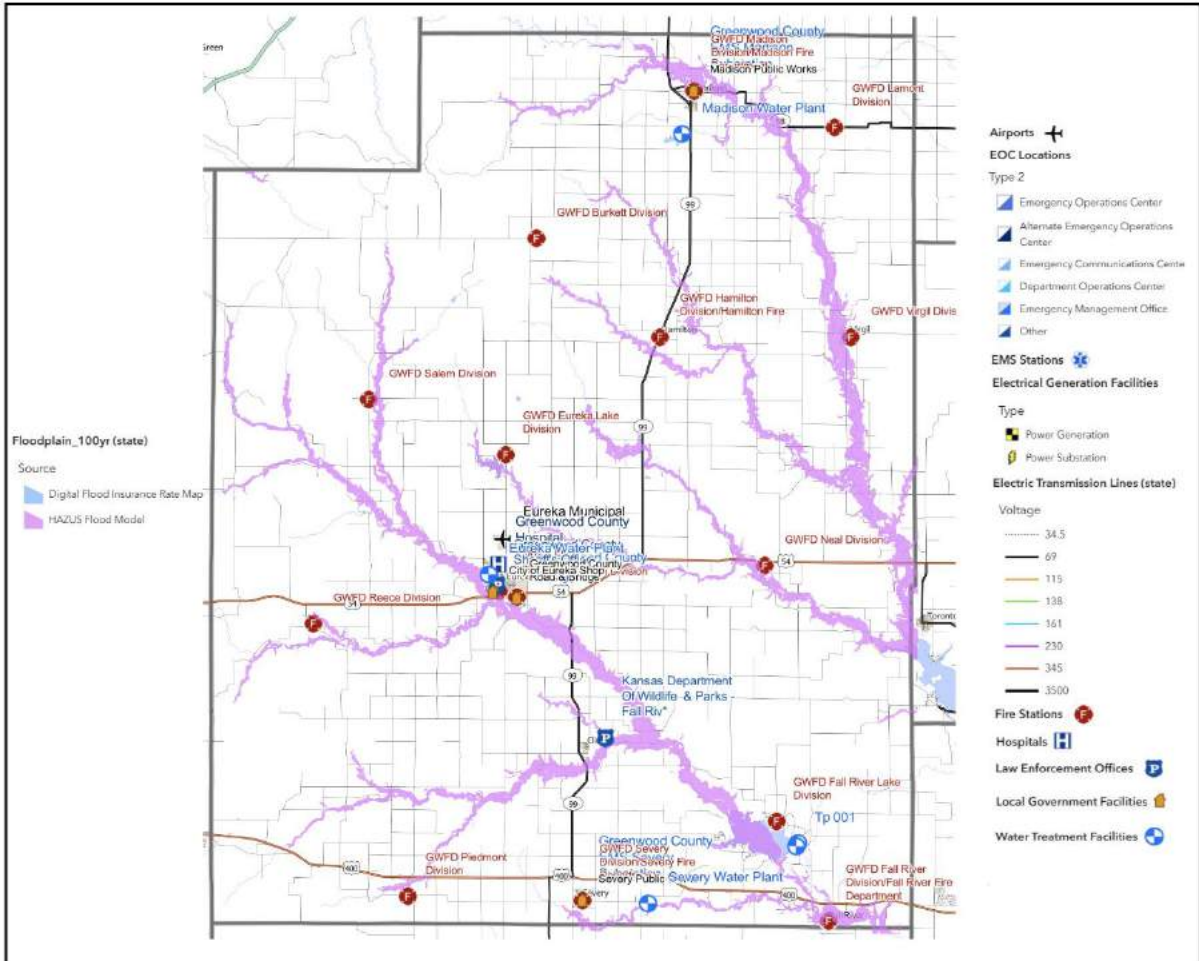
Source: KDEM

**Map 66: Elk County Community Lifelines and Critical Facilities in 100-Year Floodplains**



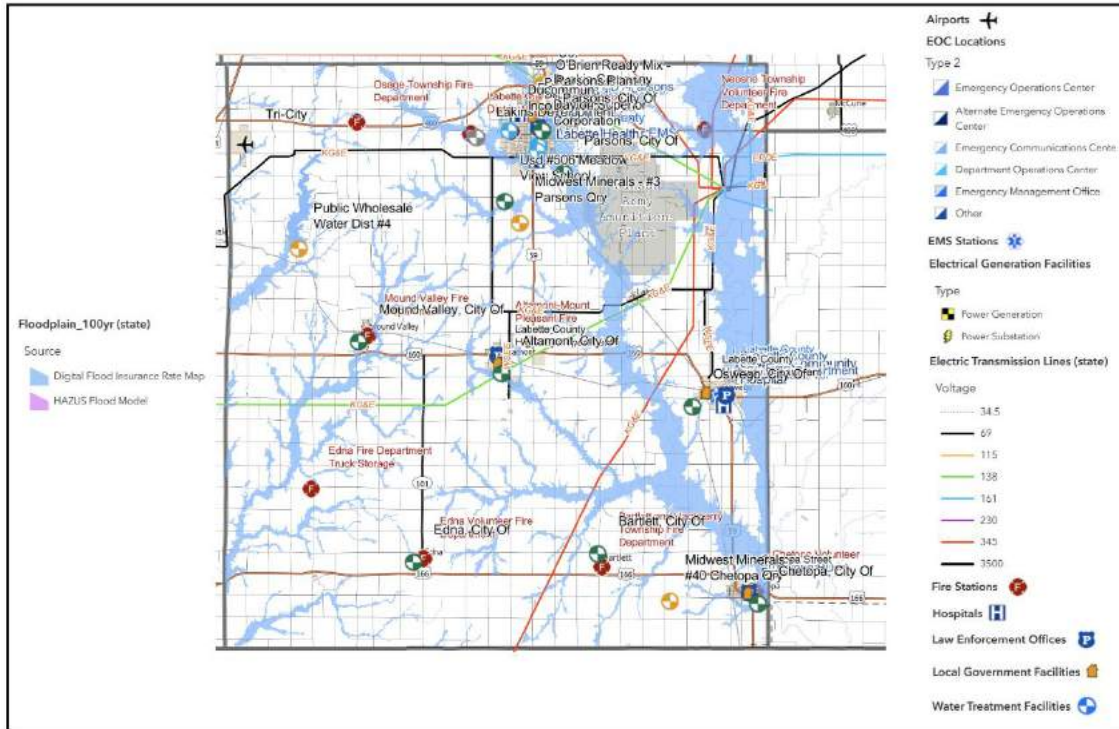
Source: KDEM

**Map 67: Greenwood County Community Lifelines and Critical Facilities in 100-Year Floodplains**



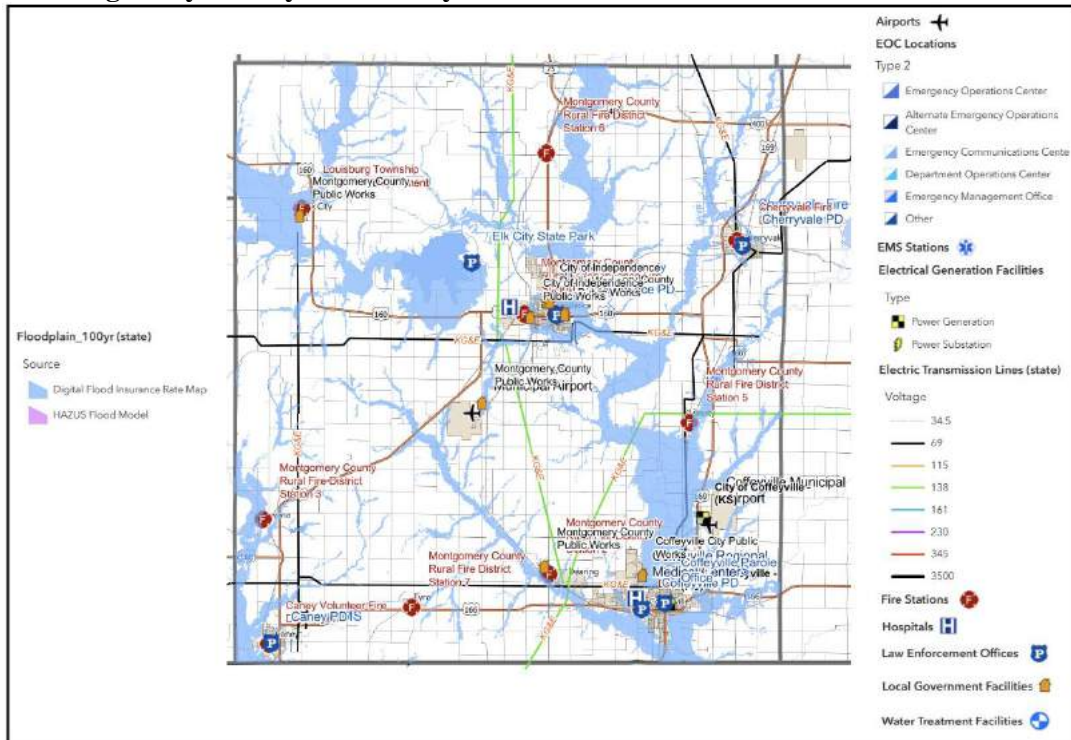
Source: KDEM

**Map 68: Labette County Community Lifelines and Critical Facilities in 100-Year Floodplains**



Source: KDEM

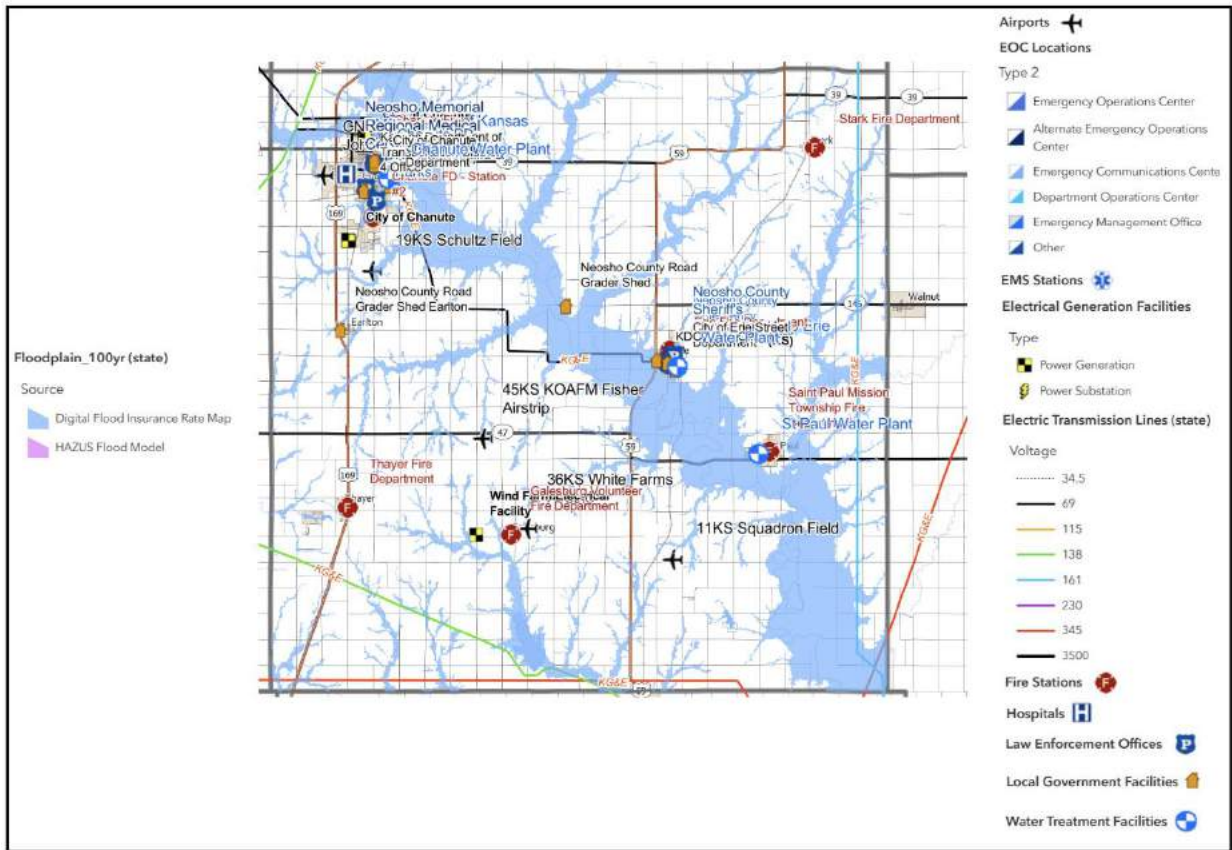
**Map 69: Montgomery County Community Lifelines and Critical Facilities in 100-Year Floodplains**



Source: KDEM

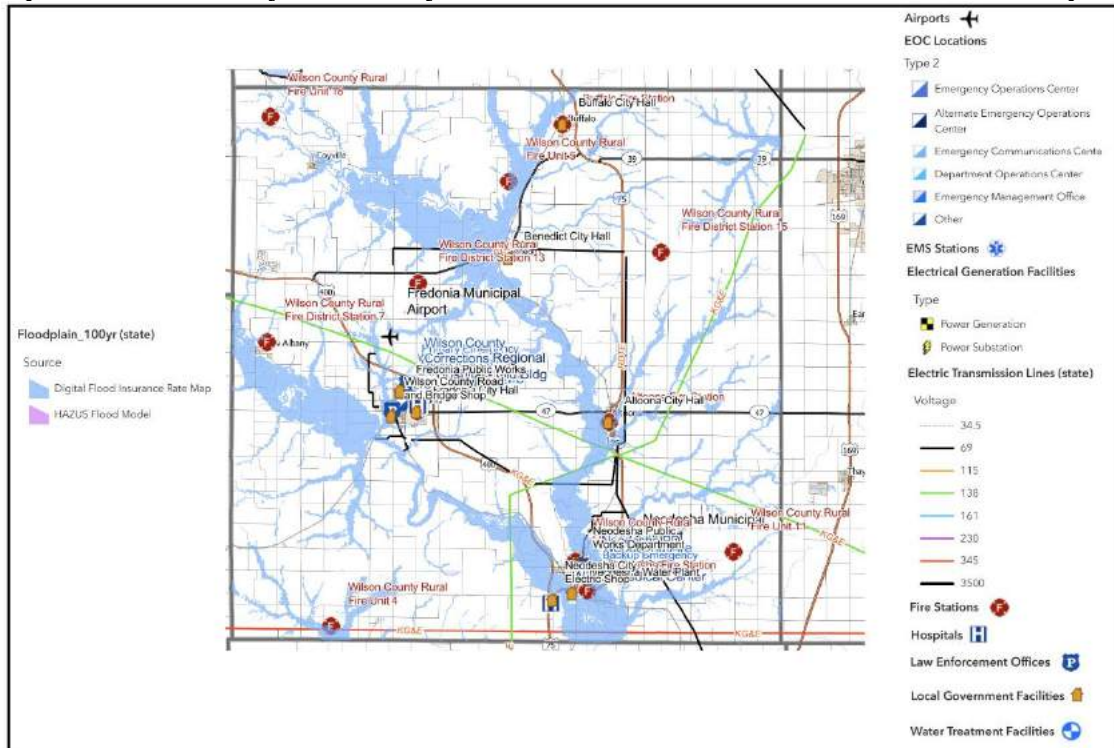


## Map 70: Neosho County Community Lifelines and Critical Facilities in 100-Year Floodplains



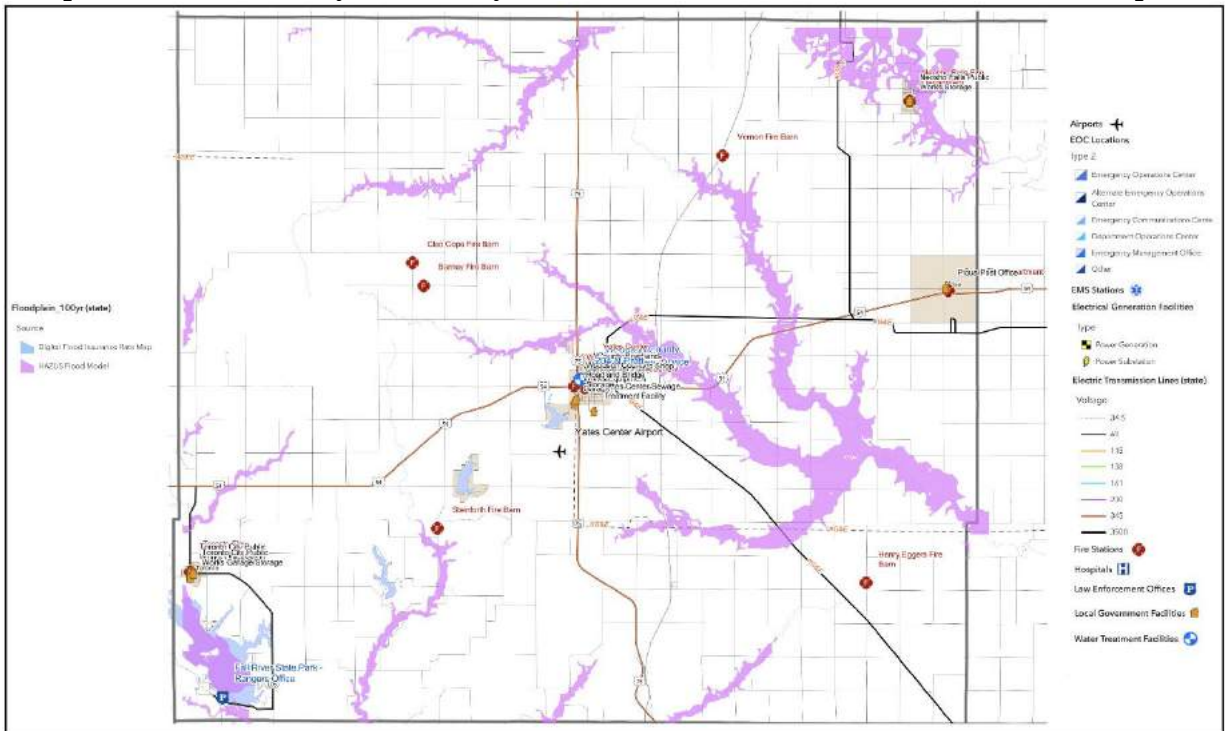
Source: KDEM

## Map 71: Wilson County Community Lifelines and Critical Facilities in 100-Year Floodplains



Source: KDEM

## Map 72: Woodson County Community Lifelines and Critical Facilities in 100-Year Floodplains



Source: KDEM

Flooding can have significant and widespread impacts on road infrastructure. The extent of the damage depends on factors such as the severity and duration of the flood, the type of flooding (river overflow, flash flooding), and the design and resilience of the road infrastructure. Impacts may include:

- **Structural Damage:** Floodwaters can erode road surfaces, weaken foundations, and damage bridges and culverts. The force of flowing water can undermine the structural integrity of roads and cause washouts.
- **Road Surface Erosion:** The erosion caused by floodwaters can remove the top layer of road surfaces, leading to potholes, cracks, and a general deterioration of the road condition.
- **Subsidence and Sinkholes:** The infiltration of water into road foundations can cause subsidence or create sinkholes.
- **Debris Accumulation:** Floodwaters often carry debris such as logs, branches, and sediment. The accumulation of debris on roads can impede drainage systems, block culverts, and hinder the flow of water.
- **Road Closures:** Flooding can result in the closure of roads due to safety concerns. High water levels, washouts, or structural damage may make roads impassable, leading to disruptions in transportation.
- **Loss of Road Markings and Signs:** Floodwaters can wash away road markings and signs, reducing visibility and creating safety hazards for motorists.
- **Long-Term Damage:** Even after floodwaters recede, long-term damage to road infrastructure may persist. Subsurface waterlogging, soil destabilization, and residual structural weaknesses can contribute to ongoing deterioration.

The cost to conduct maintenance on a road can vary significantly depending on the types of work required. However, the average estimate for repairs on a per mile basis in 2019 was \$14,750 per mile. The cost to replace a road can vary significantly based on several factors, including the type of road, local labor and material costs, the complexity of the project, and the specific requirements of the replacement. As a rough estimate, road construction costs can range from \$1,000,000 to \$10,000,000 per mile.

In order to reduce plan duplication, mapping concerning roads and bridges can be found in Section 4.10, maps 37 and 38.

Flooding can have substantial and often severe impacts on electrical utilities, disrupting power generation, transmission, and distribution systems. The consequences of flooding on electrical utilities can vary depending on factors such as the depth and duration of the flooding and the type of infrastructure affected, and may include:

- **Substation and Power Plant Damage:** Floodwaters can inundate electrical substations and power plants, damaging critical equipment such as transformers, switchgear, and control systems. Substantial damage to these facilities can lead to prolonged outages.
- **Electrical Equipment Short-Circuits:** Water infiltration into electrical equipment can cause short-circuits, leading to equipment failure and potentially causing fires. This can result in widespread power outages and safety hazards.
- **Transmission Line Disruptions:** Floodwaters can impact the stability of transmission towers and lines. Structural damage or collapse of transmission infrastructure can disrupt the flow of electricity over long distances.
- **Distribution Network Damage:** Localized flooding can damage distribution infrastructure, including power lines, poles, and transformers. This can lead to outages in specific neighborhoods or communities.
- **Transformer Submersion:** Floodwaters can submerge transformers, which are critical components in power distribution. Submersion can cause these transformers to malfunction or fail, leading to service interruptions.
- **Underground Cable Damage:** Underground power cables can be damaged by flooding, especially in areas with subterranean infrastructure. Water infiltration can compromise cable insulation, leading to electrical faults and outages.
- **Loss of Fuel Supply:** Natural gas power plants may face challenges in maintaining a stable fuel supply if transportation routes are disrupted due to flooding.

In order to reduce plan duplication, mapping concerning electrical generation plants, high capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

The Hazus model indicated that the following number of critical facilities are estimated to be damaged or suffer loss of use from the flood scenario.

**Table 87: Kansas Region H Hazus Flood Scenario Number of Critical Facilities Damaged or Impacted**

County	Emergency Operations Centers	Fire Stations	Hospitals	Police Stations	Schools
Allen	0	1	0	0	0
Bourbon	0	0	0	0	0
Chautauqua	0	0	0	0	0
Cherokee	0	0	0	0	0
Crawford	0	0	0	0	0
Elk	0	0	0	0	0
Greenwood	0	0	0	0	0
Labette	0	0	0	0	0
Montgomery	0	0	0	0	0
Neosho	0	0	0	0	0
Wilson	0	0	0	0	0
Woodson	0	0	0	0	0

Source: FEMA Hazus

Hospitals and other smaller medical facilities may see an increase in flood related during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Section 4.10, Map 41.

**FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from flood:

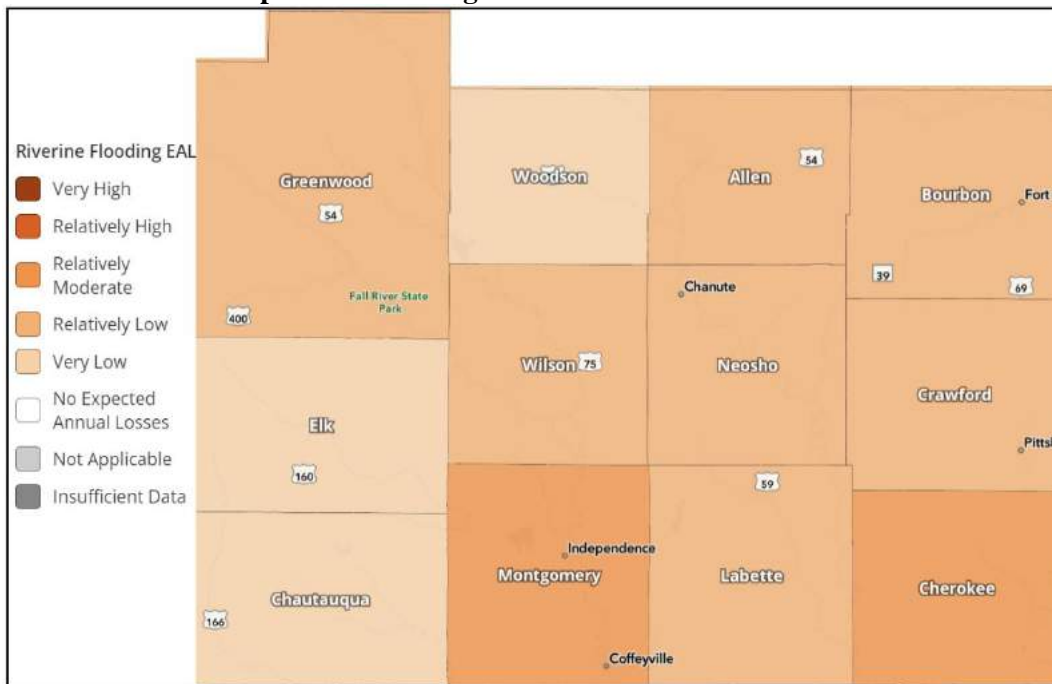
**Map 73: Kansas Region H FEMA NRI Flood Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for floods for participating counties within Kansas Region H:

**Map 74: Kansas Region H FEMA NRI Flood EAL**



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for flood:

**Table 88: Kansas Region H FEMA NRI and EAL for Flood by County**

County	Risk Index	EAL
Allen	Relatively Low	Relatively Low
Bourbon	Relatively Low	Relatively Low
Chautauqua	Very Low	Very Low
Cherokee	Relatively Moderate	Relatively Moderate
Crawford	Relatively Low	Relatively Low
Elk	Very Low	Very Low
Greenwood	Relatively Low	Relatively Low
Labette	Relatively Low	Relatively Low
Montgomery	Relatively Moderate	Relatively Moderate
Neosho	Relatively Low	Relatively Low
Wilson	Relatively Low	Relatively Low
Woodson	Very Low	Very Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 89: Flood Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Significant flooding events can lead to the damage and loss of homes, property, and businesses. Flash flooding and excessive rainfall may lead to dangerous conditions on roadways. Closures of medical facilities is a major public health concern if flooding damages those facilities. Water sources may become contaminated, and water or sewer systems may be disrupted. Vector-associated disease may increase.
Impact on Responders	Fire, police, and emergency responders may be called on to evacuate people from impacted areas, as well as close roads, attend to the injured, and direct traffic away from the flooded area and roads. First responders may face challenges with transportation and access to a location. Flash floods and mudslides due to heavy rainfall can also injure first responders, as well as delay response operations.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Floods which create power outages, debris damage, and road closures are not uncommon. This threat may impact an agency’s ability to maintain continuity of operations based on the incidents impact on power, communications and the potential to damage equipment and records within primary and alternate facilities.
Delivery of Services	Flooding can cause road and bridge closures, as well as disrupt transit services, impacting the ability to deliver goods and services. Exposure to flood waters may also damage or destroy physical goods such as food, clothing, and hygiene products.
Property, Facilities, and Infrastructure	Flooding can cause significant property destruction. Floods can disrupt normal daily activities due to the potential impact on schools, hospitals, and other public infrastructure. Transportation infrastructure can be damaged which could impact the freedom of movement or provision of utilities. Water sources can become contaminated. Water and sewer systems may be disrupted. Solid-waste collection and disposal may also be impacted, causing dangerous public health risks.
Impact on Environment	Rising waters from flooding impact the environment by spreading pollution, inundating water and wastewater treatment plants, and disrupting wildlife. Standing water following a flood event can facilitate the spread of vector-associated diseases.

**Table 89: Flood Consequence Analysis**

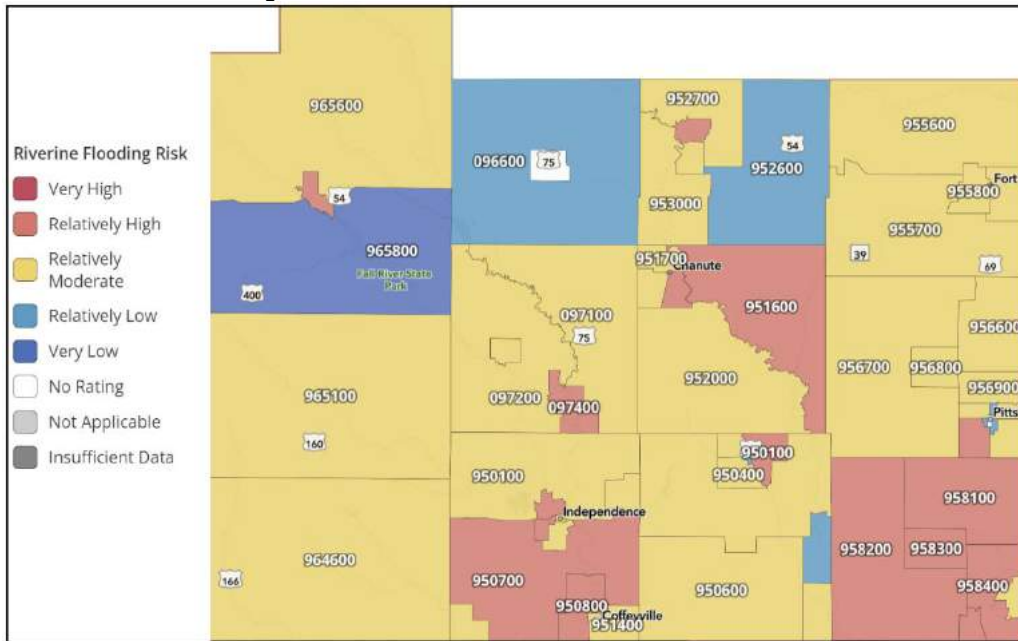
Subject	Potential Impacts
Economic Conditions	Significant and repeated flooding can lower property value throughout the state, which can have a deleterious effect on the tax base. Furthermore, flooding drains response resources, which can be costly during a large flooding event for disaster reimbursement
Public Confidence in Governance	Ineffective flooding response can decrease the public’s confidence in the ability to respond and govern. Multi-level government response requires direct actions that must be immediate and effective to maintain public confidence. Efficiency in response and recovery operations is critical in keeping public confidence high.

**4.12.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to flooding of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from floods:

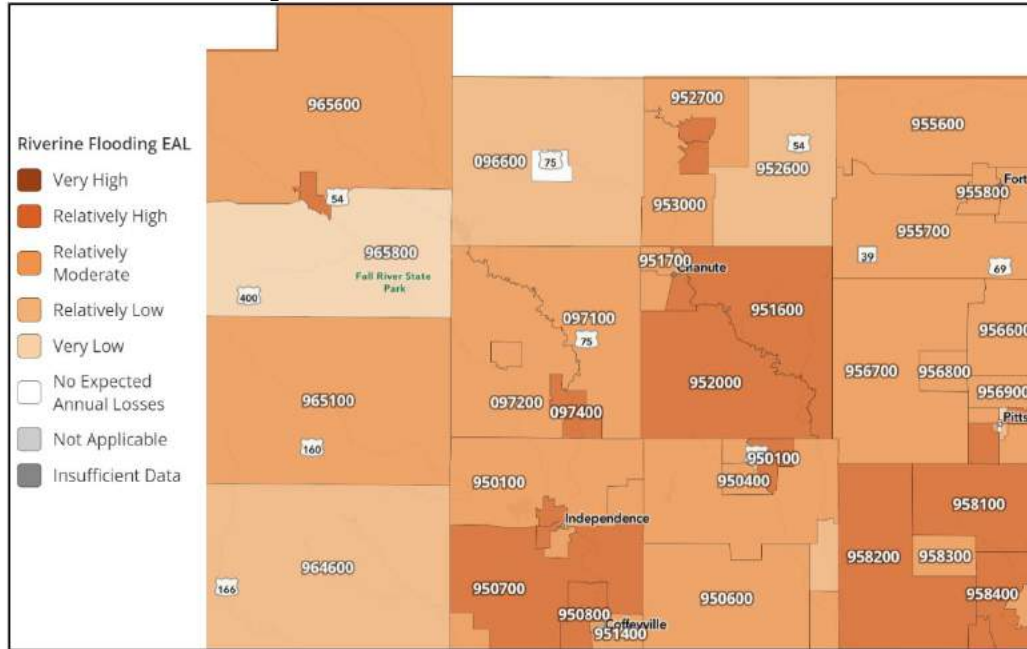
**Map 75: FEMA NRI Jurisdictional Flood Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for floods for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 76: FEMA NRI Jurisdictional Flood EAL**

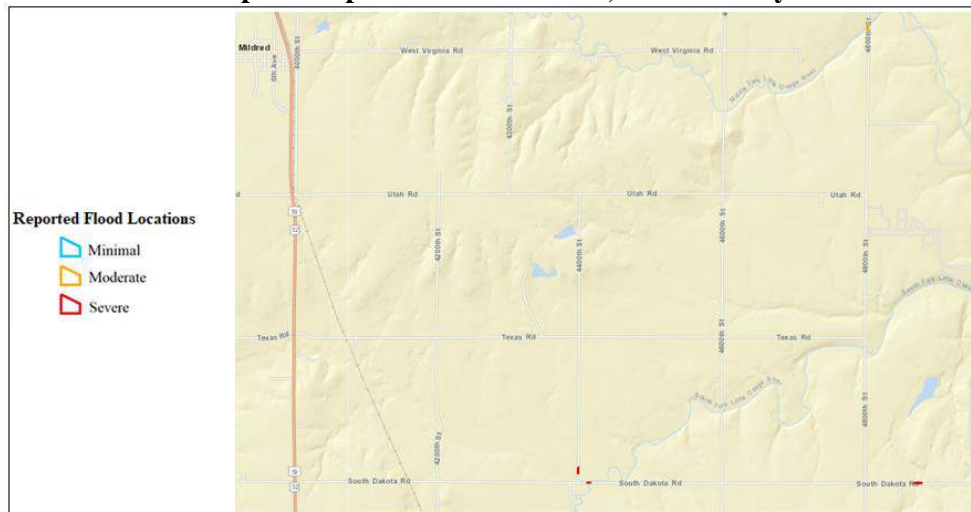


Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

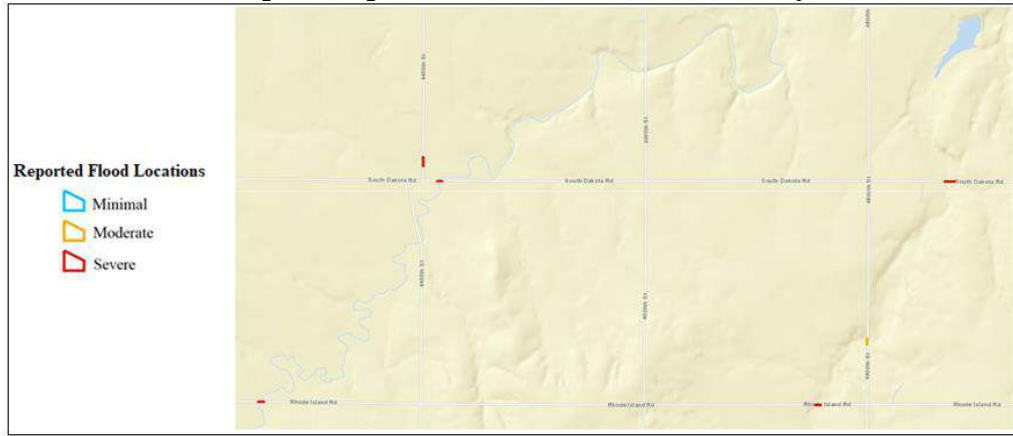
In an effort to identify repeat flood areas the USACE Silver Jackets has created a mapping system under the Recurring Flood Identification Project to map known flood areas. Three classifications of flooding areas are used, minimal moderate and severe. The following maps indicate identified repeat flood areas within the region.

**Map 77: Repeat Flood Locations, Allen County**



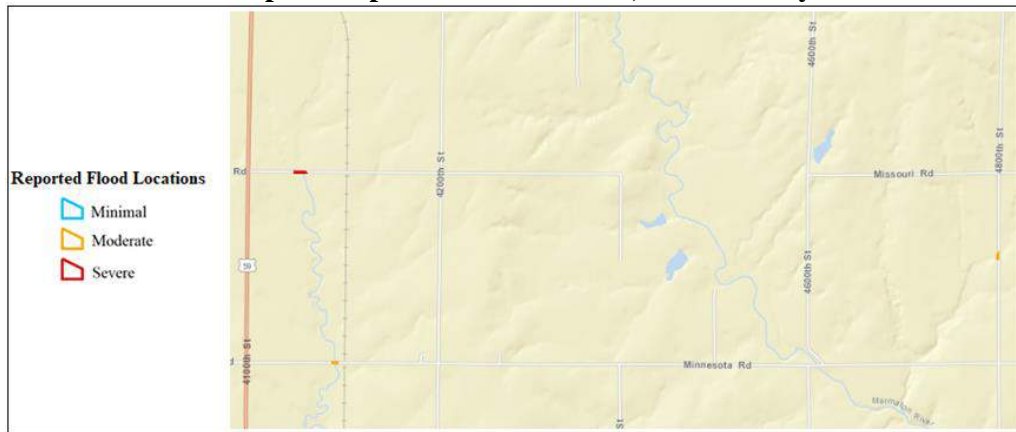
Source: USACE Silver Jackets

**Map 78: Repeat Flood Locations, Allen County**



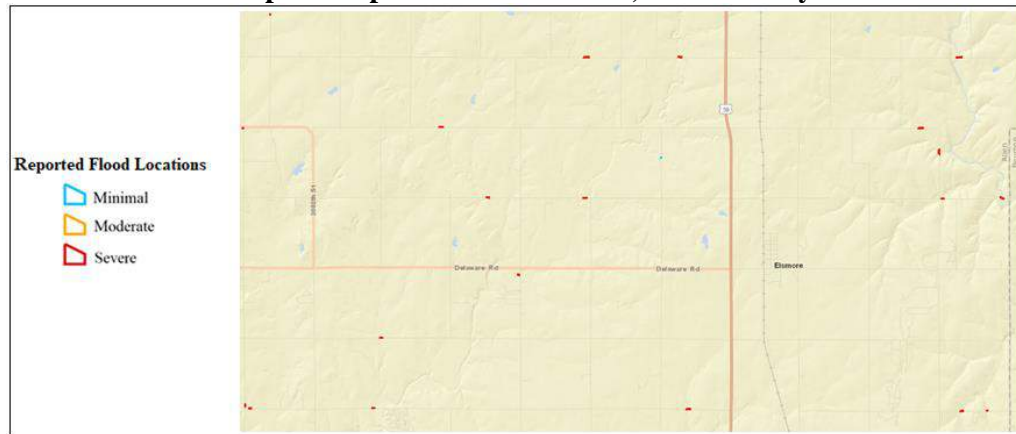
Source: USACE Silver Jackets

**Map 79: Repeat Flood Locations, Allen County**



Source: USACE Silver Jackets

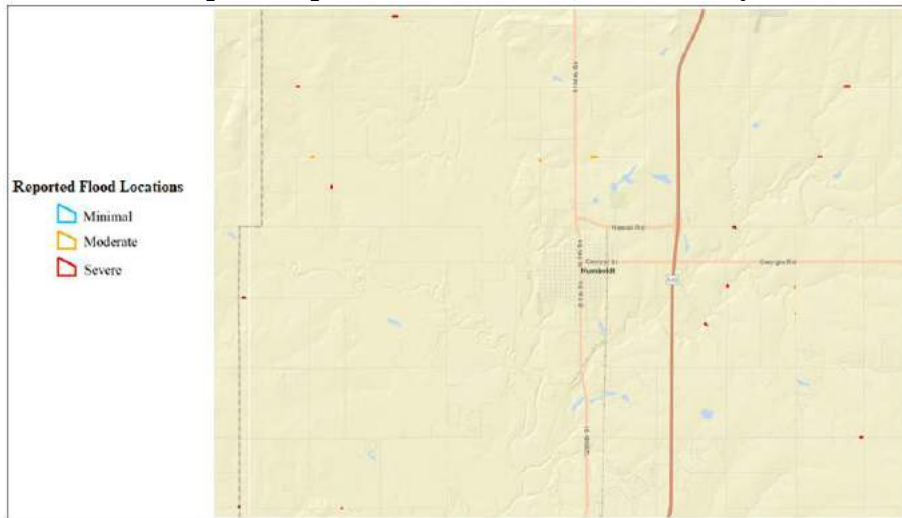
**Map 80: Repeat Flood Locations, Allen County**



Source: USACE Silver Jackets

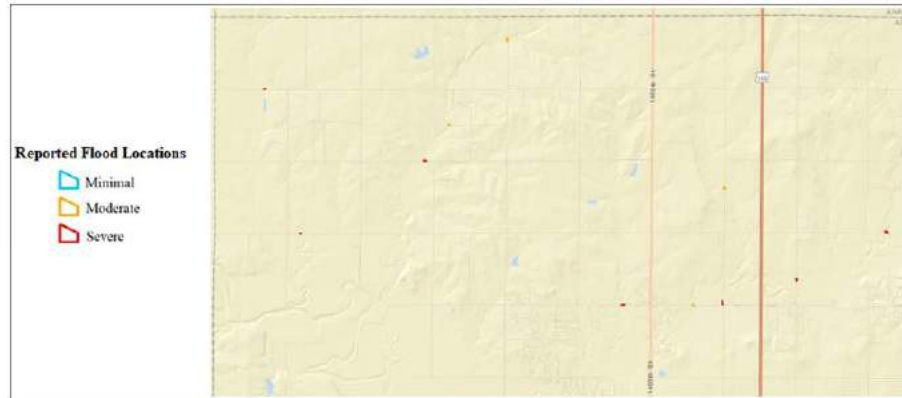


**Map 81: Repeat Flood Locations, Allen County**



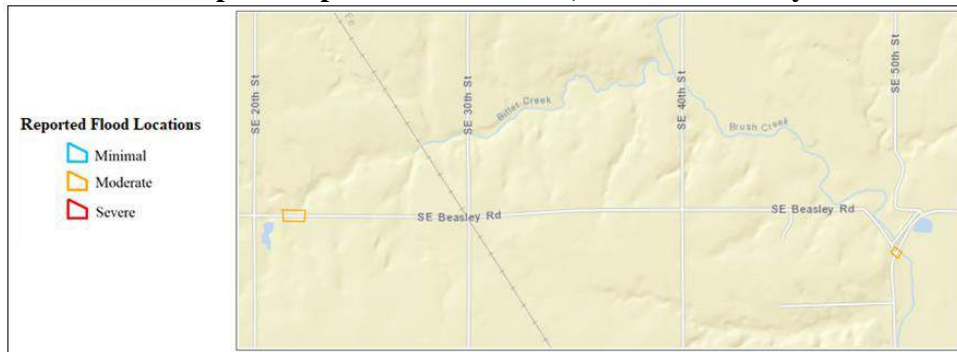
Source: USACE Silver Jackets

**Map 82: Repeat Flood Locations, Allen County**



Source: USACE Silver Jackets

**Map 83: Repeat Flood Location, Cherokee County**



Source: USACE Silver Jackets

**Map 84: Repeat Flood Location, Cherokee County**



Source: USACE Silver Jackets

**Map 85: Repeat Flood Location, Cherokee County**



Source: USACE Silver Jackets

In addition, information was solicited from participating jurisdictions on low water crossings and roads or areas of concern for flooding. The following tables details provided information.

**Table 90: Bourbon County Low Water Crossings**

Location
Wagon Road between 215 <sup>th</sup> and 205 <sup>th</sup>
Overbrook between 195 <sup>th</sup> and 7 Highway.
135 <sup>th</sup> between Quail and Poplar
Xavier between 250 <sup>th</sup> and 265 <sup>th</sup>
45 <sup>th</sup> between Juniper and Jayhawk
Hackberry between 80 <sup>th</sup> and 95 <sup>th</sup>
80 <sup>th</sup> between Hackberry and Grand
Deer between 250 <sup>th</sup> and 260 <sup>th</sup>
Osage between 75 <sup>th</sup> and 85 <sup>th</sup>
Kansas and 45 <sup>th</sup> go South
135 <sup>th</sup> between Grand and Fern
Calvary between 250 <sup>th</sup> and 260 <sup>th</sup>
Calvary between 260 <sup>th</sup> and 267 <sup>th</sup>
260 <sup>th</sup> between Calvary and Deer
145 <sup>th</sup> between Arrowhead and Birch
140 <sup>th</sup> between 39 Highway and Eagle
Fern East of 3 Highway
Birch between 3 Highway and 90 <sup>th</sup>
60 <sup>th</sup> between 39 Highway and Eagle
Grand between 50 <sup>th</sup> and 60 <sup>th</sup>
Grand between 50 <sup>th</sup> and 40 <sup>th</sup>

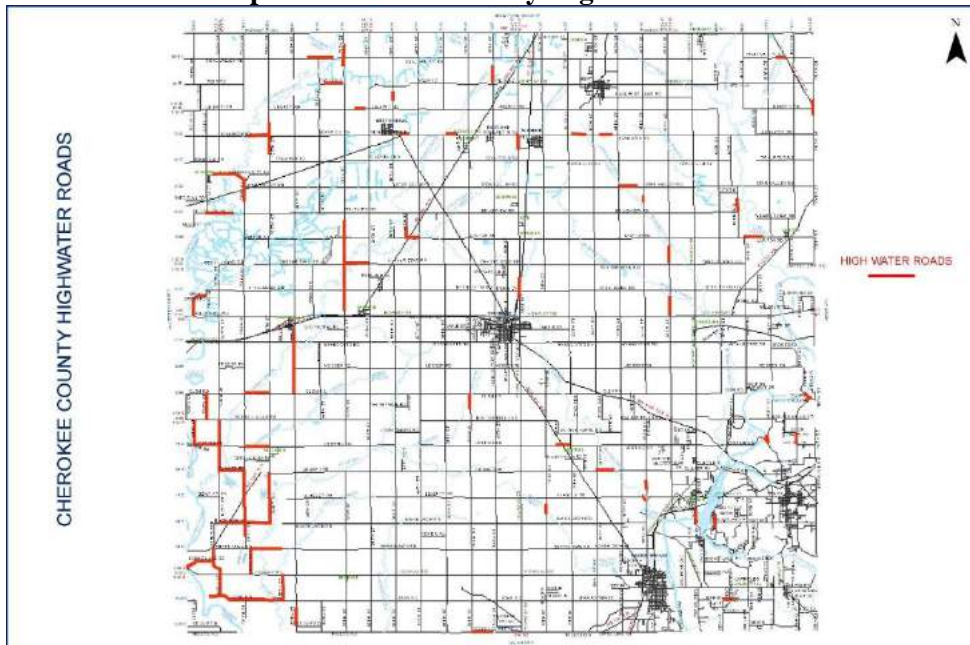
Source: Bourbon County

**Table 91: Elk County Low Water Crossings, Roads, and Areas of Concern, Flooding**

Local Name	Area Location	Type
Green Ranch	Pioneer Road, 2 miles west of Road 6	Bridge
Indigo	Indigo Road, 1/2 mile between 31 and 32	Creek Crossing
Road 31	1/8th mile north of Rock Road	Tube
Quail	1/4 mile east of 14	Tube
RD 24	1/2 mile north of Antler (24 and Blackjack)	Tube
Angus	1/2 mile east of Rd 10	Tube
Hawk, X2 (Augustine)	1/8 and 1/4 mile west of Rd 22	Two Bridges
River Road	1/4 mile south of Grain	Low Road Area
River Road	1/8 mile west of Junebug intersection	Low Road Area
Road 12	1 mile north of Indigo	Tube

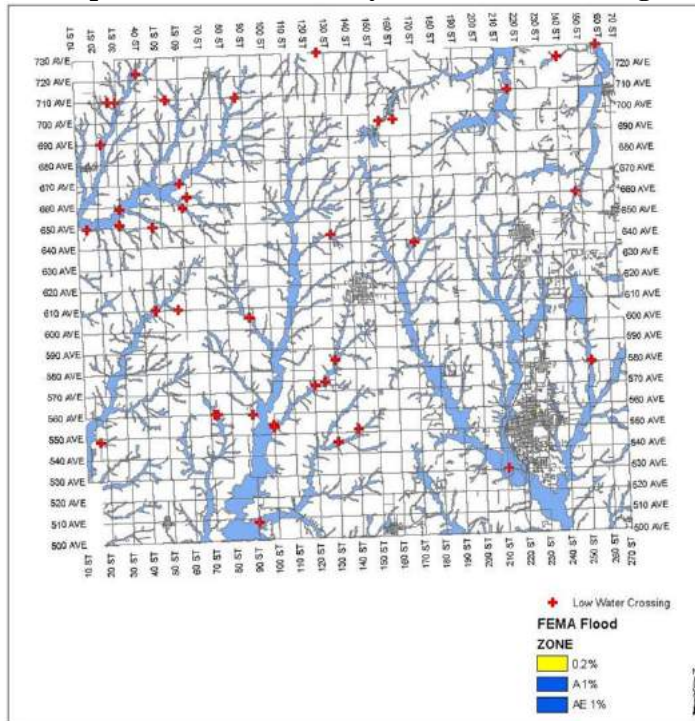
Source: Elk County

**Map 86: Cherokee County High Water Roads**



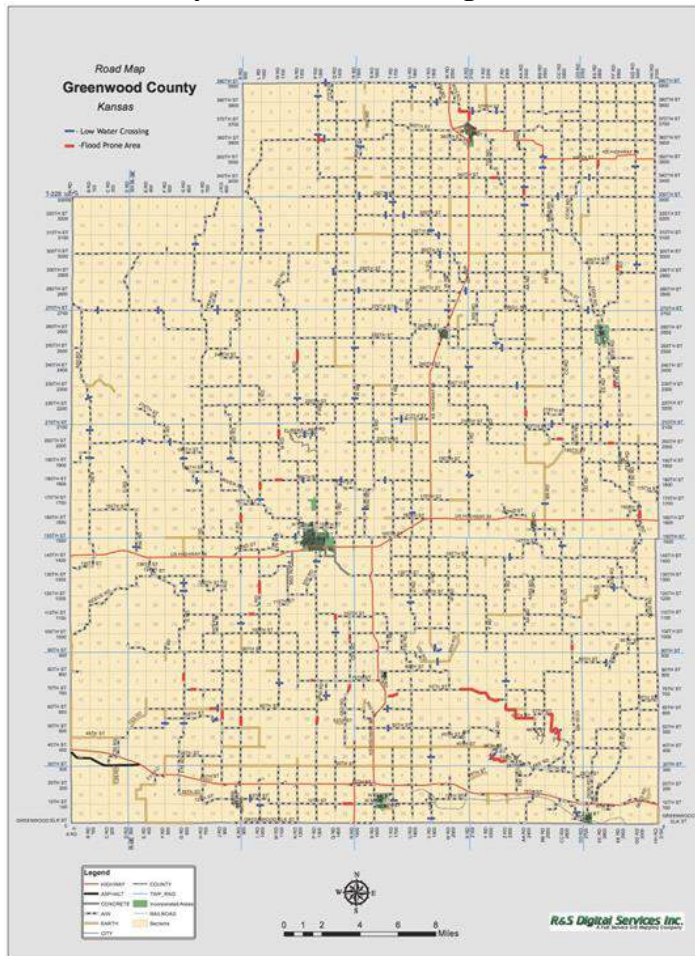
Source: Cherokee County

**Map 87: Crawford County Low Water Crossings**



Source: Crawford County

**Map 88: Greenwood County Low Water Crossing Roads and Flood Prone Areas**



Source: Greenwood County

**Table 92: Greenwood County Low Water Crossings, Roads, and Areas of Concern, Flooding**

County	Road or Area	Location
Greenwood	20 <sup>th</sup>	Quail Creek – Sunflower
Greenwood	60 <sup>th</sup>	Limestone – Mustang
Greenwood	70 <sup>th</sup>	Chisholm Trail – Diamond
Greenwood	80 <sup>th</sup>	Diamond – Eagle
Greenwood	90 <sup>th</sup>	Falcon – Goldenrod
Greenwood	140 <sup>th</sup>	Upland – Hwy 77
Greenwood	160 <sup>th</sup>	Indigo – Jade
Greenwood	190 <sup>th</sup>	Quail Creek – Remington
Greenwood	250 <sup>th</sup>	Upland – Ulysses
Greenwood	260 <sup>th</sup>	Old Mill – Pawnee
Greenwood	290 <sup>th</sup>	Old Mill – Pawnee– Remington– Sunflower, Upland – Vista
Greenwood	330 <sup>th</sup>	Eagle – Falcon
Greenwood	Bison	300 <sup>th</sup> – 310 <sup>th</sup>
Greenwood	Bluestem	230 <sup>th</sup> – 235 <sup>th</sup>
Greenwood	Diamond	70 <sup>th</sup> – 80 <sup>th</sup>
Greenwood	Old Mill	150 <sup>th</sup> – 160 <sup>th</sup>
Greenwood	Kanza	150 <sup>th</sup> – 175 <sup>th</sup>
Greenwood	Lakeshore Drive	Inlet/Outlet
Greenwood	Nighthawk	110 <sup>th</sup> – 130 <sup>th</sup> and 170 <sup>th</sup> – 190 <sup>th</sup>
Greenwood	Quail Creek	170 <sup>th</sup> – 180 <sup>th</sup> and 290 <sup>th</sup> – 300 <sup>th</sup>
Greenwood	Remington	10 <sup>th</sup> – 20 <sup>th</sup> and 220 <sup>th</sup> – 240 <sup>th</sup>
Greenwood	Sunflower	160 <sup>th</sup> – 180 <sup>th</sup>
Greenwood	Timber	130 <sup>th</sup> – 140 <sup>th</sup> and 340 <sup>th</sup> – 350 <sup>th</sup>

Source: Greenwood County

The following areas have been identified as flood prone and/or low water crossing areas within Neosho County.

- 160th between Meade and Ness
- 160th between Kiowa and Marshall
- Douglas Road between 150th and 160th
- Highway 39 between Elk Road and Harper Road
- Elk Road from 230th to Allen County Line
- Pryor Road (Main Street Erie) between 120th and 135th
- 135th between Pryor and Ness
- 20th between Gray & Harper (Low water bridge)
- Gray road between 70th & 80th
- Highway 39 to 210th on Grady Road
- Highway 39 between Lyon and Ness Road
- Highway 39 to 210th between Lyon and Ness.

**Table 93: Wilson County Low Water Crossings, Roads, and Areas of Concern, Flooding**

Local Name	Area Location	Latitude	Longitude
Blinn's Crossing	NW of New Albany	37.582396	-95.956044
Cook's Bridge	W of New Albany	37.568595	-95.949095
Baker Crossing	W of Fredonia	37.53141	-95.924551
Mill Dam	SW of Fredonia	37.513662	-95.849674
Dougan's Ford	S of Fredonia	37.485733	-95.810857
-	1975 & Edwards S 3/4	37.654704	-95.887554

**Table 93: Wilson County Low Water Crossings, Roads, and Areas of Concern, Flooding**

Local Name	Area Location	Latitude	Longitude
-	1800 & Edwards N 1 1/2	37.652207	-95.885116
-	1500 & Lane N 8/10th	37.615011	-95.762578
-	SE of Benedict	37.592868	-95.728757
-	1400 & Quinter E 3/8	37.573424	-95.654844
-	10 Rd & Lane 4/10th	37.733853	-95.754023
-	10 Rd & Lane E 1/2	37.733855	-95.752555
-	1300 & Thomas E2/3	37.558836	-95.602921
-	1200 & Scott W3/4	37.544513	95.645604
-	1400 & Udall W of Intersection	37.573271	-95.597951
-	1200 & Thomas S 1/4	37.539777	-95.61551
-	1500 & Viola S 1/4	37.583283	-95.579742
-	2100 & Wichita N of Intersection	37.675051	-95.562369
-	Hwy 39 & Wichita S 1/4	37.686683	-95.562007
-	Hwy 47 & Scott S 1/8	37.528713	-95.633759
-	950 & Reno E 3/8	37.508064	-95.644689
-	900 & Thomas S 1/4	37.49603	-95.615341
-	800 & Gove W 1/4	37.48658	-95.858053
-	700 & Gove W 3/8	37.471984	-95.8616

Source: Wilson County

**4.12.8 National Flood Insurance Program and Community Rating System Communities**

The NFIP is a federal program, managed by FEMA, which exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas. The following table presents NFIP participating communities.

**Table 94: Kansas Region H NFIP Communities**

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
<b>Allen County</b>			
Allen County	5/24/1977	9/28/1990	6/15/2022
City of Bassett	-	9/28/1990	7/18/2011
City of Gas	12/20/1974	9/28/1990	(NSFHA)
City of Humboldt	12/7/1973	9/1/1978	9/25/2009
City of Iola	12/14/1973	9/15/1978	7/18/2011
City of LaHarpe	8/22/1975	9/28/1990	9/25/2009
City of Moran	3/26/1976	9/28/1990	(NSFHA)
<b>Bourbon County</b>			
Bourbon County	10/25/1977	6/1/1988	3/16/2016
City of Bronson	7/18/1975	1/2/2009	01/2/09(M)
City of Fort Scott	12/28/1973	9/1/1978	3/16/2016
City of Fulton	1/10/1975	1/2/2009	01/02/2009(M)
City of Redfield	12/27/1974	01/08/1986	01/02/2009(M)
Uniontown	09/26/1975	01/02/2009	(NSFHA)
<b>Chautauqua County</b>			
City of Sedan	8/22/1975	6/1/1988	06/01/88(L)
<b>Cherokee County</b>			
Cherokee County	5/10/1977	8/5/1991	11/19/2008
City of Baxter Springs	5/24/1974	3/18/1986	11/19/2008(M)
City of Columbus	3/1/1974	5/15/1986	11/19/2008(M)

**Table 94: Kansas Region H NFIP Communities**

<b>Community</b>	<b>Initial Flood Hazard Boundary Map Identified</b>	<b>Initial Flood Insurance Rate Map Identified</b>	<b>Current Effective Map Date</b>
City of Galena	5/24/1974	5/15/1986	11/19/2008(M)
City of Scammon	9/19/1975	11/19/2008	11/19/2008(M)
City of Weir	9/19/1975	11/19/2008	11/19/2008
City of West Mineral	-	11/19/2008	11/19/2008
<b>Crawford County</b>			
Crawford County	5/17/1977	5/1/1990	4/16/2009
City of Arcadia	8/15/1975	4/1/1989	4/16/2009(M)
City of Arma	3/26/1976	4/16/2009	4/16/2009(M)
City of Cherokee	3/26/1976	4/16/2009	04/16/2009(M)
City of Frontenac	7/30/1976	4/16/2009	04/16/2009(M)
City of Girard	8/8/1975	4/16/2009	04/16/2009(M)
City of Hepler	-	4/16/2009	4/16/2009
City of McCune	-	4/16/2009	NSFHA
City of Pittsburg	2/15/1974	5/1/1979	4/16/2009
<b>Elk County</b>			
Elk County	-	-	-
City of Grenola	9/26/1975	-	9/26/1975
City of Howard	8/8/1975	4/8/1977	04/8/1977(M)
City of Longton	9/19/1975	5/1/1990	05/1/1990(L)
City of Moline	2/22/1974	2/1/2008	02/1/2008(L)
<b>Greenwood County</b>			
Greenwood County	-	-	-
City of Eureka	4/12/1974	9/1/1991	09/1/1991(L)
City of Hamilton	-	01/02/2003	01/2/2003
City of Madison	7/19/1974	3/5/1990	3/5/1990
<b>Labette County</b>			
Labette County	10/25/1977	9/1/1990	1/2/2009
City of Altamont	3/26/1976	1/2/2009	1/0/09(M)
City of Chetopa	9/19/1975	9/4/1985	1/2/09(M)
City of Edna	-	1/2/2009	NSFHA
City of Labette	-	1/2/2009	1/2/2009
City of Mound Valley	8/22/1975	1/2/2009	1/2/09(M)
City of Oswego	9/19/1975	1/2/2009	1/2/09(M)
City of Parsons	2/1/1974	7/16/1979	1/2/2009
<b>Montgomery County</b>			
Montgomery County	10/18/1977	6/1/1988	6/20/2019)
City of Caney	2/15/1974	7/3/1986	6/20/2019(M)
City of Cherryvale	2/15/1974	-	6/20/2019(M)
City of Coffeyville	5/3/1974	3/12/1976	6/20/2019
City of Dearing	7/25/1975	6/1/1988	6/20/2019(M)
City of Elk City	10/29/1976	4/1/1989	6/20/2019)
City of Independence	12/14/1973	6/15/1979	6/20/2019
<b>Neosho County</b>			
Neosho County	11/1/1977	2/1/2005	1/20/2010
City of Chanute	12/7/1973	1/3/1979	1/20/2010
City of Erie	1/23/1974	7/17/1978	1/20/2010
City of Galesburg	-	1/20/2010	NSFHA

**Table 94: Kansas Region H NFIP Communities**

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
City of St. Paul	1/19/1975	9/5/1990	01/20/10(M)
<b>Wilson County</b>			
Wilson County	6/7/1977	4/1/1989	04/01/89
City of Altoona	7/30/1976	4/1/1989	1/2/2009(M)
City of Buffalo	9/5/1975	-	NSFHA
City of Fredonia	1/9/1974	6/17/1986	1/8/2020
City of Neodesha	1/9/1974	8/15/1978	1/8/2020
<b>Woodson County</b>			
Woodson County	-	-	5/6/2009€
City of Neosho Falls	1/31/1975	4/1/1989	04/01/89(L)
City of Toronto	9/19/1975	-	NSFHA
City of Yates Center	8/15/1975	-	NSFHA

Notes: NSFHA: No Special Flood Hazard Area - All Zone C

(L): Original FIRM by letter - All Zone A, C and X

(M): No elevation determined - All Zone A, C and X

(E): Entry into the emergency program

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program:

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

The following Region H jurisdictions are currently participating in the CRS:

**Table 95: Kansas Region H CRS Communities**

Jurisdiction	County	CRS Entry Date	Current Class	SFHA Discount
Humboldt	Allen	05/01/17	9	5%
Coffeyville	Montgomery	05/01/2014	9	5%
Independence	Montgomery	10/01/21	7	15%

Source: FEMA

#### 4.12.9 FEMA Flood Policy and Loss Data

Kansas Region H flood policy information was sourced from FEMA's Flood Insurance Data and Analytics. The number of flood insurance policies in effect may not include all structures at risk of flooding, and it likely that some properties are under-insured. The flood insurance purchase requirement is for flood insurance in the amount of federally backed mortgages, not the entire value of the structure. Additionally, contents coverage is not required.

The following table shows the details of NFIP policy statistics for Kansas Region H:

**Table 96: Kansas Region H NFIP Coverage**

Jurisdiction	Number of Policies in Force	Total Coverage
<b>Allen County</b>		
Allen County	25	\$3,098,600
Humboldt	4	\$674,500
Iola	47	\$7,215,600
Unknown	5	\$1,049,000
<b>Bourbon County</b>		
Bourbon County	10	\$1,663,300



**Table 96: Kansas Region H NFIP Coverage**

<b>Jurisdiction</b>	<b>Number of Policies in Force</b>	<b>Total Coverage</b>
Fort Scott	15	\$5,499,600
<b>Chautauqua County</b>		
Sedan	1	\$21,000
<b>Cherokee County</b>		
Cherokee County	45	\$8,366,700
Baxter Springs	11	\$1,184,000
Columbus	6	\$896,500
Galena	1	\$70,000
Scammon	1	\$29,500
Unknown	1	\$160,000
<b>Crawford County</b>		
Crawford County	52	\$10,745,500
Arcadia	1	\$45,000
Cherokee	1	\$70,000
Frontenac	1	\$40,000
Pittsburg	40	\$7,865,600
<b>Elk County</b>		
Moline	5	\$157,000
<b>Greenwood County</b>		
Eureka	8	\$560,800
Madison	1	\$350,000
<b>Labette County</b>		
Labette County	47	\$7,134,500
Chetopa	5	\$197,000
Mound Valley	1	\$109,000
Oswego	1	\$210,000
Parsons	60	\$9,140,100
Unknown	8	\$65,000
<b>Montgomery County</b>		
Montgomery County	31	\$5,582,700
Cherryvale	1	\$210,000
Coffeyville	48	\$10,979,400
Independence	47	\$7,023,300
Unknown	2	\$152,000
<b>Neosho County</b>		
Neosho County	34	\$6,071,200
Chanute	33	\$2,466,700
Erie	31	\$4,422,800
<b>Wilson County</b>		
Wilson County	14	\$1,750,000
Altoona	3	\$161,200
Fredonia	8	\$2,201,200
Neodesha	20	\$4,024,900
<b>Woodson County</b>		
Neosho Falls	1	\$210,000

Source: FEMA Flood Insurance Data and Analytics

The following table details the change in the number of NFIP coverage from 2013 to 2023 for Kansas Region H:

**Table 97: Kansas Region H NFIP Coverage Changes**

	2013	2018	2023	Change 2013 - 2023
Number of Policies	1,114	773	676	(-438)
Amount of Coverage	\$146,365,500	\$111,778,909	\$111,873,200	(-\$34,492,300)

Source: FEMA

#### 4.12.10 Repetitive Loss Structures

A high priority for Kansas Region H is the mitigation of, and/or the reduction of losses to, Repetitive Loss (RL) and Severe Repetitive Loss (SRL) structures. The NFIP defines a RL property as:

- Any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. At least two of the claims must be more than 10 days apart.

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both of the above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than ten days apart.

The following table details information concerning RL identified properties in Kansas Region H:

**Table 98: Kansas Region H RL Properties**

County	Jurisdiction	NFIP Insured	Total Losses	Total Paid
Bourbon	Fort Scott	No	2	\$36,267.23
	Fort Scott	No	2	\$102,768.24
	Fort Scott	No	2	\$7,841.80
	Fort Scott	No	4	\$54,242.37
	Fort Scott	No	4	\$114,730.86
	Fort Scott	No	3	\$72,013.09
	Fort Scott	No	2	\$127,470.93
	Fort Scott	No	2	\$139,902.79
Cherokee	Baxter Springs	Yes	2	\$165,082.74
	Galena	No	2	\$25,435.70
	Galena	No	4	\$56,731.44
	Galena	No	5	\$69,117.35
	Galena	No	2	\$44,429.69
	Riverton	No	2	\$111,483.68
Crawford	Pittsburg	No	2	\$44,675.39
	Pittsburg	Yes	2	\$58,335.34
	Pittsburg	No	5	\$55,619.67
	Pittsburg	Yes	3	\$6,902.67
	Pittsburg	No	2	\$49,425.70
	Pittsburg	No	5	\$80,919.28
	Pittsburg	No	3	\$194,025.18
	Pittsburg	No	2	\$38,937.02
	Pittsburg	No	2	\$15,821.16
	Pittsburg	No	3	\$13,049.61
	Pittsburg	No	4	\$21,188.58

**Table 98: Kansas Region H RL Properties**

County	Jurisdiction	NFIP Insured	Total Losses	Total Paid
	Pittsburg	Yes	2	\$14,985.76
Labette	Chetopa	No	2	\$32,086.00
	Parsons	Yes	2	\$14,295.60
	Parsons	No	4	\$12,224.80
	Parsons	No	2	\$10,520.66
	Parsons	No	2	\$23,740.55
	Parsons	No	2	\$29,174.73
	Parsons	Yes	4	\$107,573.26
Montgomery	Coffeyville	No	2	\$14,980.33
	Coffeyville	Yes	3	\$52,619.85
	Coffeyville	No	3	\$8,042.88
	Coffeyville	No	3	\$19,687.05
	Coffeyville	Sdf	5	\$58,585.38
	Coffeyville	No	3	\$67,345.72
	Coffeyville	No	3	\$10,228.55
	Coffeyville	No	6	\$139,822.66
	Coffeyville	No	3	\$82,606.25
	Coffeyville	No	2	\$10,953.20
	Coffeyville	No	2	\$16,984.56
	Coffeyville	No	4	\$96,890.20
	Coffeyville	No	3	\$68,702.90
	Coffeyville	No	2	\$63,100.37
	Coffeyville	No	2	\$25,365.60
	Coffeyville	No	4	\$74,941.29
	Coffeyville	No	2	\$25,038.67
	Coffeyville	Yes	4	\$37,372.34
	Coffeyville	No	4	\$49,422.58
	Coffeyville	No	3	\$672,384.49
	Coffeyville	Yes	2	\$22,149.32
	Coffeyville	No	2	\$6,391.05
	Elk City	No	2	\$23,282.46
	Independence	No	2	\$7,399.43
	Independence	Yes	3	\$49,721.38
	Independence	No	3	\$38,801.66
	Independence	No	2	\$19,704.66
Independence	No	2	\$15,846.92	
Independence	Yes	2	\$30,649.88	
Independence	Yes	2	\$21,758.35	
Neosho	Chanute	Yes	4	\$23,815.10
Wilson	Chanute	No	2	\$9,148.11
	Chanute	No	2	\$19,262.17
	Fredonia	Yes	4	\$303,226.27

Source: KDEM

The following table details information concerning SRL identified properties in Kansas Region H:

**Table 99: Kansas Region H SRL Properties**

<b>County</b>	<b>Jurisdiction</b>	<b>NFIP Insured</b>	<b>Total Losses</b>	<b>Total Paid</b>
Bourbon	Fort Scott	No	4	\$54,242.37
	Fort Scott	No	4	\$114,730.86
	Fort Scott	No	2	\$139,902.79
Cherokee	Baxter Springs	No	5	\$165,082.74
	Galena	No	2	\$69,117.35
Crawford	Pittsburg	No	5	\$80,919.28
Montgomery	Coffeyville	No	5	\$58,585.38
	Coffeyville	No	6	\$139,822.66
	Coffeyville	No	4	\$96,890.20
	Coffeyville	no	4	\$74,941.29
	Coffeyville	No	3	\$672,384.49
Wilson	Fredonia	No	4	\$303,226.27

Source: KDEM

## 4.13 Severe Weather

### 4.13.1 Hazard Description

Severe Weather comprise the hazardous and damaging weather effects often found in violent storm fronts. They can occur together or separate, they are common and usually not hazardous, but on occasion they can pose a threat to life and property.

This plan defines Severe Weather as a combination of the following severe weather effects as defined by NOAA and the NWS:

- **Hail:** Precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.
- **Lightning:** A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.
- **Thunderstorm Winds:** The same classification as high or strong winds but accompanies a thunderstorm. It is also referred to as a straight-line wind to differentiate from rotating or tornado associated wind. Additionally, these winds can rapidly create dust storms that severely impact visibility.



Severe Weather have been so consistent throughout modern history that much of the vulnerability is mitigated. However, this section is not concerned with everyday wind, lightning in the sky, or mild precipitation. This section is concerned with common storm elements when they behave such that they pose a threat to property and life.

### 4.13.2 – Location and Extent

Severe Weather can rapidly descend on an area, but in many cases are predictable. Most weather forecasts focus on more than just temperature but on quickly changing conditions that may lead to the onset of severe storms. All of Kansas Region H is susceptible to Severe Weather.

The NWS classifies thunderstorms, often the generator of hail, lightning and high winds, using the following categories.

- **Marginal:** Isolated Severe Weather, limited in duration and/or coverage and/or intensity
- **Slight:** Scattered severe storms possible, short-lived and/or not widespread, isolated intense storms possible
- **Enhanced:** Numerous severe storms possible, more persistent and/or widespread, a few intense
- **Moderate:** Widespread severe storms likely, long-lived, widespread and intense
- **High:** Widespread severe storms expected, long-lived, very widespread and particularly intense

In the United States, hail causes billions of dollars in damage to property each year. Vehicles, roofs of buildings and homes, and landscaping are most commonly damaged by hail. Hail has been known to cause injury and the occasional fatality to humans, often associated with traffic accidents.

Based on information provided by the National Weather Service concerning size, the following table describes potential damage impacts of the various sizes of hail.

**Table 100: Hail Size Comparison and Damage Descriptions**

Diameter (inches)	Size Description	Potential Damage Impacts
1/4	Pea Size	No damage
1/2	Mothball, peanut, USB Plug	Slight damage to vegetation
3/4	Penny Size	Increased damage to crops and vegetation
7/8	Nickel Size	Severe damage to crops and vegetation, damage begins to glass and plastic
1	Quarter Size	Increased glass damage, damage begins to bodies of vehicles

**Table 100: Hail Size Comparison and Damage Descriptions**

Diameter (inches)	Size Description	Potential Damage Impacts
1 1/4	Half Dollar Size	Large scale glass damage, begin roof damage, risk of injury to exposed persons
1 1/2	Ping Pong Ball Size	Large scale glass damage, begin roof damage, increased risk of injury to exposed persons
1 3/4	Golf Ball Size	Severe roof damage, risk of serious injuries to exposed persons
2	Lime or Medium Sized Hen Egg	Potential structural damage, risk of very severe injuries to exposed persons
2 1/2	Tennis Ball Size	Extensive structural damage, risk of very severe injuries or death to exposed persons

Source: National Weather Service

A recent report by the Insurance Information Institute says lightning strikes caused \$1,300,000,000 in damage across the United States in 2021. There is currently no scale to indicate the severity of a lightning strike, but data from NOAA indicates that there approximately 25,000,000 cloud-to-ground lightning strikes per year in the United States.

To measure wind speed and its correlating potential for damage, experts use the Beaufort scale as shown below.

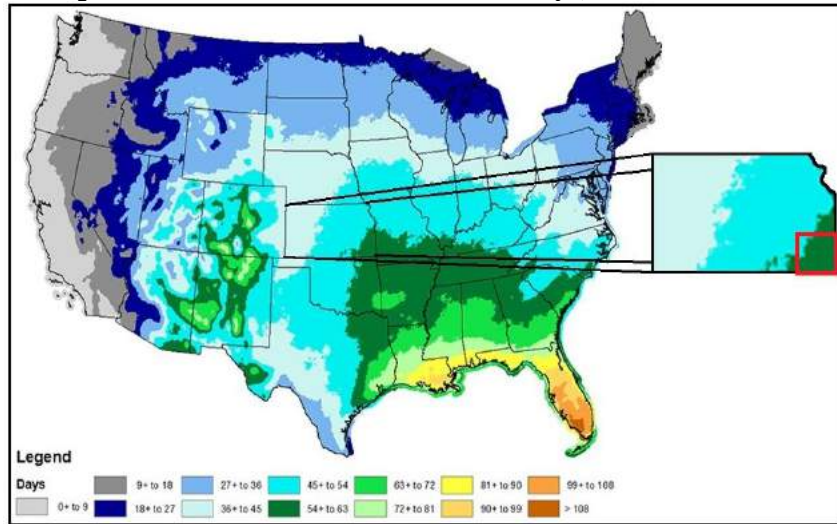
**Table 101: Beaufort Scale**

Beaufort Number	Wind Speed (mph)	Effects on Land
0	Under 1	Calm, smoke rises vertically
1	1-3	Smoke drift indicates wind direction, vanes do not move
2	4-7	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Leaves, small twigs in constant motion. Light flags extended.
4	13-18	Dust, leaves and loose paper raised up; small branches move
5	19-24	Small trees begin to sway
6	25-31	Large branches of trees in motion, whistling heard in wires
7	32-38	While trees in motion, resistance felt in walking against the wind
8	39-46	Twigs and small branches broken off trees
9	47-54	Slight structural damage occurs, slate blown from roofs
10	55-63	Seldom experienced on land, trees broken, structural damage occurs
11	64-72	Very rarely experienced on land, usually with widespread damage
12	73 or higher	Violence and destruction

Source: NOAA

The widespread and frequent nature of thunderstorms makes hail, lightning, and high wind a relatively common occurrence for Kansas Region H. The following map, from NOAA, indicates annual mean thunderstorm days from 1993 to 2018.

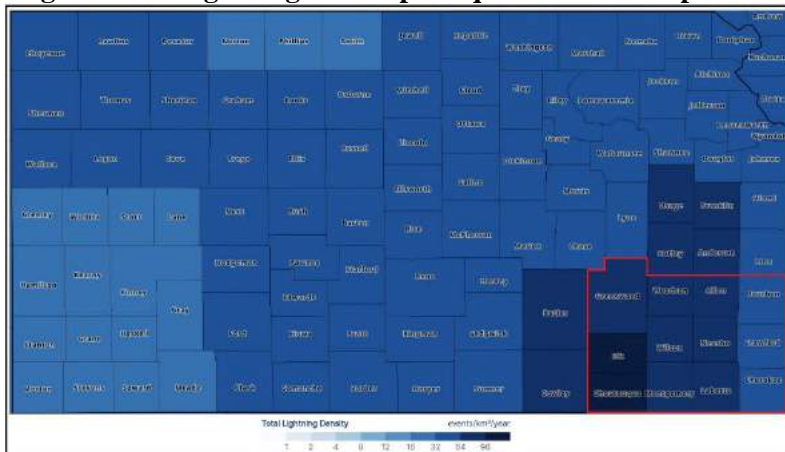
**Map 89: Annual Mean Thunderstorm Days, 1993-2018**



Source: NOAA

The following map, from Vaisala, indicates the average annual light events per square kilometer per year for Kansas Region H.

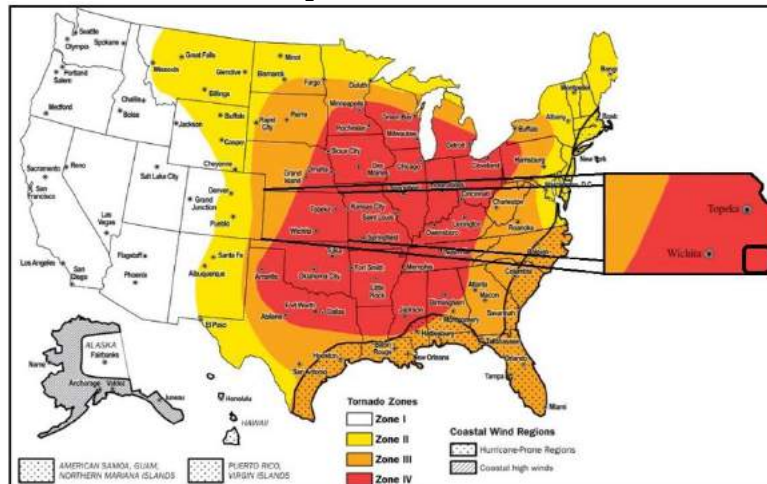
**Map 90: Average Annual Lightning Events per Square Kilometer per Year, 2016 - 2022**



Source: Vaisala

The following maps from FEMA indicate the highest possible expected wind speeds for Kansas Region H.

**Map 91: Wind Zones**



Source: FEMA

### 4.13.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The following table details Presidential Disaster Declarations related to severe storms.

**Table 102: Kansas Region H Presidentially Declared Disasters**

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4747-KS	10/26/2023	Severe Storms, Straight-Line Winds, Tornadoes, and Flooding	Allen, Woodson	-
DR-4499-KS	8/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Allen, Chautauqua, Cherokee, Elk, Greenwood, Montgomery, Neosho, Wilson, Woodson	\$51,157,548

In addition to the Presidentially Declared Disasters, the following table presents NCEI identified Severe Weather events and the resulting damage totals in Kansas Region H from 2009 to 2023:

**Table 103: NCEI Kansas Region H Severe Weather Events**

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Allen	Hail	31	\$372,500	0
	Lightning	0	\$0	0
	Winds	43	\$1,158,000	2
Bourbon	Hail	34	\$32,025,000	0
	Lightning	5	\$27,000	0
	Winds	45	\$1,828,000	0
Chautauqua	Hail	36	\$0	0
	Lightning	0	\$0	0
	Winds	42	\$228,500	0
Cherokee	Hail	63	\$515,000	0
	Lightning	0	\$0	0
	Winds	76	\$5,567,000	2
Crawford	Hail	43	\$260,000	0
	Lightning	0	\$0	0
	Winds	36	\$241,000	1
Elk	Hail	22	\$1,000	0
	Lightning	0	\$0	0
	Winds	19	\$335,450	0
Greenwood	Hail	45	\$1,075,000	0
	Lightning	1	\$30,000	0
	Winds	54	\$255,500	0
Labette	Hail	44	\$500	0
	Lightning	2	\$107,000	0
	Winds	52	\$1,055,000	3
Montgomery	Hail	59	\$5,155,000	0
	Lightning	1	\$0	0
	Winds	76	\$916,200	0
Neosho	Hail	25	\$0	0
	Lightning	1	\$25,000	1
	Winds	49	\$867,100	3
Wilson	Hail	33	\$0	0
	Lightning	1	2,0000	1



**Table 103: NCEI Kansas Region H Severe Weather Events**

County	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
	Winds	29	\$950,500	3
Woodson	Hail	24	\$0	0
	Lightning	0	\$0	1
	Winds	22	\$102,250	3

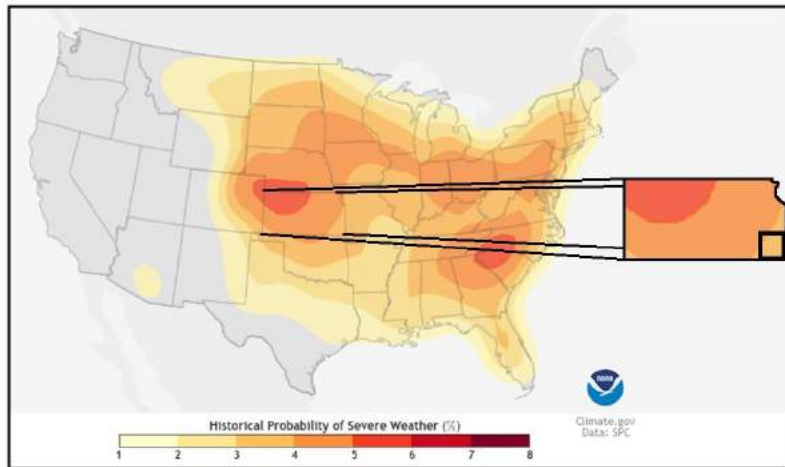
Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

**4.13.4 Probability of Future Events**

Predicting the probability of Severe Weather occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Data from NOAA indicates that Kansas Region H can expect between 27 – 45 severe weather events per year. Additionally, the following map from NOAA provides a snapshot for the probability of a severe weather event on a summer day.

**Map 92: Historic Probability of a Severe Weather Summer Event In Kansas Region H**



Source: NOAA

Based on historical occurrences, Kansas Region H will continue to experience Severe Weather events on an annual basis. The following tables, using data from the NCEI, indicate the yearly probability of a Severe Weather component event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region H.

**Table 104: Kansas Region H NCEI Hail Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	31	2	0	0	\$372,500	\$24,833
Bourbon	34	2	0	0	\$32,025,000	\$2,135,000
Chautauqua	36	2	0	0	\$0	\$0
Cherokee	63	4	0	0	\$515,000	\$34,333
Crawford	43	3	0	0	\$260,000	\$17,333
Elk	22	1	0	0	\$1,000	\$67

**Table 104: Kansas Region H NCEI Hail Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Greenwood	45	3	0	0	\$1,075,000	\$71,667
Labette	44	3	0	0	\$500	\$33
Montgomery	59	4	0	0	\$5,155,000	\$343,667
Neosho	25	2	0	0	\$0	\$0
Wilson	33	2	0	0	\$0	\$0
Woodson	24	2	0	0	\$0	\$0

Source: NCEI

**Table 105: Kansas Region H NCEI Lightning Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	0	0	0	0	\$0	\$0
Bourbon	5	0	0	0	\$27,000	\$1,800
Chautauqua	0	0	0	0	\$0	\$0
Cherokee	0	0	0	0	\$0	\$0
Crawford	0	0	0	0	\$0	\$0
Elk	0	0	0	0	\$0	\$0
Greenwood	1	0	0	0	\$30,000	\$2,000
Labette	2	0	0	0	\$107,000	\$7,133
Montgomery	1	0	0	0	\$0	\$0
Neosho	1	0	1	<1	\$25,000	\$1,667
Wilson	1	0	1	<1	20,000	\$1,333
Woodson	0	0	1	<1	\$0	\$0

Source: NCEI

**Table 106: Kansas Region H NCEI Strong Wind Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	43	3	2	<1	\$1,158,000	\$77,200
Bourbon	45	3	0	0	\$1,828,000	\$121,867
Chautauqua	42	3	0	0	\$228,500	\$15,233
Cherokee	76	5	2	<1	\$5,567,000	\$371,133
Crawford	36	2	1	<1	\$241,000	\$16,067
Elk	19	1	0	0	\$335,450	\$22,363
Greenwood	54	4	0	0	\$255,500	\$17,033
Labette	52	3	3	<1	\$1,055,000	\$70,333
Montgomery	76	5	0	0	\$916,200	\$61,080
Neosho	49	3	3	<1	\$867,100	\$57,807
Wilson	29	2	3	<1	\$950,500	\$63,367
Woodson	22	1	3	<1	\$102,250	\$6,817

Source: NCEI

**4.13.5 Projected Changes in Location, Intensity, Frequency, and Duration**

Climate change can have several impacts on Severe Weather, although the precise details can vary depending on regional climate patterns and other factors. In general, it is believed that climate change can alter the timing and seasonality of Severe Weather. In some cases, this may mean more severe weather events occurring earlier or later in the year.

Climate change can lead to increased temperatures and moisture levels in the atmosphere, which can provide favorable conditions for the development of Severe Weather. This can result in a higher frequency of Severe Weather events and an increase in their intensity. As a result of increased temperatures, warmer air can hold more moisture, leading to increased rainfall during Severe Weather. This can elevate the risk of flash flooding, particularly in areas prone to heavy precipitation. Changes in atmospheric circulation patterns associated with climate change can lead to stronger winds within thunderstorms. This can result in more powerful wind gusts, increasing the risk of wind damage and downed trees and power lines.

Climate change can influence the conditions necessary for hail formation. Warmer temperatures at the surface and greater instability in the atmosphere can contribute to larger and more damaging hailstones. Additionally, changes in atmospheric conditions can affect the frequency and distribution of lightning strikes. More lightning can increase the risk of wildfires in dry regions.

It is important to note that while there is evidence linking climate change to changes in weather patterns that can influence Severe Weather, predicting specific events remains challenging. Climate models provide valuable insights into long-term trends, but individual severe weather events are influenced by a complex interplay of factors.

#### **4.13.6 Vulnerability and Impact**

Severe Weather can have a wide range of effects on people, often posing significant risks to life, property, and general well-being. In the absence of proper shelter, hail, lightning, and high winds can cause serious injury. In general, if potentially exposed persons take shelter in a solid, well-constructed structure protection from these Severe Weather components would be provided. However, old or poorly constructed facilities may be more prone to damage, potentially increasing the impact on economically disadvantaged populations. Some of the potential effects of Severe Weather on people may include:

- **Death and Injury:** Severe weather can produce lightning and strong winds driving debris. Both of these elements can cause injuries or fatalities.
- **Power Outages:** Lightning strikes, strong winds, and falling trees can lead to power outages, disrupting daily life, and potentially affecting essential services, such as medical equipment and refrigeration.
- **Mental Health Impact:** Severe Weather can be frightening and stressful, leading to anxiety and post-traumatic stress disorder in some individuals. The emotional toll of property damage and loss can also be significant.
- **Displacement:** People may need to evacuate their homes or be temporarily displaced due to storm damage, requiring emergency shelter and support.
- **Economic Costs:** Severe Weather result in economic costs, including repair and recovery expenses, insurance claims, and potential loss of income due to property damage or work disruptions.
- **Public Safety Response:** Severe Weather can strain public safety resources, including emergency services, law enforcement, and medical facilities.

All facilities within Kansas Region H can be impacted by Severe Weather, including critical facilities. However, the location and construction of the facility will have a significant impact on the vulnerability. In general, older structures would be at higher risk of negative impacts. Some of the potential impacts include:

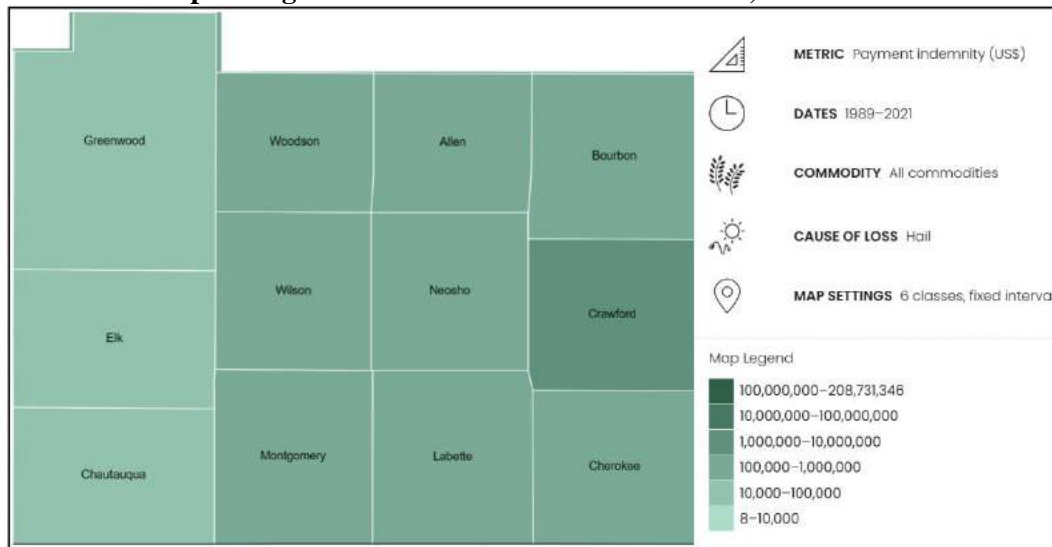
- **Electrical Infrastructure Damage:** Severe Weather can damage electrical infrastructure, including power lines, transformers, and substations. This can result in widespread power outages, affecting homes, businesses, hospitals, and other critical facilities.
- **Communication Disruptions:** Severe weather can disrupt telecommunications infrastructure, including cell towers, data centers, and communication networks. This can impact emergency communication and coordination efforts.
- **Transportation Disruptions:** Heavy rain, strong winds, and flooding can damage roads, bridges, and transportation networks. This can lead to transportation disruptions, accidents, and delays, affecting the movement of goods and people.

- **Airport Closures:** Severe weather can force the closure of airports due to safety concerns, affecting air travel and cargo shipments.
- **Water and Wastewater Systems:** Severe storms can overwhelm water treatment plants and wastewater facilities, leading to contamination and water supply disruptions. Flooding can also damage water infrastructure.
- **Critical Facilities:** Hospitals, emergency response centers, and other critical facilities may be affected by power outages, flooding, and damage to infrastructure. This can impact the ability to provide essential services during and after the storm.
- **Energy Generation:** Severe weather can disrupt energy generation facilities, such as wind farms and solar installations, and damage conventional power plants. This can affect the availability of electricity.
- **Safety Risks:** Damage to infrastructure can pose safety risks to workers and the public. Fallen power lines, damaged buildings, and debris can be hazardous.

Severe Weather can pose various risks to the environment. These risks can have both short-term and long-term impacts on natural ecosystems. Severe Weather can produce heavy rainfall over a short period of time, leading to flash floods and riverine flooding. This can result in soil erosion, damage to aquatic habitats, and the displacement of aquatic organisms. Large hailstones can damage crops, vegetation, and natural habitats. Hail can strip leaves from trees and plants, reducing their ability to photosynthesize and grow. It can also damage wildlife habitats. Severe Weather often produce strong straight-line winds. These winds can uproot trees, damage forests, and disrupt animal habitats. They can also scatter debris and cause structural damage to buildings, which can lead to further environmental issues if hazardous materials are released. Lightning is a common occurrence during severe weather and can spark wildfires. These wildfires can have significant ecological impacts, including habitat destruction, loss of wildlife, and changes in the local ecosystem.

Hail events can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to hail events from 1989 to 2021:

**Map 93: Agricultural Losses Due to Hail Events, 1989 to 2021**



Source: USDA

Severe Weather can pose various risks to government operations. These risks can have significant economic and operational consequences, and can include:

- **Power Outages:** Severe Weather can lead to power outages by damaging electrical infrastructure such as power lines and substations. Government buildings may lose power, affecting critical operations and services.
- **Flooding:** Heavy rainfall during Severe Weather can lead to flooding, which can damage government buildings and disrupt operations. Flood damage may require extensive repairs and cleanup.

- **Communication Disruptions:** Lightning strikes can damage communication equipment, including telephone lines and computer systems. This can hinder communication between government agencies and the public.
- **Transportation Disruptions:** Severe Weather can make roads impassable due to flooding or fallen trees. This can impact the ability of government employees to commute to work and can disrupt the delivery of goods and services.
- **Emergency Response:** Severe Weather may require the activation of emergency response plans. This can strain resources and personnel, especially if the storms lead to widespread damage or evacuations.
- **Loss of Records and Data:** Flooding or equipment damage can result in the loss of important records and data stored in government buildings. This can have legal and operational implications.
- **Budgetary Impact:** The costs associated with repairing and restoring government buildings and infrastructure after Severe Weather can strain budgets.

**Potentially Vulnerable Community Lifelines**

Severe Weather can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that severe weather conditions place on infrastructure, resources, and operational processes. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 107: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Electrical Service	\$199
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Severe Weather can have significant impacts on electrical utilities, leading to disruptions in power supply and potential damage to infrastructure. Severe Weather can affect electrical utilities in the following ways:

- **Lightning Strikes:** Lightning is a common occurrence during severe weather and poses a substantial risk to electrical infrastructure. Lightning strikes can damage power lines, transformers, substations, and other critical components, leading to power outages.
- **Wind Damage:** High winds associated with Severe Weather can cause trees, branches, and other debris to fall onto power lines. This can result in downed power lines, structural damage to utility poles, and disruptions in electrical service.
- **Hailstorms:** Severe Weather may produce hail, which can damage power lines, transformers, and other equipment. Hailstones can also lead to short circuits and insulation damage on electrical components.
- **Power Surges:** Lightning strikes, strong winds, and other storm-related events can lead to power surges in the electrical grid. These surges can damage electronic devices, appliances, and utility equipment connected to the power supply.

In order to reduce plan duplication, mapping concerning electrical generation plants, high capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

Communications systems within Kansas Region H may have an increased vulnerability to Severe Weather events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement
- Emergency Medical Services
- Fire

Severe storms can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Physical Infrastructure Damage:** High winds, heavy rainfall, and other severe weather conditions can cause physical damage to communication infrastructure such as cell towers, antennas, cables, and data centers. This damage can result in network outages and disruptions.
- **Power Outages:** Severe storms often lead to power outages, which can affect the operation of communication networks. Without a stable power supply, cell towers, data centers, and other critical components may become non-functional, leading to service interruptions.
- **Lightning Strikes:** Lightning poses a threat to communication infrastructure. Direct strikes or induced surges can damage electronic equipment, leading to the need for repairs or replacements and causing downtime.
- **Signal Interference:** Severe storms can create electromagnetic interference that disrupts radio signals used in wireless communication. This interference can lead to poor signal quality, dropped calls, and slower data speeds.
- **Loss of Backhaul Connectivity:** Severe weather events can damage the backhaul infrastructure that connects various communication nodes. This backbone infrastructure is crucial for transmitting data between local and regional networks, and any disruption can impact overall network performance.
- **Communication Tower Instability:** High winds and extreme weather conditions can compromise the stability of communication towers. If towers are not designed to withstand severe weather, they may collapse, leading to network outages.
- **Network Congestion:** In the event of a disaster, communication networks may experience a surge in usage as people attempt to contact emergency services, friends, and family. This increased demand can lead to network congestion, making it difficult for users to connect.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. The following data, from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency, indicates cost ranges for communications system components:

**Table 108: Summary of Communication System Component Costs**

<b>Components</b>	<b>Examples</b>	<b>Cost</b>	<b>Expected Lifespan</b>
Infrastructure	Towers, shelters, commercial and backup power equipment,	\$\$\$-\$\$\$\$\$	20–25 years
Fixed Station Equipment	Antennas, repeaters, towers on wheels, consoles, mobile stations, servers, computers, physical and electronic security elements (e.g., fencing, cameras, monitors, environmental conditions)	\$\$-\$\$\$	3-15 years
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	\$\$-\$\$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, air cards, intercoms	\$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliant services, Over-the-Air-Programming, automatic roaming	\$\$-\$\$\$	-
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	\$\$-\$\$	-

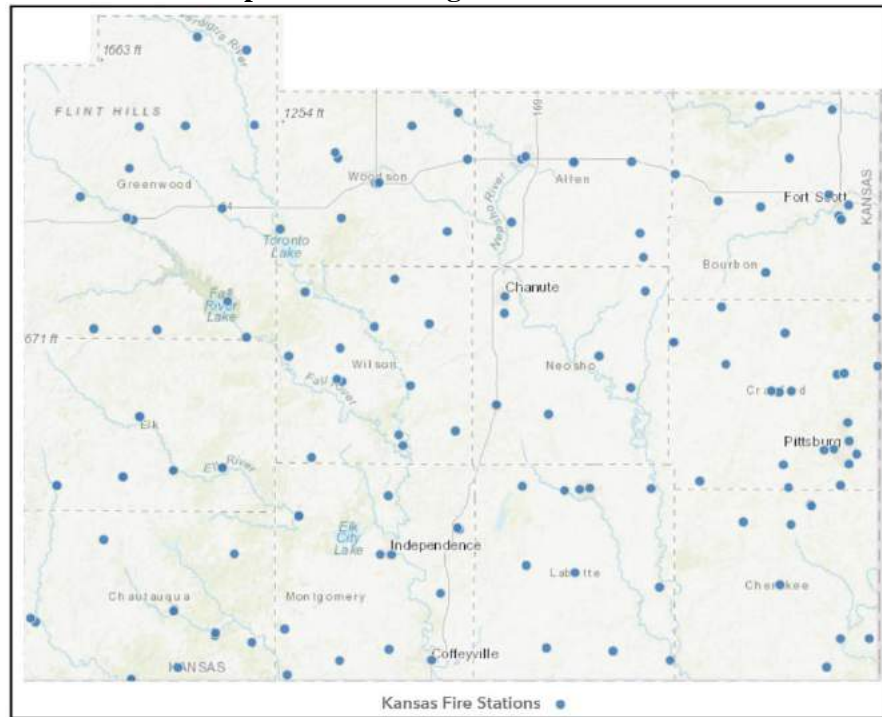
Source: U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Severe Weather can have various impacts on emergency response efforts, affecting the ability of emergency services to effectively manage and address the consequences of the storm. Some potential impacts include:

- **Increased Call Volume:** Severe weather events typically result in a surge in emergency calls, overwhelming call centers and emergency hotlines. This can lead to delays in response times and increased stress on emergency services.
- **Infrastructure Damage:** High winds associated with Severe Weather can cause trees and power lines to fall, leading to road blockages and posing safety hazards. Infrastructure damage may slow down emergency response and increase the complexity of rescue operations.
- **Search and Rescue Challenges:** Storms can generate debris, making search and rescue operations more challenging. Flooded areas may hide hazards beneath the water surface, and strong winds can complicate helicopter or drone operations.
- **Evacuations:** Severe Weather may necessitate evacuations, requiring emergency responders to manage shelters for displaced individuals. Providing adequate shelter, food, and medical care becomes a priority.
- **Resource Allocation:** Emergency response agencies must strategically allocate resources to address the most urgent needs during and after a Severe Weather. This includes deploying personnel, equipment, and supplies to the most affected areas.

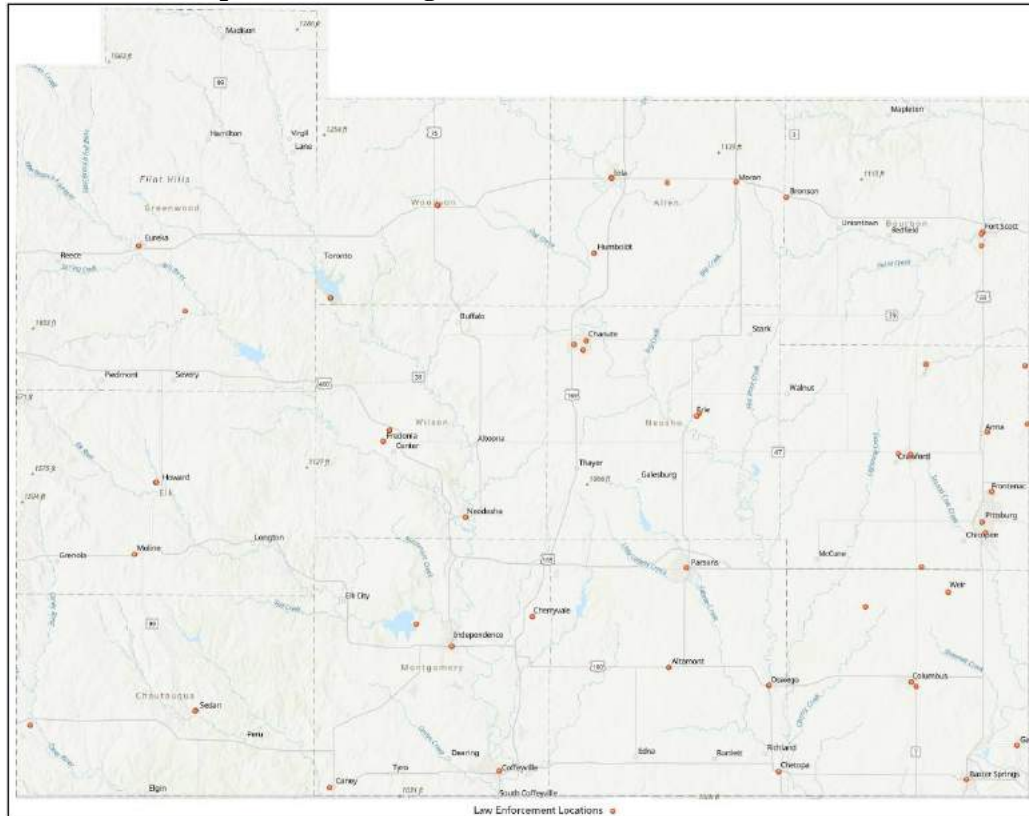
The following map, from the State of Kansas Geoportal, details the location of fire stations throughout Kansas Region H:

**Map 94: Kansas Region H Fire Stations**



Source: State of Kansas GIS

## Map 95: Kansas Region H Law Enforcement Locations



Source: State of Kansas GIS

Hospitals and other smaller medical facilities may see an increase in Severe Weather related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Section 4.10, Map 41.

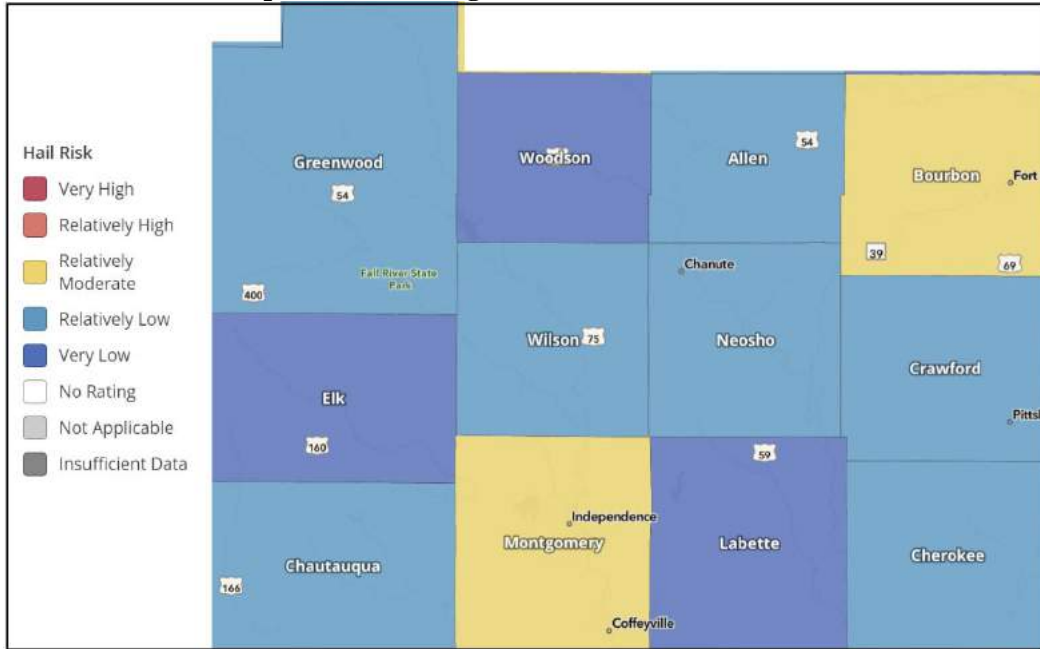
Severe Weather can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

### **FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from the components of Severe Weather (hail, lightning, and strong winds):



**Map 96: Kansas Region H FEMA NRI Hail Risk**



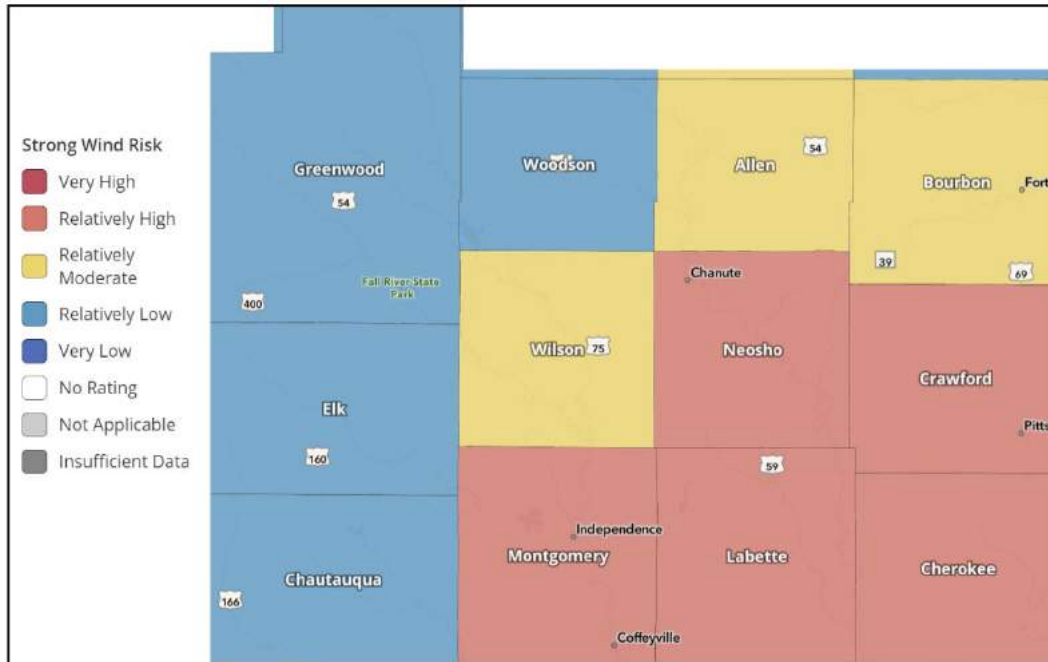
Source: FEMA NRI

**Map 97: Kansas Region H FEMA NRI Lightning Risk**



Source: FEMA NRI

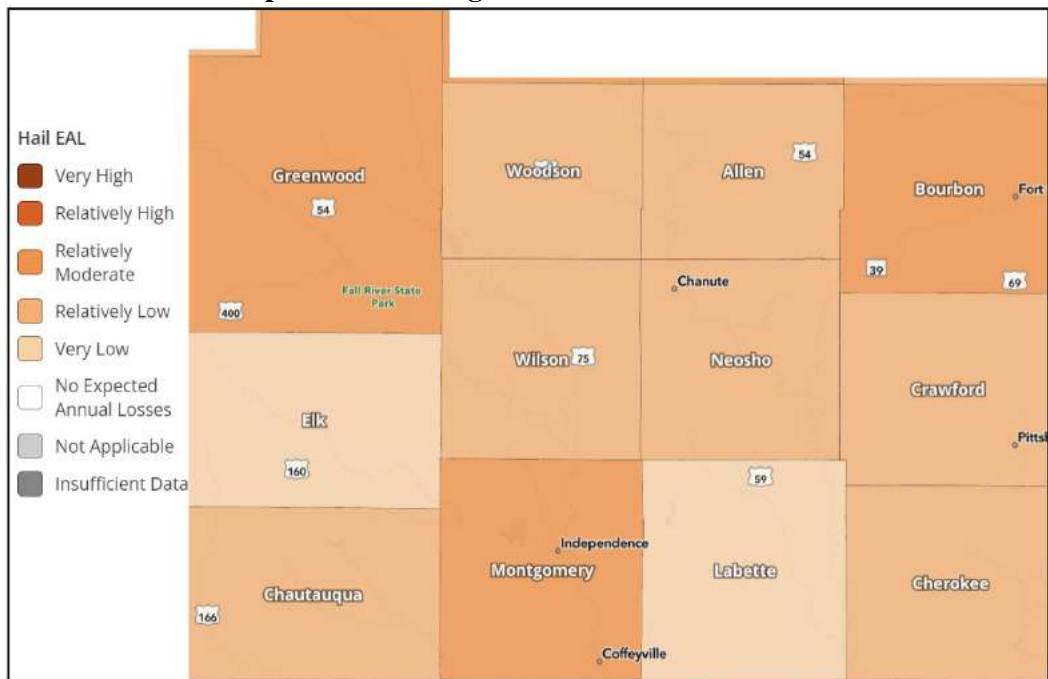
**Map 98: Kansas Region H FEMA NRI Strong Wind Risk**



Source: FEMA NRI

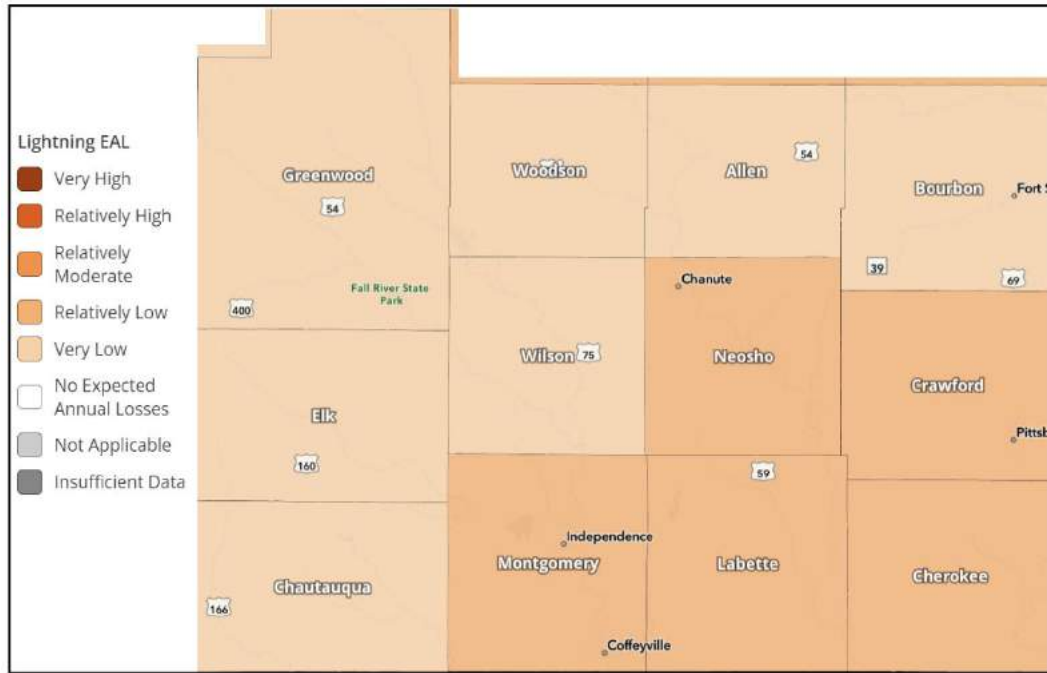
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for the components of Severe Weather (hail, lightning, and strong winds) for participating counties within Kansas Region H:

**Map 99: Kansas Region H FEMA NRI Hail EAL**



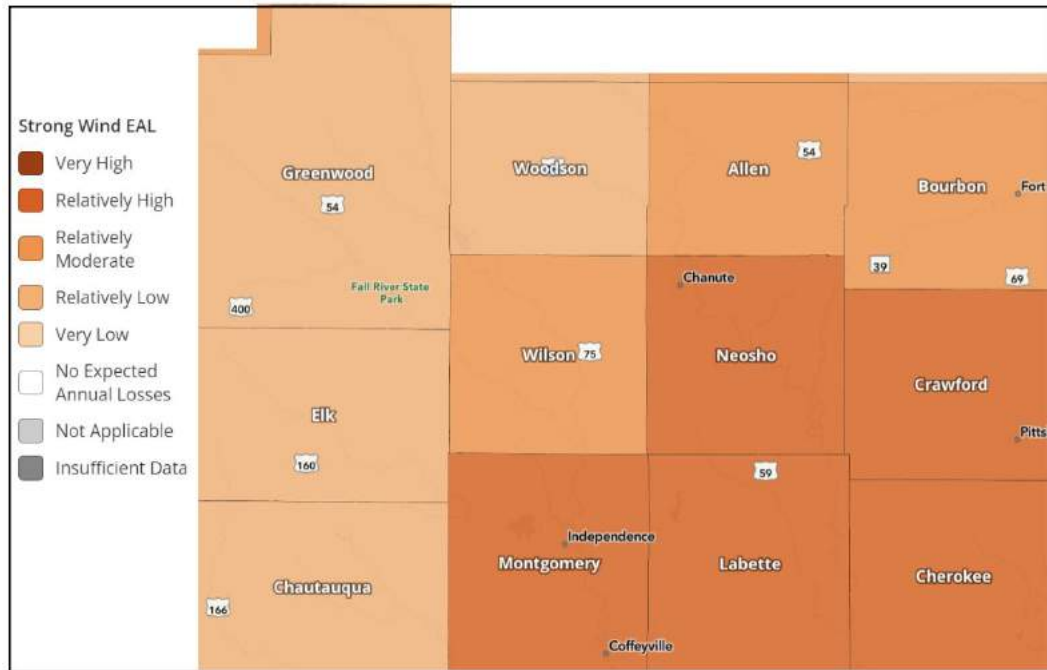
Source: FEMA NRI

**Map 100: Kansas Region H FEMA NRI Lightning EAL**



Source: FEMA NRI

**Map 101: Kansas Region H FEMA NRI Strong Wind EAL**



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for extreme heat and extreme cold:

**Table 109: Kansas Region H FEMA NRI and EAL for Hail by County**

County	Risk Index	EAL
Allen	Relatively Low	Relatively Low
Bourbon	Relatively Moderate	Relatively Moderate
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively Low	Relatively Low
Crawford	Relatively Low	Relatively Low
Elk	Very Low	Very Low
Greenwood	Relatively Low	Relatively Moderate
Labette	Very Low	Very Low
Montgomery	Relatively Moderate	Relatively Moderate
Neosho	Relatively Low	Relatively Low
Wilson	Relatively Low	Relatively Low
Woodson	Very Low	Relatively Low

Source: FEMA NRI

**Table 110: Kansas Region H FEMA NRI and EAL for Lightning by County**

County	Risk Index	EAL
Allen	Very Low	Very Low
Bourbon	Very Low	Very Low
Chautauqua	Very Low	Very Low
Cherokee	Relatively Low	Relatively Low
Crawford	Relatively Low	Relatively Low
Elk	Very Low	Very Low
Greenwood	Very Low	Very Low
Labette	Relatively Low	Relatively Low
Montgomery	Relatively Low	Relatively Low
Neosho	Relatively Low	Relatively Low
Wilson	Very Low	Very Low
Woodson	Very Low	Very Low

Source: FEMA NRI

**Table 111: Kansas Region H FEMA NRI and EAL for Strong Wind by County**

County	Risk Index	EAL
Allen	Relatively Moderate	Relatively Moderate
Bourbon	Relatively Moderate	Relatively Moderate
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively High	Relatively High
Crawford	Relatively High	Relatively High
Elk	Relatively Low	Relatively Low
Greenwood	Relatively Low	Relatively Low
Labette	Relatively High	Relatively High
Montgomery	Relatively High	Relatively High
Neosho	Relatively High	Relatively High
Wilson	Relatively Moderate	Relatively Moderate
Woodson	Relatively Low	Relatively Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 112: Severe Weather Consequence Analysis**

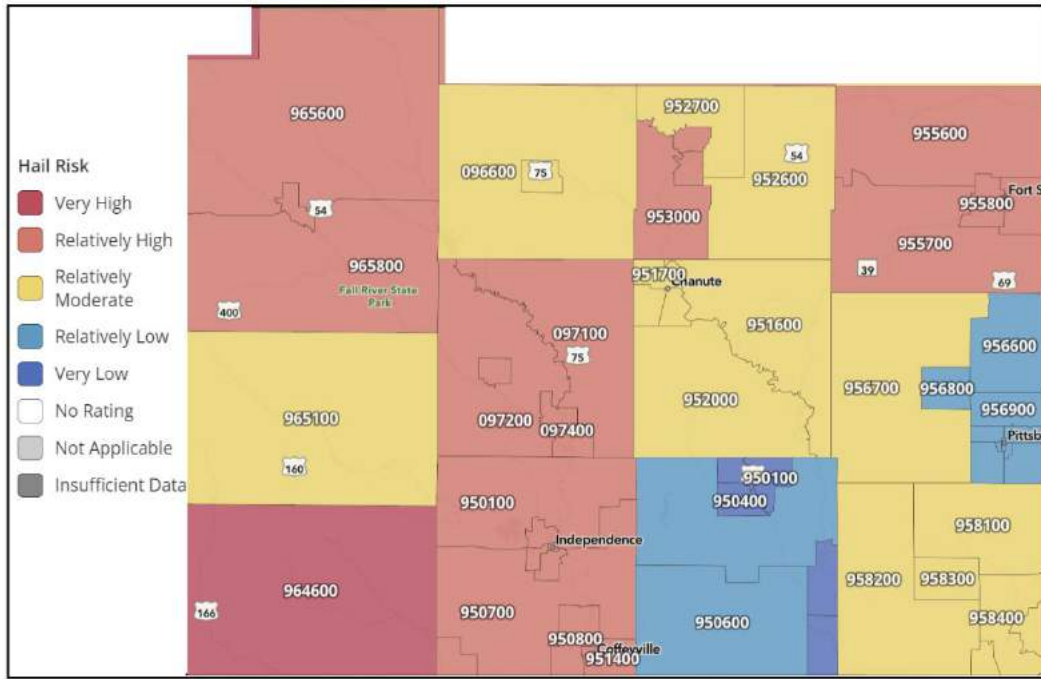
Subject	Potential Impacts
Impact on the Public	Severe weather can cause extensive property damage, loss of utility service, and injury to the public. Those most at-risk are low-income and homeless individuals without proper shelter.
Impact on Responders	First responders may be unable to access roadways due to flooding, trees, or debris. Exposure to lightning, flooding, and high winds may cause injuries to first responders. Vehicles and resources may be damaged, leading to impaired response activities. In addition, road conditions may become hazardous as a result of the by-products
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Severe Weather may impact an agency’s ability to maintain continuity of operations due to power outages, flooding, and wind damage. If the activation of alternate facilities was required, travel may be difficult as well as computer/network access due to long-term power outages caused by severe weather.
Delivery of Services	Delivery of services may be impaired by flooding, obstruction, and damage to roadways and resources. The ability to deliver goods and services will be impacted locally, regionally, or statewide depending on the magnitude of the event. Goods, equipment, and vehicles may become damaged during transport.
Property, Facilities, and Infrastructure	Power lines and power generators are most at risk from severe weather and impacts could result in isolated power outages or full-scale blackouts. Building and vehicle damage can occur from hail and other debris created by severe weather. Properties and critical facilities also may face foundational and physical damage due to flooding, lightning strike, or excessive winds, delaying response and recovery operations.
Impact on Environment	Waste and debris from damage treatment infrastructure or hazardous materials facilities could contaminate sources of water and food. Debris can impact and contaminate wildlife and natural areas. Lightning strikes may also ignite fires, leading to destruction of agricultural crops, critical ecosystems, and natural habitats.
Economic Conditions	Flooding, high winds, lightning, and hail can stress state and local resources. Even if some of the costs can be recouped through federal reimbursements (federal disaster declaration), there is a fiscal impact on the local government.
Public Confidence in Governance	Ineffective response can decrease the public’s confidence in the ability to respond and govern. Governmental response across local, state, regional, and federal levels require direct actions that must be immediate and effective to maintain public confidence.

**4.13.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to severe weather of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

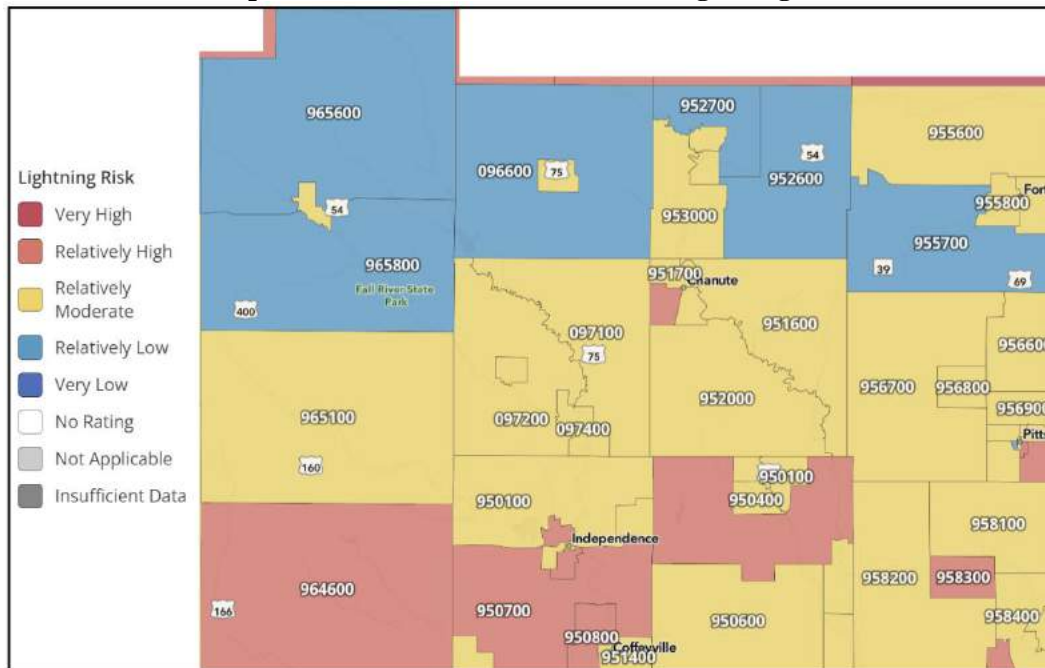
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from the components of Severe Weather (hail, lightning, and strong winds):

**Map 102: FEMA NRI Jurisdictional Hail Risk**



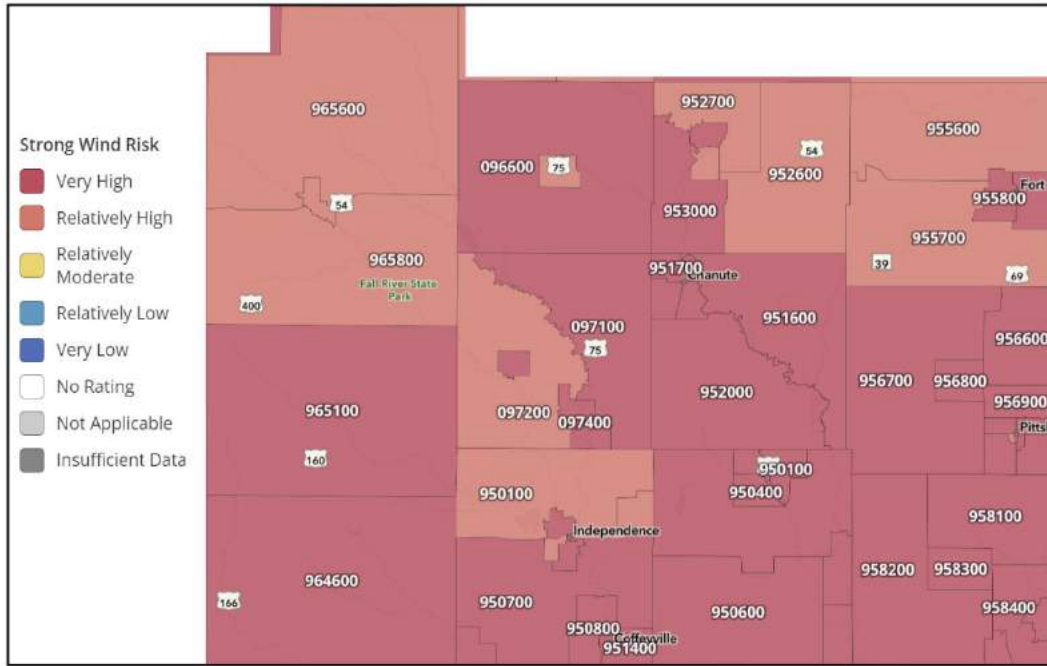
Source: FEMA NRI

**Map 103: FEMA NRI Jurisdictional Lightning Risk**



Source: FEMA NRI

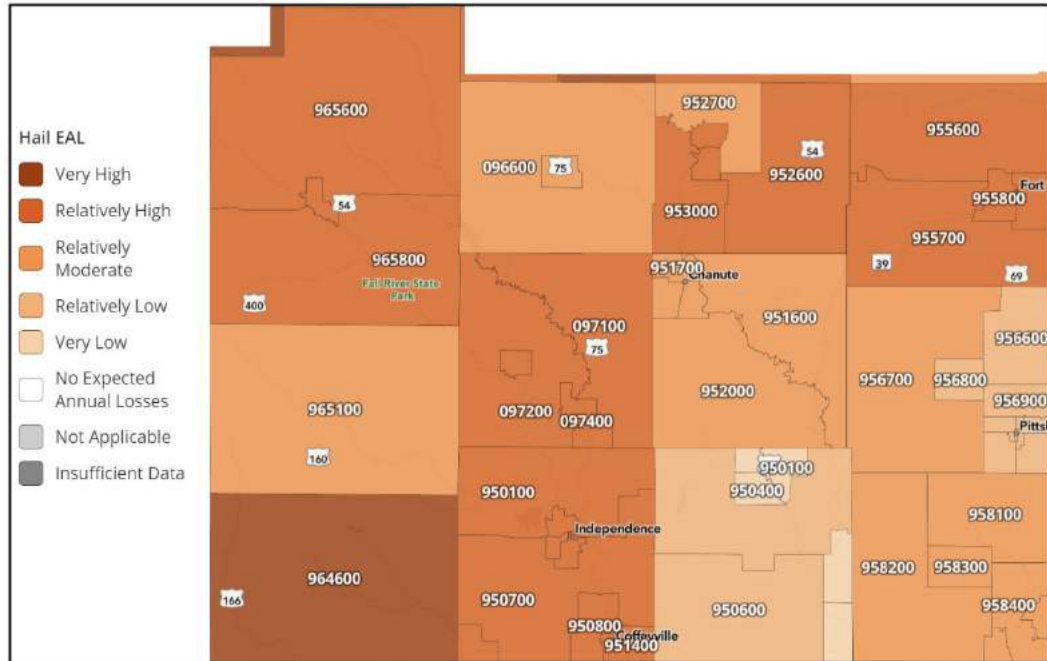
**Map 104: FEMA NRI Jurisdictional Strong Wind Risk**



Source: FEMA NRI

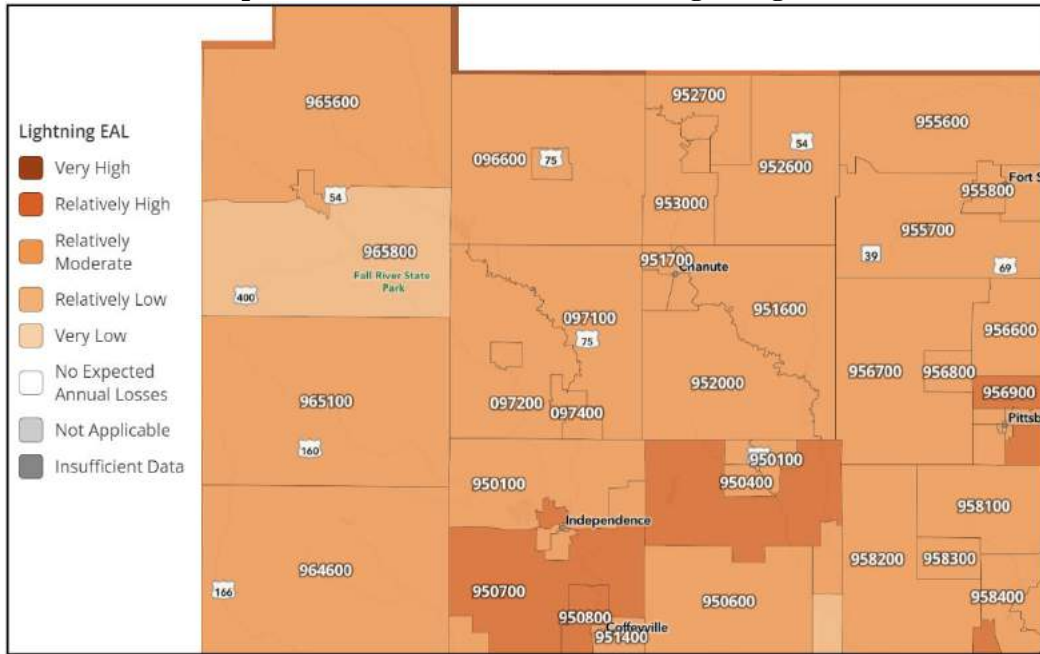
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for the components of Severe Weather (hail, lightning, and strong winds) for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 105: FEMA NRI Jurisdictional Hail EAL**



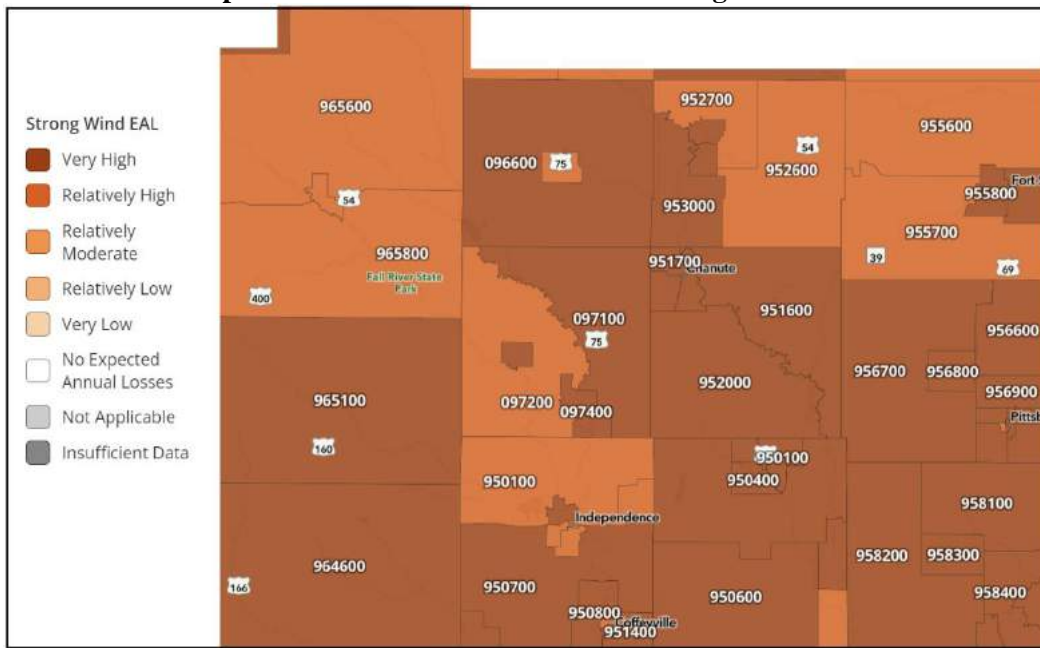
Source: FEMA NRI

**Map 106: FEMA NRI Jurisdictional Lightning EAL**



Source: FEMA NRI

**Map 107: FEMA NRI Jurisdictional Strong Wind EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Kansas Region H citizens living in mobile homes may have an increased vulnerability to Severe Weather. Please see section 3.6 for more details on the percentage of mobile homes for each participating county.



## 4.14 Severe Winter Weather

### 4.14.1 Hazard Description

A winter storm encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

This plan defines winter storms as a combination of the following winter weather effects as defined by NOAA and the NWS.

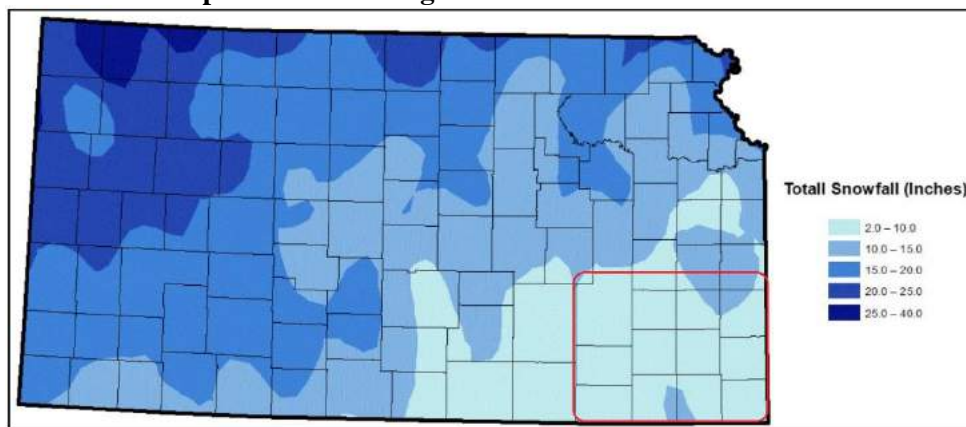


- **Ice Storm:** An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication, and make travel extremely dangerous. Significant ice accumulations are usually accumulations of ¼" or greater.
- **Heavy Snow:** This generally means snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less.
- **Winter Storm:** Hazardous winter weather in the form of heavy snow, freezing rain, or heavy sleet. It may also include extremely low temperatures and increased wind.
- **Cold Wave/Extreme Cold:** As described by NWS, a cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. As evidenced by past incidents across the U.S., extreme cold can cause impact to human life and property.

### 4.14.2 – Location and Extent

Winter storms occur regularly throughout Kansas Region H. These events occur on a large geographic scale, often affecting multiple counties, regions, and states. Winter storms typically form with warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted and when it is, the window of notification is up to few hours to under an hour. Although meteorologists estimate the amount of snowfall a winter storm will drop, it is not known exactly how much snow will fall, whether or not it will form an ice storm, or how powerful the winds will be until the storm is already affecting a community. The following map from Kansas State University indicates that the average annual snowfall for Kansas Region H:

**Map 108: Kansas Region H Normal Annual Snowfall**



Source: NOAA

The Northeast Snowfall Impact Scale is a scale used to assess and rank the impact of snowfall events in the northeastern United States, but allows for an idea of intensity for Kansas Region H. It was developed by NOAA to provide a standardized way of measuring the societal and economic impacts of snowstorms. The scale takes into account factors such as snowfall amount, population density, and the area affected by the storm to determine its impact. The scale has five categories, each with its own associated impacts:

**Table 113: Snowfall Impact Scale**

Category	Description	Impacts
1	Notable	Light to moderate snowfall. Limited impacts on transportation and daily life. Typically localized to small areas.
2	Significant	Moderate to heavy snowfall. Widespread impacts on transportation, including delays and disruptions. Some school and business closures. Widespread power outages are rare.
3	Major	Heavy snowfall, often exceeding one foot or more. Significant transportation disruptions, including major highway closures. Widespread school and business closures. Power outages may occur, especially in areas with wet, heavy snow.
4	Crippling	Extreme snowfall, often exceeding two feet or more. Severe and prolonged transportation disruptions, including highway closures. Widespread school and business closures for an extended period. Widespread and prolonged power outages, especially in areas with ice accumulation.
5	Extreme	Exceptional snowfall, often exceeding three feet or more. Complete paralysis of transportation systems, including major highways and airports. Extended school and business closures. Widespread and prolonged power outages with significant damage to the electrical infrastructure.

Source: NOAA

The scale provides information for emergency management, public safety agencies, and the public to understand the potential impacts of a snowstorm and to prepare accordingly. It helps to quantify and communicate the severity of winter weather events, especially where snowfall can have a major impact on daily life and the economy.

Ice storms are characterized by the accumulation of freezing rain or freezing drizzle, which coats surfaces with a layer of ice. These storms can have significant impacts on transportation, infrastructure, and the environment. Ice storms occur when there's a layer of warm air above a layer of cold air near the surface. Precipitation falls as rain in the warm layer and then freezes upon contact with surfaces at or below freezing temperatures in the cold layer. The most common type of precipitation during an ice storm is freezing rain. This is rain that falls as a liquid but freezes upon contact with cold surfaces, forming a layer of ice.

The Sperry–Piltz Ice Accumulation Index is an ice accumulation and ice damage prediction index that, when combined with NWS data, predicts the projected footprint, total ice accumulation, and resulting potential damage from approaching ice storms.

**Figure 2: Sperry–Piltz Ice Accumulation Index**

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Source: Sperry–Piltz Ice Accumulation Index

#### 4.14.3 Previous Occurrence

The following table presents NCEI identified ice storm and winter storm events and the resulting damage totals in Kansas Region H from 2014 to 2023. This data is presented regionally as these storms tend to cover large areas.

**Table 114: NCEI Kansas Region H Winter Storm Events**

Region	Event Type	Number of Days with Events	Property Damage	Deaths and Injuries
Kansas Region H	Blizzard	2	\$0	0
	Ice Storm	3	\$70,000	0
	Winter Storm	20	\$2,322,000	0

Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

#### 4.14.4 Probability of Future Events

Predicting the probability of winter storm occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Data from NOAA and the NWS indicate that Kansas Region H can expect an average annual snowfall of between two to 15 inches per year.

Based on historical occurrences, Kansas Region H will continue to experience severe winter storm events on an annual basis. The following table, using data from the NCEI, indicates the yearly probability of a severe winter storm event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region H.

**Table 115: Kansas Region H NCEI Severe Winter Storm Event Probability Summary**

Event Type	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Blizzard	2	<1	0	0	\$0	\$0
Ice Storm	3	<1	0	0	\$70,000	\$4,667
Winter Storm	20	1	0	0	\$2,322,000	\$154,800

Source: NCEI

#### 4.14.5 Projected Changes in Location, Intensity, Frequency, and Duration

Climate change can lead to greater variability in precipitation patterns. In Kansas Region H, this may result in more erratic winter storms with periods of heavy snowfall followed by rain or freezing rain. These mixed precipitation events can make winter storms more challenging to predict and can lead to a greater risk of ice accumulation. Additionally, Kansas Region H may experience milder winters as average temperatures rise due to climate change. While this could lead to a decrease in the frequency of traditional snowstorms, it may also increase the likelihood of winter storms that produce mixed precipitation, including freezing rain and sleet. Warmer temperatures can lead to a higher snowfall threshold, meaning that storms that would have produced snow in the past may now bring more rain or a mix of precipitation types. This can affect the accumulation of snow in the state. Changes in atmospheric circulation patterns associated with climate change can influence the tracks of winter storms. This could lead to a shift in the amounts of heavy snowfall, ice, and other winter weather hazards in Kansas Region H.

#### 4.14.5 Vulnerability and Impact

All of Kansas Region H is vulnerable to winter and ice storms. Based on the non-geographic specific aspect of this hazard, i.e., no one area is at a greater risk, all of the planning area’s structural inventory and population is vulnerable.

Extremely cold temperatures are a threat to anyone exposed to them. Extreme cold can cause frostbite and hypothermia. Bitterly cold temperatures can also burst water and create an excessive demand on providers to deliver energy for household heating. There are also fire dangers associated with home heating. Heavy snow and/or ice can paralyze communities. Roads can become hazardous which may cause accidents, disrupted flow of supplies, and challenges in the delivery of emergency and medical services. Additional impacts on people and the community may include:

- **Injuries and Fatalities:** Slippery sidewalks, roads, and driveways can lead to slip and fall accidents, vehicle crashes, and pedestrian injuries. Exposure to extreme cold temperatures can cause frostbite, hypothermia, and cold-related illnesses, which can be life-threatening.
- **Power Outages:** Heavy snow, ice, and freezing rain can bring down power lines and disrupt electricity supply. Power outages can lead to heating and lighting challenges, particularly in extreme cold conditions.
- **Transportation Disruptions:** Winter storms can make roads and highways treacherous, leading to travel delays, accidents, and stranded motorists. Public transportation services may be disrupted, affecting commuters and essential travel.
- **Stranded or Isolated Communities:** Severe winter weather can leave communities isolated and cut off from emergency services and supplies. Residents may need to shelter in place or rely on local resources until conditions improve.
- **Health Risks:** Exposure to extreme cold can lead to a range of health risks, including frostbite, hypothermia, and cold-related illnesses. Individuals with pre-existing health conditions may face exacerbated risks.
- **Increased Heating Costs:** Cold weather can result in higher heating costs, which can be a financial burden for many households. Low-income individuals and families may struggle to afford adequate heating.
- **Disruption of Essential Services:** Severe winter weather can disrupt essential services such as healthcare, emergency response, and utilities. Hospitals may face increased patient volumes due to weather-related injuries and illnesses.

Severe winter storms can have significant and wide-ranging impacts on facilities, and may include:

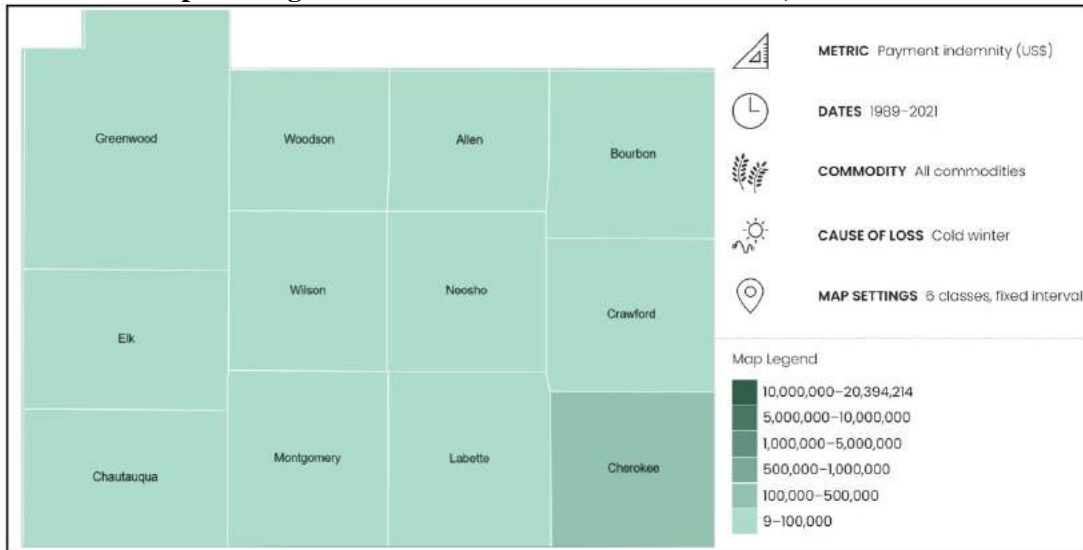
- **Power Outages:** Severe winter storms can cause power outages by bringing down power lines, causing ice accumulation on electrical infrastructure, or overloading the electrical grid due to increased demand for heating. Critical facilities such as hospitals, emergency response centers, and data centers may rely on backup generators to maintain essential operations during outages.
- **Communication Disruptions:** Ice and freezing rain can damage communication infrastructure, including cell towers, telephone lines, and data centers, leading to disruptions in phone and internet services. This can hinder emergency communication and coordination, affecting critical response efforts.
- **Transportation Disruptions:** Snow and ice accumulation on roads, runways, and railways can disrupt transportation networks, leading to travel delays, accidents, and closures. Critical facilities may face challenges in receiving essential supplies and personnel during and after the storm.
- **Water Supply Interruptions:** Freezing temperatures can cause water pipes to burst, leading to water supply interruptions and damage to water infrastructure. Critical facilities such as hospitals and emergency response centers rely on a continuous supply of clean water for various purposes, including patient care and firefighting.
- **Wastewater Systems:** Cold temperatures can affect wastewater treatment plants, leading to potential operational disruptions and contamination risks.
- **Fuel Supply Disruptions:** Snow and ice can disrupt fuel supply chains, leading to shortages of gasoline, diesel, and heating oil. Critical facilities may rely on fuel for backup power generators and heating systems.
- **Property Damage:** Severe winter storms can result in property damage, including roof collapses due to heavy snow accumulation, ice damming, and frozen pipes.

Winter storms can have various impacts on the environment, particularly in regions prone to cold and snowy winters. These impacts can affect ecosystems, wildlife, and natural resources and can include habitat disruption, reduction of food sources, changes in migration patterns, and damage to foliage (especially if a spring storm). Additionally, the use of salt and de-icing chemicals on roads and sidewalks can have negative environmental impacts. These chemicals can

find their way into nearby water bodies, leading to water pollution and harm to aquatic ecosystems. Snowmelt can also introduce pollutants from roadways and urban areas into rivers and streams, leading to reduced water quality. Elevated sediment levels and changes in water temperature can also affect aquatic life.

Severe winter weather conditions can cause significant agricultural impacts. The following map from the United States Department of Agriculture details total agricultural losses, by county, due to freeze events from 1989 to 2021:

**Map 109: Agricultural Losses Due to Freeze Events, 1989 to 2021**



Source: USDA

Severe winter weather can pose risks to local operations and can disrupt government functions and strain resources. Some of the risks to operations include:

- **Transportation Disruptions:** Snow and ice accumulation on roads and highways can hinder transportation, making it difficult for state agencies and personnel to travel and respond to emergencies. RIDOT must allocate resources to plow and salt roads, clear snow and ice, and repair potholes caused by freezing and thawing. These efforts are costly and resource intensive.
- **School Closures:** Winter storms often lead to school closures, which can affect state-run education programs and services. State agencies may need to coordinate with school districts to ensure the safety of students.
- **Emergency Response and Public Safety:** Winter storms can result in increased demands for emergency services, including responses to traffic accidents, medical emergencies, and stranded motorists. State and local agencies must allocate additional resources to address these needs.
- **Economic Impact:** Winter storms can result in economic losses due to reduced economic activity, transportation disruptions, property damage, and increased spending on emergency response and recovery efforts.
- **Emergency Shelter Operations:** Local jurisdictions may need to operate or coordinate emergency shelters during winter storms to provide shelter and resources to vulnerable populations, including those experiencing homelessness.
- **Resource Allocation:** State agencies must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response efforts and maintain public services.
- **Communication Challenges:** Winter storms can disrupt communication networks, hindering the ability of state agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- **Budgetary Impact:** The costs associated with snow removal, road maintenance, emergency response efforts, and infrastructure repair can strain state budgets.

- Governance and Administrative Challenges: State government offices and facilities may experience closures or reduced staffing during severe winter weather, affecting administrative functions, regulatory processes, and public services.

**Potentially Vulnerable Community Lifelines**

Extreme cold temperatures often associated with winter weather can impact various community lifelines, critical systems, and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that winter weather places on infrastructure, resources, and operational processes. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 116: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Electrical Service	\$199
Loss of Wastewater Services	\$66
Loss of Water Services	\$138
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Winter storms can have significant impacts on road infrastructure, creating challenging conditions for transportation and necessitating proactive measures for maintenance and safety. Winter storms can impact road infrastructure:

- Snow Accumulation: Snowfall can accumulate on road surfaces, creating slippery and hazardous conditions for drivers. Accumulated snow can reduce road visibility and make travel difficult.
- Ice Formation: Freezing temperatures can lead to the formation of ice on roadways, increasing the risk of accidents and making roads slippery. Black ice, which is nearly invisible, poses a particular hazard.
- Snowdrifts: Strong winds during winter storms can lead to the formation of snowdrifts on roads, especially in open areas. These drifts can obstruct visibility and impede traffic flow.
- Road Surface Damage: The freeze-thaw cycle, where melted snow refreezes, can lead to the formation of ice patches and potholes on road surfaces. This cycle can contribute to the deterioration of road infrastructure over time.
- Freeze-Thaw Cycling: Alternating freezing and thawing can cause the expansion and contraction of water within pavement cracks, leading to the formation and enlargement of potholes.
- Snowplow and Deicing Operations: Snowplows and deicing operations are necessary to clear roads and improve driving conditions. However, the use of salt and chemicals for deicing can contribute to corrosion and deterioration of road surfaces and infrastructure.
- Infrastructure Stress: Bridges and overpasses are particularly susceptible to ice formation due to the lack of ground contact. Winter storms can stress these structures, potentially leading to structural issues over time.

The following table, from the Kansas Department of Transportation, indicates the total road miles by county for Kansas Region H, all of which require plowing and maintenance during winter weather events:

**Table 117: Kansas Region H Road Mileage by County**

County	Total Road Miles
Allen	1,099
Bourbon	1,249
Chautauqua	761
Cherokee	1,331
Crawford	1,433
Elk	811
Greenwood	1,531
Labette	1,392

**Table 117: Kansas Region H Road Mileage by County**

<b>County</b>	<b>Total Road Miles</b>
Montgomery	1,516
Neosho	1,222
Wilson	1,103
Woodson	849

Source: Kansas Department of Transportation

In smaller counties with fewer resources and equipment, the cost may be on the lower end of the spectrum, ranging from a few thousand dollars to around \$10,000 per snow event. In larger counties or urban areas with extensive road networks and higher population densities, the cost can be much higher, potentially ranging from \$10,000 to \$50,000 or more per snow event.

**Extreme Conditions or Emergencies:** During severe winter storms or blizzards, the cost of snow removal can escalate significantly due to increased demand for services, overtime wages for workers, and the need for additional equipment and resources. In such cases, costs could exceed \$100,000 or even reach into the millions for major metropolitan areas.

In general, the priority for snow removal is based on traffic volume, speed limits and road surface types. Preference is generally given in the following order:

- State trunklines
- Primary roads
- Major local roads
- Residential / subdivision streets

Winter storms can impact electrical utilities in various ways, potentially leading to disruptions in service. These impacts include:

- **Power Outages:** High temperatures can strain electrical systems, leading to increased demand for cooling systems like air conditioners. This heightened demand can overload power grids, resulting in power outages.
- **Equipment Failure:** Electrical equipment, such as cables and switches, may experience higher resistance and increased stress during extreme heat, increasing the likelihood of equipment failures.
- **Reduced Efficiency in Power Plants:** Power generation facilities may experience reduced efficiency during heatwaves due to elevated ambient temperatures. This can affect the output of power plants and potentially lead to supply shortages.
- **Icing on Power Lines:** Ice accumulation on power lines can lead to increased weight, potentially causing lines to sag or break. This can result in power outages and safety hazards.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

Winter storms can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. Winter storms can impact emergency response through:

- **Transportation Disruptions:** Snow and ice accumulation on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Road Closures:** Winter storms can lead to the closure of roads due to snow accumulation, ice, and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.

- **Communication Disruptions:** Snow and ice can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Severe winter weather, including ice storms, can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Exposure:** Emergency responders face increased health and safety risks in winter conditions. Exposure to extreme cold, snow, and ice can impact the well-being of responders and affect their ability to provide effective assistance.
- **Resource Allocation Challenges:** Winter storms often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Logistical Challenges:** Snow accumulation and icy conditions may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- **Increased Demand for Services:** Winter storms can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously.

In order to reduce plan duplication, mapping concerning fire and police infrastructure may be found in Section 4.13, maps 94 and 95.

Hospitals and other smaller medical facilities may see an increase in winter storm related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Section 4.10, Map 41.

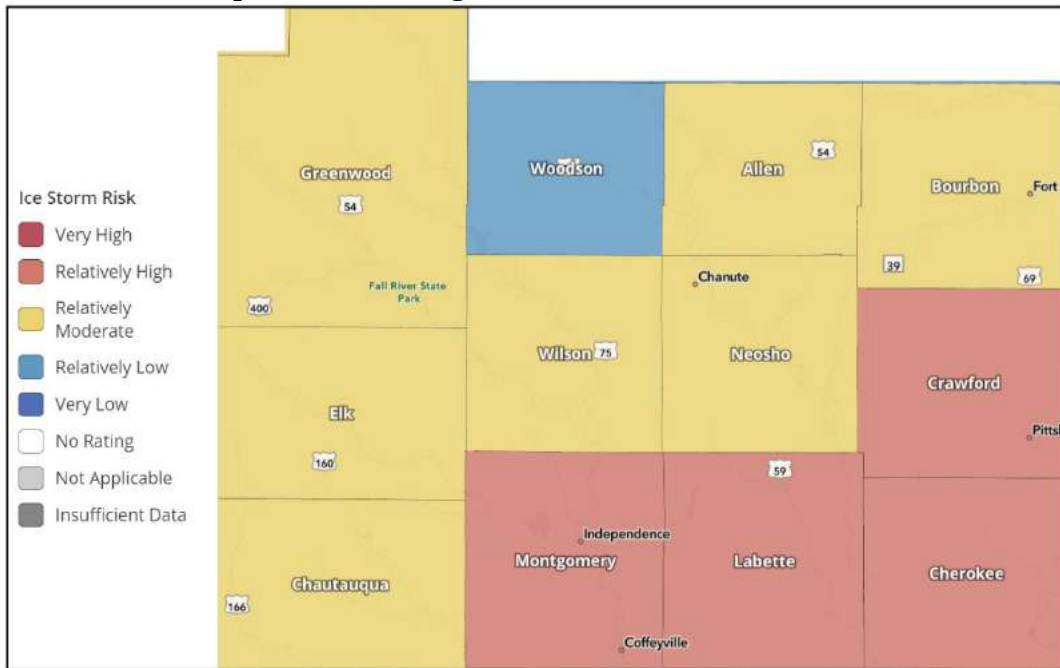
Winter storms can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

#### **FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from ice storms and winter weather:



**Map 110: Kansas Region H FEMA NRI Ice Storm Risk**



Source: FEMA NRI

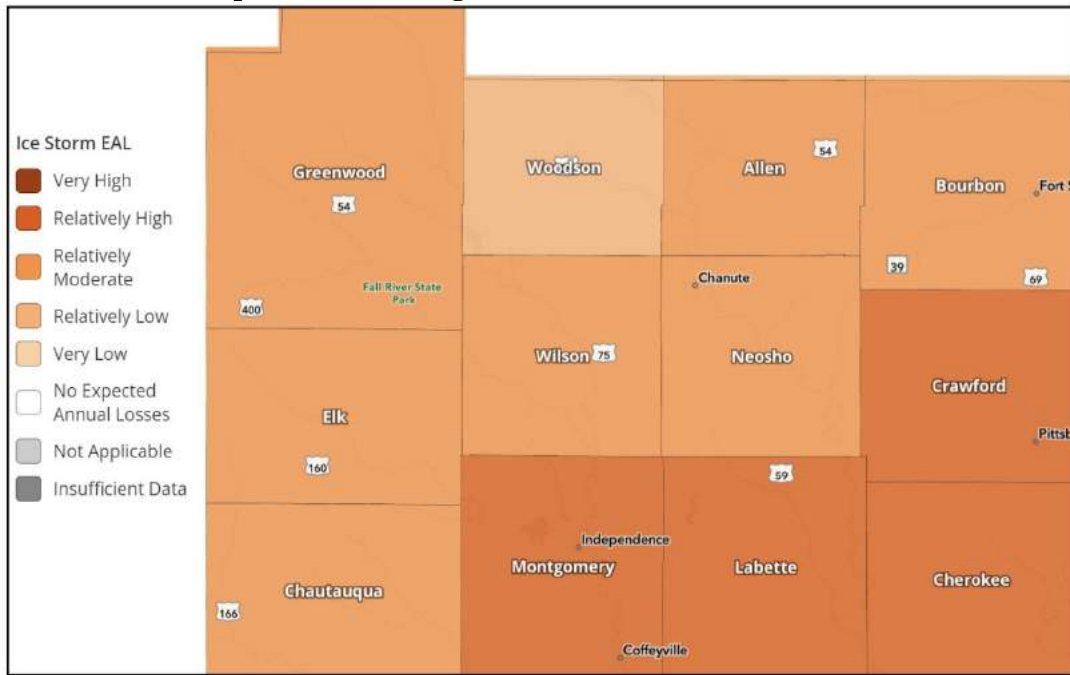
**Map 111: Kansas Region H FEMA NRI Winter Weather Risk**



Source: FEMA NRI

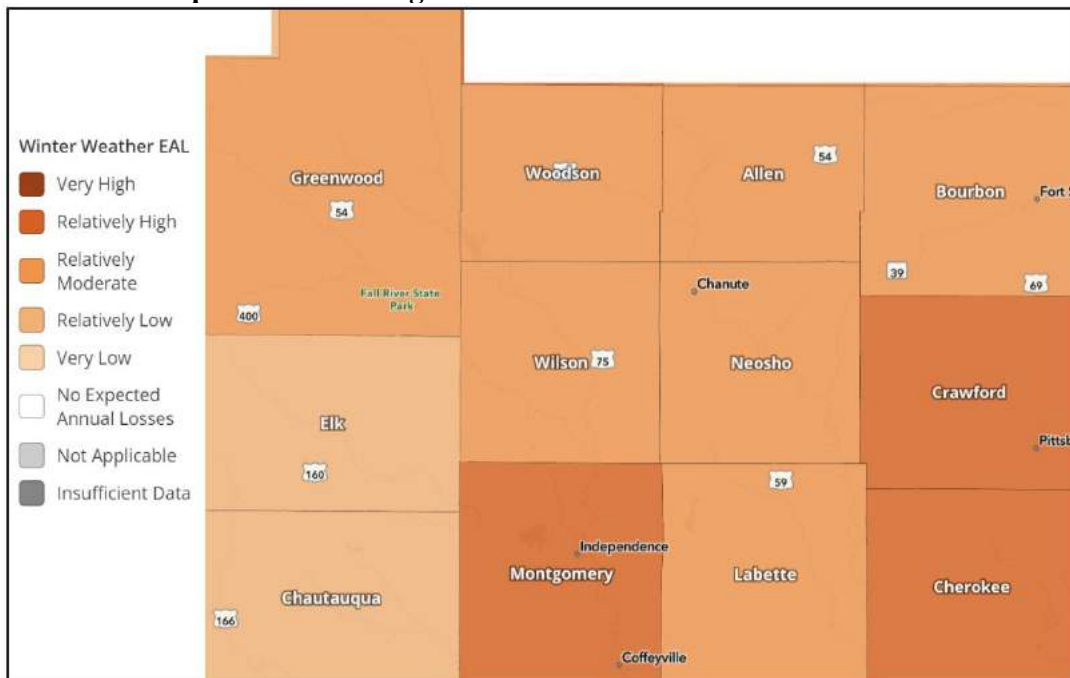
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for ice storms and winter weather for participating counties within Kansas Region H:

**Map 112: Kansas Region H FEMA NRI Ice Storm EAL**



Source: FEMA NRI

**Map 113: Kansas Region H FEMA NRI Winter Weather EAL**



Source: FEMA NRI

The following tables indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for winter weather events:

**Table 118: Kansas Region H FEMA NRI and EAL for Ice Storm by County**

County	Risk Index	EAL
Allen	Relatively Moderate	Relatively Moderate
Bourbon	Relatively Moderate	Relatively Moderate
Chautauqua	Relatively Moderate	Relatively Moderate
Cherokee	Relatively High	Relatively High
Crawford	Relatively High	Relatively High
Elk	Relatively Moderate	Relatively Moderate
Greenwood	Relatively Moderate	Relatively Moderate
Labette	Relatively High	Relatively High
Montgomery	Relatively High	Relatively High
Neosho	Relatively Moderate	Relatively Moderate
Wilson	Relatively Moderate	Relatively Moderate
Woodson	Relatively Low	Relatively Low

Source: FEMA NRI

**Table 119: Kansas Region H FEMA NRI and EAL for Winter Weather by County**

County	Risk Index	EAL
Allen	Relatively Moderate	Relatively Moderate
Bourbon	Relatively Moderate	Relatively Moderate
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively Moderate	Relatively High
Crawford	Relatively High	Relatively High
Elk	Relatively Low	Relatively Low
Greenwood	Relatively Moderate	Relatively Moderate
Labette	Relatively Moderate	Relatively Moderate
Montgomery	Relatively Moderate	Relatively High
Neosho	Relatively Moderate	Relatively Moderate
Wilson	Relatively Moderate	Relatively Moderate
Woodson	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 120: Severe Winter Weather Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Freezing temperatures coupled with heavy snow accumulation can cause dangerous travel conditions, leading to accidents and road closures. Downed power lines can lead to a loss of electricity and heat, with the young and the elderly especially vulnerable. Extremely cold temperatures may lead to hypothermia and death.
Impact on Responders	Dangerous road conditions create a transportation challenge for first responders. First responders will need to control their own exposure to the elements for prolonged periods of time and will need to continuously seek heat and shelter to stay warm. Equipment may also be damaged or destroyed due to cold temperatures, heavy wind, ice, and heavy snow fall, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary. Severe winter weather may impact an agency’s ability to maintain operations due to power outages and transportation difficulties. If the activation of alternate facilities was

**Table 120: Severe Winter Weather Consequence Analysis**

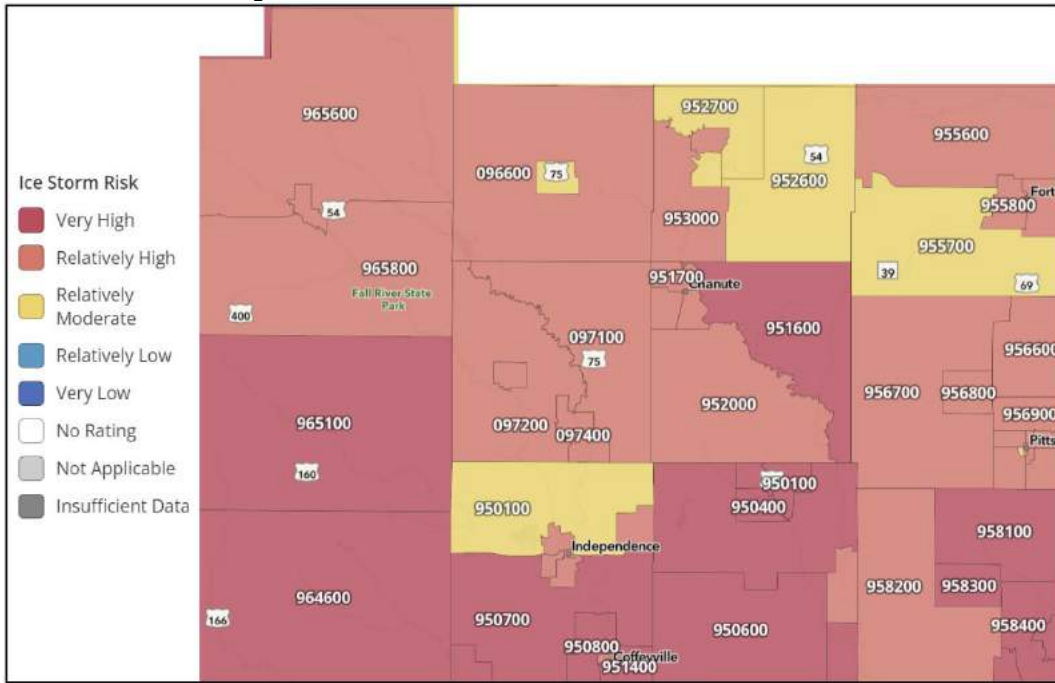
Subject	Potential Impacts
	required, travel may be difficult. Additionally, computer/network and other communication access may be impacted due to power outages.
Delivery of Services	The ability to deliver services can be impacted locally, regionally, or statewide depending on the severity of the severe winter weather event. Dangerous road conditions may lead to roadway and bridge closures, as well as transit service disruptions. Businesses and places of commerce may completely shut down, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and communications may be heavily disrupted. Roads and bridges may be heavily impacted by severe winter weather, and may be completely obstructed by downed trees, powerlines, and snow accumulation. Snow and ice can impact access to homes and critical facilities such as hospitals, schools, and supermarkets. Power loss can lead to disruption of critical infrastructure and technology.
Impact on Environment	Heavy snow and ice accumulation can weigh down and damage vegetation, tree limbs, and power lines. Flooding may also occur after the rapid melting of a heavy snowfall, causing bodies of water to flood, damaging the surrounding areas. Exposure to extreme winter weather may result in animal death. Chemicals used to treat roadways may contaminate natural environments and water reservoirs if used in large quantities.
Economic Conditions	Severe winter weather poses a fiscal impact on the governments, even if some of those costs can be recouped through federal grant reimbursements. Local, county, and state resources may be drained by a severe winter weather event.
Public Confidence in Governance	The public’s confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

**4.14.8 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to severe winter weather of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

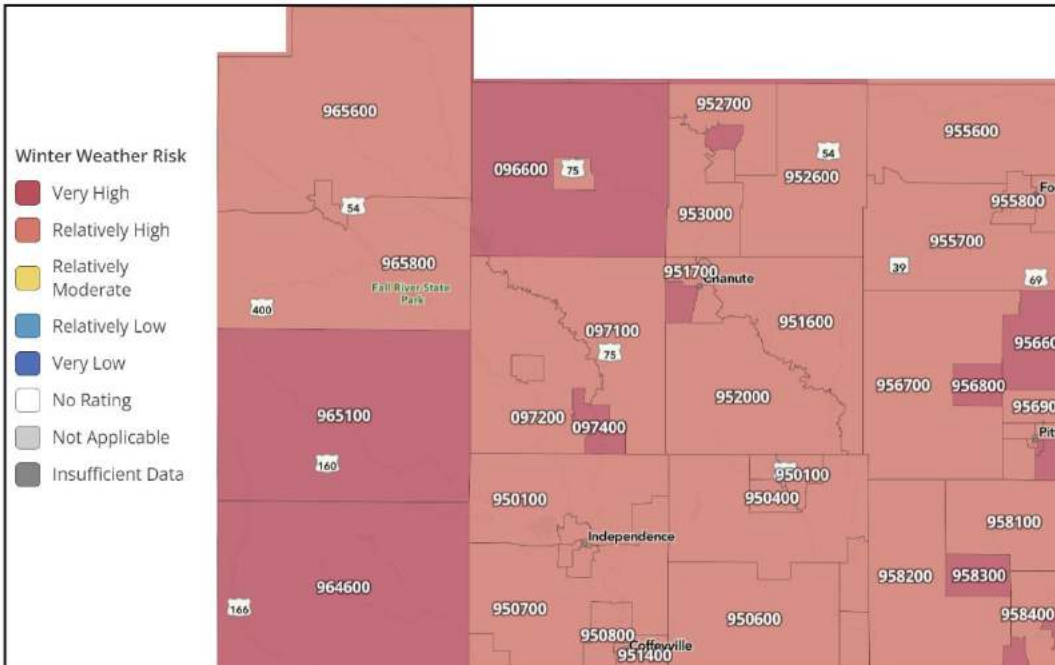
Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from ice storms and winter weather events:

**Map 114: FEMA NRI Jurisdictional Ice Storm Risk**



Source: FEMA NRI

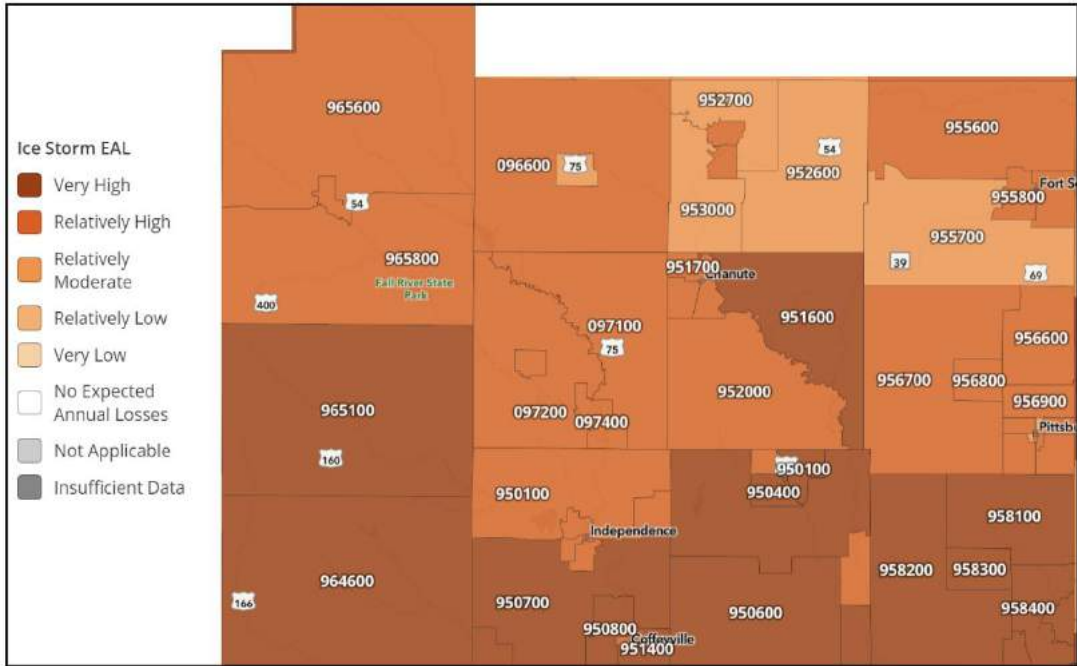
**Map 115: FEMA NRI Jurisdictional Winter Weather Risk**



Source: FEMA NRI

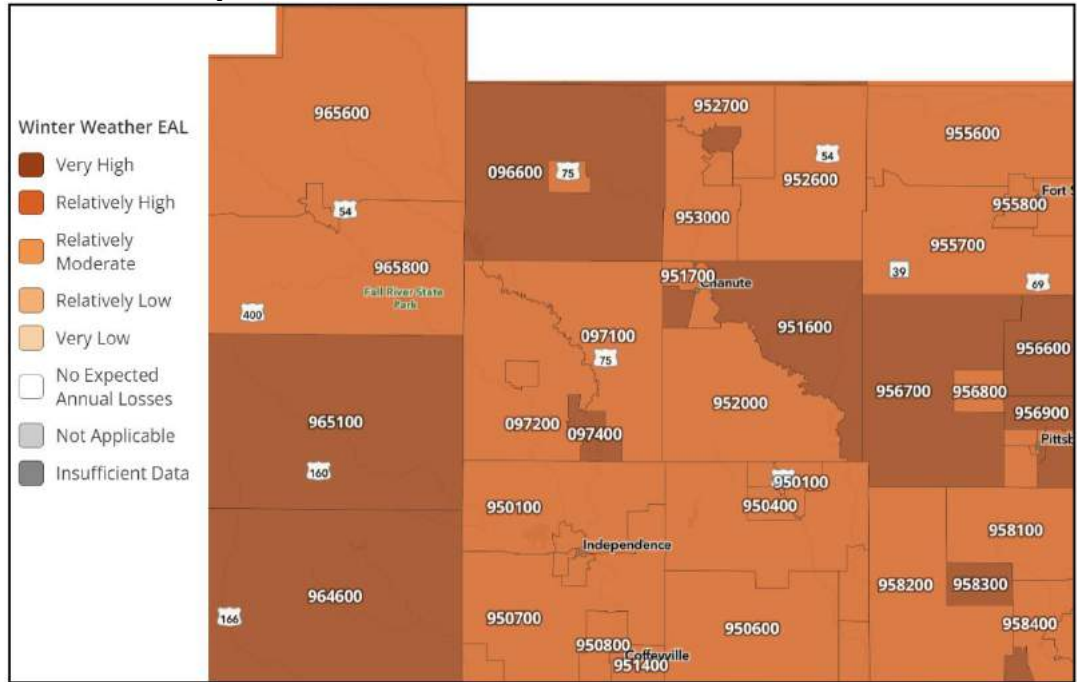
As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for ice storms and winter weather for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 116: FEMA NRI Jurisdictional Ice Storm EAL**



Source: FEMA NRI

**Map 117: FEMA NRI Jurisdictional Winter Weather EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Low temperatures associated with severe winter storms can pose various risks to local facilities and assets, and may include:

- **Power Grid Strain:** Cold temperatures can lead to increased demand for electricity. This can strain the power grid, potentially causing power outages, which can disrupt government operations, including the functioning of critical infrastructure such as hospitals, emergency services, and data centers.
- **Infrastructure Stress:** Buildings and infrastructure can suffer damage due to low temperatures. Extreme cold can freeze and damage pipes, leading to water leaks and flooding when temperatures rise.
- **Transportation Disruptions:** Extreme cold can result in icy road conditions and reduce visibility, making travel hazardous.

Socially vulnerable populations may be more vulnerable to the effects of winter storm events due to extremes in age or the inability to heat and cool homes during an event. Please see Section 3.4 for details on vulnerable populations.

## 4.15 Tornadoes

### 4.15.1 Hazard Description

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust.



Tornadoes can cause several kinds of damage to buildings. Tornadoes have been known to lift and move objects weighing more than three tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common. Houses and other obstructions in the path of the wind cause the wind to change direction. This change in wind direction increases pressure on parts of the building. The combination of increased pressures and fluctuating wind speeds creates stress on the building that frequently causes connections between building components, roofing, siding, and windows to fail. Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be thrown at buildings with enough force to penetrate windows, roofs, and walls.

### 4.15.2 – Location and Extent

Tornadoes can strike anywhere in Kansas Region H. A tornado may arrive with a squall line or cold front and touch down quickly. Smaller tornadoes can strike without warning. Other times tornado watches and sirens will alert communities of high potential tornado producing weather or an already formed tornado and its likely path.

Since 2007, the United States uses the Enhanced Fujita (EF) Scale to categorize tornadoes. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

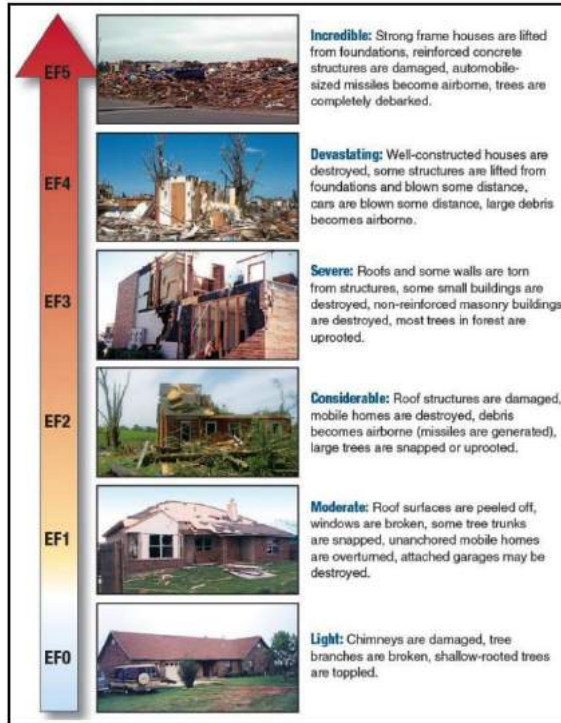
**Table 121: Enhanced Fujita Scale**

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center



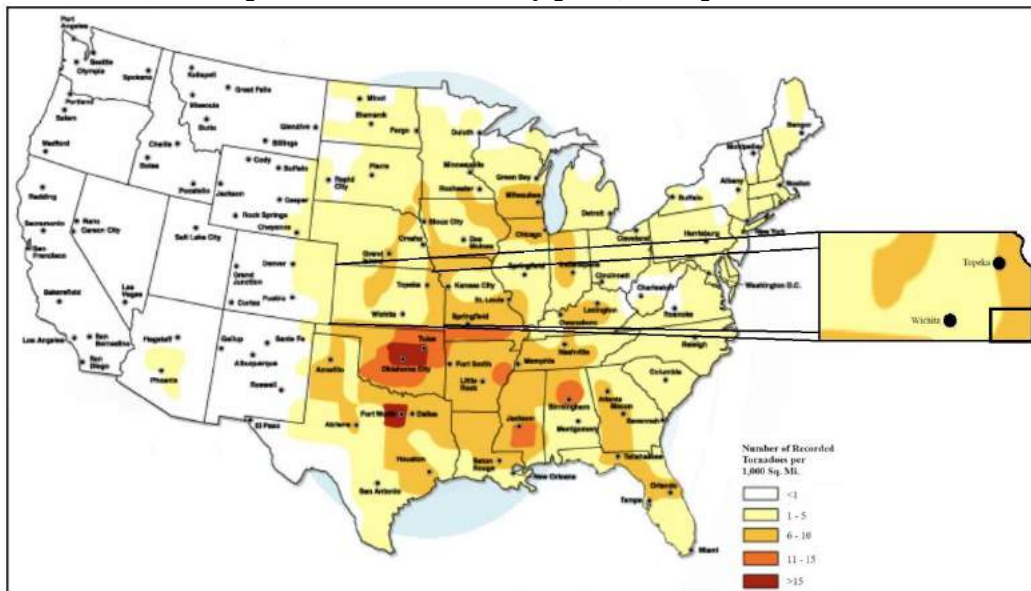
**Figure 3: Enhanced Fujita Scale Damage Estimates**



Source: FEMA

The following map, from FEMA, indicates tornado activity per 1,000 square miles for Kansas Region H.

**Map 118: Tornado Activity per 1,000 Square Miles**



Source: FEMA

### 4.15.3 Previous Occurrences

Historical events of significant magnitude or impact can result in a Presidential Disaster Declaration. The following table details Presidential Disaster Declarations related to tornadoes.

**Table 122: Kansas Region H Presidentially Declared Disasters**

Designation	Declaration Date	Incident Type	Counties	Assistance
DR-4499-KS	08/14/2019	Severe Storms, Straight-Line Winds, Flooding, Tornadoes, Landslides, and Mudslides	Allen, Bourbon, Chautauqua, Cherokee, Crawford, Elk, Greenwood, Labette, Montgomery, and Wilson	\$51,157,548

The following table presents NCEI identified tornado events and the resulting damage totals in Kansas Region H from 2014 to 2023.

**Table 123: Kansas Region H Tornado Events**

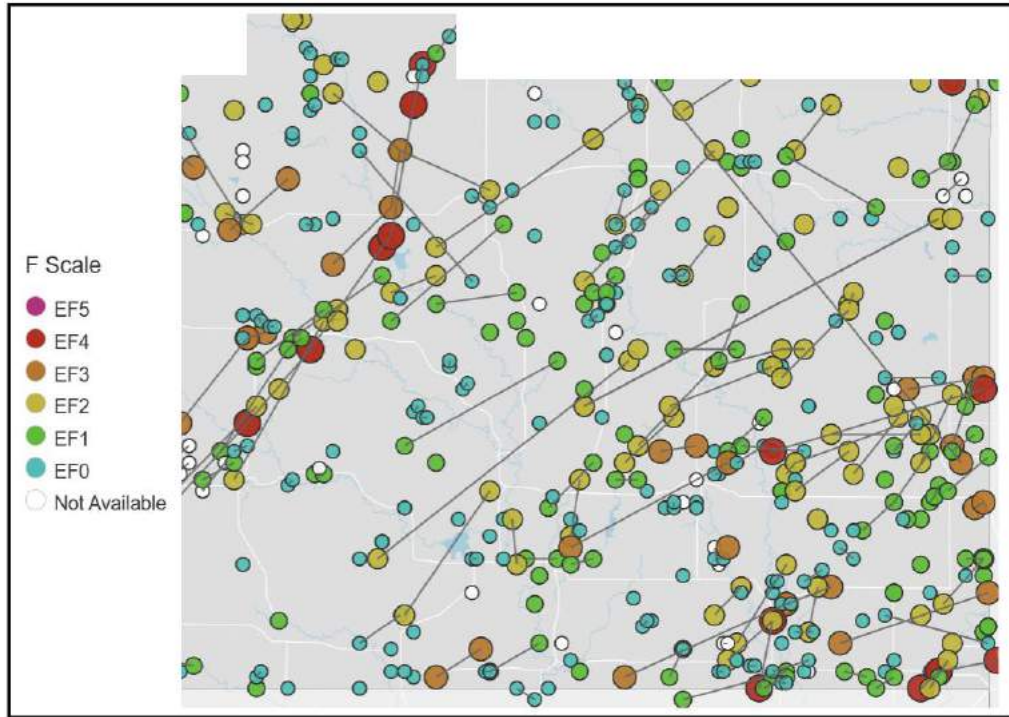
County	Number of Events	Property Damage	Deaths or Injuries	Highest Rated Tornadoes	Number of EF2 or Greater Tornadoes
Allen	1	\$0	0	EF0	0
Bourbon	3	\$700,000	0	EF1	0
Chautauqua	6	\$0	0	EF1	0
Cherokee	5	\$10,150,000	25	EF2	1
Crawford	2	\$1,185,000	0	EF1	0
Elk	2	\$5,000	0	EF1	0
Greenwood	9	\$17,590,000	8	EF3	3
Labette	7	\$5,000	0	EF0	0
Montgomery	4	\$0	0	EF0	0
Neosho	1	\$0	0	EF0	0
Wilson	2	\$0	0	EF0	0
Woodson	0	\$0	0	-	0

Source: NCEI

It is worth noting that damage estimates indicated by the NCEI are often artificially low. This underreporting is a result of the way the events are reported to the NCEI, often by the local and/or NWS office. When reporting an event oftentimes the NWS office does not have access to the actual damage assessment resulting from that event. As such, the report often details a very low amount or zero-dollar amount for damages. Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away.

NOAA has been tracking tornadoes in Kansas for decades. This following map, which contains data from 1950 to 2023, pinpoints where tornadoes have touched down and traces its path.

**Map 119: Kansas Region H Tornado Paths**



Source: NOAA

**4.15.4 Probability of Future Events**

Predicting the probability of tornado occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Based on historical occurrences, Kansas Region H will continue to experience tornado events on an annual basis. The following tables, using data from the NCEI, indicate the yearly probability of a tornado event, the number of deaths or injuries, and estimated property damage for each county in Kansas Region H.

**Table 124: Kansas Region H NCEI Tornado Event Probability Summary**

County	Days with Event	Average Events per Year	Deaths / Injuries	Average Deaths / Injuries per Year	Property Damage	Average Property Damage per Year
Allen	1	<1	0	<1	\$0	\$0
Bourbon	3	<1	0	0	\$700,000	\$46,667
Chautauqua	6	<1	0	0	\$0	\$0
Cherokee	5	<1	25	0	\$10,150,000	\$676,667
Crawford	2	<1	0	0	\$1,185,000	\$79,000
Elk	2	<1	0	0	\$5,000	\$333
Greenwood	9	1	8	0	\$17,590,000	\$1,172,667
Labette	7	<1	0	0	\$5,000	\$333
Montgomery	4	<1	0	0	\$0	\$0
Neosho	1	<1	0	0	\$0	\$0
Wilson	2	<1	0	0	\$0	\$0
Woodson	0	0	0	0	\$0	\$0

Source: NCEI

**4.15.5 Projected Changes in Location, Intensity, Frequency, and Duration**

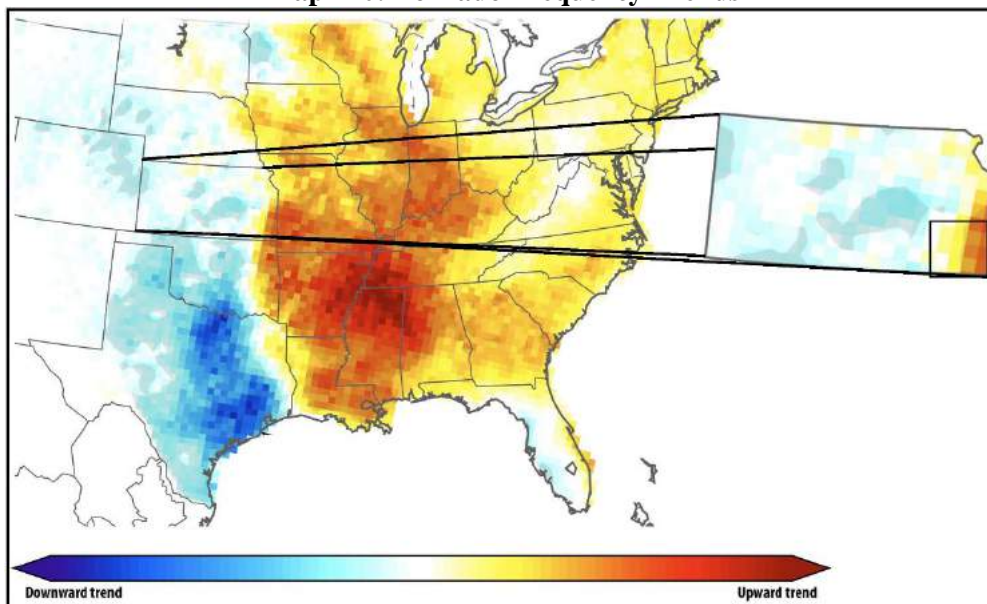
The relationship between climate change and tornadoes is complex, and while there is ongoing research in this area, it is not fully understood. Tornadoes are small-scale, short-lived weather phenomena that can be influenced by a variety of atmospheric factors, including temperature, humidity, wind patterns, and atmospheric instability. Climate change can

influence some of these factors, which may, in turn, affect tornado activity. Tornadoes typically form when warm, moist air near the surface clashes with cooler, drier air aloft, creating atmospheric instability. Climate change can alter temperature and humidity patterns, potentially affecting the conditions necessary for tornado formation. Additionally, climate change can lead to more extreme and variable weather patterns. While this may not necessarily increase the overall number of tornadoes, it could lead to more unpredictable and severe tornado events when they do occur. Some research suggests that climate change could lead to longer tornado seasons, with tornadoes occurring outside of their typical timeframes.

It's important to emphasize that while there may be some links between climate change and tornado activity, these links are not fully understood, and it is difficult to attribute specific tornado events to climate change. Tornadoes are influenced by a complex interplay of factors, and any changes in tornado patterns may vary by region.

Research conducted by the National Severe Storms Lab looked at Significant Tornado Parameters to help determine future tornado probability. Significant Tornado Parameters are a measurement of the major parameters of tornado conditions, including wind speed and direction, wind at differing altitudes, unstable air patterns, and humidity. The following map, generated by Northern Illinois University and compiled from Significant Tornado Parameter data, indicates that Kansas Region H may see a decreasing number of tornadoes.

**Map 120: Tornado Frequency Trends**



Source: Northern Illinois University

Research conducted by the National Severe Storms Lab looked at Significant Tornado Parameters to help determine future tornado probability. Significant Tornado Parameters are a measurement of the major parameters of tornado conditions, including wind speed and direction, wind at differing altitudes, unstable air patterns, and humidity. The following map, generated by Northern Illinois University and compiled from Significant Tornado Parameter data, indicates that Kansas Region H may see a decreasing number of tornadoes.

#### **4.15.6 Vulnerability and Impact**

While difficult to quantify, as the impacts of future tornadoes will be determined by many factors, the impacts of a tornado may be widespread. An EF4 or EF5 tornado has the potential to level facilities. A lesser magnitude tornado can rip off roofs and walls while launching airborne missiles born from debris. In the absence of proper shelter tornadoes can cause serious injury. In general, if potentially exposed persons take shelter in a solid, well-constructed shelter protection from tornadoes would be provided. However, old or poorly constructed facilities may be more prone to damage, potentially increasing the impact on economically disadvantaged populations.

Tornadoes can have significant and often devastating impacts on people and communities. These impacts can vary depending on the tornado's intensity, size, path, and may include:

- **Injuries and Fatalities:** Tornadoes can cause a wide range of injuries, from minor cuts and bruises to severe trauma. Flying debris, structural damage, and the force of the wind can lead to injuries or fatalities among those directly affected by the tornado. Prompt medical care is essential to treat injuries effectively and save lives.
- **Mental Health Effects:** Tornadoes can be extremely traumatic events, causing psychological distress and emotional trauma for survivors. Individuals may experience post-traumatic stress disorder, anxiety, depression, and grief. Mental health support and counseling services are often needed to help survivors cope with these emotional challenges.
- **Displacement:** People may need to evacuate their homes or be temporarily displaced due to tornado damage, requiring emergency shelter and support.

After a tornado, health risks may arise due to contaminated water, debris, and unsafe conditions. Inadequate sanitation and exposure to harsh weather can exacerbate health issues. Children, the elderly, and individuals with disabilities or limited mobility may face additional challenges in evacuating to safety and accessing needed resources.

Tornadoes can have significant and wide-ranging impacts on facilities. These risks can have significant economic consequences, and can include:

- **Power Outages:** Tornadoes can cause power outages by bringing down power lines and damaging electrical infrastructure. Critical facilities such as hospitals, emergency response centers, and data centers may rely on backup generators to maintain essential operations during outages.
- **Communication Disruptions:** Tornadoes can damage communication infrastructure, including cell towers, telephone lines, and data centers, leading to disruptions in phone and internet services. This can hinder emergency communication and coordination, affecting critical response efforts.
- **Transportation Disruptions:** Debris and fallen trees on roads, runways, and railways can disrupt transportation networks, leading to travel delays, accidents, and closures. Critical facilities may face challenges in receiving essential supplies and personnel during and after the storm.
- **Water and Wastewater System Interruptions:** Tornadoes can damage water treatment plants, pumping stations, and water distribution systems. This can lead to a loss of clean drinking water and sanitation services, posing health risks to affected communities. Damage to wastewater treatment facilities and sewer systems can result in the release of untreated sewage, creating environmental hazards and public health concerns.
- **Fuel Supply Disruptions:** Tornadoes disrupt fuel supply chains, leading to shortages of gasoline, diesel, and heating oil. Critical facilities may rely on fuel for backup power generators and heating systems.
- **Property Damage:** Tornadoes can result in property damage, up to and including complete structural collapse.

Tornadoes can have significant impacts on the environment. These impacts are often destructive and can affect ecosystems, wildlife, natural resources, and even the local climate. Tornadoes can disrupt natural habitats by uprooting or damaging trees, destroying vegetation, and altering landscapes. This can affect the habitat suitability for wildlife and plant species. Tornadoes can harm or displace wildlife, resulting in injury or death. Nesting birds, burrowing mammals, and other species can be particularly vulnerable. As tornadoes can transport plant seeds, insects, and other organisms over long distances, in the aftermath it is possible for invasive species to take root in new areas, especially those impacted by wildfires caused by downed utility lines.

Tornadoes can have significant and wide-ranging impacts on local operations. When tornadoes strike, they can disrupt government functions and strain resources. Some of the key impacts of tornadoes on operations may include:

- **Emergency Response and Public Safety:** Tornadoes can lead to a surge in emergency calls for services related to accidents, injuries, and damaged structures. State agencies involved in emergency response must mobilize additional resources to handle these demands.
- **Emergency Operations Centers:** Tornadoes often require the activation of state Emergency Operations Centers to coordinate emergency response efforts. These centers serve as hubs for communication, resource allocation, and decision-making during disasters.

- **Emergency Shelters and Services:** Tornadoes may require the establishment of emergency shelters and services for displaced residents. State agencies must coordinate the setup and operation of these facilities.
- **Education Disruption:** Tornadoes can lead to school closures, affecting state-run education programs and services. State agencies may need to coordinate with school districts to ensure the safety of students.
- **Budgetary Impact:** The costs associated with emergency response efforts, disaster recovery, and infrastructure repair can strain state budgets.
- **Resource Allocation:** State governments must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response and recovery efforts.
- **Communication Challenges:** Tornadoes can disrupt communication networks, hindering the ability of government agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- **Administrative and Governance Challenges:** State government offices and facilities may experience closures or reduced staffing during tornadoes, affecting administrative functions, regulatory processes, and public services.
- **Economic Impact:** The destruction of infrastructure and businesses can have significant economic consequences for the state and local communities, including job losses and reduced economic activity.
- **Public Services:** Tornadoes can disrupt the delivery of public services, including transportation, utilities, and social services, affecting the well-being of residents.

**Potentially Vulnerable Community Lifelines**

Tornadoes can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that tornadic conditions place on infrastructure, resources, and operational processes. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 125: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Electrical Service	\$199
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

The high winds associated with smaller tornadoes can cause trees, branches, and other debris to fall onto power lines. Higher intensity tornadoes can destroy transmission infrastructure. This can result in downed power lines, structural damage to utility poles, and disruptions in electrical service.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

Communications systems within Kansas Region H may have an increased vulnerability to tornado events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement
- Emergency Medical Services
- Fire

Tornadoes can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Structural Damage to Communication Towers:** Tornadoes can cause direct structural damage to communication towers, including cellular, television, radio, and microwave towers. Toppled or damaged towers can disrupt signal transmission and reception.

- **Power Outages:** Tornadoes often cause power outages by damaging electrical infrastructure. Communication facilities, including cell towers and data centers, rely on a stable power supply. Power failures can lead to service interruptions.
- **Fiber Optic Cable Damage:** Flying debris and tornado-related destruction can damage underground and aerial fiber optic cables. Severed cables can disrupt data transmission and internet connectivity.
- **Microwave Link Disruptions:** Tornadoes can interfere with microwave communication links, which are used for long-distance communication. High winds and debris can disrupt the line of sight needed for these links.
- **Equipment Damage:** Communication equipment located outdoors, such as antennas, dishes, and amplifiers, can be damaged by tornadoes, affecting the performance of communication systems.
- **Loss of Communication Nodes:** Tornadoes can damage communication nodes, exchanges, and network switching centers. Loss of these critical components can lead to widespread service disruptions.
- **Cellular Network Congestion:** In the aftermath of a tornado, there is often an increased demand for cellular communication as individuals seek information and contact loved ones. This surge in demand can lead to network congestion and reduced service quality.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. The following data, from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency, indicates cost ranges for communications system components:

**Table 126: Summary of Communication System Component Costs**

Components	Examples	Cost	Expected Lifespan
Infrastructure	Towers, shelters, commercial and backup power equipment,	\$\$\$-\$\$\$\$\$	20-25 years
Fixed Station Equipment	Antennas, repeaters, towers on wheels, consoles, mobile stations, servers, computers, physical and electronic security elements (e.g., fencing, cameras, monitors, environmental conditions)	\$\$-\$\$\$	3-15 years
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	\$\$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, aircards, intercoms	\$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliable services, Over-the-Air-Programming, automatic roaming	\$\$-\$\$\$	-
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	\$\$	-

Source: U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Tornadoes can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects of severe weather events. Tornadoes can impact emergency response through:

- **Transportation Disruptions:** Debris on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Road Closures:** Tornadoes can lead to the closure of roads due to debris accumulation and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- **Communication Disruptions:** Tornadoes can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.

- Power Outages: Tornadoes downing power lines can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- Resource Allocation Challenges: Tornadoes often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- Logistical Challenges: Tornadoes may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- Increased Demand for Services: Tornadoes can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously.

In order to reduce plan duplication, mapping concerning fire and police locations may be found in Section 4.13, maps 94 and 95.

Hospitals and other smaller medical facilities may see an increase in tornado related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. Hospital capacity mapping may be found in Section 4.10, Map 41.

Tornadoes can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources.

### FEMA NRI

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from tornadoes:

**Map 121: Kansas Region H FEMA NRI Tornado Risk**

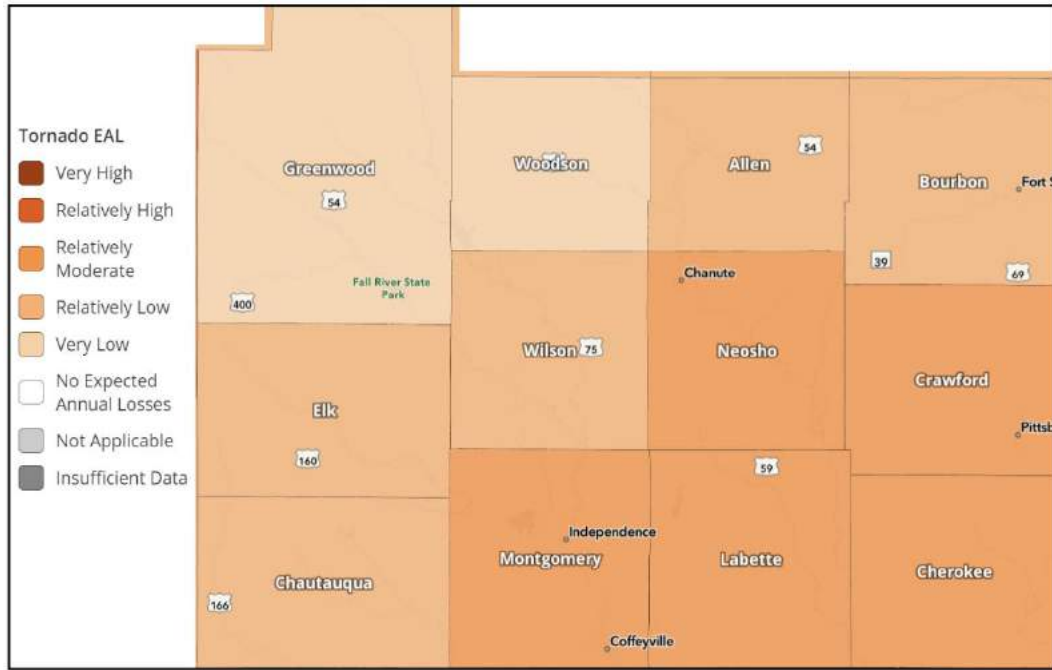


Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for tornadoes for participating counties within Kansas Region H:



**Map 122: Kansas Region H FEMA NRI Tornado EAL**



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for tornado:

**Table 127: Kansas Region H FEMA NRI and EAL for Tornadoes by County**

County	Risk Index	EAL
Allen	Relatively Low	Relatively Low
Bourbon	Relatively Low	Relatively Low
Chautauqua	Relatively Low	Relatively Low
Cherokee	Relatively Moderate	Relatively Moderate
Crawford	Relatively Moderate	Relatively Moderate
Elk	Relatively Low	Relatively Low
Greenwood	Very Low	Very Low
Labette	Relatively Moderate	Relatively Moderate
Montgomery	Relatively Moderate	Relatively Moderate
Neosho	Relatively Moderate	Relatively Moderate
Wilson	Relatively Low	Relatively Low
Woodson	Very Low	Very Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 128: Tornado Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	High wind speeds can cause automobiles to become airborne, destroy homes, and turn debris into projectiles, which may cause injury or death. An increased demand for medical treatment for traumatic injuries caused by the tornado would be anticipated. Significant portions of the population may be displaced by the destruction and those individuals may not have access to personal documents or medical records.

**Table 128: Tornado Consequence Analysis**

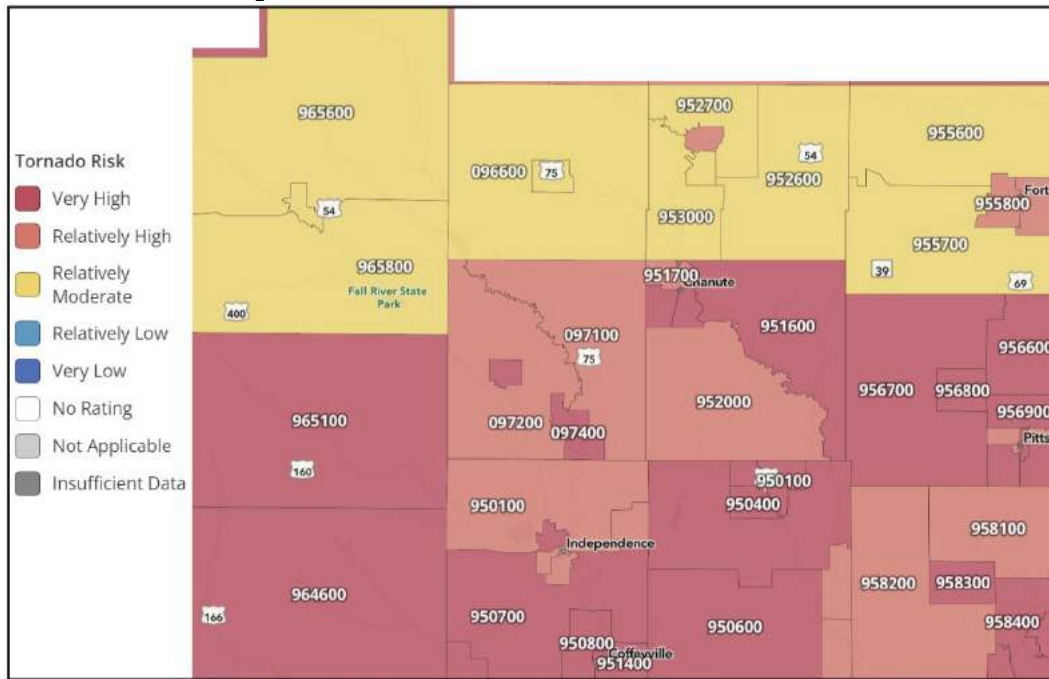
Subject	Potential Impacts
Impact on Responders	First responders may be injured as the tornado passes, resulting in employee absenteeism that impacts the overall capacity to respond to the event. The deposit of debris on major roadways, the location of the event, and/or damage to equipment or facilities may increase the response times. Exposed wires or hazardous materials may cause injury to first responders during search and rescue operations.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Tornadoes may impact an agency’s ability to maintain continuity of operations due to power or communications infrastructure impacts. If the activation of alternate facilities was required, travel may be difficult due to reduced transportation options, power outages, or damage to facilities.
Delivery of Services	Delivery of services may be impacted by dangerous conditions or disruption to transportation systems, causing food, water, and resource systems to be delayed or halted. Waterway infrastructure may be damaged or malfunction, stopping barge and ship traffic. Goods may be damaged, destroyed, or carried off by high winds.
Property, Facilities, and Infrastructure	Damages from lower intensity tornadoes can range from chimney damage to uprooted shallow trees. A significant tornado (EF-2) would cause damage to roofs on frame houses, complete destruction of mobile homes and large trees and utility lines snapping. A devastating tornado (EF-4) would result in well-constructed houses being leveled, weak foundations blown away, and cars thrown away. Communications or power infrastructure may be damaged or destroyed.
Impact on Environment	Tornadoes may cause significant damage to the environment by exposing hazardous materials, causing contamination of water or food sources, or uprooting vegetation. Animals may be injured by flying debris or being lifted by the tornado. Agricultural crops may be lost due to contamination or being uprooted.
Economic Conditions	Tornadoes pose a fiscal impact on the local governments, even if some of those costs can be recouped through federal grant reimbursements. Fiscal resources may be drained by the occurrence of a tornado.
Public Confidence in Governance	The public’s confidence in governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

**4.15.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to tornadoes of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from tornadoes:

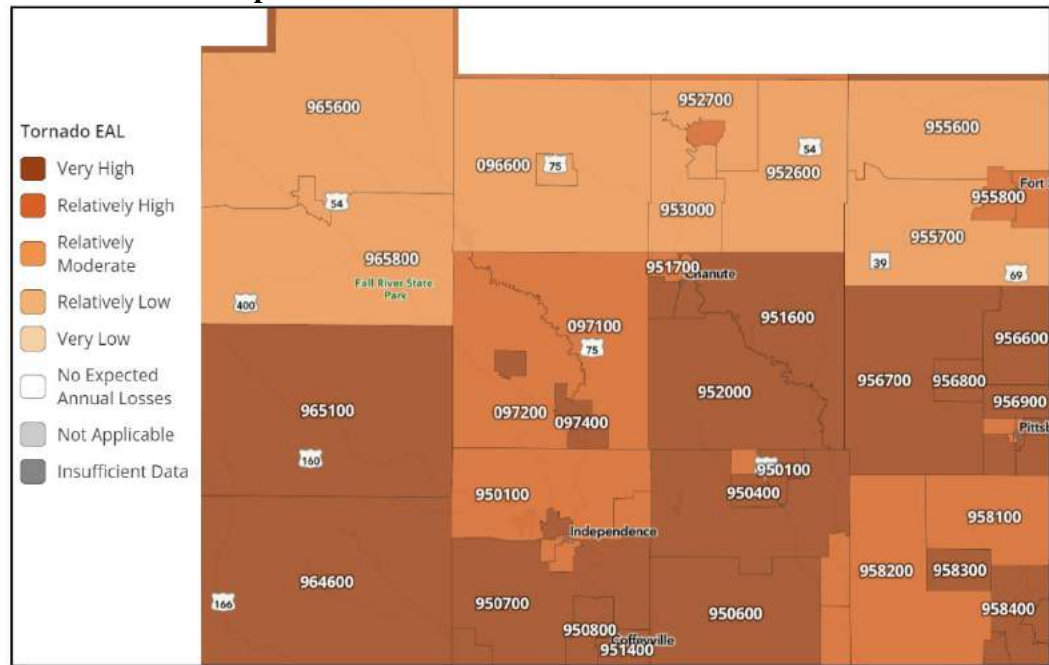
**Map 123: FEMA NRI Jurisdictional Tornado Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for tornadoes for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 124: FEMA NRI Jurisdictional Tornado EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

Kansas Region H citizens living in mobile homes may have an increased vulnerability to tornadoes. Please see section 3.6 for more details on the percentage of mobile homes for each participating county.

## 4.16 Wildfires

### 4.16.1 Hazard Description

The NWS defines a wildfire as any free burning uncontrollable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment. They can occur naturally, by human accident, and on rare occasions by human action. Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of metropolitan areas and in rural areas with attractive recreational and aesthetic amenities, especially forests. This expansion has increased the likelihood that wildfires will threaten life and property.



According to the National Park Service there three classifications of wildfires:

- **Surface Fire:** Burning which may spread rapidly and ignite leaf litter, fallen branches and other fuels located at ground level.
- **Ground Fire:** Burning of organic matter in the soil beneath the surface.
- **Crown Fire:** Burning through the top layer (canopy) of trees. Crown fires, which can be very intense and difficult to contain, require strong winds, steep slopes, and large amounts of fuel to burn.

Wildfires are strongly influenced by multiple factors, including:

- **Weather:** Factors such as relative humidity, wind speed, ambient temperature and precipitation all influence the formation and growth of wildfires.
- **Topography:** Natural features, such as canyons or ridges, can increase the spread rate of a fire by funneling or drawing heated air and fire.
- **Fuel Type, Distribution and Moisture:** Available fuels, the spacing and density of available fuels, and fuel moisture content can determine spread rates and intensity of wildfires.
- **Drought Conditions:** Drought tends to increase both the likelihood and severity of wildfires.

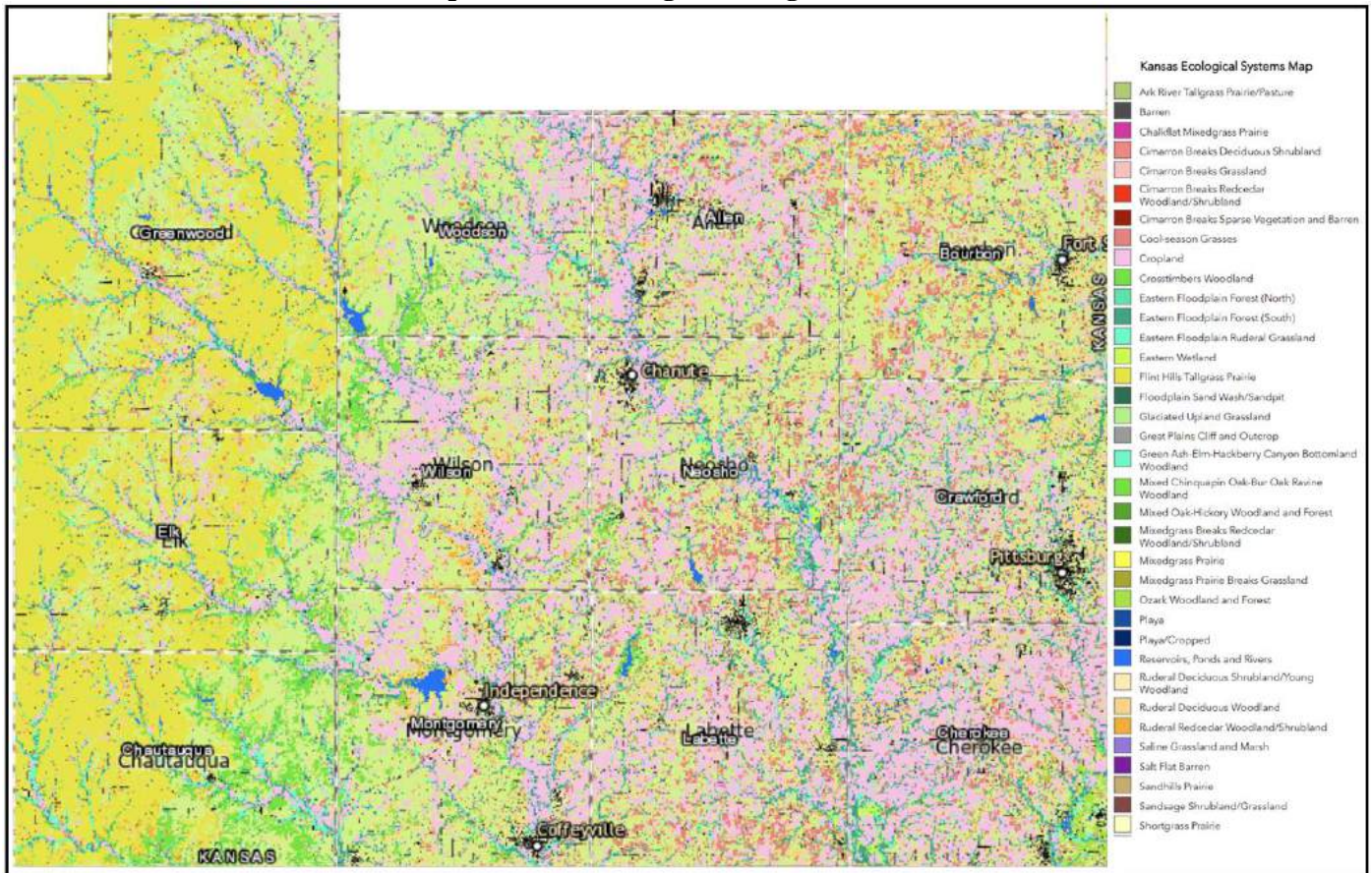
### 4.16.2 – Location and Extent

According to the Office of the State Fire Marshal, in 2021 Kansas fire departments responded to close to 5,000, vegetation-related fires that burned over 185,000 acres. Over 900 of these fires required counties to seek mutual-aid assistance to bring them under control.

According to fire officials, nearly ninety-five percent of all wildfires result from the activity of people and, subsequently, a significant number could be prevented through taking proper actions towards fire safety.

The following map, from the University of Kansas, indicates vegetation types within Kansas Region H, with areas of grasses, forest, and crops more likely to experience a wild or brush fire:

## Map 125: Kansas Region H Vegetation Cover

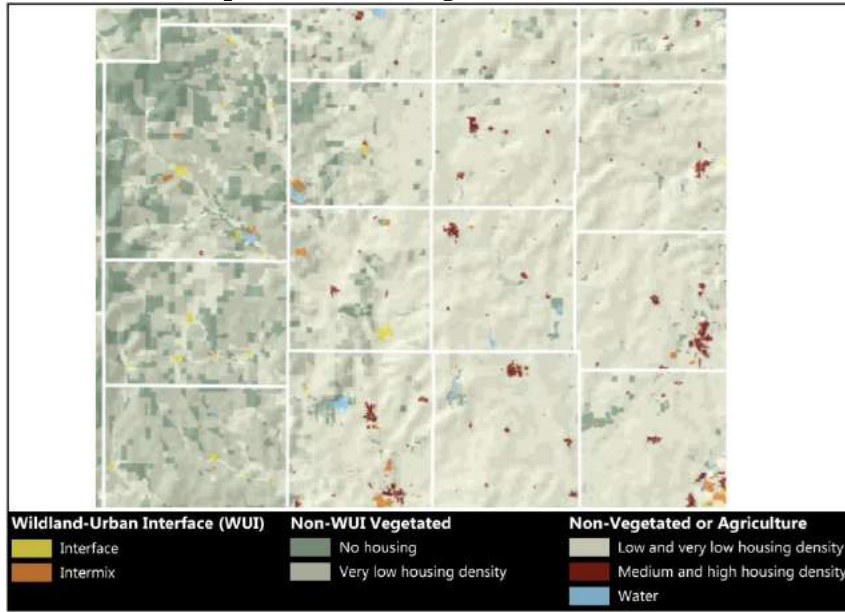


Source: University of Kansas

The wildland/urban interface (WUI) is the area where human improvements such as homes, ranches and farms come in contact with the wildlands. The WUI creates an environment in which fire can move readily between structure and vegetation fuels, often resulting in massive fires, or conflagrations, that may lead to widespread evacuations. The expansion of the WUI in recent decades has significant implications for wildfire management and its impact. There are two types of WUI, intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle, and interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation.

The following map, from the University of Wisconsin SILVIS Labs, illustrates WUI areas throughout the Kansas Region H:

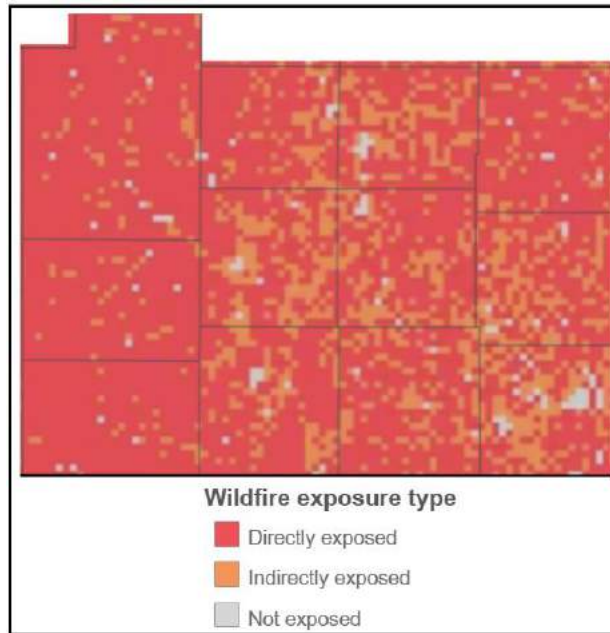
**Map 126: Kansas Region H WUI Areas**



Source: University of Wisconsin SILVIS Labs

Exposure is the intersection of wildfire likelihood and intensity with communities. Communities can be directly exposed to wildfire from adjacent wildland vegetation, or indirectly exposed to wildfire from embers and home-to-home ignition. Communities that are not exposed are not likely to be subjected to wildfire from either direct or indirect sources. Wildfire exposure is calculated based on wildfire likelihood and proximity to large areas of flammable wildland vegetation. Any community that is located where there is a chance wildfire could occur (in other words, where wildfire likelihood is greater than zero) is exposed to wildfire. Directly exposed homes are located in an area considered to be covered by flammable wildland vegetation. Indirectly exposed homes are located within one mile of a large area considered to be covered by flammable wildland vegetation. Non-exposed homes are located more than one mile from a large area considered to be covered by flammable wildland vegetation. The following map, from NOAA's Wildfire Risk to Communities, indicates the wildfire exposure for Kansas Region H:

**Map 127: Kansas Region H Wildfire Exposure**



Source: NOAA's Wildfire Risk to Communities

The duration of a wildfire depends on the weather conditions, how dry it is, the availability of fuel to spread, and the ability of responders to contain and extinguish the fire. Historically, some wildfires have lasted only hours, while other fires have continued to spread and grow for an entire season. They spread quickly and often begin unnoticed until they have grown large enough to signal by dense smoke. If fuel is available, and high wind speeds hit, a wildfire can spread over a large area in a very short amount of time. These factors make the difference between small upstart fires easily controlled by local fire services to fires destroying thousands of acres requiring multiple state and federal assets for containment and suppression.

The National Fire Danger Rating System allows fire managers to estimate today's or tomorrow's fire danger for a given area. It combines the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an area's fire protection needs. It links an organization's readiness level (or pre-planned fire suppression actions) to the potential fire problems of the day. The following is a brief explanation of the different fire danger levels based on criteria established by the National Fire Danger Rating System.

**Table 129: National Fire Danger Rating System**

<b>Rating</b>	<b>Description</b>
Low	Fuels do not ignite easily from small embers, but a more intense heat source, such as lightning, may start fires in duff or dry rotten wood. Fires in open, dry grasslands may burn easily a few hours after a rain, but most wood fires will spread slowly, creeping or smoldering. Control of fires is generally easy.
Moderate	Fires can start from most accidental causes, but the number of fire starts is usually pretty low. If a fire does start in an open, dry grassland, it will burn and spread quickly on windy days. Most wood fires will spread slowly to moderately. Average fire intensity will be moderate except in heavy concentrations of fuel, which may burn hot. Fires are still not likely to become serious and are often easy to control.
High	Fires can start easily from most causes and small fuels (such as grasses and needles) will ignite readily. Unattended campfires and brush fires are likely to escape. Fires will spread easily, with some areas of high intensity burning on slopes or concentrated fuels. Fires can become serious and difficult to control unless they are put out while they are still small.
Very High	Fires will start easily from most causes. The fires will spread rapidly and have a quick increase in intensity, right after ignition. Small fires can quickly become large fires and exhibit extreme fire intensity, such as long-distance spotting and fire whirls. These fires can be difficult to control and will often become much larger and longer-lasting fires.
Extreme	Fires of all types start quickly and burn intensely. All fires are potentially serious and can spread very quickly with intense burning. Small fires become big fires much faster than at the "very high" level. Spot fires are probable, with long-distance spotting likely. These fires are very difficult to fight and may become very dangerous and often last for several days.

Source: Wildfire Fire Assessment System

The severity of wildfire depends on several quickly changing environmental factors. It is impossible to strategically estimate the severity of a wildfire as these factors, including drought conditions and wind speed, have such a great influence on the wildfire conditions. The Characteristic Fire Intensity Scale within the Southern Wildfire Risk Assessment Summary Report specially identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories.

The following table details the range of wildfire intensity:

**Table 130: Characteristic Fire Intensity Scale**

<b>Class</b>	<b>Description</b>
Class 1- Very Low	Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

**Table 130: Characteristic Fire Intensity Scale**

Class	Description
Class 2- Low	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Class 3- Moderate	Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
Class 4 - High	Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property
Class 5- Very High	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Source: Southern Wildfire Risk Assessment Summary Report

#### 4.16.3 Previous Occurrences

FEMA can approve declarations for fire management assistance when the Administrator determines that a fire or fire complex on public or private forest land or grassland threatens such destruction as would constitute a major disaster. There have been no fire management declarations for Kansas Region H.

Wildfires are a frequent occurrence in both Kansas and Kansas Region H with over 35,000 incidents reported from 2018 to 2023. The majority of these are generally small and quickly contained with recent fire occurrences burning a smaller acreage due to quicker response times, better spotting practices, and stronger management policies. The following table details recent Kansas Region H wildfires that burned over 500 acres, caused damages greater than \$100,000, and/or caused injuries or fatalities:

**Table 131: Kanas Region H Wildfires 2018- 2023**

Date	County	Jurisdiction	Buildings Burned	Total Dollar Loss	Injuries and Fatalities	Acres Burned
04/07/2023	Chautauqua	Cedar Vale	0	\$250,000	0	Not reported
10/28/2022	Bourbon	Fulton	0	\$150,000	0	Not reported
04/11/2021	Greenwood	Eureka	0	\$0	0	600
04/02/2021	Greenwood	Madison	0	\$0	0	2,600
03/07/2021	Greenwood	Madison	0	\$0	0	800
11/18/2020	Greenwood	Madison	0	\$0	0	700
11/15/2020	Greenwood	Eureka	0	\$0	0	700
03/08/2020	Greenwood	Madison	0	\$0	0	1,500
03/05/2020	Greenwood	Eureka	0	\$0	0	5,000
01/08/2020	Greenwood	Reece	0	\$0	0	2,500
01/08/2020	Greenwood	Reece	0	\$0	0	2,055
04/17/2018	Elk	Longton	0	\$0	0	800
04/17/2018	Greenwood	Severy	0	\$0	0	1,500
04/16/2018	Greenwood	Reece	0	\$0	0	604
04/11/2018	Greenwood	Fall River	0	\$0	0	2,000
04/07/2018	Wilson	Fredonia	0	\$0	0	750
04/05/2018	Greenwood	Fall River	0	\$0	0	640
03/21/2018	Wilson	Fredonia	0	\$0	0	1,300
03/16/2018	Montgomery	Elk City	0	\$0	0	1,000
03/15/2018	Montgomery	Cherryvale	0	\$0	0	550
03/15/2018	Montgomery	Elk City	0	\$0	0	600

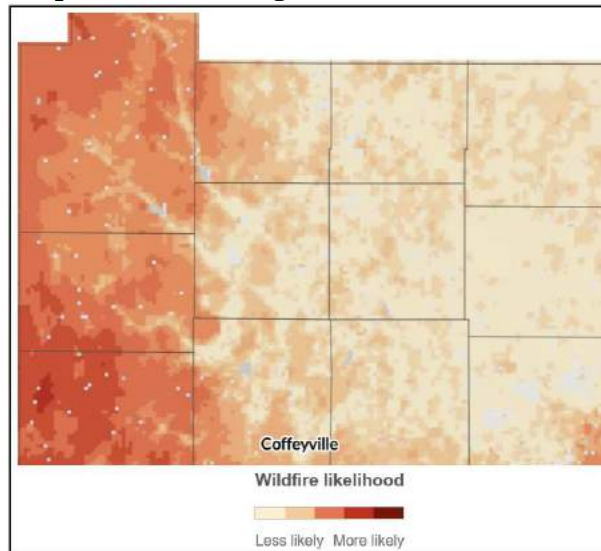
Source: KDEM



#### 4.16.4 Probability of Future Events

Predicting the probability of wildfire occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. NOAA’s Wildfire Risk to Communities mapping, which uses the best available science to identify risk, was used to help determine the probability of future wildfires within Kansas Region H. The following map indicates the likelihood of a wildfire within the Kanas Region H:

**Map 128: Kansas Region H Wildfire Likelihood**



Source: NOAA’s Wildfire Risk to Communities

#### 4.16.5 Projected Changes in Location, Intensity, Frequency, and Duration

Climate change can result in a significant increase in the likelihood and severity of wildfires. The occurrence of more frequent and longer lasting droughts due to climate change can increase the availability of fuels for wildfires through the drying of vegetation. Additionally, both the increased occurrence and continued decline of native species due to lack of precipitation can cause the proliferation of invasive species which can provide quick-burning fuels that contribute to the start and spread of fire.

Climate change may impact the frequency and magnitude of wildfires in the following ways:

- **Increased Frequency:** Warmer temperatures and prolonged periods of drought associated with climate change create conditions that favor more frequent wildfires. Extended fire seasons are becoming the new norm in many regions.
- **Greater Intensity:** Higher temperatures and drier conditions can lead to more intense wildfires. These fires burn hotter and spread more rapidly, making them more challenging to control and extinguish.
- **Longer Fire Seasons:** Climate change is extending the length of fire seasons, leading to earlier starts and later endings. This puts additional stress on firefighting resources and increases the risk of wildfires overlapping with other disasters.
- **Altered Precipitation Patterns:** Changes in precipitation patterns, including more intense rainfall events followed by extended dry periods, can promote the growth of vegetation, which can then become fuel for wildfires during subsequent dry periods.
- **Drought Conditions:** Prolonged droughts associated with climate change reduce soil moisture levels and the availability of water sources. Dry conditions increase the susceptibility of vegetation to ignition.
- **Vegetation Changes:** Climate change can alter the distribution and composition of vegetation, such as the expansion of drought-tolerant species. This can change fuel availability and make ecosystems more fire-prone.
- **Insect Infestations:** Warmer temperatures can lead to increased insect infestations in forests. Infested and dead trees provide additional fuel for wildfires.
- **Wildfire Behavior:** Climate change can lead to changes in wildfire behavior, including the development of fire whirls, more extreme fire behavior events, and increased spotting (the spread of embers ahead of the main fire).

Compounding the potential future impact of this hazard, local discussions indicate that a continued staffing shortage and aging equipment in the majority of regional fire departments may hamper future response activities.

#### 4.16.5 Vulnerability and Impact

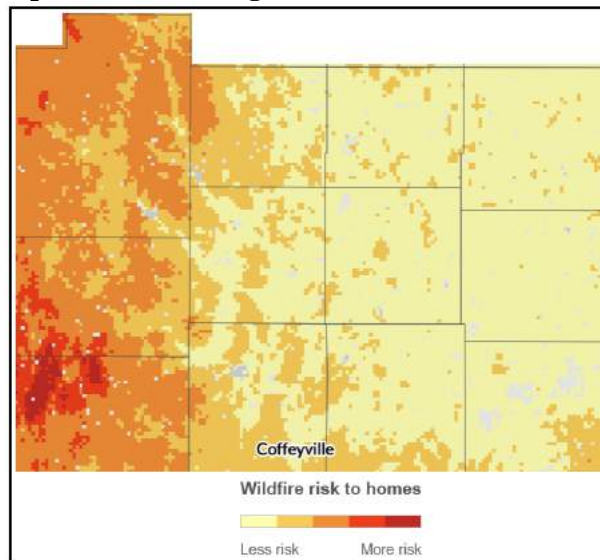
Wildfires can have significant and often devastating impacts on people and communities. These impacts can vary depending on the wildfire's intensity, size, path, and the preparedness of the affected area, and may include.

- **Injuries and Fatalities:** Wildfires can lead to injuries and fatalities among residents, firefighters, and emergency responders due to burns, smoke inhalation, and accidents during firefighting efforts.
- **Evacuations and Displacement:** Wildfire damage can force people to leave their homes, leading to temporary or even long-term displacement. Some may require emergency shelter and assistance from relief organizations.
- **Property Loss:** Wildfires can cause extensive property damage to homes, businesses, and vehicles.
- **Health Risks:** Smoke from wildfires can contain harmful pollutants, including fine particulate matter and toxic gases, which can lead to respiratory problems and exacerbate pre-existing health conditions. Vulnerable populations, such as children and the elderly, are at higher risk.
- **Mental Health Impact:** The trauma and stress associated with experiencing a wildfire, evacuations, property loss, and the challenges of recovery can have a significant impact on mental health, including anxiety, depression, and post-traumatic stress disorder.
- **Emergency Response Challenges:** Wildfires can strain emergency response resources, including firefighting personnel, equipment, and medical facilities. First responders may be faced with a large number of emergency calls.
- **Economic Costs:** Wildfires result in economic costs, including property damage and insurance claims.

Additionally, wildfires can devastate communities and homes. They can cause various types of property damage, including burning structures, charring of exterior surfaces, and damage to roofs, walls, and windows. The heat generated by wildfires can weaken or melt building materials. In extreme cases, wildfires can completely destroy homes, reducing them to ashes and rubble. Homes that may not have been directly impacted by the fire may also be affected. Wildfires can damage utility infrastructure, including power lines and gas pipelines, leading to utility interruptions that affect homes and residents. They can damage or contaminate water supply infrastructure, affecting access to clean water for drinking, firefighting, and sanitation.

The following map, from NOAA's Wildfire Risk to Communities, indicates the wildfire risk to homes in Kansas Region H:

**Map 129: Kansas Region H Wildfire Risk to Homes**



Source: NOAA's Wildfire Risk to Communities

Wildfires can have wide-ranging impacts on critical infrastructure. They can damage electrical transmission and distribution lines, transformers, and power substations. This can lead to widespread power outages, affecting homes, businesses, hospitals, and emergency response capabilities. Damage cell towers, telephone lines, and other communication infrastructure can hinder emergency response efforts, as well as the ability of individuals to call for help or communicate with loved ones. Wildfires can block roads with debris, making them impassable and hindering emergency response and evacuation efforts.

Hospitals and healthcare facilities may be damaged or rendered inoperable during wildfires, affecting the ability to provide medical care during a disaster. Fire stations, police stations, and emergency operation centers may be damaged or destroyed, impacting the ability of first responders to coordinate disaster response efforts. Damage to emergency shelters and housing facilities can disrupt services which are critical for providing temporary shelter to displaced individuals and families.

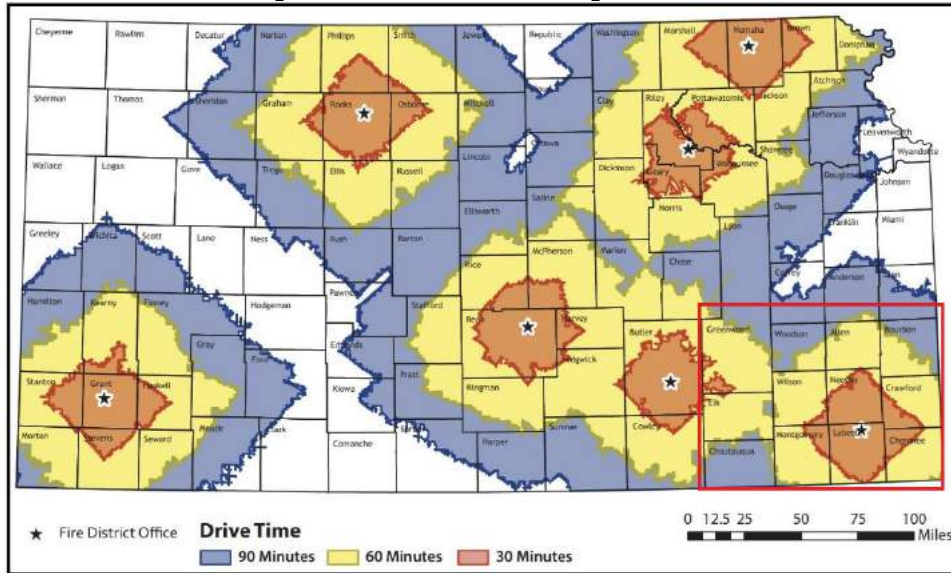
Wildfires can have varied impacts on the environment. These impacts are often destructive and can affect ecosystems, wildlife, natural resources, and even the local climate. They can destroy natural habitats, including forests, grasslands, wetlands, and shrublands. This can have devastating effects on wildlife species that depend on these ecosystems for shelter, food, and breeding. Wildfires can harm or displace wildlife, resulting in injury or death. They can force wildlife to flee their habitats, leading to displacement and potential conflicts with human populations. Animals may struggle to find suitable new habitats. Post-fire landscapes are often vulnerable to colonization by invasive plant species, which can outcompete native vegetation and disrupt ecosystem functions.

Wildfires can have significant impacts on government operations, which may include:

- **Emergency Response and Public Safety:** Wildfires can lead to a surge in emergency calls for services related to accidents, injuries, and damaged structures. Agencies involved in emergency response must mobilize additional resources to handle these demands.
- **Emergency Operations Centers:** Wildfire often require the activation of Emergency Operations Centers to coordinate emergency response efforts. These centers serve as hubs for communication, resource allocation, and decision-making during disasters.
- **Infrastructure Damage:** Wildfires can cause extensive damage to critical infrastructure, including roads, bridges, schools, government buildings, and utility facilities. This damage can disrupt government operations and hinder transportation and communication.
- **Budgetary Impact:** The costs associated with emergency response efforts, disaster recovery, and infrastructure repair can strain budgets.
- **Resource Allocation:** Local governments must allocate resources, including personnel, equipment, and stockpiled supplies, to support emergency response and recovery efforts.
- **Communication Challenges:** Wildfires can disrupt communication networks, hindering the ability of government agencies to communicate internally and with the public. This can impact emergency notifications and coordination efforts.
- **Economic Impact:** The destruction of infrastructure and businesses can have significant economic consequences for local communities, including job losses and reduced economic activity.
- **Public Services:** Wildfires can disrupt the delivery of public services, including transportation, utilities, and social services, affecting the well-being of residents.

The Kansas Forest Service operates seven full-time district offices with fire staff to serve firefighters and communities in wildland fire efforts. The following map illustrates the anticipated response time for these staff to reach Kansas Region H communities when requested by local resources:

**Map 130: Kansas Forest Response Time**



Source: Kansas Forest Service

**Potentially Vulnerable Community Lifelines**

Wildfires can impact various community lifelines, critical systems and services that communities rely on for their functioning. Vulnerabilities arise due to the stress that wildfires conditions place on infrastructure, resources, and operational processes. As an overview, the May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report indicates the following loss values for community lifelines:

**Table 132: Economic Impacts of Loss of Service Per Capita Per Day (in 2022 dollars)**

Category	Loss
Loss of Electrical Service	\$199
Loss of Wastewater Services	\$66
Loss of Water Services	\$138
Loss of Communications/Information Technology Services	\$141

Source: May 2023 FEMA Benefit-Cost Analysis Sustainment and Enhancements Standard Economic Value Methodology Report

Wildfires can have significant impacts on electrical utilities, affecting both the infrastructure and the services they provide. Some of the key impacts include:

- **Damage to Power Lines and Equipment:** Wildfires can cause direct damage to electrical infrastructure such as power lines, transformers, substations, and other equipment. The intense heat from the fire can melt wires, damage insulators, and compromise the structural integrity of utility poles and towers.
- **Power Outages:** The destruction of power lines and equipment can lead to widespread power outages in affected areas. This not only disrupts daily life for residents but can also impact critical services such as hospitals, emergency response systems, and water treatment facilities.
- **Infrastructure Accessibility:** Wildfires can make it difficult for utility crews to access affected areas due to road closures, damaged infrastructure, and hazardous conditions. This can delay repair and restoration efforts, prolonging the duration of power outages.
- **Grid Instability:** The loss of transmission lines and substations can destabilize the electrical grid, leading to voltage fluctuations, frequency variations, and potential cascading outages. Restoring grid stability after a wildfire requires careful coordination and management by utility operators.
- **Safety Concerns:** Wildfires pose safety risks to utility workers involved in repair and restoration efforts. In addition to the immediate dangers of fire and smoke, there may be hazards such as downed power lines, weakened structures, and unstable terrain.

In order to reduce plan duplication, mapping concerning electrical generation plants, high-capacity transmission lines, and electrical utility providers as well as utility repair and replacement cost estimation provides may be found in Section 4.10, maps 39 and 40.

Communications systems within Kansas Region H may have an increased vulnerability to wildfire events. Of particular concern are 911 and dispatch systems. All jurisdictions are served by a 911 and dispatch system, providing direct dispatching for:

- Law Enforcement
- Emergency Medical Services
- Fire

Wildfires can disrupt this vital communications system, affecting reliability and functionality. Some of the key vulnerabilities include:

- **Structural Damage to Communication Towers:** Wildfires can cause direct structural damage to communication towers, including cellular, television, radio, and microwave towers. Toppled or damaged towers can disrupt signal transmission and reception.
- **Power Outages:** Wildfires often cause power outages by damaging electrical infrastructure. Communication facilities, including cell towers and data centers, rely on a stable power supply. Power failures can lead to service interruptions.
- **Fiber Optic Cable Damage:** Wildfires can damage underground and aerial fiber optic cables. Severed cables can disrupt data transmission and internet connectivity.
- **Equipment Damage:** Communication equipment located outdoors, such as antennas, dishes, and amplifiers, can be damaged by wildfires, affecting the performance of communication systems.
- **Loss of Communication Nodes:** Wildfires can damage communication nodes, exchanges, and network switching centers. Loss of these critical components can lead to widespread service disruptions.
- **Cellular Network Congestion:** During and after a wildfire there is often an increased demand for cellular communication as individuals seek information and contact loved ones. This surge in demand can lead to network congestion and reduced service quality.

The cost to repair communications networks can vary widely depending on the extent of the damage, the size of the network, and the specific technologies involved. Repair costs may include expenses for labor, equipment replacement or repair, materials, and any additional resources required to restore the network to full functionality. The following data, from the U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency, indicates cost ranges for communications system components:

**Table 133: Summary of Communication System Component Costs**

<b>Components</b>	<b>Examples</b>	<b>Cost</b>	<b>Expected Lifespan</b>
Infrastructure	Towers, shelters, commercial and backup power equipment,	\$\$\$-\$\$\$\$\$	20–25 years
Fixed Station Equipment	Antennas, repeaters, towers on wheels, consoles, mobile stations, servers, computers, physical and electronic security elements (e.g., fencing, cameras, monitors, environmental conditions)	\$\$-\$\$\$	3-15 years
Devices	Handheld portable radios, cellular phones, satellite phones, mobile data devices	-\$-\$	2-10 years
Accessories	Holsters, chargers, speakers, lapel microphone extensions, Bluetooth, vehicle kits, aircards, intercoms	\$	2-10 years
Features	Encryption to protect against security risks, ruggedization to ensure reliant services, Over-the-Air-Programming, automatic roaming	-\$-\$\$\$	-

**Table 133: Summary of Communication System Component Costs**

Components	Examples	Cost	Expected Lifespan
Software and Data Storage	Global information system, emergency notifications, monitoring, call answering, database access, Automatic Vehicle Locator	\$-\$\$	-

Source: U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency

Wildfires can significantly impact emergency response infrastructure, creating challenges for first responders and organizations involved in managing and mitigating the effects. Wildfires can impact emergency response through:

- **Transportation Disruptions:** Debris on roads can hinder the ability of emergency vehicles to navigate and reach affected areas promptly. Hazardous road conditions may result in delays in response times.
- **Road Closures:** Wildfires can lead to the closure of roads due to debris accumulation and hazardous conditions. This can limit access for emergency vehicles and impede the evacuation of residents.
- **Communication Disruptions:** Wildfires can disrupt communication networks, affecting the ability of emergency responders to coordinate and communicate effectively. Downed power lines and damage to communication infrastructure contribute to these disruptions.
- **Power Outages:** Wildfires downing power lines can lead to power outages. Emergency response facilities, such as command centers and fire stations, may lose power, affecting their operational capabilities.
- **Resource Allocation Challenges:** Wildfires often require the allocation of additional resources, including personnel, equipment, and supplies, to address immediate needs. This can strain emergency response organizations and impact their ability to respond to other concurrent incidents.
- **Logistical Challenges:** Wildfires may create logistical challenges for the transportation of supplies, equipment, and personnel to affected areas, hindering the overall effectiveness of emergency response efforts.
- **Increased Demand for Services:** Wildfires can result in an increased demand for emergency services, including medical assistance, search and rescue operations, and responses to accidents. Emergency response organizations may need to manage a higher volume of incidents simultaneously.

In order to reduce plan duplication, mapping concerning fire and police locations may be found in Section 4.13, maps 94 and 95.

Wildfires can have various impacts on water utilities and infrastructure, affecting both the supply and quality of water as well as the infrastructure used to treat and distribute it. Here are some ways wildfires can impact water utilities and infrastructure:

- **Water Source Contamination:** Wildfires can contaminate surface water and groundwater sources with ash, debris, sediment, and pollutants. When rain falls on burned areas, it can wash ash and other contaminants into rivers, lakes, and reservoirs, compromising water quality. This can pose challenges for water treatment plants in removing contaminants and ensuring the safety of drinking water supplies.
- **Reduced Water Availability:** Wildfires can decrease water availability in affected watersheds by altering hydrological processes such as infiltration, runoff, and groundwater recharge. The loss of vegetation and soil cover increases the risk of erosion and reduces water retention capacity, leading to decreased streamflow and lower reservoir levels. Water utilities may need to implement conservation measures and adjust water allocation plans to manage shortages during and after wildfires.
- **Infrastructure Damage:** Wildfires can damage water infrastructure such as pipelines, pump stations, treatment plants, and storage facilities. Direct exposure to flames, intense heat, and falling debris can cause structural damage, melting of pipes, and electrical equipment failure. In addition, the loss of vegetation and soil stability can increase the risk of landslides and mudflows, which can damage or block water conveyance systems.
- **Power Outages:** As mentioned earlier, wildfires can disrupt electrical utilities, leading to power outages that affect water treatment and distribution operations. Many water treatment plants rely on electricity to power

pumps, motors, and treatment processes. Without power, water utilities may be unable to maintain adequate water pressure, treat water to regulatory standards, or supply water to customers.

In order to reduce plan duplication, mapping concerning water infrastructure may be found in Section 4.10, map 44.

Hospitals and other smaller medical facilities may see an increase in wildfire related injuries during an event, but it is considered unlikely that this increase will impact or overload capacity. However, tornadoes can increase the demand for emergency shelters, particularly in cases of widespread power outages. Setting up and managing these shelters can strain resources. Hospital capacity mapping may be found in Section 4.10, Map 41.

**FEMA NRI**

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating counties from wildfires:

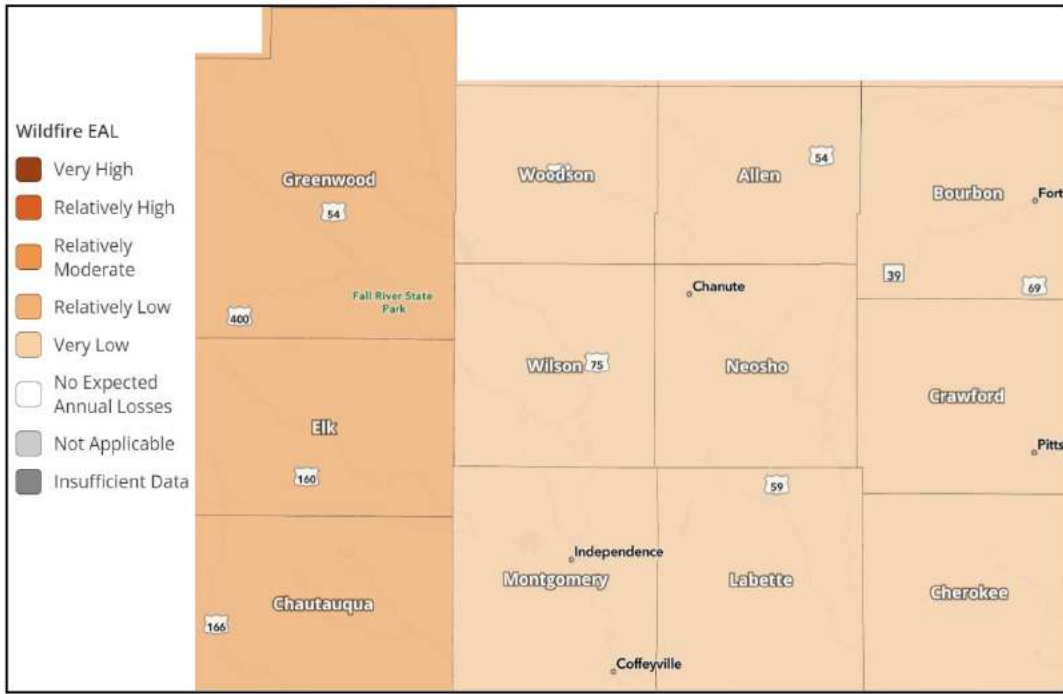
**Map 131: Kansas Region H FEMA NRI Wildfire Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community’s risk. The following map indicates the EAL for wildfires for participating counties within Kansas Region H:

**Map 132: Kansas Region H FEMA NRI Wildfires EAL**



Source: FEMA NRI

The following table indicates the FEMA NRI and EAL analysis for each participating Kansas Region H county for wildfire:

**Table 134: Kansas Region H FEMA NRI and EAL for Wildfire by County**

County	Risk Index	EAL
Allen	Very Low	Very Low
Bourbon	Very Low	Very Low
Chautauqua	Relatively Moderate	Relatively Low
Cherokee	Very Low	Very Low
Crawford	Very Low	Very Low
Elk	Relatively Low	Relatively Low
Greenwood	Relatively Low	Relatively Low
Labette	Very Low	Very Low
Montgomery	Very Low	Very Low
Neosho	Very Low	Very Low
Wilson	Very Low	Very Low
Woodson	Very Low	Very Low

Source: FEMA NRI

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 135: Wildfire Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	People located in the immediate area of the fire face the risk injury or death if not evacuated in time. Once evacuated, they may face lengthy period of relocation. Fires can release toxic components which can cause adverse health effects including respiratory and cardiovascular system impacts. Psychological and psychiatric concerns



**Table 135: Wildfire Consequence Analysis**

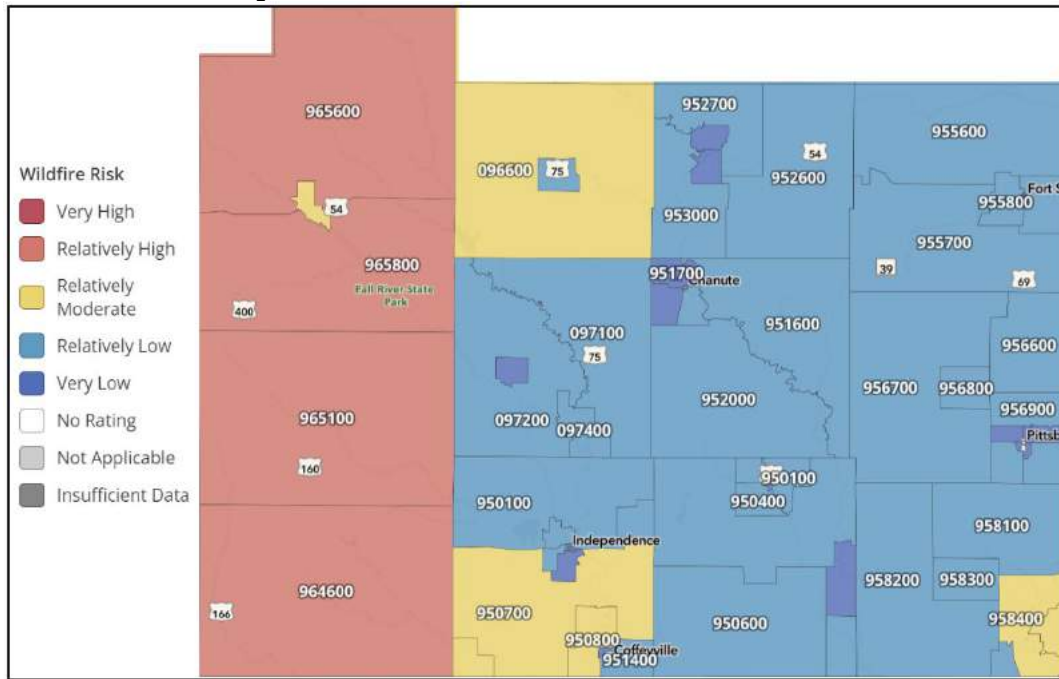
<b>Subject</b>	<b>Potential Impacts</b>
	may arise due to exposure to the traumatic event. Young children and the elderly are especially vulnerable to health issues stemming from fire and smoke exposure.
Impact on Responders	Fire, police, and emergency responders may be called to evacuate people from the fire area, close roads, create fire breaks, attend to the injured, and direct traffic. Firefighters are at a higher risk of smoke inhalation, burns, and health problems due to working in close proximity to fires and the subsequent smoke.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. Wildfires may impact an agency’s ability to maintain continuity of operations due to impacts on critical infrastructure.
Delivery of Services	Fires can cause disruption of services, including the ability to deliver goods and services. Impacts on operations could lead to a reduction or cessation of services. Goods and facilities may be damaged or destroyed by fire, smoke, or extremely high temperatures.
Property, Facilities, and Infrastructure	Fire can damage or completely destroy property and critical facilities, as well as lead to interruption of the power supply system. A fire of significant strength can cause major damage to buildings or farmland. Large fires may also interrupt transportation systems such as train and bus lines, creating a challenge for public transit and evacuation.
Impact on Environment	Fires can cause significant impact to the environment by spreading pollution, damaging agricultural crops, and disturbing the wildlife and natural areas. Water and soil pollution caused by fire can cause longer term threats to ecosystem health. Fire damage may also affect soil formation, nutrient cycling, and carbon sequestration and storage.
Economic Conditions	Fires can cause a fiscal impact on the local government, even if costs can be recouped by federal grants. Agriculture is a major component of the local, county and state economy, and major fires could cause significant impact. Costs may be associated with loss of income, damage to property, firefighting can be significant.
Public Confidence in Governance	Governmental response, on all levels, state and local, would require direct action that must be immediate and effective to maintain public confidence.

**4.16.7 Jurisdictional Risk and Vulnerability**

To help understand the risk and vulnerability to wildfires of participating jurisdictions mapping from the FEMA NRI was run on a census tract level. As the NRI does not generate mapping for individual jurisdictions, census tract analysis is the closest analogue available to understand individual jurisdiction conditions.

Using the FEMA NRI, and consisting of three input components (expected annual loss, social vulnerability, and community resilience), the following map was created indicating the potential risk to participating jurisdictions (as indicated by census tract) from wildfires:

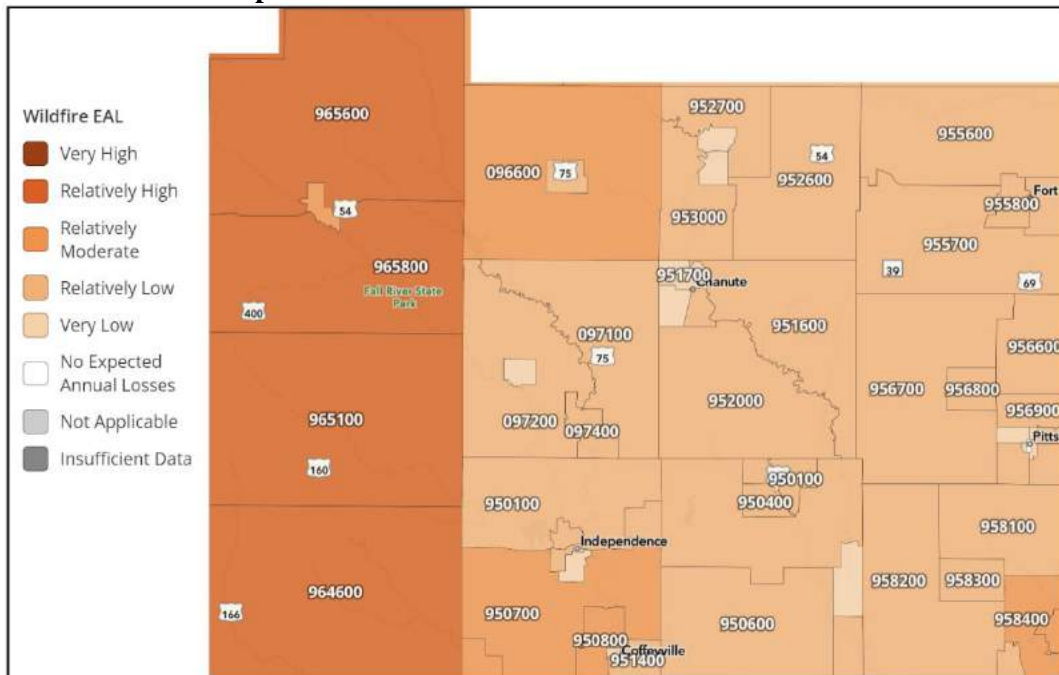
**Map 133: FEMA NRI Jurisdictional Wildfires Risk**



Source: FEMA NRI

As part of the NRI, EAL represents the average economic loss in dollars resulting from natural hazards each year and is proportional to a community's risk. The following map indicates the EAL for wildfires for participating jurisdictions (as indicated by census tract) within Kansas Region H:

**Map 134: FEMA NRI Jurisdictional Wildfires EAL**



Source: FEMA NRI

FEMA NRI data tables, by census tract, are included in Appendix C. These data tables contain the risk index and EAL along with total building valuation and agricultural valuation allowing for an understanding of potential structural and agricultural vulnerability on a jurisdictional basis.

## 4.17 Cybersecurity Event

### 4.17.1 Hazard Description

Cybersecurity attack refers to a deliberate and malicious attempt to compromise the security of computer systems, networks, devices, or data. The primary objectives of cyberattacks can vary widely and may include gaining unauthorized access, stealing sensitive information, disrupting operations, or extorting payment. Cybersecurity threat actors can be classified as:



- **Hackers:** Loosely organized groups known for conducting distributed denial-of-service attacks and defacing websites to promote political or social causes.
- **Ransomware Operators:** Criminal groups use ransomware to encrypt victims' data and demand ransoms for decryption keys.
- **Malware Developers:** Individuals or groups create and distribute malicious software (malware) for profit.
- **Organized Crime:** Criminal organizations may engage in various forms of cybercrime, such as identity theft, credit card fraud, and hacking for profit.
- **Advanced Persistent Threat Groups:** Nation-state-sponsored groups are among the most sophisticated threat actors. They conduct long-term, highly targeted cyber espionage campaigns.

### 4.17.2 – Location and Extent

The entire state is vulnerable to cybersecurity incidents. As most day-to-day activities rely on the internet in one aspect or another, any person or infrastructure is susceptible to cybersecurity threats. Cyber-attacks can take various forms, each with its own tactics and techniques, and include:

- **Malware Attacks:** Malicious software, such as viruses, worms, Trojans, ransomware, and spyware, is used to infect and compromise a computer or network. Malware can cause damage, steal information, or provide unauthorized access.
- **Phishing Attacks:** Phishing attacks involve tricking individuals into revealing sensitive information, such as passwords or financial details, by posing as a legitimate entity. Phishing emails, websites, and messages are common tools for attackers.
- **Denial-of-Service Attack:** An attack that overwhelms a target system or network with traffic, rendering it inaccessible.
- **Distributed Denial-of-Service Attack:** An attack that involve multiple compromised devices (a botnet) flooding a target with traffic, making it impossible to function effectively.
- **Man-in-the-Middle Attacks:** In these attacks, an attacker intercepts and possibly alters communications between two parties without their knowledge. This can lead to data interception, eavesdropping, or impersonation.
- **SQL Injection Attacks:** Attackers inject malicious SQL code into input fields of a web application to manipulate a database, potentially gaining unauthorized access or extracting data.
- **Zero-Day Vulnerabilities:** Attackers leverage security vulnerabilities in software or hardware that are not yet known to the vendor or public. These vulnerabilities are known as "zero-days."
- **Brute Force:** Attackers attempt to gain access to an account or system by trying all possible password combinations until the correct one is found.
- **Dictionary Attacks:** Attackers use precompiled lists of common passwords to guess login credentials.
- **Social Engineering Attacks:** This involves manipulating individuals into divulging confidential information or performing actions that compromise security. It often relies on psychological manipulation.
- **Ransomware Attacks:** Attackers encrypt a victim's data and demand a ransom in exchange for the decryption key. Payment does not guarantee data recovery, and it encourages further attacks.
- **Insider Attacks:** Malicious or negligent actions by individuals within an organization can pose significant cybersecurity risks, as they may have access to sensitive information and systems.

- **Supply Chain Attacks:** Attackers target suppliers, vendors, or partners to compromise the security of products or services, which can affect downstream organizations and consumers.
- **Internet of Things Attacks:** Devices connected to the internet, such as smart appliances and sensors, can be targeted to gain unauthorized access or control.

#### **4.17.3 Previous Occurrences**

Kansas Region H has experienced numerous cyber-attacks over the past few years. In general, jurisdictions impacted by cyber-attacks have elected not to publicize these events as part of this HMP.

#### **4.17.4 Probability of Future Events**

The continued evolution of cyber criminals and nation sponsored groups indicates that the probability of future events is significant. Although the Kansas Region H has not experienced a large-scale cybersecurity incident, large-scale attacks occur worldwide on a regular basis. The number of attacks is projected to increase, especially on critical infrastructure. Additionally, due to the widespread use of computers, email, and the internet, and the reliance on technology to support daily functions, the risks of cybersecurity incidents will continue to grow.

#### **4.17.5 Projected Changes in Location, Intensity, Frequency, and Duration**

Predicting the exact future changes in the frequency and intensity of cyber-attacks is challenging due to the rapidly evolving nature of threats, the expanding diversity of attack vectors, and the dynamic landscape of technology. Cyber criminals are likely to continue evolving their tactics, techniques, and procedures to become more sophisticated. This includes the use of advanced malware, ransomware, and targeted attacks that exploit vulnerabilities in both technology and human behavior.

Future geopolitical landscape conditions can influence the location and targeting of cyber-attacks. Nation-state actors may shift their focus based on political tensions, economic interests, or strategic objectives. Critical infrastructure, government entities, and corporations may be primary targets.

#### **4.17.6 Vulnerability and Impact**

Cybersecurity attacks can have a range of potential impacts on individuals, both direct and indirect, often affecting their finances and privacy. Some of the potential impacts of a cybersecurity attack may include:

- **Theft of Funds:** Attackers may steal money from victims' bank accounts or cryptocurrency wallets.
- **Credit Card Fraud:** Stolen credit card information can be used for unauthorized purchases.
- **Identity Theft:** Attackers may steal personal data, such as Social Security numbers, addresses, and dates of birth, to commit identity theft.
- **Opening Fraudulent Accounts:** Cybercriminals can use stolen information to open credit cards, loans, or other financial accounts in the victim's name.
- **Data Exposure:** Personal or sensitive information may be exposed, leading to loss of privacy and potential embarrassment or harm.
- **Blackmail or Extortion:** Attackers may use compromising information to blackmail or extort victims.

The impact of a cybersecurity attack on people can be far-reaching, affecting various aspects of their lives. Timely detection, response, and preventive measures, such as strong passwords, cybersecurity awareness, and software updates, are essential to mitigate these risks.

Cybersecurity attacks can have wide-ranging impacts on facilities, including critical infrastructure, industrial facilities, government buildings, and data centers. The extent of these impacts depends on the type and sophistication of the attack, the facility's level of cybersecurity preparedness, and the criticality of the systems and operations involved. Potential impacts may include:

- **Disruption of Operations:** Cyberattacks can lead to the disruption of facility operations, causing downtime that can be costly and disruptive.

- **Production Delays:** Manufacturing and industrial facilities may experience delays in production processes, affecting supply chains and delivery schedules.
- **Revenue Loss:** Downtime and operational disruptions can result in financial losses due to lost sales, contracts, or customer trust.
- **Remediation Costs:** Facilities must invest in cybersecurity measures and incident response efforts, incurring additional costs.
- **Data Breach:** Facilities that store sensitive data, such as customer information or proprietary research, may suffer data breaches, leading to data loss or theft.
- **Regulatory Penalties:** Compliance violations and regulatory fines may be imposed for failing to protect sensitive data.
- **Physical Safety Risks:** Attacks on critical infrastructure facilities, such as power plants or water treatment plants, can pose physical safety risks to the public and the environment.
- **Industrial Accidents:** Industrial control systems attacks can lead to accidents or malfunctions with serious safety implications.
- **Loss of Control:** Cyberattacks targeting operational technology systems can lead to a loss of control over critical processes, affecting safety and efficiency.

Attacks on facilities with environmental controls can lead to environmental damage, such as chemical spills or pollution which can affect the surrounding ecosystem and wildlife.

Cyberattacks on government operations can have wide-ranging impacts on the services provided to citizens. The effects of these attacks can vary depending on factors like the type of attack, the target's level of cybersecurity readiness, and the criticality of the systems involved, and may include:

- **Disruption of Government Services:** Cyberattacks can disrupt government services, leading to delays in processing applications, issuing licenses, or providing essential public services.
- **Website Downtime:** Government websites may become inaccessible, hindering access to information and online services.
- **Financial Costs:** States may incur significant expenses related to incident response, system recovery, and cybersecurity improvements.
- **Loss of Revenue:** Disrupted services can lead to revenue losses, impacting budgets and financial stability.
- **Confidential Data Exposure:** Cyberattacks can result in the exposure of sensitive citizen and employee data, including Social Security numbers, health records, and financial information.
- **Regulatory Penalties:** Non-compliance with data protection regulations can lead to penalties and legal consequences.
- **Election Integrity:** Attacks on election systems can compromise the integrity of elections, eroding trust in the democratic process.
- **Emergency Response:** Cyberattacks on public safety and emergency response systems can hinder responses to disasters or crises.
- **Reputation Damage:** Publicized cyberattacks can damage citizens' trust in government agencies and institutions.
- **Legal and Regulatory Consequences:** Jurisdictions may face legal liability for cybersecurity incidents, leading to lawsuits, fines, and settlements.

### **Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 136: Cybersecurity Incident Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	The public is heavily reliant on technology for daily life. Any disruption to this technology caused by a cyber incident could impair the ability to conduct activities such as communications and mobile banking. Although mostly indirect, public health impacts may include loss of access of important medical information and services, personal information, and unwanted sharing of that information. Disruption in attaining medical help or resources may delay receiving proper medical attention or care.
Impact on Responders	If a cybersecurity incident were to directly impact the communications infrastructure relied upon by first responders it would create severe disruptions in the ability to provide response services. If a cybersecurity event were to affect the 911 operations, response capabilities would be impacted significantly increasing critical response times.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A cybersecurity event may impact an agency’s ability to maintain continuity of operations based on the hazard’s potential to impact power or communications infrastructure. Specifically, agencies that rely on electronic backup of critical files are vulnerable to cyber incidents. A cyber incident that disrupts access to technology at both the primary and alternative facilities would be catastrophic.
Delivery of Services	The delivery of goods and services is heavily reliant on technology for the facilitation of transactions. A cyber incident could significantly disrupt the delivery of goods and services for businesses that rely on technology for the delivery of their materials.
Property, Facilities, and Infrastructure	Property and facilities may become either unusable as a result of a cyber incident, particularly if their infrastructure is reliant on technology for sustainability. In addition, a significant majority of critical infrastructure systems are tied to technology through virtual operations and supervisory control and data acquisition systems. A cyber incident could disable the majority of systems which control critical infrastructure, as well as traffic control, dispatch, utility, and response systems.
Impact on Environment	Targeted cyber incidents can impact water or wastewater treatment facilities. The disruption of the systems tied to this infrastructure could cause water pollution or contamination. In addition, a cyber incident could impact the environment if a release of a hazardous material was triggered as a cascading effect of the incident.
Economic Conditions	A significant cyber incident could have ramifications on the state economy. Society is heavily reliant on electronic-based commerce through mobile banking, automated teller machines, and electronic trading. Any disruption to daily activities by a cyber incident could effectively halt the ability to conduct transactions electronically.
Public Confidence in Governance	In the case of a cyber incident in which significant amounts of data is stolen, the government’s inability to protect confidential personal data would impact confidence. Such an incident would also subsequently cause pause regarding the security of using electronic systems for government services.

**4.17.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

**Table 137: Cyber Security Incident Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	4	3	3	3	3.5	High
Bourbon	4	3	3	3	3.5	High
Chautauqua	4	3	3	3	3.5	High
Cherokee	4	3	3	3	3.5	High
Crawford	4	3	3	3	3.5	High
Elk	4	3	3	3	3.5	High
Greenwood	4	3	3	3	3.5	High

**Table 137: Cyber Security Incident Planning Significance**

<b>County</b>	<b>Probability</b>	<b>Magnitude</b>	<b>Warning Time</b>	<b>Duration</b>	<b>Score</b>	<b>Planning Significance</b>
Labette	4	3	3	3	3.5	High
Montgomery	4	3	3	3	3.5	High
Neosho	4	3	3	3	3.5	High
Wilson	4	3	3	3	3.5	High
Woodson	4	3	3	3	3.5	High

## 4.18 Hazardous Material Incident

### 4.18.1 Hazard Description

Hazardous materials are any substances that pose a risk to health, life, or property when released or improperly handled. Generally, the term refers to materials with hazardous chemical or physical properties, though sometimes biological agents can fall under this category. The basic types of hazardous materials may be categorized according to more than six different systems; but the categories of U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11002) provide a general guide to hazardous materials:



- **Extremely Hazardous Substances:** Materials that have acutely toxic chemical or physical properties and may cause irreversible damage or death to people or harm the environment if released or used outside their intended use.
- **Hazardous Substances:** Materials posing a threat to human health and/or the environment, or any substance designated by the EPA to be reported if a designated quantity of the substance is spilled into waterways, aquifers, or water supplies or is otherwise released into the environment.

### 4.18.2 – Location and Extent

All of Kansas Region H is vulnerable to hazardous materials incidents. Hazardous materials incidents are generally classified as:

- **Fixed Facility Incidents:** Commercial Facilities and Superfund Sites
- **Transportation Incidents:** Highway, Railway, Pipeline, Air, and Water

Tier II facilities, also known as Tier II Reporting facilities, refer to certain types of industrial or commercial establishments that are required to report information about the hazardous chemicals they store or use. This reporting is mandated under the Emergency Planning and Community Right-to-Know Act under Section 312. Key factors in Tier II reporting include:

- **Hazardous Chemicals:** Tier II facilities are those that store or use hazardous chemicals in quantities that meet or exceed specific thresholds established by EPCRA. Hazardous chemicals can include substances such as flammable liquids, toxic gases, and corrosive materials.
- **Reporting Thresholds:** Facilities must report if they have a quantity of any hazardous chemical at the facility that equals or exceeds established thresholds. These thresholds can vary depending on the specific chemical and are typically set in terms of pounds (or a lower threshold for Extremely Hazardous Substances).
- **Reporting Frequency:** Tier II reports must be submitted annually to the State Emergency Response Commission, the Local Emergency Planning Committee, and local fire department.
- **Information Required:** Tier II reports must include detailed information about the hazardous chemicals stored or used at the facility, including the chemical name, location on the site, quantities, and specific health and physical hazards.
- **Community Right-to-Know:** In addition to assisting emergency responders, Tier II reporting also serves the "Community Right-to-Know" aspect of EPCRA, allowing the public to access information about hazardous chemicals in their communities. This information is typically made available through public databases.
- **Enforcement:** Non-compliance with Tier II reporting requirements can result in penalties and fines. Facilities are responsible for ensuring accurate and timely reporting.

Transportation-related hazardous materials incidents can encompass a wide range of scenarios involving the transportation of hazardous materials, including chemicals, flammable substances, radioactive materials, and other dangerous goods. These incidents can occur during the movement of these materials by road, rail, or air. These transportation-related hazardous materials incidents can include:



- **Chemical Spills on Highways:** Accidents involving trucks carrying hazardous chemicals can result in spills on highways. This can lead to the release of toxic, flammable, or corrosive substances, posing risks to people, the environment, and emergency responders.
- **Train Derailments:** Train derailments can result in the release of hazardous materials from tanker cars. These incidents can occur on both freight and passenger rail lines and may involve chemicals, fuels, or other hazardous substances.
- **Aircraft Hazmat Incidents:** Cargo planes and commercial aircraft can carry hazardous materials as cargo. Incidents may involve leaks, fires, or other issues related to hazardous materials on board.
- **Marine Spills:** Incidents involving the transport of hazardous materials by sea can lead to marine spills. These spills may involve oil, chemicals, or other substances, and can have significant environmental and economic consequences.
- **Pipeline Leaks:** Pipelines transport hazardous liquids and gases over long distances. Leaks or ruptures in pipelines can result in the release of hazardous materials into the environment.
- **Radiological Transport Incidents:** The transport of radioactive materials, including medical isotopes and nuclear fuel, carries the risk of accidents that can result in the release of radioactive substances. These incidents can have serious health and environmental consequences.
- **Chemical Fires in Transit:** Fires in transit vehicles carrying hazardous chemicals can be particularly challenging to control. The fire may cause chemical reactions, leading to toxic smoke or explosions.
- **Cargo Container Incidents:** Shipping containers transported by truck or rail can contain hazardous materials. Incidents involving these containers may include leaks, fires, or chemical reactions.
- **Intermodal Transport Incidents:** When goods are transferred between different modes of transportation (e.g., ship to truck), there is the potential for mishandling or spills during these transfers.

Counties with multiple chemical facilities experience a greater risk of a chemical incident than other locations. However, almost every community in Kansas Region H has at least one fixed facility that stores, produces, or utilizes hazardous material. Hazardous materials shipments move through Kansas Region H annually. These shipments can occur at any time, day or night, and by means of road, rail, or air, and often through areas with urbanized, high volume traffic routes.

#### **4.18.3 Previous Occurrences**

The United States Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) is a federal agency responsible for regulating the safe and secure transportation of hazardous materials by all modes of transportation, including pipelines, trucks, trains, and aircraft. PHMSA's primary mission is to protect people and the environment from the risks associated with the transportation of hazardous materials. PHMSA plays a crucial role in safeguarding public safety, protecting the environment, and ensuring the integrity of the nation's hazmat transportation infrastructure. Its work encompasses a wide range of hazardous materials, including chemicals, radioactive materials, explosives, and more. The agency collaborates with industry stakeholders, state and local governments, and other federal agencies to achieve its safety and security objectives.

For the five-year period from 2018 to 2023, PHMSA has reported over 2,300 hazardous materials incidents in Kansas. Of these incidents, none in Kansas Region H resulted in a serious evacuation, a major artery closure, fatalities, or injuries.

#### **4.18.4 Probability of Future Events**

Data from PHMSA indicates that the probability of a hazardous material incident during any given year is 100%. However, data indicates that the large majority of these incident will be small in scale and cause no evacuation, injuries, or deaths,

#### **4.18.5 Projected Changes in Location, Intensity, Frequency, and Duration**

Projecting specific changes in the location, intensity, and frequency of hazardous materials events involves numerous variables, including future industrial activities, changes in transportation systems, and more stringent regulatory measures. The location of hazardous materials events is often influenced by urbanization and industrialization. The vulnerability of communities to hazardous materials incidents may change based on demographic shifts, land-use

changes, and socioeconomic factors. Population density and proximity to industrial sites influence the potential impact of such incidents.

The continued transportation of hazardous materials by road, rail, and air poses inherent risks. Changes in transportation patterns, such as increased volumes or altered routes, can impact the potential for accidents and spills. However, the adoption of new technological solutions, such as sensor technologies, remote monitoring, and safety measures, can contribute to the mitigation of hazardous materials risks.

Changes in climate patterns, such as extreme weather events, floods, or wildfires, can influence the frequency and intensity of hazardous materials incidents. Events like floods or wildfires may impact facilities handling hazardous materials.

As previously noted, Kansas Region H facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to jurisdictional facilities has remained static since the completion of the 2019 HMP.

#### **4.18.6 Vulnerability and Impact**

Kansas Region H's first line of defense in protecting public health, safety, and welfare in a hazardous materials event are trained local responders and the Office of the State Fire Marshal. The Office of the State Fire Marshal Hazardous Materials Division was developed in 1999 to enhance the safety of Kansans by making trained, equipped hazardous materials teams available throughout the state. These teams support local first responders in hazardous materials incidents, accidents, weapons of mass destruction and acts of terrorism.

Hazardous materials teams exist through contracts between individual local fire departments and the Office of the State Fire Marshal. The fire departments agree to provide team members and regional response outside their local jurisdiction and the Office of the State Fire Marshal provides training and supplements equipment at no cost to the department. The ten regional response teams, consisting of nationally accredited hazardous materials technicians, are fully equipped to enter the area immediately surrounding the hazardous material in order to monitor the environment and mitigate the incident. The regional response teams comprise a network and are able to support each other with personnel and or equipment when needed.

These teams can respond to most areas in Kansas within an hour or less in order to address hazardous materials incidents. The regional response teams are located in the following areas:

- Coffeyville
- Colby
- Emporia
- Ford County
- Manhattan
- Overland Park
- Salina
- Sedgwick County
- Topeka

A hazardous materials release can have serious and immediate impacts on human health and safety, as well as long-term effects depending on the nature of the hazardous materials involved, the release's magnitude, and the proximity of individuals to the incident. Acute health effects from a hazardous materials release can include:

- **Chemical Exposure:** Depending on the type of hazardous material, exposure can lead to symptoms such as respiratory distress, skin burns, eye irritation, nausea, vomiting, and headaches.
- **Toxicity:** Exposure to highly toxic substances can cause severe poisoning, organ damage, and even death.

- **Asphyxiation:** Some hazardous materials, like certain gases, can displace oxygen and lead to asphyxiation when inhaled in high concentrations.
- Injuries and Trauma:**
- **Physical Injuries:** Explosive releases or fires involving hazardous materials can cause physical injuries such as burns, cuts, and blunt force trauma.
- **Psychological Trauma:** Witnessing or being affected by a hazardous materials incident can lead to psychological trauma, including post-traumatic stress disorder (PTSD) and anxiety.

Long-Term Health Effects from a hazardous materials release can include:

- **Chronic Illnesses:** Exposure to hazardous materials may lead to chronic health conditions, including cancer, respiratory diseases, neurological disorders, and reproductive problems.
- **Delayed Effects:** Some hazardous substances have delayed health effects, with symptoms appearing days, months, or even years after exposure.

Additionally, a hazardous material release can result in impacted populations requiring:

- **Evacuation:** To protect public safety, authorities may order evacuations of affected areas, displacing residents from their homes.
- **Temporary Shelter:** Evacuated individuals may require temporary shelter, food, and medical care.

The direct risk or vulnerability to property and facilities from a hazardous materials incident is generally limited. Impacts include restricting access to a facility or potential damage to the facility from corrosive agents. Direct risk and vulnerability to actual structures is limited due to the characteristics of a hazardous materials incident.

Critical facilities and infrastructure may suffer secondary impacts from a hazardous materials incident. Access may be restricted due to closures, causing employee absenteeism which could indirectly impact the ability for a critical facility to operate. Without necessary operators, critical infrastructure may be susceptible to indirect failure.

A hazardous materials release can have significant and lasting impacts on the environment, depending on the type and quantity of hazardous materials involved, the location of the release, and the effectiveness of response and cleanup efforts. Environmental impacts can range from immediate and localized effects to long-term ecological damage and may include:

- **Soil Contamination:** Hazardous materials can seep into the soil, contaminating it with toxic substances. This can affect soil quality and fertility.
- **Agricultural Damage:** Contaminated soil may harm crops, leading to reduced agricultural yields or the need to abandon affected fields.
- **Surface Water Contamination:** Hazardous materials can enter rivers, lakes, and streams, leading to water pollution. This can harm aquatic ecosystems, fish, and wildlife.
- **Groundwater Contamination:** Contaminants can infiltrate underground aquifers, potentially affecting drinking water supplies and requiring costly remediation efforts.
- **Habitat Destruction:** Contamination can harm natural habitats, disrupt ecosystems, and threaten the survival of plant and animal species.
- **Bioaccumulation:** Toxic substances can accumulate in the food chain, leading to health issues for wildlife and potentially impacting humans who consume contaminated organisms.

Some hazardous materials are persistent and can remain in the environment for extended periods, causing ongoing harm. Environmental recovery from hazardous materials releases can be slow and challenging, requiring extensive remediation efforts.

A hazardous materials incident can have wide-ranging impacts on local operations. These impacts can disrupt government operations, strain resources, and pose challenges to maintaining public order. Some of the impacts of a hazardous materials release on operations may include:

- **Emergency Response and Healthcare:** Local agencies must rapidly mobilize emergency response teams, medical personnel, and healthcare facilities to address a release. The surge in demand for medical resources can strain healthcare systems, including hospitals, clinics, and emergency services.
- **Resource Allocation:** Local agencies may need to allocate resources to respond to the incident. This includes personnel, equipment, and facilities.
- **Transportation and Supply Chain Disruption:** Transportation infrastructure closures can affect the movement of essential goods and services, including medical supplies, food, and fuel.
- **Economic Impact:** The economic consequences of a hazardous materials incident can be severe. Business closures, reduced consumer confidence, and trade disruptions can lead to financial losses, unemployment, and economic instability.
- **Public Services:** Essential public services, such as law enforcement, fire services, and sanitation, may be stretched thin due to the demands of responding to an incident.
- **Agency Coordination:** Coordination and communication among various state agencies and with federal authorities will be tested during a hazardous materials incident. Local emergency management agencies will activate emergency response plans and incident command structures.

### Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 138: Hazardous Materials Incident Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Cities within Kansas Region H with dense populations, particularly along major travel routes, are the most vulnerable (with an emphasis on any particularly vulnerable groups, such as infants and young children in day-care centers, children in schools, the elderly in residential facilities, hospital patients, etc.). Varying materials will have different effects on the population as well as environmental effects which will dilute or increase potency. Protective measures will need to be taken particularly for those of the most vulnerable communities.
Impact on Responders	Hazardous material incidents can create a dangerous environment and significant challenge for first responders. First responders may have to manage the evacuation of people from the area impacted by an incident, as well as direct traffic, close roads, operate shelters, and take care of the injured and sick. First responders must control their own exposure to the incident and ensure the correct PPE is utilized. Equipment may also be damaged or destroyed due to the impact of the incident, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A hazardous materials incident may impact an agency’s ability to maintain continuity of operations based on the incidents potential to cause workforce absenteeism, contamination, or destruction of public facilities.
Delivery of Services	The ability to deliver services can be impacted locally, regionally, or statewide depending on the characteristics of the incident. To reduce the public’s potential exposure to dangerous materials, roadway and bridge closures may be required, as well as transit service disruptions. Businesses and places of commerce may completely shut down due to chemical incidents, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation, governmental operations, and infrastructure facilities may be disrupted during a significant incident. Roads and bridges can be completely obstructed and

**Table 138: Hazardous Materials Incident Consequence Analysis**

Subject	Potential Impacts
	require cleanup. Incidents can impact access to homes and critical entities such as hospitals, schools, and supermarkets, as well as other critical facilities. Safe access to homes, vehicles, structures, and resources may adversely affect response activities. Power loss can lead to disruption of critical infrastructure and technology.
Impact on Environment	Agriculture crops and livestock are extremely susceptible to the adverse effects of biological incidents that may cause contamination of a large area of land livestock. biological incidents may impact the environment long-term by disturbing or killing wildlife and adversely affecting nature preserves.
Economic Conditions	Hazardous materials incidents pose a fiscal impact on the local and state governments. Local, county, and state resources may be required during a large incident therefore reducing their availability for future events. Additionally, private businesses may not be able to maintain operations during or after an incident if they are impacted, which would impact the economy.
Public Confidence in Governance	The public’s confidence in the state’s governance is affected by immediate local and state response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence high.

**4.18.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

**Table 139: Hazardous Materials Incident Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	4	1	3	1	2.7	Moderate
Bourbon	4	1	3	1	2.7	Moderate
Chautauqua	4	1	3	1	2.7	Moderate
Cherokee	4	1	3	1	2.7	Moderate
Crawford	4	1	3	1	2.7	Moderate
Elk	4	1	3	1	2.7	Moderate
Greenwood	4	1	3	1	2.7	Moderate
Labette	4	1	3	1	2.7	Moderate
Montgomery	4	1	3	1	2.7	Moderate
Neosho	4	1	3	1	2.7	Moderate
Wilson	4	1	3	1	2.7	Moderate
Woodson	4	1	3	1	2.7	Moderate

## 4.19 Infrastructure Failure

### 4.19.1 Hazard Description

Infrastructure failure refers to the malfunction, breakdown, or collapse of critical infrastructure systems or components that are essential for the functioning of the State. These failures can disrupt essential services, impact public safety, and lead to economic losses. There are many potential causes of infrastructure failure, including:



- **Aging Infrastructure:** Many infrastructure systems, such as bridges, roads, and water pipelines, have exceeded their designed lifespan. Over time, the materials degrade, and the risk of failure increases.
- **Earthquakes:** Seismic events can damage or destroy buildings, bridges, dams, and utility systems.
- **Floods:** Flooding can damage electrical systems, disrupt transportation, and contaminate water supplies.
- **Severe Weather:** High winds and heavy rainfall can damage infrastructure.
- **Extreme Heat:** Prolonged periods of extreme heat can cause roads to buckle, power lines to sag, and strain electrical grids.
- **Freezing Temperatures:** Cold weather can lead to frozen water pipes, which can burst and disrupt water supply.
- **Design Flaws and Poor Maintenance:** Inadequate design, construction, or maintenance practices can result in structural weaknesses or deteriorating infrastructure.
- **Corrosion and Erosion:** Infrastructure components, particularly those involving metals, can deteriorate due to corrosion over time. Erosion of natural landscapes can damage infrastructure.
- **Material Failures:** Inadequate materials or the use of substandard materials during construction can lead to premature infrastructure failure.
- **Overloading and Overuse:** Bridges, roads, and other structures can fail if they are subjected to loads beyond their designed capacity. Water and wastewater systems can fail if they are overwhelmed by excessive demand.
- **Cyberattacks:** Critical infrastructure systems, such as power grids, water treatment plants, and transportation systems, can be vulnerable to cyberattacks, which can disrupt operations and compromise safety.
- **Terrorism and Sabotage:** Deliberate acts of terrorism or sabotage can target critical infrastructure, leading to failures and disruptions.
- **Environmental Changes:** Long-term environmental changes due to climate change can threaten infrastructure.

Infrastructure failures can have significant consequences, including economic losses, public safety risks, and disruptions to daily life. Preventing such failures and ensuring the resilience of critical infrastructure often require proactive measures such as regular maintenance, improvements in design and construction practices, disaster preparedness, and investments in modernization and upgrades.

### 4.19.2 – Location and Extent

Details concerning Kansas Region H’s infrastructure were sourced from the 2020 Report Card for Kansas’s Infrastructure from the American Society of Civil Engineers (ASCE). The report provides information on infrastructure components and provides a letter grade to indicate condition. Grades are issued based on the following scale:

**Table 140: ASCE Infrastructure Grade System**

Grade	Description
A: Exceptional	The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.
B: Adequate for Now	The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require

**Table 140: ASCE Infrastructure Grade System**

Grade	Description
	attention. A few elements exhibit significant deficiencies. Safe and reliable with minimal capacity issues and minimal risk.
C: Mediocre, Requires Attention	The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.
D: Poor, At Risk	The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure.
F: Failing/Critical, Unfit for Purpose	The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.

Source: ASCE

The following table indicates the grades by the State of Kansas received for infrastructure components:

**Table 141: ASCE Kansas Infrastructure Grades**

Infrastructure Component	Grade
Aviation	C-
Bridges	C
Dams	C-
Drinking Water	C
Energy	C
Levees	C
Rail	C
Roads	C-
Stormwater	C-
<b>Overall Grade</b>	<b>C</b>

Source: ASCE

The Aviation Division of the Kansas Department of Transportation supports airfield pavement management programs and calculates pavement condition for all airports within its system apart from Dwight D. Eisenhower National airport in Wichita, which is required to perform the program as a small hub airport. The most recent state-wide pavement management report indicated pavement on 79 of 80 airports examined as having a condition of fair or less than fair on 51% of the pavement area, and a condition of satisfactory or good on the remaining 49% of the pavement. Runway pavement condition, of critical importance to operations, is reported as 50% of the runways available fall below a fair condition.

Kansas ranks fifth in the nation for total number of bridges with approximately 5,000 state-owned, 19,500 locally-owned, and 400 Kansas Turnpike Authority owned structures, making up the 25,001 Kansas bridge inventory. The majority of local bridges are owned by counties. The average age of a Kansas bridge is 48 years, with over 20% of the bridges exceeding the modern 75-year design life

Railroads in Kansas consist of 4,700 miles of track which transport approximately 340,000,000 tons of freight per year. While the 2,800 miles of track owned by the major rail companies is typically well maintained, short line tracks that carry lower traffic volumes may not have adequate funding in place for necessary maintenance and upgrades. Kansas has over 140,000 miles of public roadways. The two agencies responsible for the major highways and interstates are the Kansas Department of Transportation and the Kansas Turnpike Authority, who maintain 10,300 miles (7.4%) and 236 miles (less than 0.2%) of the state’s total public road miles, The remainder of road network is maintained by cities and counties.

In general, electricity in Kansas Region H is provided by either investor-owned utilities or rural electric cooperatives (RECs). RECs are not-for-profit, member-owned electric utilities. Kansas RECs are governed by a board of trustees elected from the membership. Most Kansas RECs were set up under the Kansas Electric Cooperative Act, which, together with the federal Rural Electrification Act of 1934, made electric power available to rural customers. Information on regional electrical suppliers may be found at [www.kec.org/servicearea\\_map.html](http://www.kec.org/servicearea_map.html). Additionally, locations of electric certified areas and transmission lines may be found at [www.kcc.state.ks.us/maps/ks\\_electric\\_certified\\_areas.pdf](http://www.kcc.state.ks.us/maps/ks_electric_certified_areas.pdf).

#### **4.19.3 Previous Occurrences**

Small scale infrastructure failures occur as a secondary impact from a natural disaster, such as a temporary power outage due to a thunderstorm or a communications outage from downed lines following a severe storm. Kansas Region H experiences these minor disruptions routinely and manages them through coordination across agencies and with the private sector. Specifically, when utility and/or infrastructure failure does occur, utility providers generally respond quickly to restore service. However, depending on the cause of the utility disruption, events of prolonged outages do occur.

#### **4.19.4 Probability of Future Events**

The probability of a utility failure can vary depending on a range of factors, including the type of utility, the condition of the infrastructure, weather conditions, and maintenance practices. Utility providers typically have systems and protocols in place to minimize the risk of utility failures, and they work to respond quickly to any outages or disruptions. The probability of a utility failure may also vary seasonally or during extreme weather events.

#### **4.19.5 Projected Changes in Location, Intensity, Frequency, and Duration**

Climate change can influence the frequency, intensity, and patterns of extreme weather events. An increase in these events can cause a commensurate increase in infrastructure failures. It is expected that climate change will impact infrastructure in the following ways:

- **Increased Frequency of Extreme Weather Events:** Climate change is associated with an increased frequency and intensity of extreme weather events, such as hurricanes, heatwaves, heavy rainfall, and wildfires. These events can damage utility infrastructure, leading to outages.
- **Heatwaves and Electrical Grids:** Rising temperatures can lead to more frequent and prolonged heatwaves. High temperatures can strain electrical grids, leading to increased demand for electricity for cooling and potentially causing power outages.
- **Increased Storm Intensity and Utility Damage:** Hurricanes and tropical storms may become more intense due to warming oceans. Stronger storms can damage power lines, transformers, and other electrical infrastructure, resulting in widespread electricity outages.
- **Sea-Level Rise and Coastal Infrastructure:** Sea-level rise, a consequence of climate change, can threaten coastal infrastructure, including power plants, wastewater treatment facilities, and transportation systems. It can lead to saltwater intrusion, erosion, and damage to critical infrastructure.
- **Flooding and Water Utilities:** More frequent and severe flooding events can impact water supply and wastewater treatment facilities, causing contamination and disruptions in water services.
- **Wildfires and Power Lines:** Climate change can contribute to more extensive and intense wildfires. In regions prone to wildfires, power lines and electrical equipment are at risk of igniting fires, leading to power outages and infrastructure damage.
- **Extreme Weather and Gas Pipelines:** Extreme weather events, including extreme cold or heat, can impact natural gas pipelines. Cold temperatures can freeze pipelines, while heatwaves can affect gas compressors and transmission systems.
- **Changing Precipitation Patterns:** Altered precipitation patterns, such as more intense rainfall or prolonged droughts, can affect the availability and quality of water resources, impacting water utilities and hydropower generation.



As previously noted, Kansas Region H facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to state facilities has remained static since the completion of the 2019 HMP.

#### **4.19.6 Vulnerability and Impact**

Infrastructure failure can have significant and immediate impacts on people. The specific impacts can vary depending on the type of utility that fails (electricity, water, gas) and the duration of the outage, and may include:

- **Disruption of Daily Life:** Utility failures can disrupt daily routines, including cooking, bathing, heating or cooling homes, and using electronic devices. Lack of electricity can also disrupt businesses, schools, and healthcare facilities.
- **Safety Concerns:** Utility failures, particularly in electrical and gas systems, can pose safety risks such as fires, electrical hazards, and gas leaks. Lack of electricity can result in the loss of lighting, increasing the risk of accidents and falls.
- **Health Implications:** Medical equipment that relies on electricity can become non-functional, posing risks to individuals with medical conditions. Lack of access to clean water can impact hygiene and health. Utility failures in healthcare facilities can impact the ability to provide medical care and support for patients. Prolonged utility failures, especially during extreme weather events, can lead to stress, anxiety, and discomfort. Vulnerable populations, such as the elderly, children, and those with special needs, may be particularly affected.

Utility failures can have significant impacts on critical infrastructure and facilities. The specific impacts can vary depending on the type of utility affected, the duration of the outage, and the criticality of the infrastructure, and may include:

- **Disruption of Operations:** Utility failures can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Compromised Safety and Security:** Loss of electricity can impact security systems, including surveillance cameras and alarm systems. Critical facilities may rely on backup power sources to maintain safety and security.
- **Loss of Communication:** Utility failures can disrupt communication systems, affecting the ability of critical facilities to coordinate responses and communicate with staff and the public.
- **Healthcare Impacts:** Hospitals and healthcare facilities may experience disruptions in patient care due to power outages, affecting the health and safety of patients. Medical equipment may require backup power to continue functioning.
- **Water and Sanitation Services:** Water utility failures can disrupt water supply to critical facilities, impacting sanitation services, firefighting capabilities, and patient care. Wastewater treatment plants may be affected, posing environmental and health risks.
- **Transportation Disruptions:** Transportation infrastructure, including airports, train stations, and traffic management systems, may be impacted by utility failures, leading to travel disruptions.
- **Safety Hazards:** Gas utility failures can result in gas leaks, posing fire and explosion hazards to critical infrastructure and nearby areas. Electrical failures may lead to equipment malfunctions, increasing the risk of accidents and safety incidents.

In general, a utility failure would have little effect on the environment. However, specific circumstances of the failure, such as a chemical leak, a downed power line in a fire prone area, or loss of wastewater containment could pose a concern. The impacts from those type of events can range from relatively minor and localized effects to more significant and widespread environmental consequences, and may include:

- **Wildfires:** Electrical utility failures, such as downed power lines or equipment malfunctions, can trigger wildfires. Wildfires can have devastating effects on natural landscapes and ecosystems.
- **Water Pollution:** Water utility failures, such as sewage system overflows or treatment plant malfunctions, can lead to the release of untreated wastewater into rivers, lakes, or oceans. This can result in water pollution, harm aquatic ecosystems, and affect drinking water quality downstream.

- **Chemical Spills:** Utility failures, particularly in industrial settings, can result in chemical spills and releases. These spills can harm the environment, contaminate soil and water, and endanger wildlife.

Infrastructure failure can have significant impacts on governmental operations, affecting the ability to provide essential services, respond to emergencies, and maintain critical infrastructure. The specific impacts can vary depending on the type of utility affected and the duration of the outage, and may include:

- **Disruption of Emergency Services:** Failures can disrupt the operations of emergency response agencies, including police, fire departments, and medical services. This can impede their ability to respond to accidents, fires, and medical emergencies.
- **Communication Challenges:** Failures, particularly in telecommunications and internet infrastructure, can hinder communication between government agencies, first responders, and the public. This can impact coordination during emergencies.
- **Data Loss and Information Technology Disruptions:** Electrical outages and information technology infrastructure failures can result in data loss and disrupt government operations that rely on digital records and systems.
- **Transportation Disruptions:** Transportation infrastructure, such as traffic management systems and public transit, may be impacted by utility failures, leading to travel disruptions and challenges in managing traffic flow.
- **Public Health Services:** Healthcare facilities and public health agencies may experience disruptions in patient care, vaccination programs, and disease surveillance during utility failures.
- **Safety Risks:** Failures can pose safety risks to government employees and the public, particularly when they result in electrical hazards, gas leaks, or water contamination.
- **Economic Consequences:** The economic impact of infrastructure failures can extend to governmental operations, affecting budgets and resources available for public programs and services.
- **Disaster Response and Recovery:** Failures may occur during natural disasters, adding complexity to state response and recovery efforts. Coordination among agencies becomes crucial.

### Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 142: Infrastructure Failure Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Critical infrastructure failures can lead to heavy flooding, power loss, property damage, injury, and even death. Roadways may be obstructed or inaccessible to the public, challenging transport and resource acquirement activities. A failure of critical infrastructure would have a direct impact on public health. Power outages, transit failures, access to clean water would create severe and immediate public health impacts.
Impact on Responders	Infrastructure failure would have a direct and immediate impact on first responder’s ability to respond effectively. Critical infrastructure failure may cause inaccessibility of roadways. Communications system failure would impact the responders’ ability to communicate their status or response capability.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. An infrastructure failure may impact an agency’s ability to maintain operations based on the incidents impact, including access to facility by transportation systems, and the availability of utilities, communications, energy, and water and wastewater systems.

**Table 142: Infrastructure Failure Consequence Analysis**

Subject	Potential Impacts
Delivery of Services	Delivery of services will be disrupted due to critical infrastructure failure. Transit systems may face closures due to public safety concerns. The ability to deliver food, drinking-water, and services will be impacted due to problems with accessibility and transport abilities. Communications, transportation, and governmental services operations would be impacted due to power failure and accessibility challenges.
Property, Facilities, and Infrastructure	Roads and bridges may be impacted, water and sewer systems may be damaged, leading to the issue of sanitation and waste collection. Property of homes and businesses may be completely destroyed if situated close to the failure point.
Impact on Environment	The impacts on the environment of critical infrastructure would vary based on the event. Failure of waste water plants would result in spreading pollution and hazardous materials throughout the environment including large bodies of water. Ecosystems and natural habitats may be destroyed, causing migration or death of wildlife.
Economic Conditions	Critical infrastructure failure would have a direct and considerable fiscal impact on the local government, however through federal disaster may be offset. Additionally, infrastructure failure in every sector has the potential to impact the ability of businesses to operate. If the private sector was not able to maintain operability, there would be continued revenue loss until operability was restored.
Public Confidence in Governance	Critical infrastructure failure would have a direct and immediate impact on the state's ability to provide governance, maintain order, and ensure the continuity of public services. Given a prolonged failure, the public would become increasingly distrustful of the government's abilities. Direct, immediate, and effective actions must be taken in order to maintain public confidence.

**4.19.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

**Table 143: Infrastructure Failure Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	3	3	3	2	2.5	Moderate
Bourbon	3	3	3	2	2.5	Moderate
Chautauqua	3	3	3	2	2.5	Moderate
Cherokee	3	3	3	2	2.5	Moderate
Crawford	3	3	3	2	2.5	Moderate
Elk	3	3	3	2	2.5	Moderate
Greenwood	3	3	3	2	2.5	Moderate
Labette	3	3	3	2	2.5	Moderate
Montgomery	3	3	3	2	2.5	Moderate
Neosho	3	3	3	2	2.5	Moderate
Wilson	3	3	3	2	2.5	Moderate
Woodson	3	3	3	2	2.5	Moderate

## 4.20 Radiological Incident

### 4.20.1 Hazard Description

For purposes of this plan, a radiological incident is considered an accident involving a release of radioactive materials from a nuclear reactor. Radiological accidents could cause injury or death, contaminate property and valuable environmental resources, as well as disrupt the functioning of communities and their economies. Since 1980, each utility that owns a commercial nuclear power plant in the United States has been required to have both an onsite and offsite emergency response plan as a condition of obtaining and maintaining a license to operate that plant. Onsite emergency response plans are approved by the U.S. Nuclear Regulatory Commission.



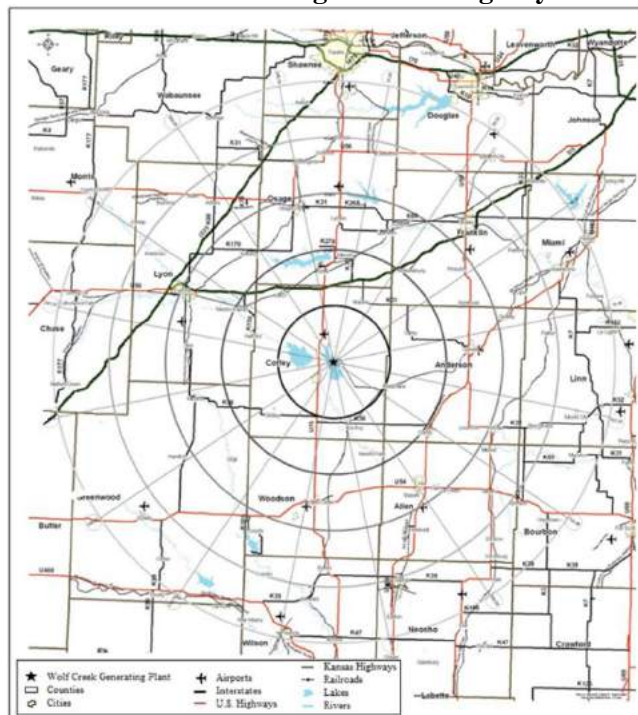
### 4.20.2 – Location and Extent

The only active commercial nuclear reactor within the State of Kansas is the Wolf Creek Nuclear Power Plant (Wolf Creek) in Coffey County. The following information, from the NRC, pertains to Wolf Creek:

- Location: Burlington, KS (3.5 miles NE of Burlington, KS)
- Operator: Wolf Creek Nuclear Operating Corp.
- Operating License: Issued - 06/04/1985
- Renewed License: Issued - 11/20/2008
- License Expires - 03/11/2045
- Reactor Type: Pressurized Water Reactor
- Licensed MWt: 3,565
- Reactor Vendor/Type: Westinghouse Four-Loop
- Containment Type: Dry, Ambient Pressure

The following map, from KDEM, illustrates both the 10-mile and 50-mile emergency planning zones (EPZs) for Wolf Creek.

**Map 135: Wolf Creek Generating Plant Emergency Planning Zones**



Source: KDEM

Kansas Region H utilizes the Nuclear Regulatory Commission emergency classification system indicating the risk of radiological incident to the public:

**Table 144: U.S. Nuclear Regulatory Commission Emergency Classification System**

Notification	Description
Notification of Unusual Event	Under this category, events are in process or have occurred that indicate potential degradation in the level of safety of the plant. No release of radioactive material requiring offsite response or monitoring is expected unless further degradation of the safety systems occur.
Alert	If an alert is declared, events are in process or have occurred that involve an actual or potential substantial degradation in the level of safety of the plant. Any releases of radioactive material from the plant are expected to be limited to a small fraction of the Environmental Protection Agency Protective Action Guides exposure levels.
Site Area Emergency	A site area emergency involves events in process or that have occurred that result in actual or likely major failures of plant functions needed for protection of the public. Any releases of radioactive material not expected to exceed the Environmental Protection Agency Protective Action Guides exposure levels except near the site boundary.
General Emergency	Events are in process or have occurred that involve actual or imminent substantial core degradation or melting with potential loss of containment integrity. Releases can reasonably be expected to exceed the Environmental Protection Agency Protective Action Guides exposure levels offsite for more than the immediate site area.

Source: U.S. Nuclear Regulatory Commission

#### 4.20.3 Previous Occurrences

No impactful nuclear incidents have been reported at the Wolf Creek Nuclear Power Plant.

#### 4.21.4 Probability of Future Events

The Wolf Creek Nuclear Power Plant operates using a pressurized water reactor, the type used by approximately two-thirds of the U.S. nuclear power plants. These reactors have several safety systems installed to protect the public from a possible accident. One notable safety feature is that if a pipe breaks and allows cooling water to escape from the metal vessel that contains the reactor core, there are several emergency pumps that will automatically start refilling lost water from an outdoor storage tank. However, the Nuclear Regulatory Commission has identified a flaw in this safety system, where debris can clog the backup pumps, preventing adequate cooling and presenting a significant hazard.

If the safety systems were to fail within the Wolf Creek Nuclear Power Plant, this could precipitate a high-impact event causing immediate and long-term damage to the environment and surrounding area. However, historically the Wolf Creek Nuclear Power Plant has only had minor malfunctions of the system.

#### 4.20.5 Projected Changes in Location, Intensity, Frequency, and Duration

There are no expected changes to the location or frequency of occurrence during the life of this plan as no nuclear power plants have been commissioned in or near the Kansas Region H. However, as the Wolf Creek Nuclear Power Plant continues to near the end of its life expectancy, and unless the continued diligent inspection and maintenance program is continued, the potential of a failure event could increase.

Climate change is associated with an increase in extreme weather events such as hurricanes, storms, and floods. These events can potentially damage or disrupt facilities that handle radioactive materials, leading to the release of radioactive substances.

As previously noted, Kansas Region H facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to jurisdictional facilities has remained static since the completion of the 2019 HMP.

#### 4.20.6 Vulnerability and Impact

A radiological release can have serious immediate and long-term impacts on human health, depending on the release's magnitude and the proximity of individuals to the incident. Acute and long-term health effects from a hazardous materials release can include:

- **Cancer:** Prolonged or repeated exposure to ionizing radiation increases the risk of cancer, including leukemia, thyroid cancer, and solid tumors.
- **Long-Term Health Issues:** Radiation exposure can lead to chronic health problems, such as cataracts, cardiovascular disease, and thyroid disorders.
- **Chronic Illnesses:** Exposure to hazardous materials may lead to chronic health conditions, including cancer, respiratory diseases, neurological disorders, and reproductive problems.
- **Delayed Effects:** Some hazardous substances have delayed health effects, with symptoms appearing days, months, or even years after exposure.
- **Genetic Effects:** Radiation exposure can increase the risk of genetic mutations in offspring, potentially leading to hereditary health issues.

Radiological incidents can cause significant psychological stress, anxiety, and fear among affected individuals and communities. Compounding the stress, large populations may need to be evacuated from affected areas to minimize exposure and may require temporary shelter and support services.

Radiological incidents can have significant impacts on facilities and critical infrastructure, affecting their operations, safety, and long-term functionality. These impacts can vary depending on the type and scale of the incident, the level of preparedness, and the effectiveness of mitigation efforts, but may include:

- **Radiological Contamination:** Facilities located in or near the affected area may become contaminated with radioactive materials, posing risks to employees, equipment, and operations. Facilities may require extensive decontamination efforts to ensure safe operations, which can be time-consuming and costly.
- **Operational Disruption:** Radiological incidents can lead to operational disruptions, shutdowns, and production delays.
- **Restricted Access:** Access restrictions may be imposed on facilities located in contaminated areas, affecting maintenance and repairs.
- **Supply Chain Disruption:** Facilities reliant on suppliers or vendors in affected areas may experience disruptions in the supply chain.
- **Logistics Challenges:** Transportation and logistics may be affected, hindering the delivery of essential materials and equipment.
- **Infrastructure Damage:** Radiological incidents can cause physical damage to infrastructure, including buildings, equipment, and supporting structures. Critical infrastructure may experience damage to electrical and mechanical systems, affecting functionality.

Radiological incidents can have long-lasting impacts on the environment, affecting ecosystems, wildlife, and natural resources. The extent of these impacts depends on the type and scale of the incident, the level of radiation released, and the effectiveness of containment and mitigation efforts, and may include:

- **Soil Contamination:** Radioactive materials can contaminate soil, making it unsuitable for agriculture and affecting plant and microbial life.
- **Water Contamination:** Surface and groundwater sources can become contaminated, posing risks to aquatic ecosystems and drinking water supplies.
- **Loss of Biodiversity:** Radiological incidents can harm local flora and fauna, leading to a decline in biodiversity and disrupting food chains.
- **Habitat Destruction:** Contaminated areas may become uninhabitable for wildlife, leading to the displacement or loss of species.

- **Persistent Contamination:** Some radioactive isotopes can remain in the environment for extended periods, causing long-term environmental damage.
- **Chronic Exposure:** Ecosystems and wildlife may experience chronic radiation exposure, leading to genetic mutations and reduced reproductive success.
- **Contaminated Fisheries Waters:** Radiation can affect fish and aquatic organisms, potentially entering the food chain and impacting fisheries and seafood safety.
- **Crop Contamination:** Crops grown in contaminated soil can become radioactive, posing risks to the food supply chain.
- **Livestock Impact:** Livestock that graze on contaminated vegetation may ingest radioactive materials, affecting meat and dairy products.

Radiological materials may be persistent and can remain in the environment for extended periods, causing ongoing harm. Environmental recovery from radiological releases can be slow and challenging, requiring extensive remediation efforts.

A radiological incident can have wide-ranging impacts on governmental operations, affecting functions, public safety, and overall stability. These impacts can disrupt government operations, strain resources, and pose challenges to maintaining public order, and may include:

- **Emergency Response and Healthcare:** Local emergency management agencies would rapidly mobilize emergency response teams, medical personnel, and healthcare facilities to address the release. The surge in demand for medical resources can strain healthcare systems, including hospitals, clinics, and emergency services.
- **Resource Allocation:** Local jurisdictions may need to allocate resources to respond to the incident. This includes personnel, equipment, and facilities.
- **Economic Impact:** The economic consequences of a radiological incident can be severe. Business closures, reduced consumer confidence, and trade disruptions can lead to financial losses, unemployment, and economic instability.
- **Public Services:** Essential public services, such as law enforcement, fire services, and sanitation, may be stretched thin due to the demands of responding to an incident.

### Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 145: Radiological Incident Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Citizens within 50-mile EPZ are at highest risk. Radiological incidents will have varying effects on the population based on the size, location, and current environmental conditions during the incident (wind direction, temperature). Protective measures will need to be taken, particularly for those in the most vulnerable communities.
Impact on Responders	Radiological incidents will create a dangerous environment and significant challenge for first responders who will have to manage the evacuation of people, direct traffic, close down roads, operate shelters, and take care of the injured and sick. First responders must control their own exposure to the radiological incident and ensure the correct protective equipment is utilized. Equipment may also be rendered unusable due to exposure, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A radiological event may impact an agency's ability to maintain

**Table 145: Radiological Incident Consequence Analysis**

Subject	Potential Impacts
	continuity of operations due to high amounts of employee absenteeism and potential restricted access to primary and alternate facilities due to radiological contamination.
Delivery of Services	To reduce the public's potential exposure to radiation, roadway and bridge closures may be required depending on the plume models, as well as transit service disruptions. Businesses and places of commerce may completely shut down due to radiological incidents, which leads to the disruption of goods and services.
Property, Facilities, and Infrastructure	Transportation and infrastructure facilities may be disrupted. Roads and bridges can be closed due to radiological releases and the required security perimeter around an event. Radiological incidents can impact access to homes and critical facilities such as hospitals, schools, and supermarkets. Energy services may be temporarily disrupted due to a plant failure, causing secondary impacts to other critical facilities.
Impact on Environment	Agriculture crops and livestock are extremely susceptible to the adverse effects of radiological incidents. Radiological incidents may impact the environment long-term by disturbing or killing wildlife and contaminating soils.
Economic Conditions	Local, county, and state resources may be required during a radiological incident therefore reducing their availability for future events. Private businesses may not be able to maintain operations during or after an incident if they are impacted, which would impact the economy.
Public Confidence in Governance	The public's confidence in governance is affected by immediate response through direct and effective actions to secure the radiological site and ensure the population is adequately informed of the risks posed by the incident. Efficiency in response and recovery operations is critical in keeping public confidence high.

**4.20.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

**Table 146: Radiological Incident Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	1	3	1	4	1.9	Low
Bourbon	1	3	1	4	1.9	Low
Chautauqua	1	3	1	4	1.9	Low
Cherokee	1	3	1	4	1.9	Low
Crawford	1	3	1	4	1.9	Low
Elk	1	3	1	4	1.9	Low
Greenwood	1	3	1	4	1.9	Low
Labette	1	3	1	4	1.9	Low
Montgomery	1	3	1	4	1.9	Low
Neosho	1	3	1	4	1.9	Low
Wilson	1	3	1	4	1.9	Low
Woodson	1	3	1	4	1.9	Low



## 4.21 Terrorism

### 4.21.1 Hazard Description

The United States does not have a standardized definition of terrorism that is agreed upon by all agencies. The Federal Bureau of Investigation generally defines terrorism as:

"the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

Terrorism is characterized by the use of violence, intimidation, or the threat of violence to instill fear, achieve political, religious, ideological, or social objectives, and disrupt the normal functioning of a society. It often involves acts of violence deliberately targeting civilians. Key elements and characteristics of terrorism include:



- **Political or Ideological Motivation:** Terrorism is often driven by political, religious, ideological, or social goals. Perpetrators seek to advance a particular agenda or bring about change in accordance with their beliefs.
- **Use of Violence:** Terrorism involves the use of violence, which can range from bombings, shootings, and kidnappings to cyberattacks and biological threats. The intent is to cause harm and instill fear.
- **Targeting Civilians:** Terrorist acts typically target civilians or non-combatants, rather than military or government personnel. This is done to maximize the psychological impact and create a sense of vulnerability within society.
- **Psychological Impact:** The primary objective of terrorism is to create fear and anxiety within the population. The fear generated by terrorist acts can have profound psychological and societal effects.
- **Non-State Actors:** Terrorism is often associated with non-state actors, such as terrorist organizations, extremist groups, or individuals acting independently. However, some state entities have also been accused of engaging in acts that meet the criteria of terrorism.
- **Symbolism:** Terrorist acts are often symbolic in nature, targeting specific locations, landmarks, or institutions that hold significance to the perpetrators or their cause.

Terrorism in the United States can take various forms, and the nature of terrorist threats has evolved over time. Common forms of terrorism in the United States include:

- **Domestic Terrorism:** Domestic terrorism involves acts of violence or intimidation committed by individuals or groups within the United States. These acts are typically driven by extremist ideologies, such as far-right extremism, far-left extremism, or other radical beliefs. Recent examples of domestic terrorism include attacks on religious institutions, acts of violence against minority communities, and violent protests.
- **Far-Right Extremism:** Far-right extremism refers to ideologies and movements characterized by extreme nationalism, racism, and opposition to government authority. Some far-right extremists have engaged in acts of violence targeting minority communities, government officials, or perceived enemies.
- **Far-Left Extremism:** Far-left extremism encompasses a range of radical ideologies, including anarchist and socialist beliefs. While not as prevalent as far-right extremism, far-left extremists have been involved in protests, clashes with law enforcement, and acts of violence.
- **Religiously-Motivated Terrorism:** Religious extremism can lead to acts of terrorism. In the United States, this has included attacks by individuals or groups inspired by extremist interpretations of Islam, Christianity, or other religions.
- **Examples include the 1993 World Trade Center bombing and the 2009 Fort Hood shooting.**
- **Single-Actor Terrorism:** Lone-wolf terrorism involves individuals who carry out acts of violence without direct affiliation with established terrorist organizations. These individuals are often self-radicalized and may be

inspired by online propaganda. Examples include the 1995 Oklahoma City bombing and the 2013 Boston Marathon bombing.

- Eco-Terrorism: Eco-terrorism refers to acts of violence or sabotage carried out in the name of environmental activism. These acts target industries or organizations perceived as harmful to the environment.
- Examples include arson attacks on logging facilities or animal testing labs.
- Cyberterrorism: Cyberterrorism involves using computer technology to disrupt or damage critical infrastructure, institutions, or networks. While not as common as other forms of terrorism, cyberattacks pose significant risks. Cyberattacks by state-sponsored actors or independent hackers can target government agencies, corporations, and infrastructure.

The U.S. government, law enforcement agencies, and intelligence services actively monitor and address various forms of terrorism. Counterterrorism efforts include preventive measures, intelligence gathering, community engagement, and law enforcement actions. Public awareness, community outreach, and reporting suspicious activities also play a role in countering terrorism in the United States.

Whether mass shooting events (especially school shootings) are considered acts of terrorism can be a subject of debate and can vary depending on the specific circumstances and legal definitions in different jurisdictions. There is no standardized definition of a mass shooting. The United States Investigative Assistance for Violent Crimes Act defines a mass killing as three or more killings in a single incident while the Federal Bureau of Investigation defines a mass shooting as any incident in which at least four people were shot and killed. Mass shootings involve acts of violence carried out in public places, often by individuals who may have personal grievances, mental health issues, or other motivations not necessarily connected to a political or ideological agenda. While mass shootings are undoubtedly acts of violence that result in tragedy and loss of life, they may not always fit the traditional definition of terrorism, as the primary motivation is often not to advance a political or ideological cause. If the shooter's primary aim is to instill fear, advance a political agenda, or promote a particular ideology, it may be more likely to be classified as terrorism. However, if the shooter's motivation is primarily personal, such as a desire for revenge or mental health issues, the act may not be considered terrorism under many legal definitions.

#### **4.21.2 – Location and Extent**

All of Kansas Region H is vulnerable to terrorism, particularly in densely populated urban areas or crowded venues. However, it is nearly impossible to pinpoint the exact location of the next terrorist attack. Through information and intelligence sharing, public safety personnel at the local, state, and federal level help identify potential targets for terrorist activity. Although it is impossible to predict for certain where the next terrorist attack will take place, terrorists generally target large, crowded places, such as malls, parks, and other large public or social gatherings, in order to maximize damage. In addition, some acts of terror are conducted against critical infrastructure in an effort to weaken or cripple services such as transportation, communications, and electricity.

The extent of terrorism can vary significantly depending on a range of factors including the tactics, capabilities, and the effectiveness of counterterrorism efforts. Tactics employed may include bombings, firearm attacks, kidnappings, assassinations, cyberattacks, or a combination. The choice of targets, such as civilians, government institutions, religious sites, or critical infrastructure can also affect the extent of the terrorist threat. The extent of terrorism may also be influenced by public support or sympathy for extremist ideologies, as well as the recruitment and radicalization of individuals into terrorist organizations. Socio-economic factors, such as poverty, unemployment, and inequality, can contribute to the conditions conducive to terrorism.

The effectiveness of counterterrorism efforts by governments and international organizations can influence the extent of terrorism. Robust counterterrorism measures can disrupt terrorist networks and reduce the frequency and impact of attacks. Efforts to address terrorism typically involve a combination of security measures, intelligence sharing, diplomacy, counter-radicalization programs, and community engagement. Reducing the extent of terrorism often requires a multifaceted approach that addresses both the root causes and the immediate security threats associated with terrorism.

### **4.21.3 Previous Occurrences**

Although there has not been a terrorist attack in Kansas Region H, this does not reduce the significance of the threat. There have been numerous examples of terrorism that have occurred in the United States, and specifically terrorist events that have occurred in the region. Of note:

- Alfred P. Murrah Federal Building, Oklahoma City (1995), 168 killed.

### **4.21.4 Probability of Future Events**

Assessing the probability of a terrorist attack in Kansas Region H involves complex analysis conducted by intelligence and law enforcement agencies such as the U.S. Department of Homeland Security, the Federal Bureau of Investigation, and the Kansas State Police. These agencies regularly provide threat assessments and security information to the public based on local, international, and geopolitical intelligence.

### **4.21.5 Projected Changes in Location, Intensity, Frequency, and Duration**

Predicting the specific changes in the location, intensity, and frequency of terrorist events is highly challenging due to the complex and dynamic nature of terrorism. Terrorism is influenced by a multitude of factors, including political, social, economic, and ideological considerations. Additionally, responses by governments, international cooperation, and evolving global dynamics contribute to the uncertainty surrounding future projections.

The increasing reliance on technology provides terrorists with new tools and methods for conducting attacks. Cyberterrorism can be used to disrupt critical infrastructure or compromise information systems may become more prevalent. Additionally, the use of online platforms for radicalization and recruitment purposes is a growing concern. Changes in the online landscape, social media platforms, and encryption methods can influence the reach and effectiveness of extremist propaganda.

Climate change can indirectly influence terrorism by exacerbating certain conditions that may contribute to the emergence and persistence of terrorist threats. While climate change itself does not directly cause terrorism, it can interact with other factors to create a more conducive environment for terrorist activities. Climate change can lead to resource scarcity, such as water and arable land shortages, which may intensify poverty. This scarcity can create conditions that extremist groups exploit. Additionally, climate-induced displacement and migration can result from events like sea-level rise, extreme weather events, and droughts. Displaced populations can become vulnerable to recruitment by extremist groups, as they may lack basic necessities and economic opportunities.

As previously noted, Kansas Region H facilities have seen no major changes in the past five years, with only modest repairs and upgrades being conducted and no major rehabilitation or construction projects completed. As such, the risk to state facilities has remained static since the completion of the 2019 SHMP.

### **4.21.6 Vulnerability and Impact**

Terrorism can have profound and far-reaching impacts on individuals and communities. These effects can be physical, psychological, social, and economic, and may include:

- **Loss of Life and Injury:** Terrorism often results in the loss of innocent lives and injuries to survivors. Victims may suffer physical trauma, disabilities, and long-term health issues.
- **Psychological Trauma:** Many survivors of terrorist attacks and witnesses may experience Post-Traumatic Stress Disorder, characterized by flashbacks, nightmares, anxiety, and emotional distress. Children and young people may be particularly vulnerable to the psychological effects of terrorism, which can impact their emotional and cognitive development.
- **Anxiety and Depression:** Terrorism can lead to increased anxiety and depression in affected individuals and communities.
- **Grief and Loss:** Those who lose loved ones in terrorist attacks may experience profound grief and loss, which can be long-lasting.

Terrorism can disrupt social structures and community cohesion, leading to feelings of insecurity and mistrust. Fear of future attacks may limit social activities and interactions, impacting the quality of life. Some terrorist attacks, such as

bombings, can result in displacement and homelessness for those affected, leading to housing instability and further psychological stress. People may alter their daily routines, travel plans, or social activities due to fear of further attacks. This can impact personal freedom and quality of life.

Critical infrastructure is often high-value and high-impact, making it an attractive target for terrorists looking to cause disruption, economic damage, and fear. Many critical infrastructure sectors are interconnected, so an attack on one sector can have cascading effects on others. For example, an attack on the power grid can impact telecommunications and transportation. Compounding the issue, certain critical infrastructure facilities are accessible to the public or located in urban areas, making them vulnerable to physical attacks, such as bombings or shootings. Specific impacts on critical infrastructure may include:

- **Disruption of Operations:** Attacks can disrupt the normal operations of critical facilities, including hospitals, emergency response centers, data centers, and transportation hubs.
- **Economic Disruption:** Attacks can lead to significant economic disruption, including damage to facilities, loss of productivity, and increased operational costs.
- **Public Safety:** Attacks on certain critical infrastructure, such as transportation hubs or healthcare facilities, can pose immediate risks to public safety, leading to injuries and loss of life.
- **Disruption of Services:** Infrastructure attacks can result in service disruptions, including power outages, water supply interruptions, and communication breakdowns.
- **Healthcare Impact:** Attacks on healthcare infrastructure, like hospitals, can limit access to medical care during emergencies, potentially leading to higher casualties.

Terrorism can have significant impacts on governmental operations. These impacts can vary depending on the nature and scale of terrorist attacks, the level of preparedness and response, and the specific vulnerabilities, and may include:

- **Security and Law Enforcement:** An attack would lead to an increased demand on law enforcement agencies to prevent, investigate, and respond to terrorist threats and incidents. Allocation of significant resources to counterterrorism efforts would stretch resources.
- **Emergency Response:** Local emergency management agencies, in conjunction with state and federal agencies, would need to activate emergency response and management systems to coordinate response. A long-term activation could strain resources and personnel. Additionally, responders may be vulnerable to secondary devices or attacks.
- **Public Services:** An attack could lead to the disruption of public services, such as transportation, utilities, and public spaces, due to security concerns.
- **Economic Impact:** Negative economic consequences, including damage to businesses, loss of investor confidence, and reduced tourism and foreign investment can occur.
- **Surveillance and Privacy Concerns:** Expansion of surveillance capabilities may result in concerns about potential violations of privacy rights.
- **Impact on Government Operations:** An attack would likely cause the disruption of government functions, including closures of government offices and facilities.
- **Psychological Impact on Government Officials:** Psychological stress and burnout among government officials and first responders involved in counterterrorism efforts.
- **Public Opinion and Confidence:** Fluctuations in public opinion and confidence in the government's ability to provide security and protect citizens would occur.

For this assessment, it is not possible to calculate a specific vulnerability for each county or participating jurisdiction. However, because of the desire for publicity following attacks, it is more likely that counties and jurisdictions with greater population densities and /or larger event venues have a greater risk.

In general, it is difficult to quantify potential losses of terrorism due to the many variables and human elements. The following hypothetical scenario, using the Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University, provides an estimated impact of a potential terrorism event.

Scenario: Improvised Explosive Device

Event: A van transported improvised explosive device utilizing an ammonium nitrate/fuel oil mixture is detonated in the parking area of a stadium as people are entering. Potential losses with this type of scenario include both human and structural assets.

Event Assumptions: The quantity of ammonium nitrate/fuel oil mixture used is 4,000 pounds. The population density of the lot is assumed to be one person per every 25 square feet for a pre-game crowd. The lethal air blast range for such a vehicle is estimated to be 50 feet, and the falling glass hazard distance is estimated at 600 feet according to the Bureau of Alcohol, Tobacco, Firearms and Explosives Standards. In this event, damage would occur to vehicles, and depending on the proximity of other structures, damage would occur to the stadium complex itself. The exact amount of these damages is difficult to predict because of the large numbers of factors, including the type of structures nearby and the amount of insurance held by vehicle owners. It is estimated that the average replacement cost for a vehicle is \$20,000 and the average repair cost for damaged vehicles would be \$4,000.

Results: The following table presents the estimated human impacts of the scenario.

**Table 147: Estimated Impact of Scenario #3, Improvised Explosive Device**

Impact	Effect
Deaths	1,391 persons
Trauma Injuries	2,438 persons
Urgent Care Injuries	11,935
Injuries not Requiring Hospitalization	4,467
Repair Costs for 100 Vehicles	\$400,000
Replacement Costs for 50 Vehicles	\$1,000,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

**Consequence Analysis**

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 148: Terrorism Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Terrorist activities including bombings, kidnappings, shootings, and hijackings could cause considerable injury and death. An attack could kill and injure hundreds to thousands of people, which could overwhelm hospitals.
Impact on Responders	Attacks can create a dangerous environment and significant challenge for first responders, who may have to manage the evacuation of people, close areas, operate shelters, and take care of the injured. First responders may be a direct target of terrorism themselves from a secondary attack during response activities. Equipment may also be damaged or destroyed, which may lead to a decrease in response capabilities.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A terrorist event may impact an agency's ability to maintain operations due to the potential to cause a significant injury to staff or impede travel.
Delivery of Services	The ability to deliver services can be impacted depending on the characteristics of the attack. Roadway and bridge closures may be required, as well as transit service disruptions. Businesses and places of commerce may completely shut down, which leads to the disruption of goods and services.

**Table 148: Terrorism Consequence Analysis**

Subject	Potential Impacts
Property, Facilities, and Infrastructure	Transportation, governmental operations, and infrastructure facilities may be disrupted both directly and indirectly. Roads and bridges may be impacted if explosive devices are utilized in the attack. Access to homes and critical facilities such as hospitals, schools, and supermarkets may be impossible. If power loss occurs following an attack, it may lead to disruption of critical infrastructure and technology.
Impact on Environment	Terrorist attacks involving bombings and arson pose considerable negative impacts to the environment in the form of smoke and destruction of vegetation. A terrorist attack utilizing chemical, nuclear, and biological weapons pose a significantly higher risk to the environment by causing pollution, damaging sewer and wastewater treatment plants; or disturbing or killing wildlife, and adversely affecting nature preserves.
Economic Conditions	Local, county, and state resources may be severely depleted during a terrorist attack response. Private businesses may not be able to maintain operations during or after an incident if they are impacted, which would impact the economy.
Public Confidence in Governance	If government employees or facilities are targeted directly by terrorism, it will have a significant impact on the ability to govern. The public's confidence in the state's governance is affected by immediate response through direct and effective actions. Efficiency in response and recovery operations is critical in keeping public confidence.

**4.21.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

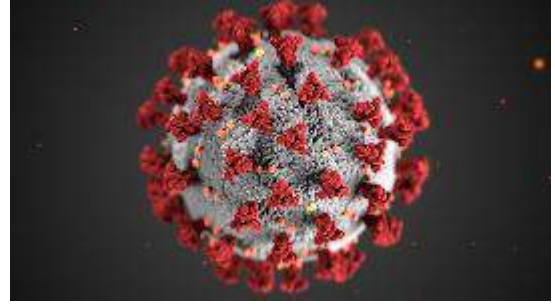
**Table 149: Terrorism Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	1	3	1	4	1.9	Low
Bourbon	1	3	1	4	1.9	Low
Chautauqua	1	3	1	4	1.9	Low
Cherokee	1	3	1	4	1.9	Low
Crawford	1	3	1	4	1.9	Low
Elk	1	3	1	4	1.9	Low
Greenwood	1	3	1	4	1.9	Low
Labette	1	3	1	4	1.9	Low
Montgomery	1	3	1	4	1.9	Low
Neosho	1	3	1	4	1.9	Low
Wilson	1	3	1	4	1.9	Low
Woodson	1	3	1	4	1.9	Low

## 4.22 Transmissible Disease

### 4.22.1 Hazard Description

A transmissible disease, also known as a communicable or infectious disease, is a type of illness caused by pathogens (such as bacteria, viruses, fungi, or parasites) that can be transmitted from one person or organism to another, directly or indirectly. These diseases can spread through various means, including person-to-person contact, respiratory droplets, contaminated food or water, vectors like mosquitoes, or contact with infected animals.



Transmissible diseases are characterized by their ability to pass from an infected individual to a susceptible host, leading to new cases of the disease. The transmission can occur through various routes, depending on the specific pathogen and the mode of transmission it utilizes. Examples of transmissible diseases include:

- Influenza: The flu is caused by influenza viruses and can spread through respiratory droplets when an infected person coughs or sneezes.
- West Nile virus: A mosquito-borne virus that can cause a range of illnesses in humans, from mild febrile symptoms to severe neurological disease. It is primarily transmitted to humans through the bite of infected mosquitoes.
- Malaria: Malaria is caused by Plasmodium parasites and is transmitted through the bite of infected female Anopheles mosquitoes.
- Salmonella Infection: This bacterial infection is often contracted through the consumption of contaminated food or water and can lead to gastrointestinal symptoms.
- Tuberculosis: • Tuberculosis is caused by Mycobacterium tuberculosis and can be transmitted through the inhalation of respiratory droplets from an infected person with active disease.
- Measles: Measles is caused by the measles virus and spreads through respiratory droplets, making it highly contagious.

Of particular concern are novel transmissible diseases. This is a disease that is caused by a pathogen (such as a virus, bacterium, or other microorganism) that is newly recognized in a human population or is increasing in incidence or geographic range. These diseases are termed novel because they have not been previously identified or have not been known to affect humans in the past. Several factors can contribute to the emergence of novel transmissible diseases, including changes in human behavior, urbanization, deforestation, climate change, global travel, and the encroachment of humans into natural habitats. Defining characteristics of novel transmissible diseases: include

- New Pathogen or Strain: Novel transmissible diseases often involve a pathogen or strain of a pathogen that is new to humans. This may result from genetic mutations, cross-species transmission (zoonotic diseases), or the introduction of a pathogen to a new geographic area.
- Human Transmission: These diseases have the potential to spread from person to person, either through direct contact, respiratory droplets, contaminated surfaces, or other modes of transmission.
- Challenges in Control: Because these diseases are new and may have limited prior immunity in the population, they can pose challenges for public health authorities in terms of surveillance, diagnosis, treatment, and containment.

Novel transmissible diseases can have pandemic potential, meaning they can spread globally and affect a large portion of the world's population. Dealing with novel transmissible diseases requires a multi-pronged approach, including surveillance, early detection, containment measures, public health interventions, and research to understand the pathogen and develop effective countermeasures. It also underscores the importance of preparedness and global cooperation in responding to emerging infectious diseases.

#### 4.22.2 – Location and Extent

Kansas Region H's geographic and demographic characteristics make it vulnerable to the spread of transmissible diseases. The extent of a transmissible disease can vary widely depending on several factors, including:

- **Pathogen Characteristics:** The biological properties of the infectious agent, such as its mode of transmission, incubation period, and virulence, play a significant role. Pathogens that are highly contagious and have a short incubation period are more likely to spread rapidly.
- **Human Behavior:** Human behavior and practices, such as hygiene, travel, and social interactions, can influence the extent of disease spread. For example, frequent travel and close interpersonal contact can facilitate the rapid transmission of infectious diseases.
- **Public Health Measures:** The effectiveness of public health measures, such as quarantine, isolation, contact tracing, and vaccination, can limit the extent of disease spread. Prompt and coordinated public health responses can be crucial.
- **Geographic Factors:** The geographic spread of a disease can be influenced by factors like population density, climate, and geographic barriers. Dense urban areas may experience more rapid transmission, while isolated or remote regions may be less affected.
- **Healthcare Infrastructure:** The capacity of healthcare systems to detect, treat, and isolate cases can impact the extent of an outbreak. Overwhelmed healthcare systems can lead to a larger extent of disease.
- **Pre-existing Immunity:** If a portion of the population has pre-existing immunity to the disease, either due to prior exposure or vaccination, this can limit the extent of disease transmission.
- **Global Travel:** In an era of global travel, novel infectious diseases can quickly cross international borders, affecting multiple countries and regions.
- **Vaccination:** The availability and coverage of vaccines against the disease can significantly reduce the extent of an outbreak. High vaccination rates create herd immunity, protecting even those who are not vaccinated.
- **Mutation and Variants:** Some infectious agents may undergo mutations that affect their transmissibility or virulence. New variants can lead to changes in the extent and severity of the disease.
- **Public Awareness and Compliance:** Public awareness of the disease, willingness to follow public health guidance, and compliance with preventive measures can affect disease transmission rates.
- **Timeliness of Response:** The speed with which authorities and healthcare systems respond to an outbreak can have a substantial impact. Rapid detection and containment efforts can limit the extent of spread.

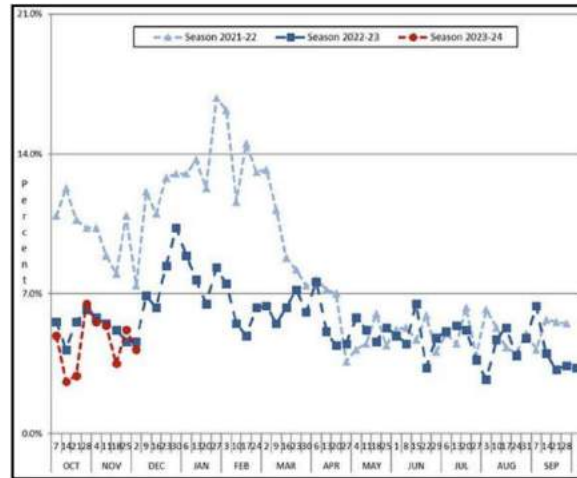
The extent of a transmissible disease can range from localized outbreaks that are quickly contained to global pandemics that affect large populations across multiple countries. The management of such diseases requires a combination of robust surveillance, effective public health interventions, research, and international collaboration to minimize their impact on human health and society.

#### 4.22.3 Previous Occurrences

One of the most common transmissible diseases within the Kansas Region H is Influenza. Influenza, commonly known as the flu, is a contagious respiratory illness caused by influenza viruses. It can affect humans, birds, and other animals. Influenza viruses are classified into types A, B, C, and D, with types A and B being the most common in humans and responsible for seasonal flu outbreaks. The following chart details deaths for the state from 2021 through 2023:



**Chart 26: Percent of Deaths Associated with Pneumonia and Influenza, October 2020 to Present**



Source: Kansas Department of Health and Environment

The most notable recent novel infectious disease to strike Kansas Region H is COVID-19, also known as Coronavirus Disease 2019. COVID-19 is an infectious respiratory illness caused by a novel coronavirus known as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). It was first identified in December 2019 in the city of Wuhan, China, and spread globally leading to a pandemic. COVID-19 primarily spreads from person to person through respiratory droplets when an infected person coughs, sneezes, talks, or breathes. It can also spread by touching surfaces contaminated with the virus and then touching the face. Symptoms can range from mild to severe and may include fever, cough, shortness of breath, fatigue, muscle aches, loss of taste or smell, sore throat, congestion, and gastrointestinal symptoms like diarrhea. Some individuals may remain asymptomatic, meaning they carry the virus without displaying symptoms. While many people with COVID-19 experience mild to moderate symptoms and recover without hospitalization, the disease can be severe, especially among older adults and individuals with underlying health conditions. Severe cases can lead to pneumonia, acute respiratory distress syndrome, organ failure, and death. Available data from the Kansas Department of Health and Environment indicates the following for COVID-19 for Kansas:

- 946,56 cases
- 10,229 deaths

COVID-19 has had a profound impact on public health, economy, and daily life across Kansas Region H. Some of the key measures taken in Kansas Region H in response to the COVID-19 pandemic include:

- **Public Health Measures:** Kansas implemented various public health measures to slow the spread of the virus. These included stay-at-home orders, mask mandates, social distancing guidelines, and limits on gathering sizes.
- **Testing and Contact Tracing:** Kansas established testing sites and conducted contact tracing to identify and isolate individuals who had been exposed to the virus. Testing was widely available to the public.
- **Vaccination Efforts:** Kansas launched vaccination campaigns to administer COVID-19 vaccines to eligible residents. Mass vaccination sites, healthcare providers, and pharmacies played a role in the distribution of vaccines.
- **School Closures and Remote Learning:** Like many other states, Kansas Region H temporarily closed schools and shifted to remote learning to minimize the risk of virus transmission among students and staff.
- **Travel and Quarantine Measures:** Kansas issued travel advisories and quarantine requirements for travelers coming into the state, especially from areas with high infection rates.
- **Mask Mandates and Social Distancing:** Face mask mandates and social distancing measures were enforced in indoor public spaces and in situations where social distancing was not possible.

Additionally, COVID-19 had numerous, and oftentimes severe impacts on Kansas Region H, including:

- **Economic Repercussion:** Job losses, business closures, and economic strain on individuals and families were common within the Kansas Region H. Kansas, like other states, implemented economic relief measures.
- **Healthcare System Overload:** Hospitals and healthcare facilities in Kansas Region H worked to increase capacity to treat COVID-19 patients. There were efforts to secure additional medical supplies and equipment.
- **Protection of Vulnerable Populations:** Efforts were made to protect vulnerable populations, including the elderly and those with underlying health conditions, who were at higher risk of severe illness from COVID-19.
- **Educational Impact:** The pandemic disrupted education, with students and teachers adapting to remote learning. Schools implemented safety measures upon reopening.

The response to COVID-19 evolved as more information became available, and measures were adjusted based on the changing circumstances of the pandemic. Kansas Region H worked to balance public health concerns with the economic and social well-being of its residents. The state and region's response were guided by recommendations from health experts from the Centers for Disease Control.

#### **4.22.4 Probability of Future Events**

While it is impossible to predict with certainty when or if a transmissible disease outbreak will occur, the probability of occurrence can be estimated based on historical patterns and current global conditions. Factors to consider include:

- **Globalization:** Increased global travel and trade can facilitate the rapid spread of infectious diseases. The interconnectedness of the world means that a disease can quickly cross borders, increasing the risk of a pandemic.
- **Vaccine Coverage:** The level of vaccination coverage against preventable diseases can impact the likelihood of pandemics. Low vaccine coverage can lead to outbreaks that have pandemic potential.
- **Public Health Preparedness:** The readiness of healthcare systems, public health agencies, and governments to respond to outbreaks is crucial. Adequate preparedness can help contain outbreaks before they become pandemics.
- **Surveillance and Early Detection:** Improved surveillance systems and early detection mechanisms can help identify and contain outbreaks before they escalate to pandemics.
- **Scientific Advancements:** Advances in science and technology, such as the rapid development of vaccines and treatments, can influence our ability to respond to emerging infectious diseases.
- **Behavioral Factors:** Human behavior, including adherence to preventive measures like handwashing, mask-wearing, and vaccination, plays a role in disease transmission. Public health campaigns can influence behavior.
- **Climate Change:** Environmental changes driven by climate change can alter the geographic distribution of diseases and the behavior of vectors (like mosquitoes). This can affect disease transmission patterns and increase the risk of outbreaks.
- **Agriculture and Farming Practices:** The way animals are raised and farmed can impact the risk of zoonotic diseases, which are diseases transmitted from animals to humans. The probability of another pandemic is influenced by the frequency of spillover events (when a pathogen jumps from animals to humans). Factors like deforestation, urbanization, and increased contact with wildlife can contribute to these events.

Transmissible disease outbreaks can vary in their impact, and public health measures can mitigate their effects. Governments, international organizations, and scientists continuously monitor and assess the risk of transmissible diseases and work to improve preparedness and response capabilities.

In order to prevent the rapid spreads of transmissible diseases, the Kansas Department of Health and Environment tracks occurrences of the following diseases and conditions:

- Acute flaccid myelitis
- Anthrax
- Anaplasmosis

- Arboviral disease, neuroinvasive and nonneuroinvasive (including chikungunya virus, dengue virus, La Crosse, West Nile virus, and Zika virus)
- Babesiosis
- Botulism
- Brucellosis
- Campylobacteriosis
- Candida auris
- Carbapenem-resistant bacterial infection or colonization
- Chancroid
- Chickenpox (varicella)
- Chlamydia trachomatis infection
- Cholera
- Coccidioidomycosis
- Cryptosporidiosis
- Cyclosporiasis
- Diphtheria
- Ehrlichiosis
- Giardiasis
- Gonorrhea (include antibiotic susceptibility results, if performed)
- Haemophilus influenzae, invasive disease
- Hansen's disease (leprosy)
- Hantavirus
- Hemolytic uremic syndrome, post-diarrheal
- Hepatitis, viral (A, B, C, D, and E, acute and chronic)
- Histoplasmosis
- Human Immunodeficiency Virus (HIV) (
- Leptospirosis
- Influenza, novel A virus infection
- Legionellosis
- Listeriosis
- Lyme disease
- Malaria
- Measles (rubeola)
- Meningococcal disease
- Mumps
- Pertussis (whooping cough)
- Plague (Yersinia pestis)
- Poliovirus
- Psittacosis
- Q Fever (Coxiella burnetii, acute and chronic)
- Rabies
- Rubella
- Salmonellosis, including typhoid fever
- Severe Acute Respiratory Syndrome-associated coronavirus (SARS-CoV)
- Shiga toxin-producing Escherichia coli
- Shigellosis
- Smallpox
- Spotted fever rickettsiosis

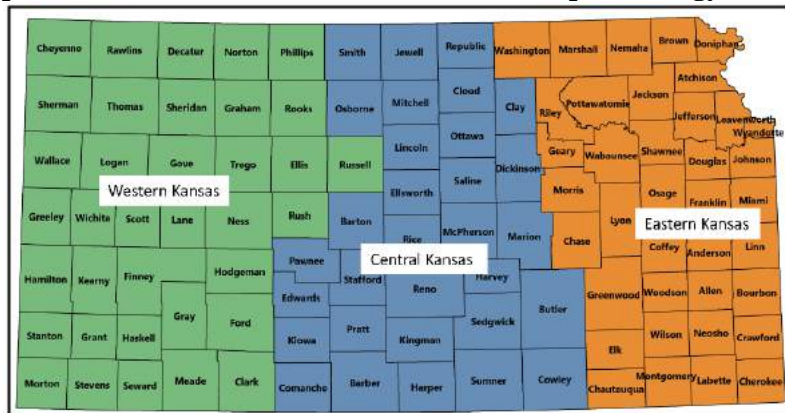
- Streptococcus pneumoniae, invasive disease
- Syphilis, all stages, including congenital syphilis
- Tetanus
- Toxic shock syndrome, streptococcal and other
- Transmissible spongiform encephalopathy or prion disease
- Trichinellosis or trichinosis
- Tuberculosis
- Tularemia, including laboratory exposures
- Vancomycin-intermediate and resistant Staphylococcus aureus
- Vibriosis (all cholerae and non-cholerae Vibrio species) □
- Viral hemorrhagic fevers □
- Yellow fever

Kansas Region H Health Departments report all nationally notifiable conditions to the Centers for Disease Control using the National Electronic Disease Surveillance System to allow for rapid and appropriate response.

The Kansas Department of Health and Environment Field Epidemiology Services Program provides trained field epidemiologists to support epidemiological activities of local health departments. Field epidemiologists are the boots on the ground regionally for the state health department and serve as a liaison between the local health departments and the Kansas Department of Health and Environment. The four primary areas of support include:

- Investigation of complex or unusual infectious disease cases and large or complicated outbreaks
- Reporting and surveillance for reportable diseases
- Data analysis and reporting
- Public health training and education

**Map 136: Kansas Department of Health and Environment Field Epidemiology Services Program Regions**



Source: Kansas Department of Health and Environment

#### 4.22.5 Projected Changes in Location, Intensity, Frequency, and Duration

A continued increase in international travel, both to and from Kansas, may increase the spread of infectious disease. The movement of people across diverse geographical regions brings together individuals with different immunological profiles. This mingling creates opportunities for the emergence of novel pathogens or the introduction of diseases into populations with limited immunity.

Climate change can have several impacts on the emergence and spread of transmissible diseases. While the relationship between climate change and transmissible diseases is complex, there are several ways in which climate change can influence disease dynamics including:

- **Altered Disease Transmission Patterns in Vector-Borne Diseases:** Climate change can affect the distribution and behavior of disease vectors (mosquitoes and ticks) by influencing temperature and precipitation patterns. This can lead to the expansion of diseases like malaria, dengue fever, and Lyme disease into new geographic areas.
- **Extended Transmission Seasons:** Rising temperatures can lengthen the transmission seasons for certain diseases, allowing them to be active for a more extended period each year.
- **Changes in Pathogen Survival:** Some pathogens can survive longer in warmer and wetter conditions. This can affect the persistence of infectious agents in the environment.
- **Increased Risk of Zoonotic Diseases:** Climate change can disrupt ecosystems and alter the habitats and migration patterns of wildlife. This can lead to increased interactions between humans, domestic animals, and wildlife, potentially facilitating the transmission of zoonotic diseases (diseases that originate in animals) to humans.
- **Weakened Immune Response:** Climate-related stressors, such as extreme heat events, can weaken the immune systems of vulnerable populations, making them more susceptible to infectious diseases.

To mitigate the impacts of climate change, public health measures, adaptation strategies, and international cooperation are essential, and may include:

- Strengthening disease surveillance systems to monitor changing disease patterns.
- Implementing vector control measures in areas at risk of vector-borne diseases.
- Enhancing healthcare infrastructure resilience to climate-related disasters.
- Promoting climate-resilient agricultural practices to ensure food security.
- Supporting research on the links between climate change and infectious diseases.
- Raising awareness and educating communities about the risks and preventive measures.

#### **4.22.6 Vulnerability and Impact**

People can be vulnerable to transmissible diseases due to various factors that influence their susceptibility to infection and the potential severity of illness. These vulnerabilities can be influenced by individual, societal, and environmental factors, and may include:

- **Lack of Immunity:** Many transmissible diseases are ones that people have little to no immunity to.
- **Vaccination Status:** Vaccination can provide immunity against certain diseases. People who are not vaccinated or have not received booster shots may be more vulnerable.
- **Age:** Infants, young children, and the elderly often have weaker immune systems, making them more susceptible to infections and complications.
- **Underlying Health Conditions:** Individuals with underlying health conditions, such as immunodeficiency disorders, chronic diseases, or respiratory conditions, may be more vulnerable to severe illness.
- **Medication and Treatment Availability:** The availability of medications or treatments specific to the disease can impact vulnerability. Rapid access to appropriate treatments can be lifesaving.
- **Population Density:** Highly populated areas can facilitate the rapid spread of diseases, making people in densely populated regions more vulnerable.
- **Sanitation and Hygiene:** Poor sanitation and hygiene practices can increase the risk of disease transmission. Access to clean water and sanitation facilities is crucial for reducing vulnerability.
- **Access to Healthcare:** The availability and accessibility of healthcare services, including diagnostic testing and medical treatment, can significantly impact the outcome of a novel transmissible disease.
- **Public Awareness:** People who are unaware of the risks associated with a novel transmissible disease or who do not know how to protect themselves may be more vulnerable.
- **Behavioral Factors:** People's behavior, such as adherence to public health guidelines (e.g., handwashing, wearing masks), can influence vulnerability.
- **Fear and Panic:** Fear and panic can hinder effective responses, potentially increasing vulnerability.

- **Access to Information:** Timely and accurate information can empower individuals to take protective measures. Lack of information or misinformation can increase vulnerability.

The spread of a transmissible disease can have severe and far-reaching impacts on human health and society, , and can include:

- **Illness and Death:** The most immediate impact is the potential for widespread illness and death. Depending on the disease, the severity of illness can range from mild to life-threatening.
- **Healthcare Overload:** A rapidly spreading disease can quickly overwhelm healthcare systems, leading to shortages of medical supplies, hospital beds, and healthcare personnel. The ability to provide timely medical care may be compromised.
- **Social Disruption:** Social disruption can occur due to isolation and quarantine measures, as well as the need for social distancing. Schools, businesses, and public gatherings may be canceled or limited, affecting daily life and routines.
- **Psychological Trauma:** Survivors of a transmissible disease may experience long-lasting psychological trauma due to the fear of infection, the loss of loved ones, and the overall trauma of the event.
- **Long-Term Health Effects:** Some diseases can cause long-term health effects in survivors, including chronic illnesses and disabilities.

It is important to note that public health agencies and emergency responders work to minimize vulnerabilities by implementing preventive measures, conducting public awareness campaigns, and having response plans in place. Preparedness efforts, including vaccination programs, stockpiling of medical supplies, and coordination among healthcare providers, are critical for reducing vulnerabilities.

The direct risk or vulnerability to property and critical facilities from a transmissible disease is generally limited. While unlikely, transmissible diseases could possibly be moved through a facility's ventilation system. An incident like this would not pose a direct risk to the structure's integrity; however, considerable contamination of the facility may occur, requiring decontamination and potential loss of access to the building for a considerable length of time. Critical facilities and infrastructure generally will not suffer direct impacts from a novel transmissible disease event. Employee absenteeism could indirectly impact the ability for a critical facility to operate. Without necessary operators, critical infrastructure may be susceptible to indirect failure.

Zoonotic diseases are infections that can be transmitted between animals and humans. These diseases can have significant impacts on both human and animal populations, as well as broader environmental consequences. Some diseases have caused significant declines and extinctions in affected species and can infect domesticated animals, leading to economic losses in the agricultural sector. Diseases like avian influenza and foot-and-mouth disease can result in culling of livestock to prevent disease spread. Zoonotic diseases can also influence the health and dynamics of ecosystems. Changes in wildlife populations due to disease can have cascading effects on biodiversity and ecosystem function.

The rapid spread of a transmissible disease can have wide-ranging impacts on governmental operations, affecting functions and public safety. These impacts can disrupt government operations, strain resources, and pose challenges to maintaining public order, and can include:

- **Emergency Response and Healthcare:** Kansas Region H would need to rapidly mobilize emergency response teams, medical personnel, and healthcare facilities. The surge in demand for medical resources can strain healthcare systems, including hospitals, clinics, and emergency services.
- **Public Health Services:** County health departments would play a critical role in disease surveillance, contact tracing, and public health messaging. A transmissible disease could require additional personnel and resources to manage the outbreak.

- **Resource Allocation:** County health departments may need to help allocate resources for medical supplies, pharmaceuticals, personal protective equipment, and vaccine distribution. Competition for limited resources can lead to shortages and increased costs.
- **Transportation and Supply Chain Disruption:** Quarantine measures, travel restrictions, and supply chain disruptions can affect the movement of essential goods and services, including medical supplies, food, and fuel.
- **Economic Impact:** The economic consequences of a transmissible disease can be severe. Business closures, reduced consumer confidence, and trade disruptions can lead to financial losses, unemployment, and economic instability.
- **Education Disruption:** School closures and disruptions to education can affect students' learning and parental work arrangements, leading to social and economic consequences.
- **Public Services:** Essential public services, such as law enforcement, fire services, and sanitation, may be stretched thin due to the demands of responding to the outbreak.
- **Social Distancing and Isolation Measures:** Government directives for social distancing, isolation, and quarantine can impact daily life, social interactions, and public gatherings. The enforcement of such measures can be challenging.
- **Psychological and Societal Impact:** Fear and anxiety can spread rapidly during disease transmission, affecting public morale and mental health. Disinformation and rumors can compound these psychological impacts.

### Consequence Analysis

This consequence analysis lists the potential impacts of a hazard on various elements of community and state infrastructure. The impact of each hazard is evaluated in terms of disruption of operations, recovery challenges, and overall wellbeing to all Kansas Region H residents and first responder personnel. The consequence analysis supplements the hazard profile by analyzing specific impacts.

**Table 150: Transmissible Disease Consequence Analysis**

Subject	Potential Impacts
Impact on the Public	Depending on the scale of outbreak and type of disease, residents may be at risk of illness or death. Population density may play a role in the spread of disease, with urban areas being more likely to be impacted than rural areas. Specific impacts to residents will be dependent upon the type of disease and how it is transmitted.
Impact on Responders	Epidemics pose a unique risk to first responders because they are more likely to be exposed to a transmissible disease before it has been identified. If the novel transmissible disease infects first responders and healthcare practitioners, the provision of public safety and public health services may be significantly impacted.
Continuity of Operations	Local jurisdictions maintain continuity plans which can be enacted as necessary based on the situation. A transmissible disease may impact an agency's ability to maintain continuity of operations based on the potential to create high levels employee absenteeism. Employee absenteeism could also hinder the ability to fulfill critical operations as well as implementation and maintenance of the plan itself.
Delivery of Services	Epidemics may cause disruption of services in the event of employee absenteeism.
Property, Facilities, and Infrastructure	It is unlikely that an epidemic would have direct effects on critical infrastructure or other facilities or structures. However, under cases of absenteeism, it is possible that regular maintenance or repairs would not be performed, resulting in disrepair.
Impact on Environment	In some cases, disease outbreaks are caused by infections spread from animals to humans. Under these circumstances, infections may be spread as the result of normal care (proximity) to sick animals or consumption of byproducts of infected animals. Infected animals may die as a result of the disease. Timely removal of infected animal carcasses may help to reduce the spread of the disease among animals.
Economic Conditions	Depending on the scale of outbreak and type of disease, a localized infectious disease outbreak could impact Kansas Region H significantly. In the event residents and workers became infected from an epidemic, employee absenteeism would increase and the length of time necessary to recover could be significant.

**Table 150: Transmissible Disease Consequence Analysis**

Subject	Potential Impacts
Public Confidence in Governance	Governmental response requires direct actions that must be immediate and effective to maintain public confidence. If government functionality is reduced by absenteeism, the public’s confidence in governance may be reduced. The ability to perform critical functions will directly impact the community’s perception of government. Maintenance of these operations will be critical to response and recovery operations.

**4.22.7 Hazard Planning Significance**

Utilizing the above detailed formula for calculating the hazard planning significance for human caused and technological hazards, the following table details the rating of each criterion along with a composite rating:

**Table 151: Transmissible Disease Planning Significance**

County	Probability	Magnitude	Warning Time	Duration	Score	Planning Significance
Allen	3	3	1	4	2.8	Moderate
Bourbon	3	3	1	4	2.8	Moderate
Chautauqua	3	3	1	4	2.8	Moderate
Cherokee	3	3	1	4	2.8	Moderate
Crawford	4	3	1	4	3.4	Moderate
Elk	3	3	1	4	2.8	Moderate
Greenwood	3	3	1	4	2.8	Moderate
Labette	3	3	1	4	2.8	Moderate
Montgomery	3	3	1	4	2.8	Moderate
Neosho	3	3	1	4	2.8	Moderate
Wilson	3	3	1	4	2.8	Moderate
Woodson	3	3	1	4	2.8	Moderate



## Section 5 –Capability Assessment

### 5.1 Introduction

This capability overview for Kansas Region H documents programs, policies, and funding mechanisms for participating jurisdictions. All listed capabilities documented in the previous HMP were reviewed for relevance and updated to reflect the current environment, as necessary. Additionally, any programs, policies, or funding mechanisms that are no longer applicable, are outdated, or are no longer in existence have been removed. As part of this process, updated jurisdictional capability profiles were sent for review and, if necessary, further revision.

This section of the plan discusses the current capacity of regional communities to mitigate the effects of identified hazards. A capability assessment is conducted to determine the ability of a jurisdiction to execute a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs or projects.

A capability assessment helps to determine which mitigation actions are practical based on a jurisdiction’s fiscal, staffing and political resources, and consists of:

- An inventory of relevant plans, ordinances, or programs already in place
- An analysis capacity to carry them out.

A thoughtful review of jurisdictional capabilities will assist in determining gaps that could limit current or proposed mitigation activities, or potentially aggravate a jurisdiction’s vulnerability to an identified hazard. Additionally, a capability assessment can detail current successful mitigation actions that should continue to receive support.

Currently, all Kansas Region H counties have an emergency management program that has the primary responsibility for directing the hazard mitigation planning process. However, the capability of each emergency management program varies based largely on the size and financial capabilities of the jurisdiction. While all counties, and some participating jurisdictions, have the capability needed to conduct mitigation planning, many rely on the technical expertise of KDEM to apply for mitigation grant funding and oversee mitigation projects. Additionally, further augmenting local emergency management capabilities, KDEM aids with state and federal mitigation and emergency management initiatives and available funding opportunities.

Technical capabilities for each county and participating jurisdiction vary widely and are generally based on financial capabilities. In general, more urban, or larger jurisdictions have a greater range of technical capabilities and staffing related to planning, engineering, and mapping, while smaller counties and jurisdictions lack these capabilities. It should be noted that KDEM offers a variety of programs to provide local jurisdictions with technical expertise, including mapping and planning.

The following table details local departments and positions and their roles in supporting hazard mitigation planning:

**Table 152: Local Jurisdiction Department and Positions Supporting Mitigation Planning**

Department or Position	Description	Role in Mitigation
Building Officials	Implements and enforces building codes and zoning ordinances.	Ensures construction standards are consistently applied.
Emergency Management Director	Directs local response, recovery, and mitigation programs.	Develops Local Emergency Operations Plan, Continuity Plans, and Hazard Mitigation Plans, helping to minimize loss of life and property damage.
NFIP/CRS Coordinators	Oversees compliance with the NFIP and CRS and addresses flood determinations, mapping issues, and construction	Reviews floodplain/building permits for structures within floodplains and inspects developments to determine compliance with the community development standards and NFIP

**Table 152: Local Jurisdiction Department and Positions Supporting Mitigation Planning**

<b>Department or Position</b>	<b>Description</b>	<b>Role in Mitigation</b>
	standards within Special Flood Hazard Areas.	requirements. Explains floodplain development requirements to community leaders, citizens, and the general public.
Planning Boards	Recommends land use regulations	Coordinates with the NFIP Coordinator and the Hazard Mitigation Committee through the mitigation planning process and the implementation of the plans.
Public Works Departments	Responsible for municipal drainage and storm water management systems.	Provides for the ongoing maintenance and upgrading of local storm water systems to help reduce flood risks.
Town/Township/ City Council	Approves subdivision, zoning and land ordinances and bylaws and facilitates capital improvements budget and plan.	Provide leadership and approval for local hazard mitigation plans, projects, grants, and programs.

## **5.2 Granted Authority**

In implementing a mitigation plan or specific action, a local jurisdiction may utilize any or all of the four broad types of government authority granted by the State of Kansas. The four types of authority are defined as:

- Regulation
- Acquisition
- Taxation
- Spending

The scope of regulation is subject to constraints, however, as all of Kansas’ political subdivisions must not act without proper delegation from the State. Under a principle known as “Dillon’s Rule,” all power is vested in the State and can only be exercised by local governments to the extent it is delegated.

The power of acquisition can be a useful tool for pursuing local mitigation goals. Local governments may find the most effective method for completely “hazard-proofing” a particular piece of property or area is to acquire the property, thus removing the property from the private market and eliminating or reducing the possibility of inappropriate development occurring. Kansas legislation empowers cities, towns, counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain (County Home Rule Powers, K.S.A. 19-101, 19-101a, 19-212).

The power to levy taxes and special assessments is an important tool delegated to local governments by Kansas law. The power of taxation extends beyond merely the collection of revenue and can have a profound impact on the pattern of development in the community. Communities have the power to set preferential tax rates for areas which are more suitable for development in order to discourage development in otherwise hazardous areas. Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving flood control within a designated area. This can serve to increase the cost of building in such areas, thereby discouraging development. Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

The Kansas General Assembly allocated the ability to local governments to make expenditures in the public interest. Hazard mitigation principles can be made a routine part of all spending decisions made by the local government, including the adoption of annual budgets and a Capital Improvement Plan. A Capital Improvement Plan is a schedule

for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control growth to some extent. In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. A Capital Improvement Plan that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the Capital Improvement Plan is effective in directing growth away from environmentally sensitive or high hazard areas.

### **5.3 Regulation of Development**

The regulation of development plays a crucial role in helping a community become more resilient in the face of various hazards. Effective regulation of development contributes to community resilience through:

- **Risk Reduction:** Regulations guide land use and construction practices, ensuring that they provide strong protection against hazards.
- **Public Safety:** Building codes and land-use regulations establish minimum safety standards for construction, including structural integrity, fire resistance, and the use of resilient materials.
- **Infrastructure Resilience:** Regulations may require infrastructure improvements, such as the construction of resilient roads, bridges, utility systems, and drainage systems. This strengthens a community's ability to withstand hazards, ensures the continued operation of critical services, and aids in recovery.
- **Floodplain Management:** Regulations in flood-prone areas can mandate elevation requirements for new construction, ensuring that structures are built above the base flood elevation. This minimizes flood damage, reduces the need for costly post-disaster repairs, and protects property values.
- **Land Use Planning:** Effective land-use planning helps communities avoid inappropriate development in areas at high risk of hazards.
- **Community Awareness:** Public education and outreach can be incorporated into regulations, requiring communities to inform residents about local hazards, evacuation routes, and preparedness. Informed residents are more likely to take protective measures and respond effectively to disasters.

The following sections provide further detail on building codes, zoning ordinances, and floodplain management.

#### **Building Codes**

In Kansas, the authority for enacting and enforcing building codes lies with local governments, such as cities and counties. Each jurisdiction can adopt its own building code, which can be based on national or international building codes like the International Building Code or the International Residential Code.

Building codes establish general minimum construction standards and are enforced through authorized local building inspection agencies and inspectors. Building codes provide for:

- **Life Safety:** Building codes include provisions for fire safety, emergency egress, and the use of fire-resistant materials.
- **Accessibility and Life Support:** Building codes incorporate accessibility standards, ensuring that buildings are designed to accommodate all individuals. This is crucial during and after disasters when people with mobility issues may require assistance. Accessible features also benefit emergency responders and support recovery efforts.
- **Retrofitting Existing Buildings:** Building codes may require the retrofitting of older structures to meet modern safety standards.
- **Public Awareness:** Building codes promote public awareness of hazards and the importance of resilient construction. This can lead to informed decision-making by property owners, builders, and developers, resulting in safer structures.

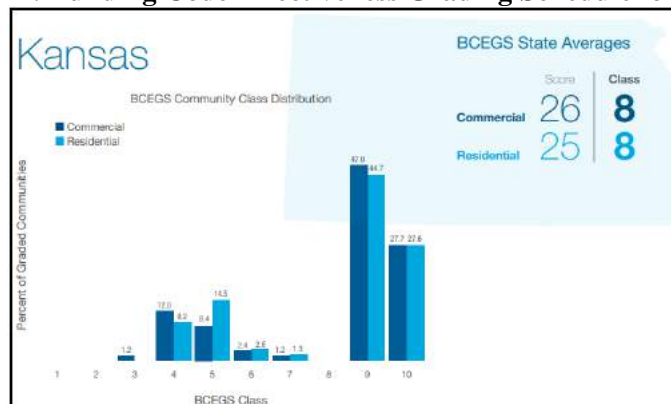
Key hazard resistant building code provisions found in current building codes include:

- **Structural Design Requirements:** Provides requirements for the structural design of buildings to ensure their resistance to various hazards, including high winds, and snow loads. These requirements are aimed at enhancing the overall structural integrity and safety of buildings.
- **Wind Design Requirements:** Provides specific provisions for wind design, considering the geographical location of the structure. Wind loads are calculated based on factors such as wind speed, exposure, and building height.
- **Seismic Design Requirements:** Incorporates seismic design provisions to address earthquake hazards. The code includes seismic design categories and requirements for the design and construction of buildings in seismic-prone regions.
- **Flood-Resistant Design Requirements:** Includes provisions related to flood-resistant design, particularly in areas prone to flooding. It may specify elevation requirements, construction materials, and other considerations to reduce the risk of flood damage. The vast majority of the regulations required by the NFIP are included within the International Building Code and the International Residential Code.
- **Fire-Resistant Construction Requirements:** Requirements for fire-resistant construction are included to mitigate the risk of fire hazards. This includes specifications for fire-resistant materials, assemblies, and building features.
- **Material and Construction Standard Requirements:** Establishes standards for building materials and construction methods to ensure the durability and safety of structures, considering various hazards.

As building codes vary by jurisdiction, it is essential to contact the local building department for the most accurate information concerning application and enforcement.

The Building Code Effectiveness Grading Schedule assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The program assigns each participating municipality a Building Code Effectiveness Grading Schedule grade of 1 (exemplary commitment to building code enforcement) to 10 (lowest possible score). The following graph illustrates the rating for each rated State of Kansas participating municipalities.

**Chart 27: Building Code Effectiveness Grading Schedule for Kansas**



Source: Building Code Effectiveness Grading Schedule

The average score for the State of Kansas was 26 (or a Class 8) rating for commercial, and a 25 (Class 8) for residential.

As part of this planning effort, county personnel charged with regulating or overseeing development were given the opportunity to review and comment of the elements of this plan. Please note that not all counties have building or zoning departments. The following personnel involved in regulating development were identified:

**Table 153: Kansas Region H County Building or Development Stakeholders**

Jurisdiction	Name	Title
Allen County	Jami Clark	Appraiser
Bourbon County	Matt Quick	Appraiser

**Table 153: Kansas Region H County Building or Development Stakeholders**

<b>Jurisdiction</b>	<b>Name</b>	<b>Title</b>
Chautauqua County	Jeremy Hendren	Appraiser
Cherokee County	David Thornton	Appraiser
Crawford County	May Smith	Zoning & Floodplain Administrator
Elk County	Don Sanders	Public Works Administrator
Greenwood County	K. Turner	Road and Bridge Administrator
Labette County	Sandy Krider	Director of Public Works
Montgomery County	Jim Wright	Director of Public Works
Neosho County	Holly Mathews	GIS Coordinator/Floodplain Manager
Wilson County	Jessica P.	Appraiser
Woodson County	Timothy Dimick	Road Supervisor

### **Zoning Ordinances**

Zoning ordinances in Kansas Region H govern land use, development, and building requirements. These ordinances work by dividing the land into different zoning districts and establishing rules and guidelines for land use, building placement, density, and setback within the zoning districts. In general, zoning ordinances establish:

- **Zoning districts:** Areas designated for specific types of land uses, such as residential, commercial, industrial, agricultural, mixed-use, or special districts.
- **Land usage within a zoning district:** Specifications as to which activities, buildings, and operations are permitted in each zoning district.
- **Enforcement:** Zoning ordinances are enforced by the local building department or zoning enforcement officers.

Zoning is the traditional, and most common, tool available to local jurisdictions to control the use of land. Zoning is used to promote health, safety, and the general welfare of the community. Zoning is used to dictate the type of land use and to set minimum specifications for use such as lot size, building height and setbacks, and density of population.

Legal authority for Kansas Region H local governments to adopt and implement zoning regulations is found at K.S.A. 12-741, which provides for the enactment of planning and zoning laws and regulations by cities and counties. The components of local zoning ordinances are detailed at K.S.A. 12-753(a). and include the provision for the adoption or amendment of zoning regulations and the provision for restricting and regulating the height, number of stories and size of buildings

Zoning ordinances play a significant role in enhancing hazard resilience for communities and can help reduce vulnerability to various natural and man-made hazards by regulating land use and development practices. In Kansas Region H, locally instituted and enforced zoning ordinances provide for:

- **Land Use Planning:** Zoning ordinances designate land use zones within a community, ensuring that certain areas are reserved for particular uses. This can prevent the construction of critical infrastructure, homes, or businesses in high-risk zones, such as floodplains or wildfire-prone areas.
- **Setback Requirements:** Zoning ordinances often mandate specific setbacks, which are distances between structures and property lines or natural features. These setbacks can help prevent buildings from being too close to potential hazards, potentially reducing the risk of damage.
- **Building Height and Design Standards:** Zoning codes can establish building height limits to reduce exposure to certain hazards. Design standards, including materials and construction methods, can be specified to make structures more resilient.
- **Floodplain Management:** Many zoning ordinances incorporate floodplain regulations, which dictate where and how buildings can be constructed within flood-prone areas. These regulations may require buildings to be elevated, use flood-resistant materials, or include openings to allow floodwaters to pass through.

- Wildfire Mitigation Zones: In regions susceptible to wildfires, zoning ordinances can establish wildfire mitigation zones with specific requirements for defensible space, fire-resistant landscaping, and building materials to reduce the risk of wildfires spreading to structures.

In addition to zoning ordinances, historic preservation is an important consideration for all jurisdictions within Kansas Region H. Historic preservation is enacted under K.S.A. 12-755(a)(3), and provides local governments the authority they need to adopt zoning regulations to preserve structures listed on local, state, or national historic registers.

Properly applied, zoning restriction and historic preservation are some of the most effective hazard mitigation tools available against a wide variety of hazards.

### Floodplain Management Standards

Floodplain ordinances and management are one of the most effective hazard mitigation tools available against flooding. Local floodplain ordinances, required for NFIP participants, are often used to prevent inappropriate development in floodplains and to reduce flood hazards. In general, they allow the jurisdiction to:

- Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- Prevent and minimize loss of life, injuries, and property damage in flood hazard areas.
- Promote the public health, safety and welfare of citizens in flood hazard areas.
- Manage planned growth.
- Grant permits for use in development within special flood hazard areas that are consistent with the community ordinance and the NFIP under 44 CFR 60.3.

The NFIP floodplain management regulations work alongside local building codes by providing specific flood-related requirements that must be met in addition to general building code standards. In NFIP communities, when constructing or substantially improving a structure in a Special Flood Hazard Area (SFHA), the structure must be elevated to or above the Base Flood Elevation (BFE), which is a requirement imposed by the NFIP's regulations.

The following table details the status of these codes and ordinances for participating jurisdictions:

**Table 154: Kansas Region H Jurisdictional Codes and Ordinances**

Jurisdiction	Building Code	Floodplain Ordinance	Zoning Ordinance
<b>Allen County</b>	x	x	x
Elsmore			
Gas	x	x	x
Humboldt	x	x	x
Iola	x	x	x
La Harpe	x	x	x
Savonburg			
Moran	x	x	
<b>Bourbon County</b>		x	
Bronson		x	
Fort Scott	x	x	
Fulton		x	
Mapleton			
Redfield		x	
Uniontown	x	x	
<b>Chautauqua County</b>	-	-	-
Cedar Vale			
<b>Cherokee County</b>		x	
Scammon		x	
<b>Crawford County</b>		x	x

**Table 154: Kansas Region H Jurisdictional Codes and Ordinances**

Jurisdiction	Building Code	Floodplain Ordinance	Zoning Ordinance
Pittsburg		X	
<b>Elk County</b>		X	
Elk Falls			
Grenola			
Howard		X	
Longton		X	
Moline		X	
<b>Greenwood County</b>	X	X	X
Eureka		X	
Fall River		X	
Hamilton		X	
Madison	X	X	
Severy			
<b>Labette County</b>		X	
Altamont		X	
Chetopa		X	
Edna		X	
Mound Valley		X	
Oswego	X	X	X
Parsons	X	X	
<b>Montgomery County</b>		X	
Caney	X	X	X
Cherryvale		X	
Coffeyville		X	
Havana			
Independence	X	X	X
Liberty			
<b>Neosho County</b>		X	
Erie			
Galesburg			
St. Paul		X	X
<b>Wilson County</b>		X	X
Altoona		X	
Buffalo	X	X	
Fredonia	X	X	X
Neodesha	X	X	X
<b>Woodson County</b>		X	X
Neosho Falls		X	

Note: No X (or blank) indicates jurisdiction does not have code or ordinance

**Regulation of High Hazard Dams**

The KDA Division of Water Resources (KDA-DWR) is responsible for the review and approval of plans for constructing new dams and for modifying existing dams, ensuring quality control during construction, and monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services. The KDA-DWR regulates the construction, operation, and maintenance of all dams or other water obstructions, with the exception of federal reservoirs. The Obstructions in Streams Act (K.S.A 82a-303b) requires owners of high hazard (class C) and significant hazard dams (class B) dams to have a qualified engineer conduct periodic dam inspections. For high hazard dams, the inspection must be done every three years. For significant hazard dams, an inspection must be done every five years.

#### 5.4 Jurisdictional Compliance with NFIP

All NFIP participating jurisdictions are required to meet the minimum standards set forth in the program. The jurisdictions’ NFIP coordinator ensures all new construction projects are properly surveyed and receive an elevation certificate.

NFIP participants are committed to continued involvement and compliance. To help facilitate compliance, NFIP participating jurisdictions:

- Adopted floodplain regulations through local ordinance
- Enforces floodplain ordinances through building restrictions
- Regulates new construction in Special Flood Hazard Areas as outlined in their floodplain ordinance
- Utilizes FEMA DFIRMs, where available
- Monitors floodplain activities

Please see section 4.12.8, National Flood Insurance Program and Community Rating System Communities, Table 94: Kansas Region H NFIP Communities for current effective map dates for each participating community.

As part of this planning effort, jurisdictional NFIP Coordinators were given the opportunity to review and comment of the elements of this plan. The following individuals designated as NFIP Coordinators identified:

**Table 155: Kansas Region H Jurisdictional NFIP Coordinators**

<b>Jurisdiction</b>	<b>NFIP Coordinator</b>	<b>Title</b>
<b>Allen County</b>	Sherrie Riebel	County EMS
Gas	Rhonda Hill	City Clerk
Humboldt	Jeremy Bulk	City Clerk
Iola	Gregg Hutton	FPA
La Harpe	Kim Bradford	City Clerk
Moran	Lori Evans	City Clerk
<b>Bourbon County</b>	Shane Walker	GIS/Floodplain Administrator
Bronson	Danielle Minor	City Clerk
Fort Scott	Bill Downey	Codes Department Supervisor
Mapleton	Robert Farmer	City Attorney
Redfield	Sally Johnson	City Clerk
Uniontown	Shane Walker	GIS/Floodplain Administrator
<b>Chautauqua County</b>	-	-
Cedar Vale	-	-
<b>Cherokee County</b>	Matt Haviland	Emergency Management Director
Scammon	Tammy Duley	City Clerk
<b>Crawford County</b>	May Smith	Zoning and Floodplain Administrator
Pittsburg	Dexter Neisler	FPMA
<b>Elk County</b>	Don Sanders	Public Works Director
Grenola	Jessica Rankin	City Clerk
Howard	Joanna Hunter	City Clerk
Longton	Bonnie Foged	City Clerk
Moline	Lisa Townsley	City Clerk
<b>Greenwood County</b>	Ben Fox	Chairman of BOCC
Eureka	Lucas Mullin	City Administrator
Fall River	John Schouten	City Water Manager
Hamilton	Amber Woodie	City Clerk
Madison	Carol Porter	City Clerk
<b>Labette County</b>	Charles Morse	Sanitation Officer
Altamont	Lizabeth Finley	City Clerk



**Table 155: Kansas Region H Jurisdictional NFIP Coordinators**

<b>Jurisdiction</b>	<b>NFIP Coordinator</b>	<b>Title</b>
Chetopa	Toni Crumrine	City Clerk
Edna	Joyce Rosson	City Clerk
Oswego	Calvin Jugensen	City Superintendent
Parsons	Darrell Moyer	FPM
<b>Montgomery County</b>	<b>Rick Whitson</b>	<b>Emergency Manager</b>
Caney	Fred Gress	City Administrator
Cherryvale	Joe Rexwinkle	Fire Chief/EMS
Coffeyville	Thomas Osborn	City Engineer
Havana	Judith Wade	City Clerk
Independence	David Cowan	Assistant City Manager
Liberty	Paul Hawley	Mayor
<b>Neosho County</b>	<b>Holly Mathews</b>	<b>GIS Coordinator</b>
Erie	Buddy Stark	Utilities
Galesburg	Carol Clevenger	City Clerk
St. Paul	Jeri Geifer	City Clerk
<b>Wilson County</b>	<b>Terry Lyons</b>	<b>Emergency Management</b>
Altoona	Pat Bonner	Council Member
Buffalo	Jerry Robinson	Mayor
Fredonia	Carolyn Anderson	Interim City Admin/FPA
Neodesha	Ed Truelove	Floodplain Administrator
<b>Woodson County</b>	<b>Timothy Dimick</b>	<b>Emergency Manager</b>
Neosho Falls	Vickie German	FPMA

Source: State of Kansas

Participation in the NFIP is based on an agreement between the municipality and the federal government. If a municipality agrees to adopt and enforce a floodplain ordinance designed to reduce future flood risks, all citizens in the participating municipality can purchase flood insurance.

In Kansas Region H, as part of NFIP participation communities must:

- Use current NFIP flood maps in adopting floodplain management regulations.
- Require permits for all development in SFHAs
- Ensure that development does not increase the flood hazard on other properties.
- Meet current elevation standards. Ensuring the lowest occupied floor is elevated to or above the base flood elevation indicated on the NFIP flood map.

While most floodplain requirements have been incorporated into the current Building Codes, some additional provisions and regulations may be required by a community. Communities participating in the NFIP are required to adopt, enforce and maintain a local floodplain ordinance as a stipulation of compliance with the program. The purpose of this ordinance is to ensure public safety, minimize impact to persons and property from flooding, protect watercourses from encroachment, and maintain the capability of floodplains to retain and carry off floodwaters. The local floodplain administrator is typically the municipal official responsible for overseeing the enforcement and update of the document.

Floodplain ordinances are typically enforced by law enforcement departments or code enforcement offices. In general, the enforcement process generally works as follows:

- Identification of Violations: Violations are often identified through various means, such as citizen complaints, routine inspections, or observations by enforcement officers.

- Notification: Once a violation is identified, the responsible party is typically notified of the violation. This notification may come in the form of a written citation, warning letter, or verbal communication depending on the severity of the violation and local procedures.
- Correction Notice: In many cases, the responsible party is given a certain amount of time to correct the violation. They may be required to remedy the situation, obtain necessary permits, or comply with specific regulations.
- Follow-up Inspections: After the designated correction period, enforcement officers may conduct follow-up inspections to ensure that the violation has been addressed satisfactorily.
- Penalties and Fines: If the responsible party fails to comply with the ordinance or correct the violation within the specified timeframe, they may face penalties or fines. These penalties can vary depending on the nature and severity of the violation and may escalate for repeated offenses.
- Legal Action: In cases of persistent non-compliance or serious violations, local authorities may initiate legal proceedings against the responsible party. This can involve court appearances, injunctions, or other legal measures to compel compliance.

The following figure represents both pre- and post-disaster community NFIP requirements:

**Figure 4: Pre- and Post-Disaster Community NFIP Requirements**



Source: FEMA

When structures located in the SFHAs are substantially modified (more than 50% damaged or improved) they are required to be brought into compliance with current NFIP standards and local building codes. In cases of repairs being conducted as a result of damage, jurisdictional NFIP Coordinators are responsible for substantial damage and improvement determinations. These determinations are required for compliance in the NFIP and must be completed before residents begin repairs or permits are issued.

However, the May 2020 Report to Congressional Committees on the National Flood Insurance Program by the United States Government Accountability indicates “FEMA generally does not collect or analyze the results of these assessments, limiting its ability to ensure the process operates as intended. Furthermore, FEMA has not clarified how communities can access NFIP claims data. Such data would help communities target substantial damage assessments after a flood.” This has been found to be true in the Kansas Region H, with submitted information and data underutilized and some FEMA available data unshared and/or unadvertised.

Section 1206 of the Disaster Recovery Reform Act of 2018 authorizes the FEMA to provide communities with the resources to administer and enforce building code and floodplain management ordinances following a major disaster declaration through FEMA’s Public Assistance Program. To be eligible for reimbursement under the Public Assistance Program, including for the Disaster Recovery Reform Act of 2018 Section 1206, communities must be designated for Public Assistance permanent work under a major disaster declaration and be legally responsible to administer and enforce building codes or floodplain management regulations. Communities must also be in good standing with the NFIP. Available assistance includes:

**Figure 5: Disaster Recovery Reform Act of 2018 Available Assistance**



Source: FEMA

It is worth noting that this assistance is available for a variety of hazards occurrence types, not just flooding.

Key to achieving across the board reduction in flood damages is a robust community assistance, education, and awareness program. As such, NFIP participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.

**5.5 Jurisdictional Plans**

Planning plays a critical role in hazard mitigation by helping communities identify, assess, and reduce risks associated with natural and man-made hazards. Effective planning involves a proactive, strategic, and comprehensive approach to minimize the impact of disasters and enhance community resilience. Jurisdictions were asked if they had completed the following plans:

- **Comprehensive Plan:** Establishes the overall vision for a jurisdiction, serves as a guide to decision making, and generally contains information on demographics, land use, transportation, and facilities. As a comprehensive plan is broad in scope the integration of hazard mitigation measures can enhance the likelihood of achieving risk reduction goals.
- **Emergency Operations Plan:** Outlines the responsibility and methods by which resources are deployed during and following an emergency or disaster. In Kansas Region H, the overarching county provides emergency operation planning for jurisdictions within its borders.
- **Fire Mitigation Plan:** Used to mitigate a jurisdiction’s wildfire risk and vulnerability. The plan documents areas with an elevated risk of wildfires, and identifies the actions taken to decrease the risk. A fire mitigation plan can influence and prioritize future funding for hazardous fuel reduction projects, including where and how federal agencies implement fuel reduction projects on federal lands.
- **Flood Mitigation Assistance Plan:** The purpose of the flood mitigation assistance plan is to reduce or eliminate the long-term risk of flood damage to buildings and other structures insured under the NFIP.

The following table details the status of these plan types for each participating jurisdiction:

**Table 156: Kansas Region H Jurisdictional Plans**

Jurisdiction	Comprehensive Plan	Emergency Operations Plan	Fire Mitigation Plan	Flood Mitigation Assistance Plan
Allen County	x	x	x	x
Elsmore				
Gas	x	x		x
Humboldt	x	x	x	x
Iola	x	x	x	x
La Harpe		x		
Moran	x			
Savonburg				

**Table 156: Kansas Region H Jurisdictional Plans**

<b>Jurisdiction</b>	<b>Comprehensive Plan</b>	<b>Emergency Operations Plan</b>	<b>Fire Mitigation Plan</b>	<b>Flood Mitigation Assistance Plan</b>
<b>Bourbon County</b>		X		
Bronson		X		X
Fort Scott	X	X		X
Fulton				
Mapleton				
Redfield		X		
Uniontown		X		X
<b>Chautauqua County</b>		X		
Cedar Vale		X		
<b>Cherokee County</b>		X		X
Scammon				
<b>Crawford County</b>		X		X
Pittsburg				
<b>Elk County</b>		X		
Elk Falls				
Grenola				
Howard				
Longton		X		
Moline		X		X
<b>Greenwood County</b>		X		
Eureka				
Fall River				
Hamilton		X		
Madison				
Severy		X		
<b>Labette County</b>		X		
Altamont		X		
Chetopa		X		
Edna		X		
Mound Valley	X	X		
Oswego	X	X		
Parsons	X	X		
<b>Montgomery County</b>				
Caney	X			
Cherryvale				
Coffeyville				
Havana				
Liberty				
<b>Neosho County</b>		X		
St. Paul		X	X	X
<b>Wilson County</b>	X	X		X
Altoona				
Buffalo	X			
Fredonia		X	X	X
Neodesha		X		
<b>Woodson County</b>	X	X	X	X
Neosho Falls		X		

Note: No X (or blank) indicates jurisdiction does not have plan

## 5.6 Challenges and Opportunities for Capability Improvement

As always, challenges exist for all participating jurisdictions due to the day-to-day demands of the working environment including staffing issues, budget restrictions, and staffing turnover. These issues can, and do, impact the utilization and incorporation of the HMP and the completion of identified hazard mitigation projects.

Improving capabilities can lead to enhanced performance, increased efficiency, and better outcomes in hazard mitigation planning and implementation. The following identify recommended improvements for jurisdictions, with some recommendations being applicable to all jurisdictions, and others being applicable to specific jurisdictions:

- On a yearly basis, many counties and jurisdictions throughout Kansas Region H fully allocate their tax revenue to basic services and programs. Because of this, funding for mitigation projects is often unavailable or severely limited. While the capability to assess special taxes or issue bonds does exist, historically it has been shown that passing these measures is extremely difficult. As a result, many needed mitigation projects throughout Kansas Region H are not completed due to lack of funding. All Kansas Region H jurisdictions should, as possible, prioritize budgeting for mitigation projects.
- All participating jurisdictions should build a relationship with local meteorologists and the NWS to give priority access to rapidly developing weather conditions.
- All participating jurisdictions could receive instruction from the State of Kansas Division of Emergency Management /Homeland Security and FEMA Region VII on grant application processes and grant management strategies. These classes could help all participating jurisdictions receive available grant funding.
- All participating jurisdictions should consider adoption of the 2018 (or newer) International Building Codes to ensure current constructions standards, including climate resiliency standards.
- Participating jurisdictions without a long-term community plan would benefit from the creation of a comprehensive plan to help plan and budget for hazard mitigation measures, policies, and procedures. Legal authority for Kansas local governments to develop comprehensive plans, both individually and with other jurisdictions, is found at K.S.A 12-747 and K.S.A. 19-2958. The statute also authorizes county planning commissions to develop comprehensive plans for unincorporated areas, and for cities, where appropriate.
- Jurisdictions that do not currently participate in the NFIP should enroll in the program to allow citizens to purchase federally backed flood insurance.
- Current NFIP participants should apply for membership in the CRS to allow citizens to receive discounts off their federally backed flood insurance policies.
- All participating jurisdictions should explore engaging in public-private emergency planning partnerships to further increase hazard resiliency through the infusion of additional funding and expertise to help complete mitigation projects.

Additionally, to help overcome many of these identified challenges, participating jurisdictions will work collaboratively using the following strategies, as appropriate:

- Innovation and Adaptation: Foster a culture of innovation and adaptability. Encourage employees to think creatively, embrace change, and explore new ways of doing things to overcome challenges.
- Training and Development: Invest in training and development to enhance skills and knowledge.
- Communication Improvement: Enhance communications and provide clear and transparent communication when sharing information, aligning teams, and addressing concerns.
- Collaboration and Teamwork: Encourage collaboration and teamwork which allows for the pooling of diverse skills and perspectives, leading to more effective problem-solving (the MPC is a good example of effective use of this strategy).
- Technology Adoption: Embrace technology to streamline operations and enhance productivity.
- Agile Project Management: Implement agile project management methodologies to enhance flexibility and responsiveness to changing conditions. Agile approaches allow teams to adapt quickly to challenges.

As appropriate, these strategies will be tailored for specific circumstances, with a combination of these strategies often being more effective than relying on a single approach.

## Section 6 – Mitigation Strategy

### 6.1 Introduction

As part of this planning effort, Kansas Region H participating jurisdictions worked to minimize the risk of future impacts from identified hazards to all citizens of the region. In an attempt to shape future regulations, ordinances and policy decisions the MPC reviewed, revised, and developed a comprehensive hazard mitigation strategy. This comprehensive strategy includes:

- Goals to guide the selection of activities to mitigate and reduce potential loss.
- A discussion of funding capabilities for hazard mitigation projects.
- Identification, evaluation, and prioritization of mitigation actions along with potential funding sources.

Kansas Region H’s mitigation strategy promotes long-term hazard resilience that will have a positive impact on quality-of-life issues. By minimizing both the exposure to, and potential impacts from, identified hazards jurisdictions can expect to minimize injuries and loss of life, reduce property damage, and minimize the day to day social and economic disruptions that follow hazard events.

### 6.2 Goals and Objectives

Kansas Region H’s overall mitigation goal is to minimize the protect lives and properties within the region from the impacts of hazards identified in this plan. Based on discussion with the discussions by the MPC, it was determined that the goals (desired outcomes) identified in the 2019 HMP remained viable and valid. The following represent the identified goals and objectives for the 2024 HMP:

- **Goal 1:** Reduce the risk to the people and property from the identified hazards in this plan.
- **Goal 2:** Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness, and partnerships with all entities in order to enhance the understanding identified hazards and hazard mitigation opportunities.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

The Kansas Region H MPC will continuously evaluate these identified goals against current capabilities and conditions. As part of this process, the Kansas Region H MPC will utilize a monitoring and evaluation system to systematically track, assess, and measure the progress of activities and outcomes related to the goals outlined in this HMP. Key components to the monitoring and evaluation system include:

- Establishment of baseline data to quantify the starting point upon the approval of this plan. This will provide a reference against which progress can be measured.
- Enactment of a monitoring plan which outlines the specific activities, tasks, and responsibilities for regularly collecting, analyzing, and reporting data on the performance indicators.
- Identification and specification of the methods for collecting data, whether through surveys, interviews, focus groups, or observations.
- Definition of the criteria and methods for analyzing collected data. This includes determining how quantitative and qualitative data will be processed and interpreted to assess progress.
- Involvement of stakeholders to ensure that all perspectives are considered, and that feedback on the progress of achieving the delineated goals is taken into account.

Providing specific goals for each hazard type in Appendix D, the jurisdictions tailored their mitigation efforts to address the unique challenges posed by different types of hazards while still working towards the overarching goals established for the entire region.

### 6.3 Review and Creation of Hazard Mitigation Actions

Hazard mitigation actions are proactive measures taken to reduce or eliminate the long-term risk and impact of natural and human-made hazards. These actions are designed to minimize the damage caused by disasters and contribute to the overall resilience of communities and infrastructure.

For this plan update members of the MPC were provided with a complete list of previously identified mitigation actions and asked to review them to determine their status. Previously identified mitigation status was reported using the following definitions:

- **Completed:** The action has been fully completed.
- **Not Completed:** The action was not started or has been started and is not completed.
- **Revised:** Action has been revised to reflect current planning environment or identified changes.
- **Cancelled:** The action has been removed from consideration due to either a lack of resources or changing mitigation priorities.
- **Ongoing:** The action is completed and has become an ongoing activity or capability.

Additionally, MPC members and stakeholders were provided with opportunities to identify and incorporate newly identified actions based on the changing hazard environment or previously unidentified needs.

In preparing a mitigation strategy all reasonable and obtainable mitigation actions were considered to help achieve the general goals. Priorities were developed based on past damages, existing exposure to risk, and weaknesses identified by the State and local capability assessments. In identifying mitigation actions, the following activities were considered:

- The use of applicable building construction standards.
- Hazard avoidance through appropriate land-use practices.
- Relocation, retrofitting, or removal of structures at risk.
- Removal or elimination of the hazard.
- Reduction or limitation of the amount or size of the hazard.
- Segregation of the hazard from that which is to be protected.
- Modification of the basic characteristics of the hazard.
- Control of the rate of release of the hazard.
- Provision of protective systems or equipment for both cyber or physical risks.
- Establishment of hazard warning and communication procedures.
- Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

In general, all identified mitigation actions were classified under one of the following broad categories:

- **Local plans and regulations:** Actions that create or update plans to reflect situational changes and/or actions that aid in the creation, revision, or adoption of regulations related to hazard mitigation and management.
- **Natural resource protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Preparedness and response:** Emergency response or operational preparedness actions.
- **Public education and awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.
- **Structural:** Actions that the modification of existing buildings or structures or involve the construction of structures to reduce the impact of hazard.

#### 6.4 Prioritization of Mitigation Actions

The MPC and subject matter experts worked together to prioritize both previously identified and newly identified hazard mitigation actions. The methodology used to determine mitigation action priorities was based upon the following:

- Review of the updated risk assessments.
- Review of revised goals and objectives.
- Review of capabilities.

A multi-pronged and flexible analysis method was used for determining and prioritizing mitigation actions. An initial review of previously identified but not completed actions was conducted to ensure that, based on current condition and

capabilities, the actions were still viable. Actions that were considered viable were retained in this plan update, with minor revisions completed as necessary.

For identified actions that were retained, and for newly identified actions, the FEMA recommended Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) criteria were used to assist with prioritization. The following table details the STAPLEE criteria:

**Table 157: STAPLEE Review Criteria**

<b>Criteria</b>	<b>Discussion</b>	<b>Example Considerations</b>
<b>Social</b>	There should be community acceptance and support for the mitigation action?	Does the action have community acceptance? Will the proposed action adversely affect one segment of the population?
<b>Technical</b>	The proposed mitigation action should be technically feasible and should provide a long-term reduction in losses.	How effective is the action in avoiding or reducing future losses? Does it solve a problem or only a symptom? Does the action create additional problems?
<b>Administrative</b>	Personnel and administrative capabilities should be available to administer all phases of the project.	Are the staffing and administrative capabilities to implement the action in place? Is there someone to coordinate and lead the effort?
<b>Political</b>	Political support for the mitigation action needs to be present.	Is the action politically acceptable? Have political leaders been involved in the planning process? Is there a political champion to help see the project to completion?
<b>Legal</b>	The legal authority to implement the actions need to be in place or possible with the passing of laws or regulations.	Does the legal authority to implement the proposed action exist? Are there potential legal repercussions?
<b>Economic</b>	The current budget (and/or general obligation bonds or other instruments) need to be in place to fully fund the mitigation action.	Do the potential benefits of this action exceed the potential costs? Has funding been secured for the proposed action? What are the potential funding sources (public, non-profit, and private)? How will this action affect the fiscal capability of the community(s)? Does the action contribute to other community goals, such as capital improvements or economic development?
<b>Environmental</b>	Actions should interface with the need for sustainable and environmentally healthy communities. Also, statutory considerations, such as the National Environmental Policy Act need to be considered for federal funds.	How will the action affect the environment? Will the action need environmental regulatory approvals? Will it meet federal, state, and local state regulatory requirements? Are endangered or threatened species likely to be affected?

Based on the prioritization review, the MPC assigned each action the following prioritized ranking:

- **High Priority:** Actions that provide substantial progress towards improving resiliency and are determined as potentially urgent in nature by the MPC. This would include actions that strongly support the reduction of high hazard risks and meet mitigation goals. Additionally, actions in this ranking may have imminent funding availability or strong community support.
- **Medium Priority:** Actions that provide reasonable progress towards improving resiliency and are determined as moderately urgent in nature by the MPC. This would include actions that would lessen impact hazard events, but not eliminate the impact completely.



- **Low Priority:** Actions that provide incremental progress towards improving resiliency and are determined as slightly urgent in nature by the MPC. This would include actions that are generally the responsibility of the local community, actions outside the normal authority of the State, or actions whose cost/benefit analysis returns a low yield.

## 6.5 Mitigation Action Funding Sources

It is generally recognized that mitigation actions help realize long term savings by preventing future losses due to hazard events. However, many mitigation actions are beyond the budgetary capabilities of a single jurisdiction. This section provides a general description of some of the avenues available to defray the cost of implementing mitigation actions.





FEMA provides financial assistance to state, local, tribal, and territorial governments, as well as certain private non-profit organizations, to implement projects that help reduce the risk and impact of future disasters. These grant programs are designed to support initiatives aimed at mitigating hazards and improving resilience. The main grant program offered by FEMA for hazard mitigation is the Hazard Mitigation Assistance (HMA) program. The HMA program includes four subprograms, the Hazard Mitigation Grant Program (HMGP), the HMGP Post-Fire, Building Resilient Infrastructure and Communities (BRIC), and the Flood Mitigation Assistance (FMA) grant program. Applicants to these grant programs are required to submit project proposals that demonstrate the effectiveness of their proposed mitigation projects. The eligibility criteria, application process, and specific requirements for each program are outlined by FEMA in their guidelines and announcements, which are typically published on FEMA’s website.

The following provides a general overview of major grant funding streams:

- **HMGP and HMGP Fire:** The HMGP grants assist in implementing long-term hazard mitigation measures following Presidential disaster declarations, including fire declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.
- **BRIC:** BRIC supports states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. Working in coordination with BRIC, the National Mitigation Investment Strategy is intended to provide a national, whole-community approach to investments in mitigation activities and risk management.
- **FMA Grant Program:** FMA is a competitive grant program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the NFIP. FEMA chooses recipients based on the applicant’s ranking of the project and the eligibility and cost-effectiveness of the project. FEMA requires state, local, tribal and territorial governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for hazard mitigation assistance projects.

The following chart summarizes HMA grants programs:

**Chart 28: HMA Grant Program Summary**

HMA Program Comparison	 HMGP	 HMGP Post Fire	 BRIC	 FMA
Program Type	Post-disaster	Post-disaster	Pre-disaster	Pre-disaster
Funding Availability	Presidentially declared disaster	FMAG-declared disaster	6% set aside from federal post-disaster grant funding	Annual appropriations
Competitive?	No	No	Yes	Yes
Eligible Applicants	States, federally recognized tribes, territories and the District of Columbia (DC)	States, federally recognized tribes, territories and DC	States, federally recognized tribes, territories and DC	States, federally recognized tribes, territories and DC
Eligible Subapplicants	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments, tribes and private nonprofit organizations	State agencies, local governments and tribes	State agencies, local governments and tribes
Hazard Mitigation Plan Requirement	Yes	Yes	Yes	Yes
NFIP Participation	Communities with projects in Special Flood Hazard Areas (SFHAs)	Communities with projects in SFHAs	Communities with projects in SFHAs	Subapplicants and properties

Source: FEMA

Additionally, the following provide available grant funding avenues for hazard mitigation projects:

- **Rehabilitation Of High Hazard Potential Dam (HHPD) Grant Program:** HHPD awards provide technical, planning, design and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. A state or territory with an enacted dam safety program, the State Administrative Agency, or an equivalent state agency, is eligible for the grant.
- **Emergency Management Performance Grant:** Program provides state, local, tribal and territorial emergency management agencies with the resources required for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation. Allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response and recovery mission areas.
- **State Homeland Security Program:** Program includes a suite of risk-based grants to assist state, local, tribal and territorial efforts in preventing, protecting against, mitigating, responding to and recovering from acts of terrorism and other threats. This grant provides grantees with the resources required for implementation of the National Preparedness System and working toward the National Preparedness Goal of a secure and resilient nation.
- **Nonprofit Security Grant Program:** Program is one of three grant programs that support DHS/FEMA’s focus on enhancing the ability of state, local, tribal, and territorial governments, as well as nonprofits, to prevent, protect against, prepare for, and respond to terrorist or other extremist attacks. These grant programs are part of a comprehensive set of measures authorized by Congress and implemented by DHS to help strengthen the nation’s communities against potential terrorist or other extremist attacks. Among the five basic homeland security missions noted in the DHS Strategic Plan for Fiscal Years 2020-2024
- **Public Assistance Program:** The mission of FEMA's Public Assistance program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities

can quickly respond to and recover from major disasters or emergencies declared by the President. Through the Public Assistance program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations. The Public Assistance Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-Federal share (up to 25%) is split with the eligible applicants.

- **Individual Assistance Program:** After a disaster, the federal government determines if any county in the state meets the criteria for individual disaster assistance. The decision is based on damage related to the severity and magnitude of the event. When a county receives an Individual Assistance declaration from the President of the United States, anyone who lives in that county can apply for assistance.
- **Small Business Administration Disaster Loans:** The Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Small Business Administration disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.
- **The Housing and Urban Development Agency:** Provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.
- **Community Development Block Grant Program:** This is a flexible program that provides communities with resources to address a wide range of unique community development needs. The program provides annual grants on a formula basis to general units of local government and States.
- **Individual and Households, Other Needs Assistance Program:** This program provides financial assistance to individuals or households who sustain damage or develop serious needs because of a natural or man-made disaster. The funding share is 75% federal funds and 25% state funds. The program provides grants for necessary expenses and serious needs that cannot be provided for by insurance, another federal program, or other source of assistance. The current maximum allowable amount for any one disaster to individuals or families is \$25,000. The program gives funds for disaster-related necessary expenses and serious needs, including personal property, transportation, medical and dental, funeral, essential tools, flood insurance, and moving and storage.
- **WUI Grants:** The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The WUI Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.
- **Bureau of Indian Affairs Aid to Tribal Governments:** This program provides funds to Indian Tribal governments to support general Tribal government operations, to maintain up-to-date Tribal enrollment, to conduct Tribal elections, and to develop appropriate Tribal policies, legislation, and regulations. Funds may be used in a variety of ways to strengthen the capabilities of Indian tribes in self-government, community planning, and maintenance of membership records.
- **Bureau of Indian Affairs Replacement and Repair of Indian Schools:** Providing safe, functional, code-compliant, economical, and energy efficient education facilities for American Indian students attending Bureau of Indian Affairs owned or funded primary and secondary schools or residing in Bureau owned or funded dormitories.
- **Bureau of Indian Affairs Wildland Fire Management:** Cooperative agreements for grants and reimbursable costs related to wildland fire management directly associated with programs contracted by tribes under the authority of the National Indian Forest Resources Management Act.

Small and impoverished communities that receive grants may receive a federal cost share of up to 90% of the total amount approved under the grant award. As defined in 44 CFR 201.2, a small and impoverished community is:

- A community of 3,000 or fewer individuals that is identified by the State as a rural community

- Is not a remote area within the corporate boundaries of a larger city
- Is economically disadvantaged, by having an average per capita annual income of residents not exceeding 80% of national, per capita income
- The local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate
- Any other factors identified in the State Plan in which the community is located

## 6.6 Completed Mitigation Actions

Kansas Region H and its participating jurisdictions remain committed to investigating and obtaining all available grant funding for the completion of hazard mitigation projects. Since the completion of the previous HMP, the MPC has been tracking the completion status of all identified hazard mitigation actions. The onset of COVID-19 early in the life of the 2019 HMP necessitated all available resources, funding, and capabilities to be reassigned to help manage the pandemic. Additionally, staff shortages and non-standard working arrangements were instituted for all agencies. As such, Kansas Region H and its participating jurisdictions only managed to complete a sub-set of previously identified mitigation action items since the completion of the last HMP. Completed actions are marked as such in the detailed list jurisdictional mitigation actions found in Appendix D.

## 6.7 Jurisdictional Mitigation Actions

To support the mitigation goals identified in this HMP, all participating Kansas Region H jurisdictions identified a comprehensive range mitigation projects and activities. The selected set carefully takes an all-hazards approach to mitigation while simultaneously addressing each of the plan’s profiled hazards. The list of mitigation actions is based upon the potential to reduce risk to life and property with an emphasis on ease of implementation, community and agency support, consistency with local jurisdictions’ plans and capabilities, available funding, and jurisdictional vulnerability. This plan update includes carryover mitigation actions from the 2019 HMP as they are still relevant and/or in progress or ongoing. It also includes projects that have been carried over due to a lack of funding and/or resources required for project completion during the last five-year cycle.

It is important to note that since the previous HMP, requirements for plan approval have changed. In the previous plan, all jurisdictions identified only a few actions, with many of the actions identified at the county level to cover local participants. As such, the actions in this plan have been re-written and reclassified on a wholesale basis to ensure each participating jurisdiction has identified at least one action per identified hazard. In doing so, presenting a comparison to previously identified actions is impractical. However, any actions previously identified that have been completed are noted to illustrate successes.

The Kansas Region H MPC acknowledges that the adoption and approval of this plan does not obligate any participating jurisdictions to complete each identified action. Rather, the MPC understands that progress should be shown in mitigation efforts which may include the completion of mitigation actions or other actions or progress in achieving the goals of the HMP.

A detailed list of each participating jurisdiction’s hazard mitigation actions may be found in Appendix D. A revised version of the requirement allows for a more tailored approach to mitigation planning, ensuring that communities address the hazards most relevant to their circumstances while also acknowledging that not all hazards may be equally significant across different areas. It promotes a more efficient use of resources by focusing efforts on mitigating the most pressing risks faced by each community.

The following table details each participating jurisdiction’s mitigation action items against identified hazards:

**Table 158: Jurisdictional Mitigation Action Cross Check**

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
<b>Allen County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23
Elsmore	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Gas	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Humboldt	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Iola	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
La Harpe	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Moran	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Savonburg	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Allen County Community College	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 256 – Moran Public Schools	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 257 - Iola Public Schools	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 258 – Humboldt Public Schools	1, 2, 3	X	X	4	5	6	7	5	2	7
Heartland Electric	1	X	2	2	2	2	2	2	2	2
Community Health Center of SE Kansas	1	X	X	X	X	X	2	X	2	2
<b>Bourbon County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23
Bronson	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Fort Scott	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Fulton	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Mapleton	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Redfield	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Uniontown	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Fort Scott Community College	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 234 - Fort Scott	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 235 - Uniontown	1, 2, 3	X	X	4	5	6	7	5	2	7
Bourbon County Rural Fire District #3	1									2,3
Community Health Center of SE Kansas	1	X	X	X	X	X	2	X	2	2
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
<b>Chautauqua County</b>	DNP	DNP	DNP	DNP	DNP	DNP	DNP	DNP	DNP	DNP
Cedar Vale	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 285 – Cedar Vale	1, 2, 3	X	X	4	5	6	7	5	2	7
Big Caney Watershed #31	1	X	X	2	X	3	X	X	X	X
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
<b>Cherokee County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23
Scammon	1, 2, 3	X	4	5, 6	7	8, 9, 10, 11	12	13	14	12, 15
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electrical	1	X	2	2	2	2	2	2	2	2
<b>Crawford County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
Pittsburg	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 247 - Cherokee	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 248 - Girard	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 249 - Frontenac	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 250 Pittsburg	1, 2, 3	X	X	4	5	6	7	5	2	7
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electric	1	X	2	2	2	2	2	2	2	2
Big Caney Watershed #31	1	X	X	2	X	3	X	X	X	X
Girard Medical Center	1	X	X	X	X	X	2	X	2	2
Labette Health	1	X	X	X	X	X	2	X	2	2
Community Health Center of SE Kansas	1	X	X	X	X	X	2	X	2	2

**Table 158: Jurisdictional Mitigation Action Cross Check**

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
<b>Elk County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
Elk Falls	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Grenola	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Howard	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Longton	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Moline	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 282 - West Elk	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 283 - Elk Valley	1, 2, 3	X	X	4	5	6	7	5	2	7
Caney Valley Electric	1	X	2	2	2	2	2	2	2	2
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Elk County Rural Fire Districts (all)	1	X	X	X	X	X	X	X	X	2,3
Rural Water District #1	1	X	2	2	2	2	2	2	2	2
Rural Water District #2	1	X	2	2	2	2	2	2	2	2
Big Caney Watershed #31	1	X	X	2	X	3	X	X	X	X
Public Wholesale Water Supply District #2	1	X	X	2	X	X	X	X	X	X
Public Wholesale Water Supply District #33	1	X	X	2	X	X	X	X	X	X
<b>Greenwood County</b>	1, 2	3, 4	5, 6	3, 7, 8	9, 10	11, 12, 13, 14, 15	16, 17, 18	19, 20, 21, 22	18, 22	23
Eureka	1, 2	X	3	4, 5	6	7, 8, 9	10	11	13	10, 13
Fall River	1, 2	X	3	4, 5	6	7, 8, 9	10	11	13	10, 13
Hamilton	1, 2	X	3	4, 5	6	7, 8, 9	10	11	13	10, 13
Madison	1, 2	X	3	4, 5	6	7, 8, 9	10	11	13	10, 13
Severy	1, 2	X	3	4, 5	6	7, 8, 9	10	11	13	10, 13
USD 389 - Eureka	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 390 - Hamilton	1, 2, 3	X	X	4	5	6	7	5	2	7
Greenwood County RFD #1	1	X	X	X	X	X	X	X	X	2,3
Butler Electric Cooperative	1	X	2	2	2	2	2	2	2	2
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
<b>Labette County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
Altamont	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Chetopa	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Edna	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Mound Valley	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Oswego	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Parsons	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 506 - Altamont	1, 2, 3	X	X	4	5	6	7	5	2	7
Community Health Center of SE Kansas	1	X	X	X	X	X	2	X	2	2
Labette Health	1	X	X	X	X	X	2	X	2	2
Divita Dialysis Center	1	X	X	X	X	X	2	X	2	2
Great Plains Industrial Park	1,2,3	X	X	X	X	X	X	X	X	X
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electric	1	X	2	2	2	2	2	2	2	2
<b>Montgomery County</b>	1, 2	3, 4	5, 6	3, 7, 8	9, 10	11, 12, 13, 14, 15	16, 17, 18	19, 20, 21, 22	18, 22	23
Caney	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Cherryvale	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Coffeyville	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14

**Table 158: Jurisdictional Mitigation Action Cross Check**

Jurisdiction	All Hazards	Agricultural Infestation	Dam or Levee Failure	Drought	Extreme Temperatures	Flood	Severe Weather	Severe Winter Weather	Tornado	Wildfire
Havana	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Independence	3	X	8	X	X	2, 3, 4, 5, 6, 7, 8, 11	X	X	1, 3, 11	X
Liberty	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Coffeyville Community College	1, 2, 3	X	X	4	5	6	7	5	2	7
Independence Bible School	1, 2, 3	X	X	4	5	6	7	5	2	7
Independence Community College	1, 2, 3	X	X	4	5	6	7	5	2	7
St. Andrews Catholic School	1, 2, 3	X	X	4	5	6	7	5	2	7
The Holy Name Catholic School	1, 2, 3	X	X	4	5	6	7	5	2	7
Tyro Christian School	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 436 - Caney	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 445 - Coffeyville	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 446 - Independence	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 447 - Cherryvale/Thayer	1, 2, 3	X	X	4	5	6	7	5	2	7
Zion Lutheran School	1, 2, 3	X	X	4	5	6	7	5	2	7
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Caney Valley Electric	1	X	2	2	2	2	2	2	2	2
Coffeyville Regional Medical Center	1	X	X	X	X	X	2	X	2	2
Labette Health	1	X	X	X	X	X	2	X	2	2
Community Health Center of SE Kansas	1	X	X	X	X	X	2	X	2	2
<b>Neosho County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
Erie	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Galesburg	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
St. Paul	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 101 - Erie	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 413 - Chanute	1, 2, 3	X	X	4	5	6	7	5	2	7
Labette Health	1	X	X	X	X	X	2	X	2	2
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electric	1	X	2	2	2	2	2	2	2	2
<b>Wilson County</b>	1, 2, 3	4, 5	4, 5	4, 6	7, 8	9, 10, 11, 12	13	15	14	16
Altoona	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Buffalo	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Fredonia	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
Neodesha	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
USD 387 - Altoona-Midway	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 461 - Neodesha	1, 2, 3	X	X	4	5	6	7	5	2	7
USD 484 - Fredonia	1, 2, 3	X	X	4	5	6	7	5	2	7
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electric	1	X	2	2	2	2	2	2	2	2
Freedonia Regional Hospital	1	X	X	X	X	X	2	X	2	2
Wilson Medical Center	1	X	X	X	X	X	4	X	4	4
<b>Woodson County</b>	1, 2, 3, 4	5, 6	7, 8	5, 9, 10	11, 12	13, 14, 15, 16, 17	18, 19, 20	21, 22	20	23, 24
Neosho Falls	1, 2, 3	X	4	5, 6	7	8, 9, 10	11	12	13	11, 14
4 Rivers Electric	1	X	2	2	2	2	2	2	2	2
Heartland Electric	1	X	2	2	2	2	2	2	2	2

Note: DNP: Jurisdiction did not participate in HMP

Note: X: Jurisdiction did not consider hazard to be either a major risk to the community, provided an action for the hazard classified as all hazards, and/or the hazard to be managed by another entity.

Prior to the implementation of any action further feasibility analysis will be performed. Additionally, a Benefit-Cost Analysis that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits

to its costs will be conducted as required. Applicants and sub-applicants will use FEMA approved methodologies and tools, such as the Benefit-Cost Analysis Toolkit, to demonstrate the cost-effectiveness of their projects. The result of the analysis is a Benefit-Cost Ratio, and a project is considered cost-effective when the Benefit-Cost Ratio is 1.0 or greater. Depending on the project, either a full Benefit-Cost Analysis will be completed by entering documented values into the FEMA Benefit-Cost Analysis Toolkit, which calculates a benefit-cost ratio or, if the project meets specified criteria, a streamlined Benefit-Cost Analysis may be completed (FEMA's cost-effectiveness requirement is never waived).

## **6.8 Mitigation Action Implementation and Monitoring**

Kansas Region H participating jurisdictions are responsible for implementing their identified mitigation actions. To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to a specific department or position as a champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion should provide input on whether the action as implemented is successful in reducing vulnerability, if applicable.
- If the action is unsuccessful in reducing vulnerability, the identified champion will be tasked with identifying deficiencies and additional required actions.

Additionally, each action has been assigned a proposed completion timeframe to determine if the action is being implemented according to plan.

In general, the Kansas Region H HMP is responsible for monitoring the progress of mitigation activities and projects throughout the county in conjunction with participating jurisdictions. To facilitate the tracking of any awarded hazard mitigation grants, the Kansas Region H MPC, in conjunction with participating jurisdictions, will compile a list of projects funded throughout the calendar year, if any, and add it to an electronic database administered by KDEM. Additionally, the Kansas Region H MPC will monitor information on any other mitigation projects that were not funded through hazard mitigation grants.

To track mitigation projects from initiation to closeout, participating jurisdictions will use a project tracking spreadsheet that includes, at a minimum, the following information:

- Applicant/Subrecipient
- Grant Identifier
- Contractor
- Total Cost Estimate
- Federal/Local share
- Award Date
- Period of Performance
- Quarterly Reports
- Subrecipient Risk
- Reimbursements

Upon completion of a project, a member of the awarded jurisdiction, a member of the Kansas Region H MPC, and a State of Kansas representative will conduct a closeout site visit to:

- Review all files and documents
- Review all procurement files and contracts to third parties
- Take photos of the completed project

Project closeout packages will generally be submitted 90 days after a project has been completed, and will include the following:

- Summary of documentation



- Pictures of completed project
- Materials, labor, and equipment forms, if required
- Close-out certification

## **6.9 Hazard Mitigation Plan Incorporation and Integration**

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county, tribal, and local plans. Unfortunately, previous versions of the Kansas Region H HMP have not been incorporated into jurisdictional planning efforts. Under the leadership of the MPC, it is hoped that when future revisions occur to these other plans, they will be measured against the contents of this HMP. Plan integration will help:

- Align community goals, objectives, and prime concerns
- Avoid lost opportunities
- Eliminate duplication of effort

In cooperation with the MPC, each participating jurisdiction will be actively courted on incorporating elements of this hazard mitigation plan for any relevant plan, code or ordinance revision or creation. Each participating jurisdiction has committed to actively encourage all departments to implement actions that minimize loss of life and property damage from hazards. Whenever possible, each participating jurisdiction will use existing plans, policies, procedures, and programs to aid in the implementation of identified hazard mitigation actions.

On a local level, hazard mitigation plans can be integrated into various planning documents and initiatives to ensure a comprehensive and coordinated approach to reducing the impact of hazards. Local level plans where hazard mitigation strategies can be integrated include:

- **Comprehensive Plans:** Helps guide long term community development o ensure future resilience against identified hazards.
- **Threat and Hazard Identification and Risk Assessment:** Utilizes information from the HMP to understand the specific threats and hazards that may impact the community. This informs the development of strategies and resource allocation for emergency management capabilities, ensuring that the community is well-prepared to respond effectively.
- **Comprehensive Land-Use Plans:** Helps guide the development and zoning decisions in a way that minimizes vulnerability to hazards. This includes avoiding construction in high-risk areas and encouraging resilient building practices.
- **Emergency Operations Plans:** Contributes to detailing specific actions to be taken before, during, and after disasters to reduce vulnerability and enhance community resilience.
- **Climate Action Plans:** Can help address both short-term hazards and long-term climate-related risks. This includes considerations for extreme temperatures and changes in precipitation patterns.
- **Transportation Plans:** Helps ensure the resilience of transportation infrastructure to hazards such as floods. This may involve designing infrastructure to withstand extreme weather events.
- **Infrastructure Master Plans:** Contributes to the design, construction, and maintenance of critical infrastructure, such as water supply systems, roads, bridges, and utility networks.
- **Community Development Plans:** Helps ensure that new development projects align with hazard resilience goals. This may involve establishing building codes that prioritize hazard-resistant construction.
- **Open Space and Recreation Plans:** Provides for the consideration of green infrastructure and open spaces for flood control, wildfire buffers, and other hazard mitigation purposes.
- **School Emergency Plans:** Enhances the safety and resilience of educational facilities. This may involve retrofitting buildings, establishing evacuation routes, and conducting regular drills.
- **Public Health Preparedness Plans:** Addresses potential health risks associated with hazards. This includes planning for medical surge capacity, disease prevention, and healthcare facility resilience.

Integration of hazard mitigation into these various plans ensures that resilience efforts are embedded in the broader fabric of community development. Coordination and collaboration among different sectors and stakeholders are

essential for the successful implementation of hazard mitigation strategies on the local level. Plan incorporation and integration is crucial for creating a cohesive and coordinated approach to address various aspects of hazard mitigation. All stakeholders and participating jurisdictions utilize similar internal procedures for plan incorporation and integration. The following represent commonly utilized methods by all participating jurisdictions

- **Cross-Referencing:** Identify and cross-reference relevant sections of different plans and policies. This involves explicitly noting connections between the goals, strategies, and actions outlined in one plan with those in others.
- **Consistency Checks:** Conduct consistency checks to ensure that the language, objectives, and strategies in different plans and policies align with each other.
- **Joint Planning Committees:** Establish joint planning committees or task forces that involve representatives from different departments or agencies responsible for various plans (for example, the MPC). These committees facilitate communication, collaboration, and the coordination of planning efforts across sectors.
- **Collaborative Workshops and Meetings:** Organize collaborative workshops and meetings to bring together stakeholders involved in different planning processes (as seen in the planning meetings for the HMP). These forums provide an opportunity for stakeholders to share information and discuss common goals.
- **Alignment with State and Regional Plans:** Ensure that local plans align with broader regional and state plans. This involves considering regional and state priorities and incorporating them into local planning efforts to create a harmonized approach to development.
- **Data Sharing and Analysis:** Share relevant data among planning efforts and conduct joint data analysis. This helps in creating a common understanding of the challenges and opportunities, facilitating evidence-based decision-making across different plans.
- **Unified Implementation Strategies:** This involves identifying common actions and initiatives that contribute to the achievement of multiple goals outlined in various plans.

All participating jurisdictions within Kansas Region H have good working relationships with both each other, the State of Kansas, and FEMA indicating great potential for plan incorporation and integration across the planning area. Where appropriate, The Kansas Region H MPC will take the lead in integrating this HMP into overarching plans, codes, ordinances and any other relevant documents, policies, or procedures.

### **Federal Program Integration**

KDEM and Kansas Region H work closely with FEMA Region VII in all aspects of planning, response, and mitigation. To ensure understanding and cooperation, the KDEM SHMO and Kansas Region H Emergency Managers regularly interface with FEMA mitigation staff on the status of local plans, changing FEMA guidelines, and opportunities for closer working relationships.

### **FEMA Grant Outcomes (FEMA GO)**

The State of Kansas is currently working with FEMA to apply the FEMA GO system to all FEMA grants. The FEMA GO system allows users to apply, track, and manage all disaster and non-disaster grants and helps improve oversight and monitoring.

### **Risk Mapping, Assessment, and Planning Program**

Kansas Region H and KDEM work closely with FEMA, tribal, and local partners to identify flood risk and promote informed planning and development practices through the Risk MAP program. Risk MAP is the process used to make FIRMs which both map flood risk and provide informational datasets. Mapping occurs in four phases:

- **Discovery:** An initial investigation into a community's flood risk, challenges, and goals.
- **Analysis and Mapping:** A complete engineering analysis is performed that leads to the initial updates to the flood maps. Work is completed with technical experts in each community to make sure the drafts line up with community knowledge.
- **Preliminary Flood Map Release:** A preliminary flood map and supporting preliminary flood hazard data is generated for review and comment.
- **Map Adoption:** Community takes full ownership of the updated flood maps and data.

Kansas Region H and KDEM work with FEMA during the map update process from discovery to map adoption. In addition, Kansas Region H and KDEM provide any available data to FEMA as requested.

### **Kansas Silver Jackets**

The Kansas Silver Jackets is comprised of representatives from Federal and State agencies which support comprehensive and sustainable actions that reduce flood risk. In general, the Silver Jackets:

- Promote capacity to implement projects, programs, plans, policies, and legislative actions to reduce vulnerability to flooding.
- Foster and facilitate statewide coordination with organizations, agencies, and stakeholders to achieve flood risk reduction.
- Establish or supplement mechanisms to collaboratively identify issues and implement or recommend solutions.
- Increase and improve flood risk communication and outreach.
- Advise and assist communities in their efforts to become more resilient and less vulnerable to flood hazards.

### **FEMA National Safety of Dams Program**

The State of Kansas is responsible for regulating the safety of dams and supports the National Safety of Dams Program.

## Section 7 – Plan Maintenance

### 7.1 Introduction

The HMP is a living document that will be updated and submitted to FEMA for approval every five years as required by 44 CRF 201.4. During the five-year cycle, the plan will undergo continuous monitoring and evaluation to ensure that the policies, procedures, priorities, and state environment established in the plan reflect current conditions. Kansas Region H will utilize the MPC to provide plan updates, revisions, and data collection for future HMP planning purposes.

### 7.2 Plan Maintenance Responsibilities

KDEM serves as the lead coordinating agency for plan maintenance. Additional assistance in the plan maintenance process is provided by members of the MPC, subject matter experts, and representatives of local jurisdictions.

KDEM and the MPC will facilitate the review and revision of the HMP every five years. The review and revision will be an ongoing process. This process will incorporate all of the revisions made during the life of the plan, especially new data obtained from participating jurisdictions.

### 7.3 Plan Review Meetings

As part of the Local Emergency Planning Committee (LEPC), a Mitigation Sub-Committee will be formed from members of the MPC. The LEPC Mitigation Sub-Committee will meet annually for the first two years after plan approval. Kansas Region H LEPC Mitigation Sub-Committee members will determine the meeting dates and locations and will ensure that the meetings are open to all participating jurisdictions and the public. The elected LEPC Mitigation Sub-Committee Chair will be the main point of contact for these meetings and will maintain attendance and meeting minutes.

The purpose of these meetings is to discuss agency capability changes, the status of proposed projects, and any new studies or mapping that may inform the HMP. Should a specific plan element or section require revision or amendment due to a state or federal legislation or policy change, the LEPC Mitigation Sub-Committee will work with the KDEM SHMO to complete a plan addendum and submit it to FEMA as quickly as is practicable.

During these meetings, and in order to monitor HMP progress, the following information will be tracked by the LEPC Mitigation Sub-Committee:

- How the actions from the mitigation strategy are being pursued and completed
  - Are actions being prioritized
- How the plan goals and objectives are being carried out
- How mitigation funding mechanisms are being utilized
- How local jurisdictions are receiving technical assistance

Additionally, the LEPC Mitigation Sub-Committee will monitor the following elements to ensure the HMP is current and correct:

- Reviewing the hazards and determining if any of them have changed
- Determining if there are new hazards that pose a risk to the state
- Ensuring goals and objectives are still relevant
- Determining if any actions have been completed or are deemed irrelevant
- Determining if new actions should be added
- Determining if capabilities have changed

After each meeting, the LEPC Mitigation Sub-Committee will compile a meeting report for usage in future plan revisions.

In addition to these meetings, MPC members and local jurisdictional representatives will monitor and evaluate the progress of mitigation projects via quarterly reports, site visits, correspondence, and reimbursements. Completed projects will be evaluated for loss avoidance and alignment with local development plans.

KDEM may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the HMP plan due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

#### **7.4 Plan Monitoring and Situational Change**

Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency's resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

The full MPC or the LEPC Mitigation Sub-Committee will track and record all substantial situational changes and will address, as appropriate, the following questions:

- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in jurisdictional capabilities which impact the plan?
- Are there any changes in jurisdictional hazard risk?
- Has the mitigation action been initiated, or its initiation planned?
- Is the current process of prioritizing mitigation actions and projects appropriate and accurate?
- Has the current method of incorporating mitigation actions and projects yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action's collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?
- If any, what plan updates occurred, why they occurred, and what is their impact?

#### **7.5 Post-Disaster Review**

After each Presidential disaster declaration, and in coordination with FEMA, KDEM and the full MPC will convene to document impacts on Kansas Region H and to determine if any mitigation actions should be considered to reduce future risk. This will allow for the development of hazard mitigation recommendations to FEMA during the disaster operation as well as to update the mitigation strategy as needed. The post-disaster review may coincide with established meetings or may be convened as separate events.

#### **7.6 Plan Evaluation**

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated goals and contributing to decision making.

A plan evaluation report will be completed by either the full MPC or the LEPC Mitigation Sub-Committee when the situation dictates. The following situations are typical examples of when an evaluation will be necessary.

- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

An evaluation report will ask the following questions in response to the previously listed events.

- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?
- Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?
- Does a change in the mitigation strategy demand a change of or addition of mitigation actions or projects?
- Are current resources appropriate for implementing a mitigation project?

- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Was the public engaged to the point where they were satisfied with current engagement strategies?
- Did the public participate in a number that produced a positive yield on the plan, action, or project?
- Are there coordination problems?

### 7.7 Plan Updates

Typically, the updating of a HMP is initiated upon the completion of a plan evaluation when the evaluation determines an update is appropriate. A plan update also occurs every five years per FEMA guidelines or at any time it is deemed necessary by MPC members or KDEM.

According to FEMA DMA 2000 guidelines for mitigation planning, Kansas Region H will begin the update process three years from this plan’s adoption under the direction of the LEPC Mitigation Sub-Committee. An increase in meeting tempo to twice yearly will allow the LEPC Mitigation Sub-Committee to gather relevant information needed for the next plan update. The following meeting schedule indicates the tasks to be performed during this plan update period:

- **2026 Fall Meeting:** The LEPC Mitigation Sub-Committee will begin updating the risk assessment portion of the plan. Hazards will be analyzed to determine if they are still relevant, if location should be updated, and if new hazards should be added. Previous occurrences will be reviewed to help determine the probability of future events.
- **2027 Spring Meeting:** The LEPC Mitigation Sub-Committee will begin updating the vulnerability assessment. The MPC will update the vulnerability assessment portion of the plan. Data will need to be gathered for assets, critical facilities, building stock values, jurisdictional damages, etc.
- **2027 Fall Meeting:** The LEPC Mitigation Sub-Committee will review information received and determine if the goals and objectives are still relevant and if new ones should be added. Actions will be reviewed to determine if they should remain in the plan, have been completed, or are no longer relevant. The LEPC Mitigation Sub-Committee will review the potential funding sources for each action.
- **2028 Spring Meeting:** As appropriate, a new MPC for Kansas Region H will be formed, and all participating jurisdictions will be convened, to take over the planning process. The new MPC and all participating jurisdictions will evaluate the policies, programs, capabilities, and funding sources from the previous plan to determine if they are still accurate and if any new items should be added.
- **2028 Fall Meeting:** The new MPC and all participating jurisdictions will review the draft copy of the mitigation plan and make comments and updates if necessary. Formal submittal to FEMA for re-approval will follow.

In general, the following steps will be taken to complete the next HMP revision:

**Table 158: Kansas Region H HMP Update Task List**

Task	Action
1	Evaluate and update the planning process.
2	Review the stakeholder contact list and identify new stakeholders.
3	Initiate plan outreach and discussion, including a stakeholder meeting.
4	Consider the addition, removal, or modification of hazards identified in the plan.
5	Update and revise membership of the MPC.
6	Evaluate risk assessment methodologies and data sources.
7	Evaluate and update critical facility inventory information.
8	Evaluate and update the hazard profiles.
9	Evaluate and update the risk assessment summary.
10	Evaluate and update the mitigation strategy, including proposed mitigation actions.
11	Evaluate and update the mitigation implementation system.
12	Integrate new and updated local plans.
13	Evaluate and update other plans sections.
14	Identify and add any additional sections or information needed.

**Table 158: Kansas Region H HMP Update Task List**

<b>Task</b>	<b>Action</b>
15	Review updated plan in its entirety.
16	Conduct updated plan outreach, including public information, comment period, and meetings.
17	Integrate additional comments received.
18	Finalize plan document.
19	Complete crosswalk and submit final plan to FEMA for review and approval.
20	Make additional modifications as required.
21	Obtain jurisdictional adoption resolutions.

**7.8 Continued Public Involvement**

Kansas Region H and all participating jurisdictions are dedicated to involving the public in the continual shaping of the HMP and in the development of its mitigation projects and activities.

The Kansas Region H MPC, the LEPC Mitigation Sub-Committee, and all participating jurisdictions will continue to keep the public informed about hazard mitigation projects and activities through jurisdictional websites, and as appropriate, public announcements. The public will also be invited to participate in all meetings to review and discuss the mitigation-related events. Additionally, participating jurisdictions will present to public officials in a public forum concerning the progress of mitigation actions identified in this plan as progress is made.

Copies of the Kansas Region H HMP will be distributed to all the participating jurisdictions and made available to the public. Methods of public availability may include electronically posted on a website or a hard copy kept at a jurisdictional office

# **Appendix A – Kansas Region H Adoption Documentation and FEMA Region VII Approval Documentation**



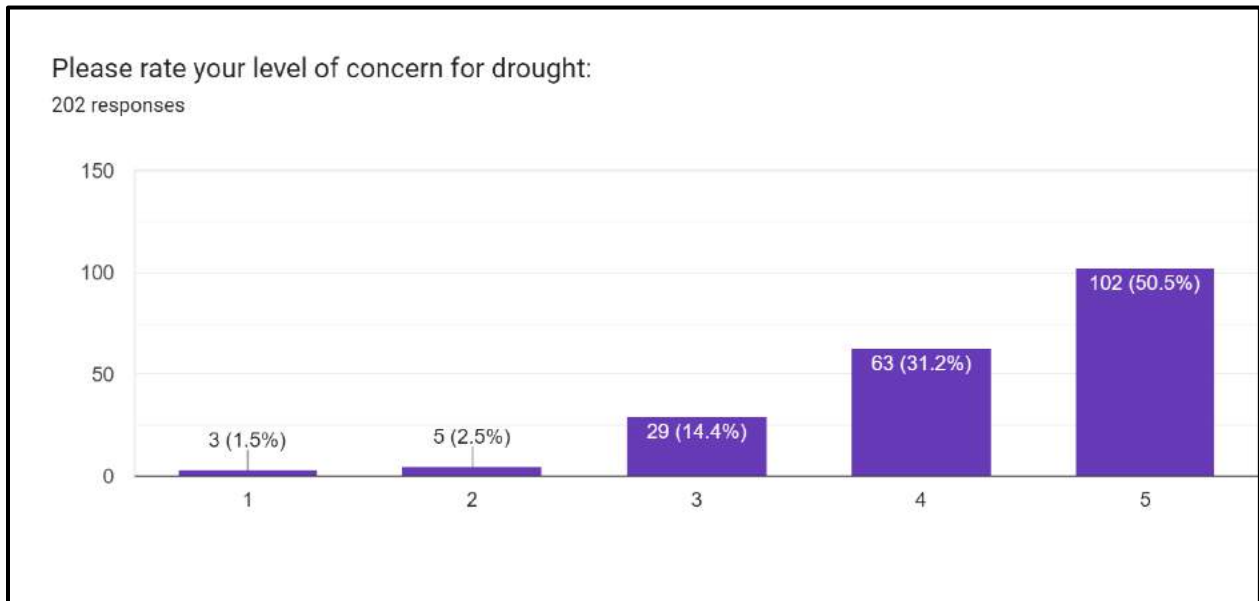
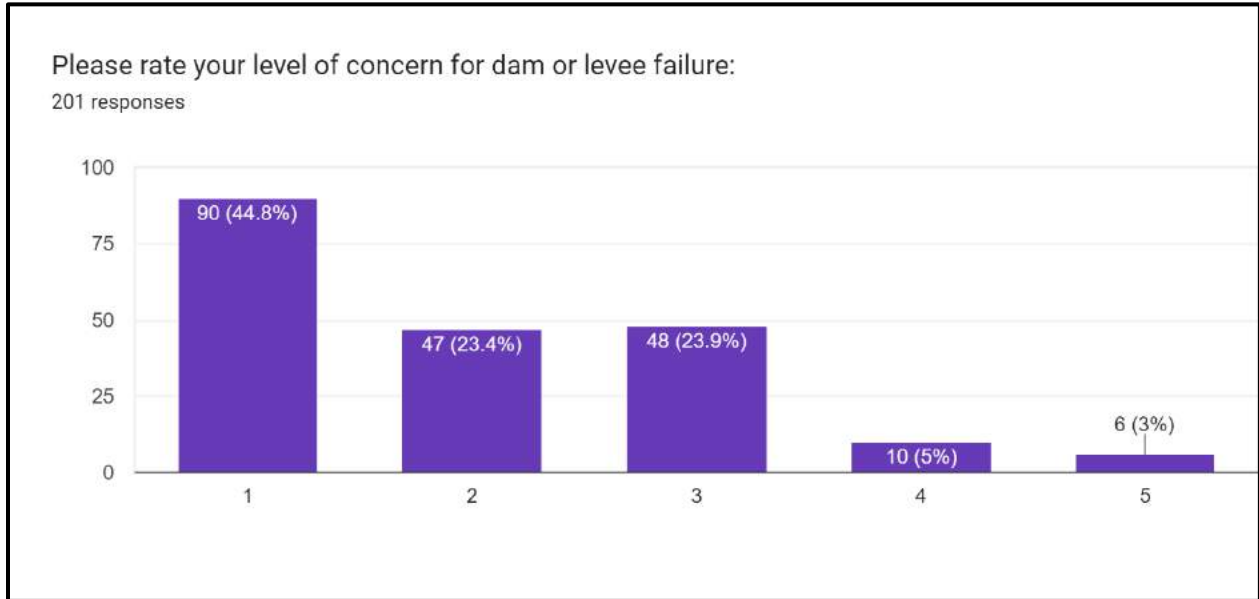
## Appendix B – Community Feedback

What county do you live in?	What city do you live in (or nearest city)?
Wilson	Fredonia
Bourbon	Fort Scott
Bourbon	Fort Scott
bourbon	Uniontown
Bourbon	Fort Scott
Bourbon	Mapleton
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
BB	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fulton
Bourbon	Uniontown
Bourbon	Fort Scott
Bourbon	Redfield
Bourbon	Redfield
Bourbon	Fort Scott
Bourbon	Fort Scott
Montgomery	Independence
Montgomery	Independence
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Uniontown
Bourbon	Fort Scott
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon County KS	Fort Scott
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort scott
Cherokee	Columbus
Bourbon	Bronson
Bourbon	Fort Scott
Greenwood	Hamilton
Bourbon	Bronson
Bourbon	Bronson
crawford	pittsburg

What county do you live in?	What city do you live in (or nearest city)?
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Uniontown
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Uniontown
Bourbon	Fort Scott
Allen County	Iola
Wilson	Fredonia
ALLEN	MORAN
Bourbon	Redfield
Allen	Iola
Bourbon	Redfield
bourbon	Fort Scott
Allen	Humboldt
Bourban	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Allen	Iola
Bourbon	Bronson
Allen County	Iola
Allen	Iola
Allen	Iola
Allen	Iola
Cherokee	Columbus
Allen	Iola
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Ft.Scott
Bourbon	Fort Scott
Allen	Humboldt
Bourbon	Fulton
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Crawford	Farlington
Coffey	Le Roy
The United States of America	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Bourbon	Bronson
Bourbon	Fort scott
Bourbon	Fort Scott
Bourbon	Fort Scott
Allen	Iola
Bourbon	Fort Scott
Allen	Savonburg
Bourbon	Fort Scott
Neosho	Galesburg
Neosho	Saint Paul, KS
Neosho	Chanute
Allen	Iola
Neosho	Chanute
Neosho	Erie
Labette	Parsons
Neosho	Chanute
Neosho	Erie
Neosho	Erie
Bourban	Fort Scott
Greenwood	Eureka
Neosho	St Paul
Neosho	Erie
Greenwood	Eureka
Neosho	Erie

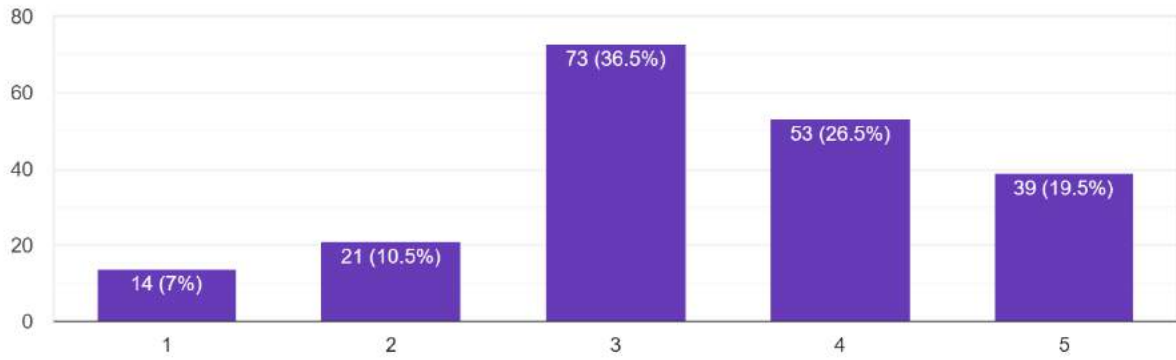
What county do you live in?	What city do you live in (or nearest city)?
Neosho	Erie
Greenwood	Eureka
Greenwood	Eureka
bourbon	fort scott
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Reece
Neosho	Stark
Neosho	Galesburg
Neosho	Erie
Greenwood	Eureka
Neosho	Erie
Neosho	Saint Paul
Greenwood	Eureka
GW	Eureka
Greenwood	Eureka
Neosho	Erie
Greenwood	Eureka
Neosho	St Paul
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Piedmont
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Eureka
Allen	Humboldt
Greenwood	Eureka
Greenwood	Eureka
Greenwood	Eureka
Neosho	Erie
Greenwood	Eureka
Neosho	Erie
Neosho	Erie
Neosho	Chanute
Bourbon	Uniontown
Neosho	Chanute
Neosho	Erie
Greenwood	Eureka
Neosho	Erie
Bourbon	Fort Scott
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho County, Kansas	Chanute, Kansas
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
neosho	erie
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Neosho	Chanute
Allen	Gas
Neosho	Chanute

What county do you live in?	What city do you live in (or nearest city)?
Neosho	Chanute
ALLEN	IOLA
Greenwood	Eureka
Mcperson	Galva
Bourbon	Mapleton
Bourbon	Fort Scott
Bourbon	Devon



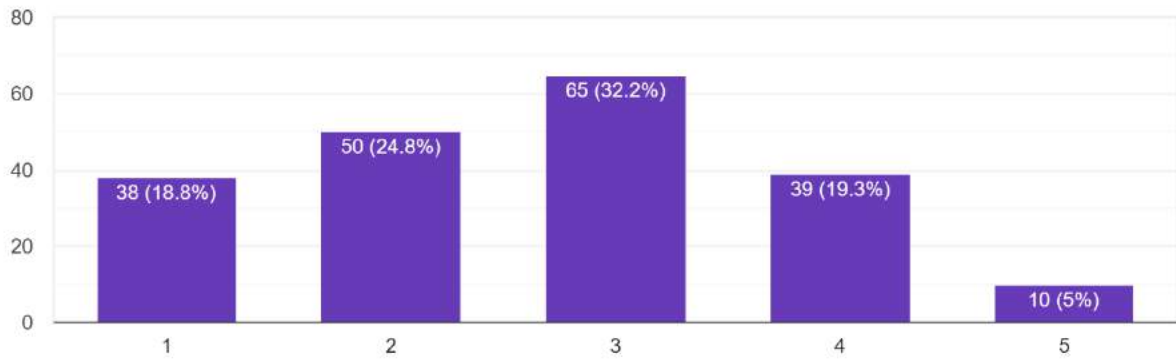
Please rate your level of concern for extreme temperatures:

200 responses



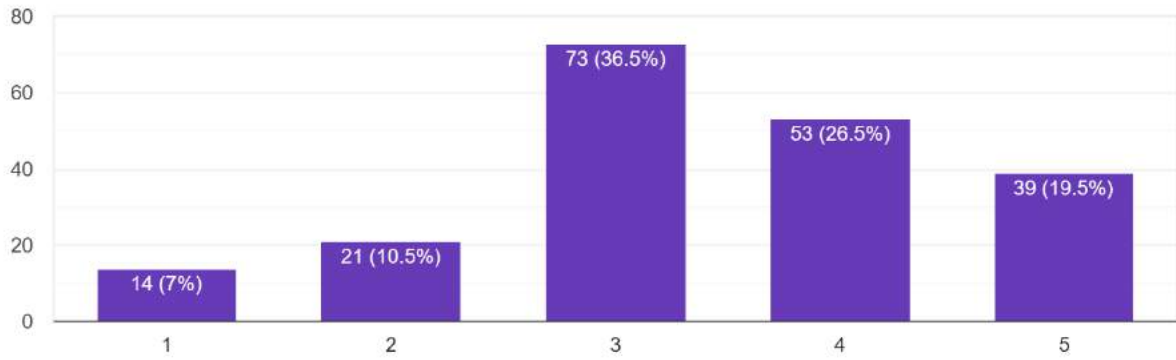
Please rate your level of concern for flooding:

202 responses



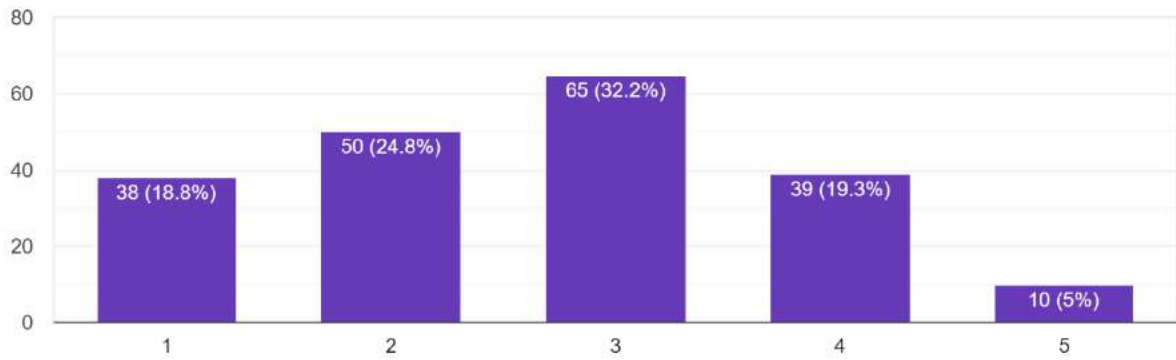
Please rate your level of concern for extreme temperatures:

200 responses



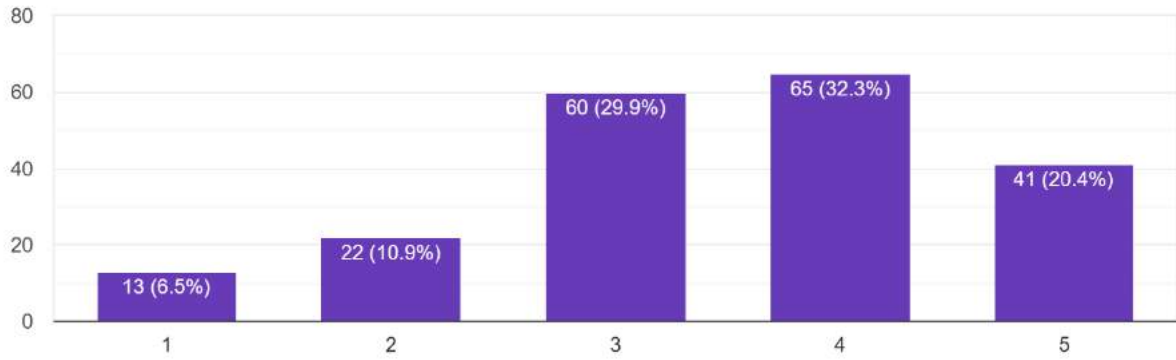
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202 responses



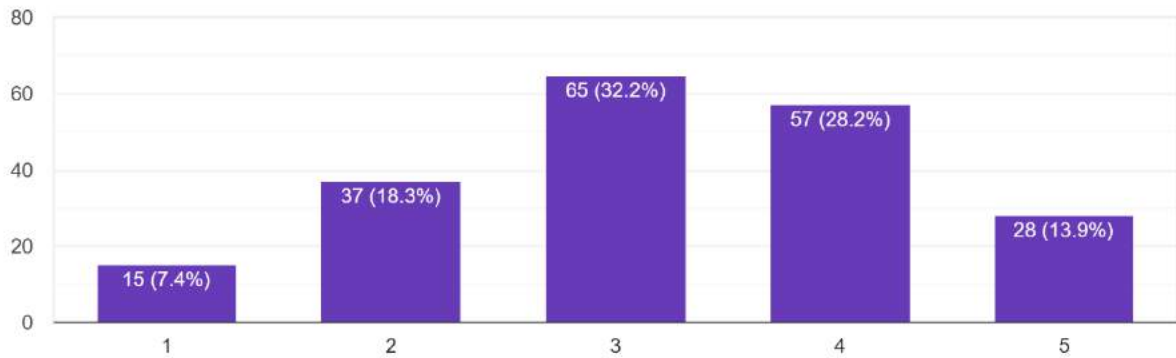
Please rate your level of concern for severe thunderstorms (including hail, lightning, and strong winds):

201 responses



Please rate your level of concern for severe winter weather (ice storms and blizzards):

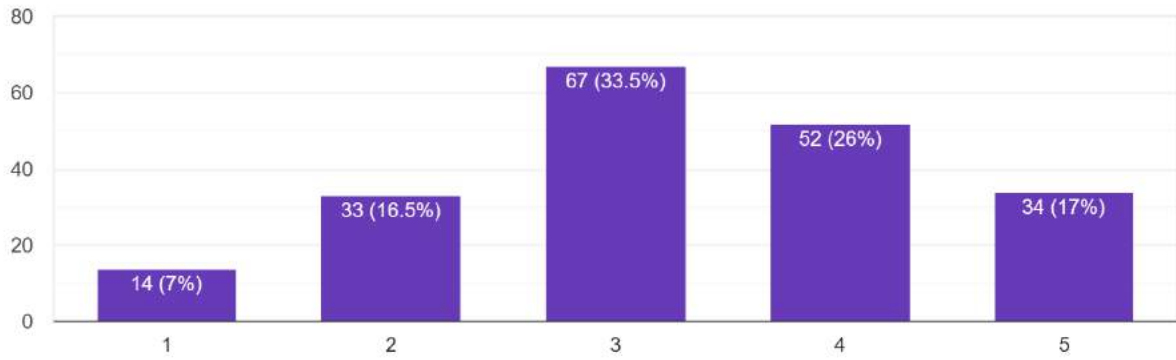
202 responses





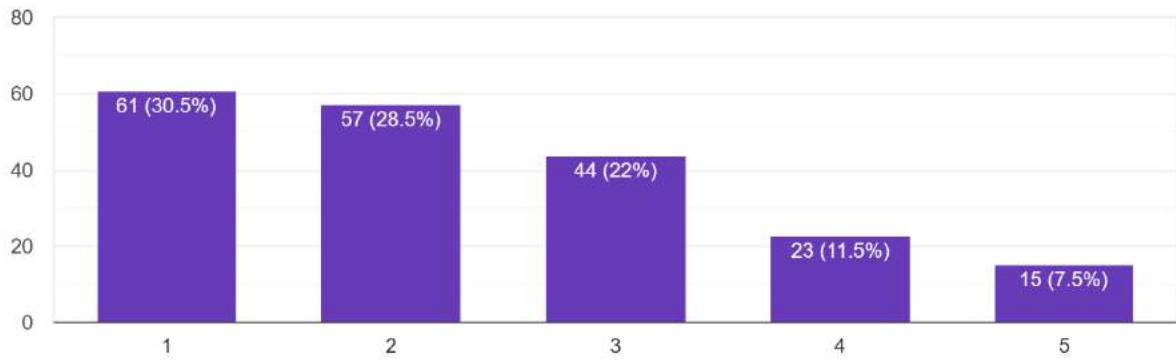
Please rate your level of concern for tornadoes:

200 responses



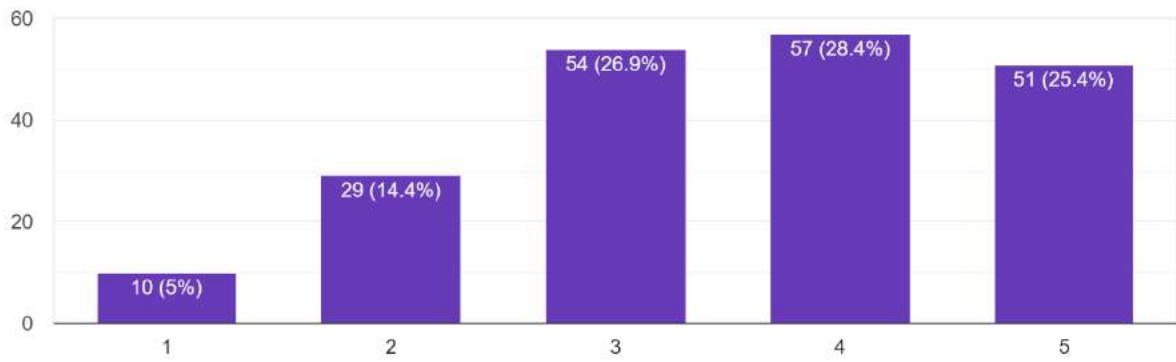
Please rate your level of concern for wildfires:

200 responses



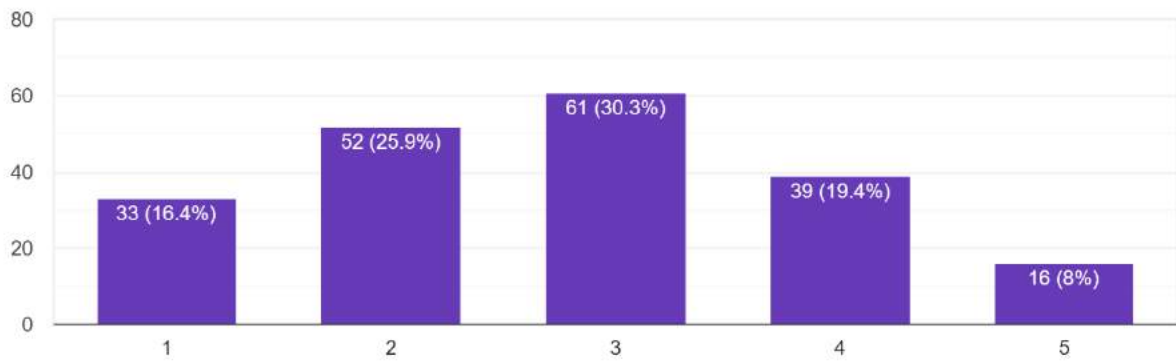
Please rate your level of concern for a cybersecurity incident:

201 responses



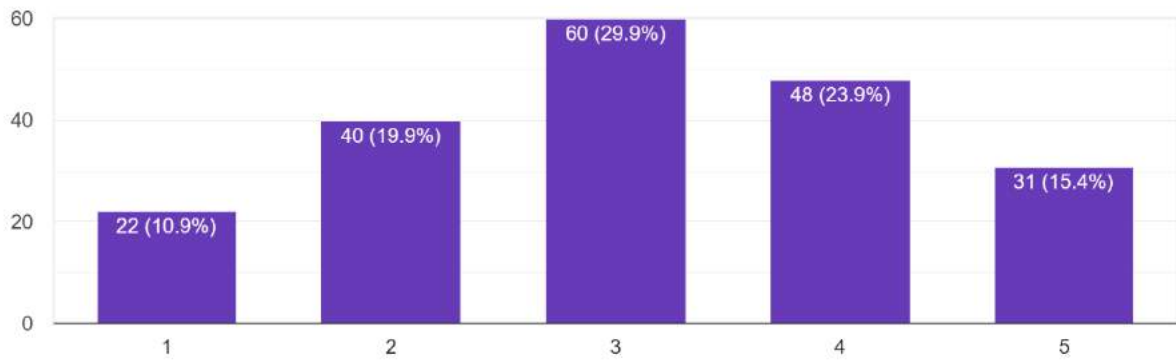
Please rate your level of concern for a hazardous materials incident (release):

201 responses



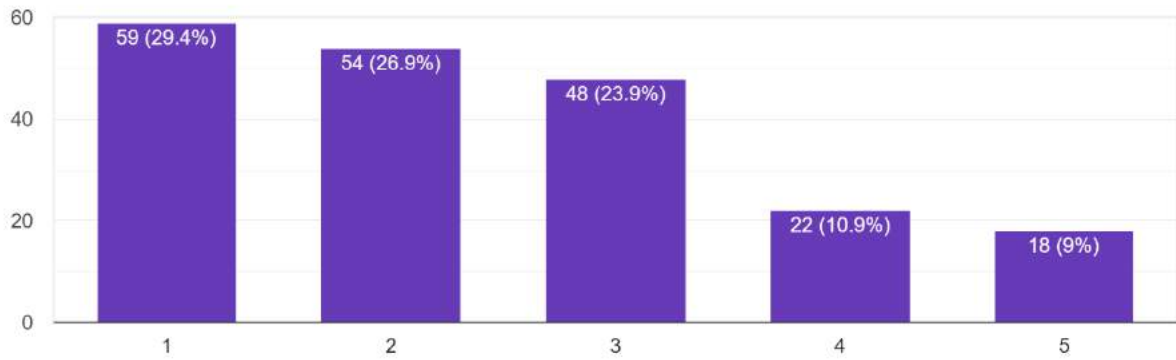
Please rate your level of concern for infrastructure failure:

201 responses



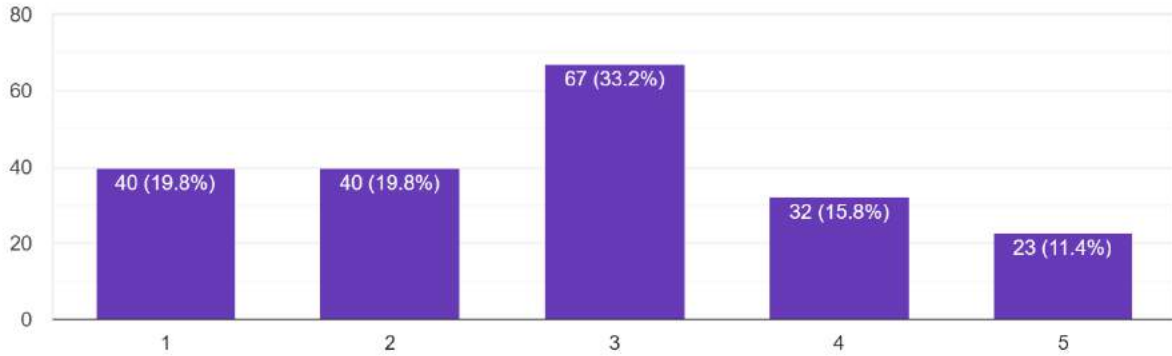
Please rate your level of concern for a terrorism event:

201 responses



Please rate your level of concern for the spread of a transmissible disease:

202 responses



**Do you have any specific concerns about any of these hazards?**

If a severe drought occurs there is no other way to get additional water other than mother nature.
worried drought, and heat will get worse, and would like to see more lakes or ponds to hold water.
No
No
Drought
How will the county respond without viable healthcare options
No
Solar panels polluting ground/water
Lack of stable regional food chain that is easily disrupted by the above hazards.
We are currently involved in a project to attempt to raise the levee providing protection to the city of Coffeyville.
Spread of disease
Not really.
With the ongoing drought, my concern is continuously depleting water sources with nothing to fall back on. No natural springs, wells or aquifers  what is the outlook for the next 5 years if the drought and hotter temperatures continue? How long before we don't have enough drinking water, water for livestock, and farms?
Our infrastructure is already bad and the drought is making it worse specifically on water lines.
No
Our local water quality and electrical dependability-100%
No
Yes! We have no health care to assist in any of these instances. It doesn't help to make silly little plans for each problem if there isn't the most basic of medical help in our county. ABSOLUTE FAILURE on commissioners part! They will be known for their deeds for decades to come.
No
No

<b>Do you have any specific concerns about any of these hazards?</b>
No
That the county does not properly prioritize issues that effect the population within the county.
Drought- our house and our livestock is supplied by well water. We don't know how much water we have and it is concerning during dry periods. Rural water is not an option since our house is 60ft higher than their tallest water tower.
No
My beef operation has been shut down due to drought. Excessive wind has damaged several buildings.
No
No
No
Yes due to the current Administration in the Whitehouse.
I am most concerned about liberal education of our children.
No other than we do not have an adequate response plan
Railroad accident releasing toxins
No
No
Gunn Park continuously flooding during heavy rains. CHC health center not testing for covid, flu, or strep and turning away for a "cold or possible viral infection"
I worry specifically that the roads and buildings in the area will not hold up to flood or storm damage for much longer as many of them have not been maintained.
The school really just doesn't focus on any of it.
No.
No
Severe Weather is an every year occurrence within our area.
none
Drought - What is Chanute's back up plan?
No
nope
The city does not have much for cybersecurity protection
No
No
Yes
Farm waste spills as trucks transport through the area; possible exposure to hazardous farming chemicals
Hard to hear sirens for tornado
no
Keep solar and wind farms to yourselves
No
Prevent the sale of agricultural lands to out-of-state hunters as that land becomes vacant making the apparent need for emergency services year around seem even less needed, which is absolutely incorrect.
Hazardous runoff into drinking water
Lack of water
No
No
No

<b>Do you have any specific concerns about any of these hazards?</b>
Local news ie: radio station, does not keep you updated on weather events that happen after midnight so you have to track weather online or with weather radio to even know there is a severe weather event.
Unreliable internet or slow internet speeds is concerning in the fact that this could hamper communication regarding several of the hazards mentioned above.
No
No
The pasture burning each spring damaging air quality as well as concerns when the fires get out of control.
Cyber threats are almost as bad, relative to disruption, as natural weather events.
Tornado and severe drought
If we have any emergency in Erie, in a couple of months if not sooner Erie will not have any access roads going south because of the bridge being replaced. Very bad planning!
Yes, by having wind generators in our county, we change the climate and the threat of high winds, tornados, wild fires, ice all pose more of a threat to our safety.
Train derailment is a define concern
I am most concerned about climate change and its impacts on our region.
There clearly aren't any safety measures in place for cybersecurity attacks, as we've just recently seen with the court system being hacked. What steps have been taken to reduce cybersecurity attacks? Is there a plan in place for a haz-mat incident, other than contacting the Fire Department?
My school building is the least secure in terms of entry proximity to students. I would like to Mitigate this somehow.
Drought is a huge concern due to the need for water for life in general
No
None are really preventable except drought and the county building reservoirs
No
Yes. Please remove the roundabout at Fredonia KS, on highway 400. It is very poorly designed, and a traffic hazard. It is much to small for big trucks to navigate around it safely.
All

<b>What hazard mitigation projects would you like to see completed for your community (examples include safe rooms, flood control measures, education)?</b>
Additional reservoirs for public water supply storage. This would help with flooding issues as well.
Safe rooms
None
Another railroad overpass
Water supply
Fallout shelters
Healthcare
Severe weather shelters
Ban solar panels
Food security projects and relief to farmers.
Storm shelter

<b>What hazard mitigation projects would you like to see completed for your community (examples include safe rooms, flood control measures, education)?</b>
Preparation for terrorist attack
Infrastructure and dam repair
Raising that Levee!
Public Tornado Shelters are something lacking it seems in all towns around this area and that is very concerning. Not everyone can afford to put in a personal shelter.
Presence of an ER
Spread of information.
Not sure.
Sewer repair, water infrastructure repair for safe drinking water.
Safe rooms
Water main and sewer pipes, electricity dependability, affordable utilities, functional roads, lower taxes. We payout and get nothing.
Public safe rooms.
We NEED a hospital in Fort Scott. How can there be hazard mitigation without a hospital or ER?
Drought plans
Expand local water resources
Safe Rooms (tornado shelters for public use) better education to schools and daycares regarding viruses, when they are spread/when they are most transmissible etc.
Water lines updated, too many leak or fail
Community tornado shelters
Updated Tornado Sirens in Columbus and Scammon
Safe rooms for tornadoes
Find solutions for better access to water during drought
Warm/cooling Shelter with generator
Education
None
Storm shelters
Education
<b>WOULD LIKE TO SEE FASTER TORNADO WARNINGS OR STORM WARNINGS MORE LOCALIZED BY AREA.</b>
Back to the basics of education.
Information sharing
More water reservoirs.
Education
Generators for the Community Center to be used as a Heating/Cooling center when the power is out for prolonged periods.
New to area
Safe rooms for all of our schools to prevent harm to our students if an active shooter comes on campus.
Safe Rooms
Active shooter protocol
Established tornado shelter, heat/cold spots for power outages.
Safe rooms
The flood mitigation in sw Bourbon county seems to work really well. Maybe that flood control could be used in other counties.
I would like to see more repair on buildings and roads as well as adding drainage channels or a slope to the highways to help with water on the roads and hydroplaning.

<b>What hazard mitigation projects would you like to see completed for your community (examples include safe rooms, flood control measures, education)?</b>
Communication if cell phones are down i.e.: CB communication. Dangerous structures homes or businesses that are unsafe falling down.
Safe rooms for everyone to go to
Safe rooms - evacuation plans
Rain water retention capabilities
Getting additional community storm shelters strategically placed throughout the community
Education
Infrastructure, water
More water sources
education
Shelters during power outages in winter
Evacuation routes for flooding &/or severe weather damage, ability for EMS to reach Erie & st paul when main roads are closed.
We are too reliant on personal cell phones for warnings that should be given through conventional sirens. They should be lowered in height to be unquestionably and uncomfortably heard.
Handicap accessible Community safe Room, Education
Safe rooms, educational events partnering with us (the hospital), and other Emergency Management Services
Better notification systems
education
None
Better tornado siren
Adequate funding for the replacement of bridges when dead end roads occur, further reducing emergency assistance availability
People knowing what water districts they are in. Lack of water supply
Education on all
Education; fire protection; dam repair
It is scary our community doesn't have a community tornado shelter.
Safe rooms would be good
Flooding control measures and storm shelters.
Roads
Safe rooms, flood control measures
Cyber attack vulnerability assessment and mitigation. Better, more accurate weather advisories.
Safety shelters or better run off drains so the roadways don't get flooded in the chance of a flash flood
Public tornado shelter
When highway 59 closes we need a faster way for emergency vehicles to get here or out to Parsons We need an access road. Pray we don't have any emergencies that are life threatening!
Community tornado shelters
Create a 2nd water source for the city.
The turbines turned off!
Drug and alcohol addiction prevention
Education and flood control
Education (printed information sent to ALL citizens regarding "what this county does in these situations" would be a start)
Tornado shelter at CHS is horrible. A few community safe rooms would be great.
Education! Teach people about climate change. We especially need to inform our citizens and policy-makers.



<b>What hazard mitigation projects would you like to see completed for your community (examples include safe rooms, flood control measures, education)?</b>
Safe rooms, Security at all entrances
Tornados are not very prevalent in our area, however, I don't feel the public is aware of storm shelters if the need should arise. Many homes don't have tornado shelters, and with how weak the trees are, it's more of a safety hazard of trees falling in the roadway that would prevent someone from getting to the storm shelter. There needs to be more shelters.
Backup power generators at schools and intruder entry deterrents at the alternative school.
Safe rooms
possibly more education related to water needs
Want to be sure there are safe rooms and shelters available to access for all the community
Build Reservoirs for water storage; Better rural internet for communications
<b>BETTER FLOOD CONTROL IN RIVERSIDE PARK</b>
Education on Personal Preparedness
Safe rooms

<b>Is there anything else concerning hazard mitigation that you would like us to know?</b>
No
No
Emergency Room
No
Effects of destroying so much farm ground/natural resources in the name of "green energy".
Currently, drought. Soon, it'll be flooding.
No
Not really
ADM is dumping waste into our river
No
I know understand the inquiry. Ducks, people, sewer water?
Not at this time.
Where are we supposed to go if there are people injured from a tornado, a chemical spill, someone caught in flood waters, we catch a transmittable disease, someone has a heat stroke during a drought or extreme conditions, injury from a levee or dam break, in a car wreck on the ice or snow, a terrorist attack, or burns from a wildfire? So this is not 1 concern, this is 13 concerns, no ER or hospital in each one of these situations!
No
Often talked about, never acted upon
No
No
No
We need more education on States emergency preparedness plans
No
New to area
I live in Le Roy but work in Iola and many of the county roads between the two towns are inaccessible during flooding, leaving it very difficult to travel one direction or the other in an emergency, and also making it difficult to access medical services.

<b>Is there anything else concerning hazard mitigation that you would like us to know?</b>
No.
No
No
no
No
No
I work as the Education, Marketing, and Foundation director at our hospital and would be happy to share information and help with these efforts. I also serve as our Public Information Officer.
When incidents happen insure the police do not send people back when trying to leave areas. Let the get out into safe spots. In 2018 my family had to go back across tornado stricken area instead of across road to safe area. The had to travel out of town in severe weather as we could not get to pre designated house that was unaffected.
no
nope
Keep up the much appreciated efforts that are underway daily. Thank you.
Lack of food and housing access
No
Generators installed more locations
Roads are terrible
I'm very thankful for John Redmond for water management.
Not at this time.
I believe Radon is an issue in the town. Perhaps testing for residences.
Our biggest threat to safety is drug and alcohol addiction
Lack of water in the future is a big concern.
Again, I believe climate change is a real thing, and we (global citizens) need to address it. Take action, and do it soon, please!
A tornado shelter for the alternative school for up to 50 high school students and adults.
More durable cell towers and signals for communications during emergencies. No one has land lines anymore. When Chanute had the micro-burst around April 4th, no one's cell phones worked properly.
<b>WILL STATISTICS BE AVAILABLE FOR US TO VIEW WHEN DONE?</b>
Education on Historical incidence of hazardous events

# Appendix C – FEMA NRI Census Tract Data

**Table C1: FEMA NRI Census Tract General Data**

County	Census Tract	Population	Building Value	Agricultural Value	Area	All Hazard Risk Rating	All Hazard EAL	Social Vulnerability Rating	Community Resilience Rating
Allen	952600	1,791	\$443,247,628	\$30,948,878	275.3	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Allen	952700	2,008	\$295,059,603	\$9,095,340	94.5	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Allen	952800	3,813	\$871,918,396	\$1,364,857	12.4	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Allen	952900	2,230	\$611,963,299	\$1,083,754	13.0	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Allen	953000	2,683	\$508,740,782	\$12,504,782	115.1	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Bourbon	955600	2,647	\$502,641,797	\$42,355,354	293.5	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate
Bourbon	955700	2,205	\$465,645,196	\$40,870,061	291.2	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Bourbon	955800	3,529	\$809,740,146	\$2,959,117	24.9	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Bourbon	955900	3,324	\$723,199,884	\$4,334,343	34.8	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Bourbon	956000	2,651	\$609,885,771	\$4,944	1.3	Relatively Moderate	Relatively Low	Relatively High	Relatively Moderate
Chautauqua	964600	3,379	\$1,303,146,666	\$35,920,297	651.3	Relatively High	Relatively High	Very High	Very Low
Cherokee	958100	2,589	\$662,320,877	\$38,745,020	160.5	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low
Cherokee	958200	1,901	\$570,908,516	\$62,291,474	294.7	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Cherokee	958300	3,585	\$970,357,000	\$9,014,179	41.1	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Low
Cherokee	958400	3,598	\$724,102,821	\$10,176,323	72.6	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Low
Cherokee	958500	3,478	\$680,772,911	\$1,090,115	16.4	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Low
Cherokee	958600	4,190	\$924,317,184	\$1,315,718	11.6	Relatively High	Relatively High	Relatively High	Relatively Low
Crawford	956600	4,111	\$815,262,531	\$10,633,860	100.9	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Crawford	956700	3,454	\$979,442,585	\$70,659,241	370.5	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Moderate
Crawford	956800	3,304	\$827,867,089	\$5,280,557	30.6	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Crawford	956900	4,161	\$923,875,689	\$5,023,171	36.4	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Moderate
Crawford	957000	3,459	\$754,752,348	\$882,267	8.4	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Moderate
Crawford	957100	2,811	\$404,658,395	\$8,409	1.2	Relatively Moderate	Relatively Moderate	Very High	Relatively Moderate
Crawford	957200	2,189	\$490,447,466	\$613,471	8.1	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Crawford	957300	3,061	\$653,860,927	\$2,202,360	19.2	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Crawford	957400	2,129	\$259,149,032	\$962	0.7	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Crawford	957500	2,513	\$731,264,666	\$0	0.8	Relatively Moderate	Relatively Moderate	Very High	Relatively Moderate
Crawford	957601	4,406	\$931,591,939	\$3,252,026	22.5	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Crawford	957602	3,366	\$1,098,223,204	\$67	1.6	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Elk	965100	2,483	\$1,103,933,420	\$43,201,230	657.0	Relatively High	Relatively High	Relatively Moderate	Very Low
Greenwood	965600	1,970	\$894,314,106	\$57,013,660	686.1	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Greenwood	965700	2,455	\$684,045,816	\$2,442,443	13.3	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Low
Greenwood	965800	1,586	\$715,354,317	\$61,506,326	464.9	Relatively Low	Relatively Moderate	Very Low	Relatively Low
Labette	950100	2,861	\$826,685,303	\$6,575,689	24.0	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Labette	950200	2,002	\$618,068,023	\$13,480	1.0	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Labette	950300	2,776	\$553,857,131	\$3,086,335	11.1	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Labette	950400	3,214	\$769,681,346	\$5,998,505	21.0	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Labette	950500	3,954	\$1,250,741,295	\$80,618,825	268.9	Relatively Moderate	Relatively High	Relatively Moderate	Relatively Moderate
Labette	950600	2,229	\$740,230,659	\$89,957,288	276.8	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Labette	950700	1,965	\$521,972,292	\$7,725,958	29.8	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Labette	950800	1,165	\$393,508,549	\$7,947,906	27.1	Relatively Moderate	Relatively Low	Relatively High	Relatively Moderate
Montgomery	950100	1,944	\$390,783,531	\$40,423,749	239.4	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate
Montgomery	950200	2,507	\$435,024,216	\$3,726,105	19.8	Relatively Moderate	Relatively Low	Relatively High	Relatively Moderate
Montgomery	950300	4,083	\$773,298,134	\$1,504,956	9.8	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate

**Table C1: FEMA NRI Census Tract General Data**

County	Census Tract	Population	Building Value	Agricultural Value	Area	All Hazard Risk Rating	All Hazard EAL	Social Vulnerability Rating	Community Resilience Rating
Montgomery	950400	2,150	\$532,853,407	\$33,178	1.1	Relatively Moderate	Relatively Low	Very High	Relatively Moderate
Montgomery	950500	1,466	\$409,301,548	\$1,252,050	6.0	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Montgomery	950600	2,808	\$407,301,691	\$1,509,058	10.0	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Montgomery	950700	3,699	\$1,102,873,767	\$49,645,015	286.1	Relatively Moderate	Relatively High	Relatively Low	Relatively Moderate
Montgomery	950800	4,441	\$815,009,574	\$5,460,945	39.0	Relatively High	Relatively High	Relatively High	Relatively Moderate
Montgomery	951000	1,898	\$439,128,006	\$0	0.7	Relatively Moderate	Relatively Low	Very High	Relatively Moderate
Montgomery	951100	2,323	\$456,354,345	\$24,568	1.3	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Montgomery	951300	2,099	\$569,793,204	\$1,918,276	19.6	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Montgomery	951400	2,061	\$656,653,170	\$3,751,867	25.4	Relatively Moderate	Relatively Moderate	Very High	Relatively Moderate
Neosho	951600	3,709	\$950,114,272	\$37,371,865	248.5	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Neosho	951700	2,366	\$502,402,329	\$3,297,280	18.5	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Neosho	951800	3,991	\$834,791,692	\$2,592,804	16.9	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Neosho	951900	3,073	\$977,774,230	\$2,066,175	13.6	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Neosho	952000	2,765	\$672,608,912	\$48,560,095	286.1	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Wilson	97100	1,862	\$511,407,869	\$35,034,165	267.4	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Moderate
Wilson	97200	1,436	\$403,677,989	\$30,387,101	267.9	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Wilson	97300	2,440	\$622,046,648	\$1,823,696	12.0	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Wilson	97400	2,869	\$839,034,029	\$4,203,937	33.5	Relatively High	Relatively Moderate	Relatively High	Relatively Moderate
Woodson	96600	1,559	\$641,758,704	\$58,201,435	491.1	Relatively Low	Relatively Low	Relatively Moderate	Relatively Low
Woodson	96700	1,552	\$430,391,921	\$2,074,229	19.2	Relatively Low	Relatively Low	Relatively Moderate	Relatively Low

Source: FEMA NRI

**Table C2: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Drought EAL	Drought Risk Rating	Cold Wave EAL	Cold Wave Risk Rating	Heatwave EAL	Heatwave Risk Rating
Allen	952600	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively Moderate
Allen	952700	Relatively Low	Relatively Low	Relatively Moderate	Relatively Low	Relatively High	Relatively High
Allen	952800	Very Low	Very Low	Relatively Low	Relatively Low	Relatively High	Relatively High
Allen	952900	Very Low	Very Low	Relatively Low	Relatively Low	Relatively High	Relatively High
Allen	953000	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Bourbon	955600	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Bourbon	955700	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively Moderate
Bourbon	955800	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Bourbon	955900	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Bourbon	956000	No Expected Annual Losses	No Rating	Relatively Low	Relatively Low	Relatively High	Relatively High
Chautauqua	964600	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Very High
Cherokee	958100	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Relatively High
Cherokee	958200	Relatively High	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High
Cherokee	958300	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High
Cherokee	958400	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High
Cherokee	958500	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Cherokee	958600	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	956600	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	956700	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Very High
Crawford	956800	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	956900	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	957000	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Relatively High
Crawford	957100	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	957200	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Crawford	957300	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	957400	No Expected Annual Losses	No Rating	Relatively Low	Relatively Low	Relatively High	Relatively High
Crawford	957500	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	957601	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Crawford	957602	No Expected Annual Losses	No Rating	Relatively Moderate	Relatively Moderate	Very High	Very High
Elk	965100	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Greenwood	965600	Relatively Low	Relatively Low	Relatively Low	Relatively Low	Relatively High	Relatively Moderate
Greenwood	965700	Very Low	Very Low	Very Low	Relatively Low	Relatively High	Relatively High
Greenwood	965800	Relatively Low	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Labette	950100	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Labette	950200	No Expected Annual Losses	No Rating	Relatively Low	Relatively Low	Relatively High	Relatively High
Labette	950300	Very Low	Very Low	Relatively Low	Relatively Moderate	Very High	Very High
Labette	950400	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Labette	950500	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Very High
Labette	950600	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Labette	950700	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Labette	950800	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Montgomery	950100	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Montgomery	950200	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Montgomery	950300	Very Low	Very Low	Relatively Low	Relatively Moderate	Relatively High	Relatively High
Montgomery	950400	Very Low	Very Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively High

**Table C2: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Drought EAL	Drought Risk Rating	Cold Wave EAL	Cold Wave Risk Rating	Heatwave EAL	Heatwave Risk Rating
Montgomery	950500	Very Low	Very Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Montgomery	950600	Very Low	Very Low	Relatively Low	Relatively Low	Relatively High	Relatively High
Montgomery	950700	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Montgomery	950800	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Montgomery	951000	No Expected Annual Losses	No Rating	Relatively Low	Relatively Low	Relatively Moderate	Relatively High
Montgomery	951100	Very Low	Very Low	Relatively Low	Relatively Low	Relatively High	Relatively Moderate
Montgomery	951300	Very Low	Very Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate
Montgomery	951400	Very Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively High
Neosho	951600	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Very High
Neosho	951700	Very Low	Very Low	Relatively Low	Relatively Moderate	Very High	Relatively High
Neosho	951800	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Neosho	951900	Very Low	Very Low	Relatively Low	Relatively Low	Very High	Very High
Neosho	952000	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Relatively High
Wilson	97100	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Wilson	97200	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively High	Relatively High
Wilson	97300	Very Low	Very Low	Relatively Low	Relatively Low	Very High	Relatively High
Wilson	97400	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High
Woodson	96600	Relatively Low	Relatively Low	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate
Woodson	96700	Very Low	Very Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate

Source: FEMA NRI

**Table C3: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Riverine Flood EAL	Riverine Flood Risk Rating	Hail EAL	Hail Risk Rating	Lightning EAL	Lightning Risk Rating	Strong Wind EAL	Strong Wind Risk Rating
Allen	952600	Relatively Low	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Low
Allen	952700	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Moderate
Allen	952800	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Allen	952900	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Relatively High	Relatively Moderate
Allen	953000	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Bourbon	955600	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate
Bourbon	955700	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Moderate
Bourbon	955800	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Bourbon	955900	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Bourbon	956000	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Very High	Relatively Moderate
Chautauqua	964600	Relatively Moderate	Very High	Very High	Relatively Moderate	Relatively High	Very High	Very High	Relatively Moderate
Cherokee	958100	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Cherokee	958200	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Cherokee	958300	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Very High	Very High	Relatively High
Cherokee	958400	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Cherokee	958500	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Cherokee	958600	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Very High	Very High	Relatively High
Crawford	956600	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	956700	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	956800	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	956900	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	957000	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	957100	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Low
Crawford	957200	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Crawford	957300	Relatively High	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Crawford	957400	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Low
Crawford	957500	No Rating	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	No Rating
Crawford	957601	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Very High	Relatively Moderate
Crawford	957602	Relatively Low	Relatively Low	Relatively Low	Relatively Moderate	Relatively High	Very High	Very High	Relatively Low
Elk	965100	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Greenwood	965600	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Low	Relatively High	Relatively High	Relatively Moderate
Greenwood	965700	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High
Greenwood	965800	Very Low	Relatively High	Relatively High	Relatively Low	Relatively Low	Relatively High	Relatively High	Very Low
Labette	950100	Relatively High	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Labette	950200	Relatively Low	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Low
Labette	950300	Relatively Moderate	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Labette	950400	Relatively Moderate	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Labette	950500	Relatively Moderate	Relatively Low	Relatively Low	Relatively High	Relatively High	Very High	Very High	Relatively Moderate
Labette	950600	Relatively Moderate	Relatively Low	Relatively Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Labette	950700	Relatively Low	Very Low	Very Low	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Low
Labette	950800	Relatively Moderate	Very Low	Very Low	Relatively Low	Relatively Moderate	Relatively High	Very High	Relatively Moderate
Montgomery	950100	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate
Montgomery	950200	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate
Montgomery	950300	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively High
Montgomery	950400	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Very High	Relatively Moderate



**Table C3: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Riverine Flood EAL	Riverine Flood Risk Rating	Hail EAL	Hail Risk Rating	Lightning EAL	Lightning Risk Rating	Strong Wind EAL	Strong Wind Risk Rating
Montgomery	950500	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High
Montgomery	950600	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively High	Relatively High	Very High	Relatively Moderate
Montgomery	950700	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively High
Montgomery	950800	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively High
Montgomery	951000	No Rating	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Very High	No Rating
Montgomery	951100	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Very High	Relatively Moderate
Montgomery	951300	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Montgomery	951400	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Neosho	951600	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Neosho	951700	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Neosho	951800	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Very High	Very High	Relatively Moderate
Neosho	951900	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Neosho	952000	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Wilson	97100	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Wilson	97200	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate
Wilson	97300	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively Moderate
Wilson	97400	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very High	Very High	Relatively High
Woodson	96600	Relatively Low	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Low	Very High	Very High	Relatively Low
Woodson	96700	No Rating	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	No Rating

Source: FEMA NRI

**Table C4: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Ice Storm EAL	Ice Storm Risk Rating	Winter Weather EAL	Winter Weather Rating	Tornado EAL	Tornado Risk Rating	Wildfire EAL	Wildfire Risk Rating
Allen	952600	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Allen	952700	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Allen	952800	Relatively High	Relatively High	Very High	Very High	Relatively High	Relatively High	Very Low	Very Low
Allen	952900	Relatively High	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Very Low	Very Low
Allen	953000	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Bourbon	955600	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Bourbon	955700	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low
Bourbon	955800	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Bourbon	955900	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Bourbon	956000	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively High	Very Low	Very Low
Chautauqua	964600	Very High	Very High	Very High	Very High	Very High	Very High	Relatively High	Relatively High
Cherokee	958100	Very High	Very High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Cherokee	958200	Very High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Cherokee	958300	Very High	Very High	Very High	Very High	Very High	Very High	Relatively Low	Relatively Low
Cherokee	958400	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Moderate	Relatively Moderate
Cherokee	958500	Very High	Very High	Relatively High	Very High	Very High	Very High	Relatively Moderate	Relatively Moderate
Cherokee	958600	Very High	Very High	Very High	Very High	Very High	Very High	Relatively Low	Relatively Low
Crawford	956600	Relatively High	Relatively High	Very High	Very High	Very High	Very High	Relatively Low	Relatively Low
Crawford	956700	Relatively High	Relatively High	Very High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Crawford	956800	Relatively High	Relatively High	Relatively High	Very High	Very High	Very High	Relatively Low	Relatively Low
Crawford	956900	Relatively High	Relatively High	Very High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Crawford	957000	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Relatively High	Relatively Low	Very Low
Crawford	957100	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very Low	Very Low
Crawford	957200	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Crawford	957300	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Crawford	957400	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Crawford	957500	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very High	No Expected Annual Losses	No Rating
Crawford	957601	Relatively High	Relatively High	Very High	Very High	Very High	Very High	Relatively Low	Relatively Low
Crawford	957602	Relatively High	Relatively High	Very High	Very High	Very High	Very High	Very Low	Very Low
Elk	965100	Very High	Very High	Very High	Very High	Very High	Very High	Relatively High	Relatively High
Greenwood	965600	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Greenwood	965700	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Greenwood	965800	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High
Labette	950100	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Labette	950200	Very High	Very High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Labette	950300	Relatively High	Very High	Relatively High	Relatively High	Relatively High	Very High	Relatively Low	Relatively Low
Labette	950400	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Labette	950500	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Labette	950600	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Labette	950700	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Labette	950800	Very High	Very High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Montgomery	950100	Relatively High	Relatively Moderate	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Montgomery	950200	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Montgomery	950300	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Montgomery	950400	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low

**Table C4: FEMA NRI Identified Hazard Ratings**

County	Census Tract	Ice Storm EAL	Ice Storm Risk Rating	Winter Weather EAL	Winter Weather Rating	Tornado EAL	Tornado Risk Rating	Wildfire EAL	Wildfire Risk Rating
Montgomery	950500	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Montgomery	950600	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Montgomery	950700	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Moderate	Relatively Moderate
Montgomery	950800	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Moderate	Relatively Moderate
Montgomery	951000	Relatively High	Very High	Relatively High	Relatively High	Relatively High	Very High	No Expected Annual Losses	No Rating
Montgomery	951100	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Very Low	Very Low
Montgomery	951300	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Moderate	Relatively Moderate
Montgomery	951400	Very High	Very High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Neosho	951600	Very High	Very High	Very High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Neosho	951700	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Very Low	Very Low
Neosho	951800	Relatively High	Relatively High	Very High	Very High	Very High	Very High	Very Low	Very Low
Neosho	951900	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Relatively Low	Relatively Low
Neosho	952000	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Relatively High	Relatively Low	Relatively Low
Wilson	97100	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Wilson	97200	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively High	Relatively Low	Relatively Low
Wilson	97300	Relatively High	Relatively High	Relatively High	Relatively High	Very High	Very High	Very Low	Very Low
Wilson	97400	Relatively High	Relatively High	Very High	Very High	Very High	Very High	Relatively Low	Relatively Low
Woodson	96600	Relatively High	Relatively High	Very High	Very High	Relatively Moderate	Relatively Moderate	Relatively Moderate	Relatively Moderate
Woodson	96700	Relatively Moderate	Relatively Moderate	Relatively High	Relatively High	Relatively Moderate	Relatively Moderate	Relatively Low	Relatively Low

Source: FEMA NRI

# Appendix D – Jurisdictional Hazard Mitigation Actions

**Allen County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Allen County 1	Install generators in all county facilities.	All hazards	Allen County Emergency Manager, Allen County Facilities Department	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 2	Upgrade and enhance sirens throughout county	All hazards	Allen County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Allen County 3	Purchase electronic mobile traffic notification signs.	All hazards	Allen County Emergency Manager, Allen County Public Works	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Allen County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Allen County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	Five years	New
Allen County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Allen County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Allen County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Allen County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Allen County 7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Allen County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Allen County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Allen County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New

**Allen County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Allen County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Allen County Facilities Department	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Allen County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Allen County Administration	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Allen County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Allen County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Allen County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Allen County Facilities Director	Low	1, 2	\$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Allen County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Allen County 14	Purchase and demolish flood prone properties	Flood	Allen County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Allen County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, Allen County	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

**Allen County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
			Emergency Manager						
Allen County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Allen County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Allen County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Allen County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Allen County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Allen County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 21	Construct snow fences along major transportation routes.	Winter Storm	Allen County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Allen County Building Director	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Allen County-23	Increase public training on brush clearance to minimize fuel for wildland-urban interface fires	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Allen County 24	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Allen County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Allen County 25	Provide hazardous materials response training to first responders and	Hazardous Materials Event	Allen County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Allen County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	emergency management staff.								
Allen County 26	Identify and map all structurally deficient bridges.	Infrastructure Failure	Allen County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Allen County 27	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Allen County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Allen County 28	Purchase and install new epidemiological tracking software.	Transmissible Disease	Allen County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**Elsmore Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Elsmore 1	Purchase and install critical facility backup generators.	All hazards	Elsmore Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Elsmore 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Elsmore Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Elsmore 3	Institute a tree trimming program near utility lines.	All hazards	Elsmore Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Elsmore 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Elsmore Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Elsmore 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Elsmore Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Elsmore 6	Conduct a personal water use education program.	Drought	Elsmore Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Elsmore 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Elsmore Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Elsmore 8	Apply to participate in the NFIP.	Flood	Elsmore Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Elsmore 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Elsmore Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

**Elsmore Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Elsmore 10	Clean and repair drainage ditches to maintain capacity.	Flood	Elsmore Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Elsmore 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Elsmore Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Elsmore 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Elsmore Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Elsmore 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Elsmore Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elsmore 14	Create defensible space buffers at all critical facilities	Wildfire	Elsmore Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Elsmore 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Elsmore IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Elsmore 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Elsmore Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Gas Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Gas 1	Purchase and install critical facility backup generators.	All hazards	Gas Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Gas 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Gas Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Gas 3	Institute a tree trimming program near utility lines.	All hazards	Gas Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Gas 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Gas Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Gas 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Gas Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Gas 6	Conduct a personal water use education program.	Drought	Gas Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Gas 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Gas Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Gas 8	Continue to participate meet requirements of the NFIP.	Flood	Gas NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Gas 9	Construct rainwater retention/detention	Flood	Gas Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Gas Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Gas 10	Clean and repair drainage ditches to maintain capacity.	Flood	Gas Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Gas 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Gas Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Gas 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Gas Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Gas 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Gas Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Gas 14	Create defensible space buffers at all critical facilities	Wildfire	Gas Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Gas 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Gas IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Gas 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Gas Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Humboldt Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Humboldt 1	Purchase and install critical facility backup generators.	All hazards	Humboldt Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Humboldt 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Humboldt Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Humboldt 3	Institute a tree trimming program near utility lines.	All hazards	Humboldt Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Humboldt 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Humboldt Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Humboldt 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Humboldt Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Humboldt 6	Conduct a personal water use education program.	Drought	Humboldt Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Humboldt 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Humboldt Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Humboldt 8	Continue to participate meet requirements of the NFIP.	Flood	Humboldt NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Humboldt 9	Construct rainwater retention/detention	Flood	Humboldt Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Humboldt Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Humboldt 10	Clean and repair drainage ditches to maintain capacity.	Flood	Humboldt Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Humboldt 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Humboldt Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Humboldt 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Humboldt Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Humboldt 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Humboldt Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Humboldt 14	Create defensible space buffers at all critical facilities	Wildfire	Humboldt Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Humboldt 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Humboldt IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

**Iola Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Iola 1	Purchase and install critical facility backup generators.	All hazards	Iola Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Iola 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Iola Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Iola 3	Institute a tree trimming program near utility lines.	All hazards	Iola Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Iola 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Iola Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Iola 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Iola Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Iola 6	Conduct a personal water use education program.	Drought	Iola Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Iola 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Iola Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Iola 8	Continue to participate meet requirements of the NFIP.	Flood	Iola NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Iola 9	Construct rainwater retention/detention	Flood	Iola Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Iola Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Iola 10	Clean and repair drainage ditches to maintain capacity.	Flood	Iola Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Iola 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Iola Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Iola 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Iola Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Iola 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Iola Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Iola 14	Create defensible space buffers at all critical facilities	Wildfire	Iola Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Iola 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Iola IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Iola 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Iola Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**La Harpe Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
La Harpe 1	Purchase and install critical facility backup generators.	All hazards	La Harpe Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
La Harpe 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	La Harpe Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
La Harpe 3	Institute a tree trimming program near utility lines.	All hazards	La Harpe Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
La Harpe 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	La Harpe Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
La Harpe 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	La Harpe Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
La Harpe 6	Conduct a personal water use education program.	Drought	La Harpe Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
La Harpe 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	La Harpe Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
La Harpe 8	Continue to participate meet requirements of the NFIP.	Flood	La Harpe NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
La Harpe 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	La Harpe Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

**La Harpe Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
La Harpe 10	Clean and repair drainage ditches to maintain capacity.	Flood	La Harpe Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
La Harpe 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	La Harpe Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
La Harpe 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	La Harpe Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
La Harpe 13	Construct community saferooms in select jurisdictional buildings.	Tornado	La Harpe Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
La Harpe 14	Create defensible space buffers at all critical facilities	Wildfire	La Harpe Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
La Harpe 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	La Harpe IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
La Harpe 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	La Harpe Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Moran Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Moran 1	Purchase and install critical facility backup generators.	All hazards	Moran Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Moran 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Moran Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Moran 3	Institute a tree trimming program near utility lines.	All hazards	Moran Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Moran 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Moran Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Moran 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Moran Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Moran 6	Conduct a personal water use education program.	Drought	Moran Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Moran 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Moran Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Moran 8	Continue to participate meet requirements of the NFIP.	Flood	Moran NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Moran 9	Construct rainwater retention/detention	Flood	Moran Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Moran Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Moran 10	Clean and repair drainage ditches to maintain capacity.	Flood	Moran Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Moran 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Moran Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Moran 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Moran Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Moran 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Moran Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Moran 14	Create defensible space buffers at all critical facilities	Wildfire	Moran Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Moran 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Moran IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Moran 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Moran Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Savonburg Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Savonburg 1	Purchase and install critical facility backup generators.	All hazards	Savonburg Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Savonburg 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Savonburg Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Savonburg 3	Institute a tree trimming program near utility lines.	All hazards	Savonburg Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Savonburg 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Savonburg Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Savonburg 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Savonburg Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Savonburg 6	Conduct a personal water use education program.	Drought	Savonburg Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Savonburg 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Savonburg Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Savonburg 8	Apply to participate in the NFIP.	Flood	Savonburg Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Savonburg 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Savonburg Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

### Savonburg Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Savonburg 10	Clean and repair drainage ditches to maintain capacity.	Flood	Savonburg Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Savonburg 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Savonburg Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Savonburg 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Savonburg Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Savonburg 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Savonburg Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Savonburg 14	Create defensible space buffers at all critical facilities	Wildfire	Savonburg Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Savonburg 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Savonburg IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Savonburg 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Savonburg Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Allen County Community College Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Allen County Community College 1	Purchase and install facility backup generators.	All hazards	Allen County Community College Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Allen County Community College 2	Construct safe rooms in all school buildings to required standards.	All hazards	Allen County Community College Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Allen County Community College 3	Conduct hazard mitigation education programs for students.	All hazards	Allen County Community College Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Allen County Community College 4	Conduct a xeriscaping program for all school facilities	Drought	Allen County Community College Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Allen County Community College 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Allen County Community College Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Allen County Community College 6	Construct rainwater gardens adjacent to paved areas.	Flood	Allen County Community College Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Allen County Community College 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Allen County Community College Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Allen County Community College 8	Conduct regular staff and student active shooter trainings.	Terrorism	Allen County Community College Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 256 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 256 1	Purchase and install facility backup generators.	All hazards	USD 256 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 256 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 256 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 256 3	Conduct hazard mitigation education programs for students.	All hazards	USD 256 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 256 4	Conduct a xeriscaping program for all school facilities	Drought	USD 256 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 256 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 256 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 256 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 256 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 256 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 256 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 256 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 256 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New



### USD 257 Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
USD 257 1	Purchase and install facility backup generators.	All hazards	USD 257 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 257 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 257 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 257 3	Conduct hazard mitigation education programs for students.	All hazards	USD 257 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 257 4	Conduct a xeriscaping program for all school facilities	Drought	USD 257 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 257 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 257 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 257 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 257 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 257 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 257 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 257 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 257 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 258 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 258 1	Purchase and install facility backup generators.	All hazards	USD 258 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 258 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 258 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 258 3	Conduct hazard mitigation education programs for students.	All hazards	USD 258 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 258 4	Conduct a xeriscaping program for all school facilities	Drought	USD 258 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 258 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 258 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 258 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 258 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 258 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 258 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 258 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 258 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

### Heartland Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	Carried over due to lack of funding
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	New

### Community Health Center of SE Kansas Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Community Health Center of SE Kansas 1	Purchase and install facility backup generators.	All hazards	Community Health Center of SE Kansas Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Community Health Center of SE Kansas 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado	Community Health Center of SE Kansas Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Community Health Center of SE Kansas 3	Upgrade ventilation and filtration system.	Transmissible disease	Community Health Center of SE Kansas Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**Bourbon County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Bourbon County 1	Install generators in all county facilities.	All hazards	Bourbon County Emergency Manager, Bourbon County Facilities Department	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County 2	Upgrade and enhance sirens throughout county	All hazards	Bourbon County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Bourbon County 3	Purchase electronic mobile traffic notification signs.	All hazards	Bourbon County Emergency Manager, Bourbon County Public Works	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Bourbon County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Bourbon County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	Five years	New
Bourbon County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Bourbon County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Bourbon County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Bourbon County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Bourbon County 7	Install evacuation route and high ground signage in any high	Dam/Levee Failure	Bourbon County	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New

**Bourbon County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	hazard dam potential inundation areas.		Emergency Manager						
Bourbon County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Bourbon County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Bourbon County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Bourbon County Facilities Department	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Bourbon County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Bourbon County Administration	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Bourbon County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Bourbon County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Bourbon County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Bourbon County Facilities Director	Low	1, 2	\$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Bourbon County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Bourbon County 14	Purchase and demolish flood prone properties	Flood	Bourbon County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New

**Bourbon County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Bourbon County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, Bourbon County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Bourbon County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Bourbon County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Bourbon County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Bourbon County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Bourbon County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Bourbon County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County-21	Construct snow fences along major transportation routes.	Winter Storm	Bourbon County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Bourbon County Building Director	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Bourbon County 23	Increase public training on brush clearance to minimize fuel for wildland-urban interface fires	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding

**Bourbon County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Bourbon County 24	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Bourbon County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Bourbon County 25	Provide hazardous materials response training to first responders and emergency management staff.	Hazardous Materials Event	Bourbon County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Bourbon County 26	Identify and map all structurally deficient bridges.	Infrastructure Failure	Bourbon County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Bourbon County 27	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Bourbon County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Bourbon County 28	Purchase and install new epidemiological tracking software.	Transmissible Disease	Bourbon County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Bronson Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Bronson 1	Purchase and install critical facility backup generators.	All hazards	Bronson Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Bronson 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Bronson Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Bronson 3	Institute a tree trimming program near utility lines.	All hazards	Bronson Administrator	Medium	1, 2	\$25,000 every five year	HMGP, BRIC, Jurisdiction budget	As required	New
Bronson 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Bronson Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Bronson 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Bronson Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Bronson 6	Conduct a personal water use education program.	Drought	Bronson Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Bronson 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Bronson Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Bronson 8	Continue to participate meet requirements of the NFIP.	Flood	Bronson NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Bronson 9	Construct rainwater retention/detention	Flood	Bronson Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New



**Bronson Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Bronson 10	Clean and repair drainage ditches to maintain capacity.	Flood	Bronson Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Bronson 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Bronson Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Bronson 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Bronson Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Bronson 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Bronson Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Completed
Bronson 14	Create defensible space buffers at all critical facilities	Wildfire	Bronson Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	Carried over due to lack of funding
Bronson 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Bronson IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	Completed

**Fort Scott Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Fort Scott 1	Purchase and install critical facility backup generators.	All hazards	Fort Scott Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Fort Scott 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Fort Scott Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Fort Scott 3	Institute a tree trimming program near utility lines.	All hazards	Fort Scott Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Fort Scott 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Fort Scott Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Fort Scott 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Fort Scott Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fort Scott 6	Conduct a personal water use education program.	Drought	Fort Scott Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Fort Scott 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Fort Scott Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Fort Scott 8	Continue to participate meet requirements of the NFIP.	Flood	Fort Scott NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Fort Scott 9	Construct rainwater retention/detention	Flood	Fort Scott Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Fort Scott Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Fort Scott 10	Clean and repair drainage ditches to maintain capacity.	Flood	Fort Scott Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fort Scott 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Fort Scott Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Fort Scott 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Fort Scott Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Fort Scott 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Fort Scott Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Fort Scott 14	Create defensible space buffers at all critical facilities	Wildfire	Fort Scott Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fort Scott 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Fort Scott IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Fort Scott 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Fort Scott Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Fulton Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Fulton 1	Purchase and install critical facility backup generators.	All hazards	Fulton Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Fulton 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Fulton Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Fulton 3	Institute a tree trimming program near utility lines.	All hazards	Fulton Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Fulton 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Fulton Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Fulton 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Fulton Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fulton 6	Conduct a personal water use education program.	Drought	Fulton Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Fulton 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Fulton Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Fulton 8	Apply to participate in the NFIP.	Flood	Fulton Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Fulton 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Fulton Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

### Fulton Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Fulton 10	Clean and repair drainage ditches to maintain capacity.	Flood	Fulton Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fulton 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Fulton Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Fulton 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Fulton Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Fulton 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Fulton Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Fulton 14	Create defensible space buffers at all critical facilities	Wildfire	Fulton Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fulton 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Fulton IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Fulton 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Fulton Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Mapleton Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Mapleton 1	Purchase and install critical facility backup generators.	All hazards	Mapleton Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Mapleton 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mapleton Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Mapleton 3	Institute a tree trimming program near utility lines.	All hazards	Mapleton Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Mapleton 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mapleton Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Mapleton 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Mapleton Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mapleton 6	Conduct a personal water use education program.	Drought	Mapleton Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Mapleton 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Mapleton Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Mapleton 8	Continue to participate meet requirements of the NFIP.	Flood	Mapleton NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Mapleton 9	Construct rainwater retention/detention	Flood	Mapleton Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Mapleton Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Mapleton 10	Clean and repair drainage ditches to maintain capacity.	Flood	Mapleton Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mapleton 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mapleton Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Mapleton 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mapleton Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Mapleton 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mapleton Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Mapleton 14	Create defensible space buffers at all critical facilities	Wildfire	Mapleton Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Mapleton 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Mapleton IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Mapleton 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Mapleton Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Redfield Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Redfield 1	Purchase and install critical facility backup generators.	All hazards	Redfield Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Redfield 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Redfield Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Redfield 3	Institute a tree trimming program near utility lines.	All hazards	Redfield Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Redfield 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Redfield Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Redfield 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Redfield Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Redfield 6	Conduct a personal water use education program.	Drought	Redfield Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Redfield 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Redfield Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Redfield 8	Continue to participate meet requirements of the NFIP.	Flood	Redfield NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Redfield 9	Construct rainwater retention/detention	Flood	Redfield Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New



**Redfield Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Redfield 10	Clean and repair drainage ditches to maintain capacity.	Flood	Redfield Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Redfield 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Redfield Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Redfield 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Redfield Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Redfield 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Redfield Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Redfield 14	Create defensible space buffers at all critical facilities	Wildfire	Redfield Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Redfield 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Redfield IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Redfield 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Redfield Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Uniontown Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Uniontown 1	Purchase and install critical facility backup generators.	All hazards	Uniontown Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Completed
Uniontown 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Uniontown Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Uniontown 3	Institute a tree trimming program near utility lines.	All hazards	Uniontown Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Uniontown 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Uniontown Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	Completed
Uniontown 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Uniontown Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Completed
Uniontown 6	Conduct a personal water use education program.	Drought	Uniontown Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Completed
Uniontown 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Uniontown Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Completed
Uniontown 8	Continue to participate meet requirements of the NFIP.	Flood	Uniontown NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Uniontown 9	Construct rainwater retention/detention	Flood	Uniontown Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Uniontown Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Uniontown 10	Clean and repair drainage ditches to maintain capacity.	Flood	Uniontown Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Uniontown 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Uniontown Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Uniontown 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Uniontown Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Uniontown 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Uniontown Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Uniontown 14	Create defensible space buffers at all critical facilities	Wildfire	Uniontown Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Uniontown 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Uniontown IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Uniontown 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Uniontown Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Fort Scott Community College Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Fort Scott Community College 1	Purchase and install facility backup generators.	All hazards	Fort Scott CC Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Fort Scott Community College 2	Construct safe rooms in all school buildings to required standards.	All hazards	Fort Scott CC Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Fort Scott Community College 3	Conduct hazard mitigation education programs for students.	All hazards	Fort Scott CC Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Fort Scott Community College 4	Conduct a xeriscaping program for all school facilities	Drought	Fort Scott CC Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Fort Scott Community College 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Fort Scott CC Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Fort Scott Community College 6	Construct rainwater gardens adjacent to paved areas.	Flood	Fort Scott CC Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Fort Scott Community College 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Fort Scott CC Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Fort Scott Community College 8	Conduct regular staff and student active shooter trainings.	Terrorism	Fort Scott CC Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 234 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 234 1	Purchase and install facility backup generators.	All hazards	USD 234 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 234 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 234 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 234 3	Conduct hazard mitigation education programs for students.	All hazards	USD 234 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 234 4	Conduct a xeriscaping program for all school facilities	Drought	USD 234 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 234 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 234 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 234 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 234 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 234 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 234 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 234 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 234 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 235 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 235 1	Purchase and install facility backup generators.	All hazards	USD 235 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 235 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 235 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 235 3	Conduct hazard mitigation education programs for students.	All hazards	USD 235 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 235 4	Conduct a xeriscaping program for all school facilities	Drought	USD 235 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 235 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 235 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 235 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 235 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 235 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 235 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 235 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 235 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Bourbon County Rural Fire District #3 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Bourbon County Rural Fire District #3 1	Purchase and install facility backup generators.	All hazards	Bourbon County Rural Fire District #3 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Fire budgets	Five years	Carried over due to lack of funding
Bourbon County Rural Fire District #3 2	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Bourbon County Rural Fire District #3 Administrator	Medium	1,2	\$105.00 an acre	Federal WUI grant dollars, Fire budget	On going	Carried over due to lack of funding
Bourbon County Rural Fire District #3 3	Conduct Wildland Urban Interface response training for firefighters.	Wildfire	Bourbon County Rural Fire District #3 Administrator	Medium	1,2,3	\$30 per student per training	Federal WUI grant dollars, Fire budget	On going	New

**Community Health Center of SE Kansas Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Community Health Center of SE Kansas 1	Purchase and install facility backup generators.	All hazards	Community Health Center of SE Kansas Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Community Health Center of SE Kansas 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado	Community Health Center of SE Kansas Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Community Health Center of SE Kansas 3	Upgrade ventilation and filtration system.	Transmissible disease	Community Health Center of SE Kansas Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding



### Cedar Vale Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Cedar Vale 1	Purchase and install critical facility backup generators.	All hazards	Cedar Vale Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Cedar Vale 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Cedar Vale Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Cedar Vale 3	Institute a tree trimming program near utility lines.	All hazards	Cedar Vale Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Cedar Vale 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Cedar Vale Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Cedar Vale 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Cedar Vale Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Cedar Vale 6	Conduct a personal water use education program.	Drought	Cedar Vale Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Cedar Vale 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Cedar Vale Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Cedar Vale 8	Apply to participate in the NFIP.	Flood	Cedar Vale Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Cedar Vale 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Cedar Vale Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

### Cedar Vale Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Cedar Vale 10	Clean and repair drainage ditches to maintain capacity.	Flood	Cedar Vale Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Cedar Vale 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Cedar Vale Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Cedar Vale 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Cedar Vale Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Cedar Vale 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Cedar Vale Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cedar Vale 14	Create defensible space buffers at all critical facilities	Wildfire	Cedar Vale Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Cedar Vale 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Cedar Vale IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Cedar Vale 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Cedar Vale Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**USD 285 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 285 1	Purchase and install facility backup generators.	All hazards	USD 285 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 285 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 285 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 285 3	Conduct hazard mitigation education programs for students.	All hazards	USD 285 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 285 4	Conduct a xeriscaping program for all school facilities	Drought	USD 285 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 285 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 285 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 285 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 285 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 285 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 285 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 285 7	Conduct regular staff and student active shooter trainings.	Terrorism	USD 285 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

### Big Caney Watershed #31 Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Big Caney Watershed #31 1	Purchase and install facility backup generators to ensure continued service during disruptive events.	All hazards	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 2	Purchase more efficient equipment to minimize loss.	Drought	Big Caney Watershed #31 Administrator	High	1, 2	Per location cost	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 3	Elevate critical equipment out of potential flood areas.	Flood	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New

### 4 Rivers Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

### Cherokee County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Cherokee County 1	Install generators in all county facilities.	All hazards	Cherokee County Emergency Manager, Cherokee County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 2	Upgrade and enhance sirens throughout county	All hazards	Cherokee County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Cherokee County 3	Purchase electronic mobile traffic notification signs.	All hazards	Cherokee County Emergency Manager, Cherokee County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Cherokee County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Cherokee County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Cherokee County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Cherokee County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Cherokee County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Cherokee County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Cherokee County 7	Install evacuation route and high ground signage in any high	Dam/Levee Failure	Cherokee County	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New

### Cherokee County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	hazard dam potential inundation areas.		Emergency Manager						
Cherokee County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Cherokee County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Cherokee County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Cherokee County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Cherokee County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Cherokee County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Cherokee County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Cherokee County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Cherokee County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Cherokee County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Cherokee County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Cherokee County 14	Purchase and demolish flood prone properties	Flood	Cherokee County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New

### Cherokee County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Cherokee County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Cherokee County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Cherokee County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Cherokee County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Cherokee County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Cherokee County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Cherokee County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Cherokee County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 21	Construct snow fences along major transportation routes.	Winter Storm	Cherokee County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Cherokee County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Cherokee County 23	Create defensible space buffers at all critical facilities	Wildfire	Cherokee County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

**Cherokee County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Cherokee County 24	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Cherokee County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	-	Completed
Cherokee County 25	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Cherokee County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Cherokee County-26	Identify and map all structurally deficient bridges.	Infrastructure Failure	Cherokee County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherokee County 27	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Cherokee County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Cherokee County 28	Purchase and install new epidemiological tracking software.	Transmissible Disease	Cherokee County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Cherokee County 29	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding



**Scammon Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Scammon 1	Purchase and install critical facility backup generators.	All hazards	Scammon Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Scammon 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Scammon Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Scammon 3	Institute a tree trimming program near utility lines.	All hazards	Scammon Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Scammon 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Scammon Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Scammon 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Scammon Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Scammon 6	Conduct a personal water use education program.	Drought	Scammon Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Scammon 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Scammon Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Scammon 8	Continue to participate meet requirements of the NFIP.	Flood	Scammon NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Scammon 9	Construct rainwater retention/detention	Flood	Scammon Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Scammon Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Scammon 10	Re-fabrication of manholes to prevent flood waters from entering sewer system	Flood	NFIP Director	High	1, 2	\$300,000	Local, HMGP	One to four years	New
Scammon 11	Clean and repair drainage ditches to maintain capacity.	Flood	Scammon Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Scammon 12	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Scammon Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Scammon 13	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Scammon Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Scammon 14	Construct community saferooms in select jurisdictional buildings.	Tornado	Scammon Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Scammon 15	Create defensible space buffers at all critical facilities	Wildfire	Scammon Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Scammon 16	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Scammon IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Scammon 17	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Scammon Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Heartland Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Crawford County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Crawford County 1	Install generators in all county facilities.	All hazards	Crawford County Emergency Manager, Crawford County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County 2	Upgrade and enhance sirens throughout county	All hazards	Crawford County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Crawford County 3	Purchase electronic mobile traffic notification signs.	All hazards	Crawford County Emergency Manager, Crawford County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Crawford County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Crawford County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Crawford County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Crawford County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Crawford County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Crawford County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Crawford County 7	Install evacuation route and high ground signage in any high	Dam/Levee Failure	Crawford County	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New

**Crawford County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	hazard dam potential inundation areas.		Emergency Manager						
Crawford County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Crawford County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Crawford County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Crawford County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Crawford County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Crawford County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Crawford County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Crawford County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Crawford County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Crawford County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Crawford County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Crawford County 14	Purchase and demolish flood prone properties	Flood	Crawford County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New

**Crawford County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Crawford County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Crawford County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Crawford County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Crawford County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Crawford County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Crawford County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Crawford County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Crawford County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County-21	Construct snow fences along major transportation routes.	Winter Storm	Crawford County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Crawford County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Crawford County 23	Create defensible space buffers at all critical facilities	Wildfire	Crawford County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

### Crawford County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Crawford County 24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Crawford County 25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Crawford County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Crawford County 26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Crawford County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Crawford County 27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Crawford County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Crawford County 28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Crawford County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Crawford County 29	Purchase and install new epidemiological tracking software.	Transmissible Disease	Crawford County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Pittsburg Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Pittsburg 1	Purchase and install critical facility backup generators.	All hazards	Pittsburg Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Pittsburg 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Pittsburg Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Pittsburg 3	Institute a tree trimming program near utility lines.	All hazards	Pittsburg Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Pittsburg 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Pittsburg Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Pittsburg 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Pittsburg Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Pittsburg 6	Conduct a personal water use education program.	Drought	Pittsburg Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Pittsburg 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Pittsburg Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Pittsburg 8	Continue to participate meet requirements of the NFIP.	Flood	Pittsburg NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Pittsburg 9	Construct rainwater retention/detention	Flood	Pittsburg Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	Carried over due to lack of funding



### Pittsburg Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Pittsburg 10	Clean and repair drainage ditches to maintain capacity.	Flood	Pittsburg Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Pittsburg 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Pittsburg Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Pittsburg 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Pittsburg Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Pittsburg 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Pittsburg Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Pittsburg 14	Create defensible space buffers at all critical facilities	Wildfire	Pittsburg Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	Carried over due to lack of funding
Pittsburg 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Pittsburg IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Pittsburg 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Pittsburg Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**USD 247 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 247 1	Purchase and install facility backup generators.	All hazards	USD 247 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 247 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 247 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 247 3	Conduct hazard mitigation education programs for students.	All hazards	USD 247 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 247 4	Conduct a xeriscaping program for all school facilities	Drought	USD 247 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 247 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 247 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 247 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 247 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 247 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 247 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 247 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 247 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 248 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 248 1	Purchase and install facility backup generators.	All hazards	USD 248 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 248 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 248 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 248 3	Conduct hazard mitigation education programs for students.	All hazards	USD 248 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 248 4	Conduct a xeriscaping program for all school facilities	Drought	USD 248 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 248 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 248 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 248 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 248 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 248 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 248 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 248 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 248 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 249 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 249 1	Purchase and install facility backup generators.	All hazards	USD 249 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 249 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 249 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 249 3	Conduct hazard mitigation education programs for students.	All hazards	USD 249 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 249 4	Conduct a xeriscaping program for all school facilities	Drought	USD 249 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 249 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 249 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 249 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 249 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 249 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 249 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 249 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 249 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 250 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 250 1	Purchase and install facility backup generators.	All hazards	USD 250 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 250 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 250 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 250 3	Conduct hazard mitigation education programs for students.	All hazards	USD 250 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 250 4	Conduct a xeriscaping program for all school facilities	Drought	USD 250 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 250 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 250 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 250 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 250 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 250 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 250 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 250 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 250 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

#### 4 Rivers Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

#### Heartland Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Big Caney Watershed #31 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Big Caney Watershed #31 1	Purchase and install facility backup generators to ensure continued service during disruptive events.	All hazards	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 2	Purchase more efficient equipment to minimize loss.	Drought	Big Caney Watershed #31 Administrator	High	1, 2	Per location cost	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 3	Elevate critical equipment out of potential flood areas.	Flood	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New

**Girard Medical Center Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Girard Medical Center 1	Purchase and install facility backup generators.	All hazards	Girard Medical Center Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Girard Medical Center 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado	Girard Medical Center Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Girard Medical Center 3	Upgrade ventilation and filtration system.	Transmissible disease	Girard Medical Center Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

### Labette Health Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Labette Health 1	Purchase and install facility backup generators.	All hazards	Labette Health Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Labette Health 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Labette Health 3	Upgrade ventilation and filtration system.	Transmissible disease	Labette Health Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

### Community Health Center of SE Kansas Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Community Health Center of SE Kansas 1	Purchase and install facility backup generators.	All hazards	Community Health Center of SE Kansas Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Community Health Center of SE Kansas 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado	Community Health Center of SE Kansas Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Community Health Center of SE Kansas 3	Upgrade ventilation and filtration system.	Transmissible disease	Community Health Center of SE Kansas Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New



### Elk County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Elk County 1	Install generators in all county facilities.	All hazards	Elk County Emergency Manager, Elk County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County 2	Upgrade and enhance sirens throughout county	All hazards	Elk County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Elk County 3	Purchase electronic mobile traffic notification signs.	All hazards	Elk County Emergency Manager, Elk County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Elk County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Elk County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Elk County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Elk County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Elk County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Elk County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Elk County 7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Elk County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Elk County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Elk County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New

### Elk County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Elk County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Elk County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Elk County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Elk County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Elk County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Elk County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Elk County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Elk County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Elk County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Elk County 14	Purchase and demolish flood prone properties	Flood	Elk County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Elk County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Elk County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County	Medium	1, 2	Location dependent	HMGP, BRIC,	Five years	Carried over due to lack of funding

### Elk County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
			Emergency Manager				Jurisdiction budget		
Elk County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Elk County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Elk County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Elk County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Elk County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Elk County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County-21	Construct snow fences along major transportation routes.	Winter Storm	Elk County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Elk County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Elk County 23	Create defensible space buffers at all critical facilities	Wildfire	Elk County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Elk County 24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Elk County 25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Elk County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New

### Elk County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Elk County 26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Elk County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Elk County 27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Elk County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk County 28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Elk County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

**Elk Falls Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Elk Falls 1	Purchase and install critical facility backup generators.	All hazards	Elk Falls Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Elk Falls 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Elk Falls Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Elk Falls 3	Institute a tree trimming program near utility lines.	All hazards	Elk Falls Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Elk Falls 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Elk Falls Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Elk Falls 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Elk Falls Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Elk Falls 6	Conduct a personal water use education program.	Drought	Elk Falls Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Elk Falls 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Elk Falls Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Elk Falls 8	Apply to participate in the NFIP.	Flood	Elk Falls Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Elk Falls 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Elk Falls Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

**Elk Falls Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Elk Falls 10	Clean and repair drainage ditches to maintain capacity.	Flood	Elk Falls Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Elk Falls 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Elk Falls Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Elk Falls 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Elk Falls Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Elk Falls 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Elk Falls Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Elk Falls 14	Create defensible space buffers at all critical facilities	Wildfire	Elk Falls Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Elk Falls 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Elk Falls IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Elk Falls 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Elk Falls Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Grenola Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Grenola 1	Purchase and install critical facility backup generators.	All hazards	Grenola Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Grenola 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Grenola Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Grenola 3	Institute a tree trimming program near utility lines.	All hazards	Grenola Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Grenola 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Grenola Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Grenola 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Grenola Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Grenola 6	Conduct a personal water use education program.	Drought	Grenola Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Grenola 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Grenola Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Grenola 8	Continue to participate meet requirements of the NFIP.	Flood	Grenola NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Grenola 9	Construct rainwater retention/detention	Flood	Grenola Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Grenola Mitigation Actions**

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Grenola 10	Clean and repair drainage ditches to maintain capacity.	Flood	Grenola Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Grenola 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Grenola Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Grenola 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Grenola Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Grenola 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Grenola Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Grenola 14	Create defensible space buffers at all critical facilities	Wildfire	Grenola Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Grenola 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Grenola IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Grenola 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Grenola Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



### Howard Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Howard 1	Purchase and install critical facility backup generators.	All hazards	Howard Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Howard 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Howard Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Howard 3	Institute a tree trimming program near utility lines.	All hazards	Howard Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Howard 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Howard Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Howard 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Howard Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Howard 6	Conduct a personal water use education program.	Drought	Howard Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Howard 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Howard Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Howard 8	Continue to participate meet requirements of the NFIP.	Flood	Howard NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Howard 9	Construct rainwater retention/detention	Flood	Howard Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Howard Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Howard 10	Clean and repair drainage ditches to maintain capacity.	Flood	Howard Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Howard 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Howard Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Howard 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Howard Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Howard 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Howard Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Howard 14	Create defensible space buffers at all critical facilities	Wildfire	Howard Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Howard 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Howard IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Howard 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Howard Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Longton Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Longton 1	Purchase and install critical facility backup generators.	All hazards	Longton Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Longton 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Longton Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Longton 3	Institute a tree trimming program near utility lines.	All hazards	Longton Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Longton 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Longton Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Longton 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Longton Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Longton 6	Conduct a personal water use education program.	Drought	Longton Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Longton 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Longton Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Longton 8	Continue to participate meet requirements of the NFIP.	Flood	Longton NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going

### Longton Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Longton 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Longton Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Longton 10	Clean and repair drainage ditches to maintain capacity.	Flood	Longton Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Longton 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Longton Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Longton 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Longton Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Longton 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Longton Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Longton 14	Create defensible space buffers at all critical facilities	Wildfire	Longton Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Longton 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Longton IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Longton 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Longton Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Moline Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Moline 1	Purchase and install critical facility backup generators.	All hazards	Moline Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Moline 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Moline Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Moline 3	Institute a tree trimming program near utility lines.	All hazards	Moline Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Moline 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Moline Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Moline 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Moline Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Moline 6	Conduct a personal water use education program.	Drought	Moline Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Moline 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Moline Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Moline 8	Continue to participate meet requirements of the NFIP.	Flood	Moline NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Moline 9	Construct rainwater retention/detention	Flood	Moline Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Moline Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Moline 10	Clean and repair drainage ditches to maintain capacity.	Flood	Moline Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Moline 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Moline Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Moline 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Moline Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Moline 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Moline Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Moline 14	Create defensible space buffers at all critical facilities	Wildfire	Moline Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Moline 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Moline IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Moline 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Moline Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**USD 282 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 282 1	Purchase and install facility backup generators.	All hazards	USD 282 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 282 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 282 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 282 3	Conduct hazard mitigation education programs for students.	All hazards	USD 282 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 282 4	Conduct a xeriscaping program for all school facilities	Drought	USD 282 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 282 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 282 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 282 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 282 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 282 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 282 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 282 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 282 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 283 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 283 1	Purchase and install facility backup generators.	All hazards	USD 283 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 283 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 283 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 283 3	Conduct hazard mitigation education programs for students.	All hazards	USD 283 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 283 4	Conduct a xeriscaping program for all school facilities	Drought	USD 283 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 283 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 283 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 283 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 283 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 283 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 283 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 283 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 283 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New



**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Caney Valley Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Caney Valley Electric 1	Purchase and install critical location backup generators.	All hazards	Caney Valley Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Caney Valley Electric 2	Shorten distance between utility poles.	All hazards	Caney Valley Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Elk County Rural Fire Departments (All) Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Elk County Rural Fire Departments (All) 1	Purchase and install facility backup generators.	All hazards	Elk County Rural Fire Departments (All) Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Fire budgets	Five years	Carried over due to lack of funding
Elk County Rural Fire Departments (All) 2	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Elk County Rural Fire Departments (All) Administrator	Medium	1,2	\$105.00 an acre	Federal WUI grant dollars, Fire budget	On going	Carried over due to lack of funding
Elk County Rural Fire Departments (All) 3	Conduct Wildland Urban Interface defensible space training for firefighter and publics.	Wildfire	Elk County Rural Fire Departments (All) Administrator	Medium	1,2,3	\$30 per student per training	Federal WUI grant dollars, Fire budget	On going	New

**Rural Water District #1 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Rural Water District #1 1	Purchase and install facility backup generators.	All hazards	Water Name Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Rural Water District #1 2	Replace water lines at critical locations throughout service area.	All hazards	Water Name Administrator	Medium	1,2	Distance and specification dependent	Bric, HMGP, System budget	On going	New

**Rural Water District #2 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Rural Water District #2 1	Purchase and install facility backup generators.	All hazards	Rural Water District #2 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Rural Water District #2 2	Replace water lines at critical locations throughout service area.	All hazards	Rural Water District #2 Administrator	Medium	1,2	Distance and specification dependent	Bric, HMGP, System budget	On going	New

**Big Caney Watershed #31 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Big Caney Watershed #31 1	Purchase and install facility backup generators to ensure continued service during disruptive events.	All hazards	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 2	Purchase more efficient equipment to minimize loss.	Drought	Big Caney Watershed #31 Administrator	High	1, 2	Per location cost	HMGP, BRIC, System budgets	Five years	New
Big Caney Watershed #31 3	Elevate critical equipment out of potential flood areas.	Flood	Big Caney Watershed #31 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	New

**Public Wholesale Water Supply District #2 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Public Wholesale Water Supply District #2	Purchase and install critical location backup generators.	All hazards	Public Wholesale Water Supply District #2 Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Public Wholesale Water Supply District #2	Institute drought education programs.	Drought	Public Wholesale Water Supply District #2 Administrator	Medium	1, 2	Distance and specification dependent	System budget	Five years	New

**Public Wholesale Water Supply District #33 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Public Wholesale Water Supply District #33	Purchase and install critical location backup generators.	All hazards	Public Wholesale Water Supply District #2 Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Public Wholesale Water Supply District #33	Institute drought education programs.	Drought	Public Wholesale Water Supply District #2 Administrator	Medium	1, 2	Distance and specification dependent	System budget	Five years	New

**Greenwood County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Greenwood County 1	Install generators in all county facilities.	All hazards	Greenwood County Emergency Manager, Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	Jurisdiction budget	Ten years	3 Buildings Completed 2 Remaining
Greenwood County 2	Purchase electronic mobile traffic notification signs.	All Hazards	Greenwood County Emergency Manager, Public Works	Medium	1, 2	\$35,000	Local Budget	Five years	Completed 2 Signs bought in 2023
Greenwood County 3	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Greenwood County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Greenwood County 4	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Greenwood County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Greenwood County 5	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Crawford County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Greenwood County 6	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Crawford County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Greenwood County 7	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Greenwood County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

**Greenwood County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Greenwood County 8	Revise building codes to require low water flow toilets and faucets.	Drought	Greenwood County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Greenwood County 9	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Greenwood County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Greenwood County 10	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Greenwood County Facilities Director	Low	1, 2	\$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Greenwood County 11	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Greenwood County 12	Purchase and demolish flood prone properties	Flood	Greenwood County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 13	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Greenwood County 14	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 15	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, Greenwood County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

**Greenwood County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Greenwood County 16	Install surge protectors in all jurisdictional facilities.	Severe Weather	Greenwood County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Greenwood County 17	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Greenwood County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Greenwood County 18	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Greenwood County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 19	Construct snow fences along major transportation routes.	Winter Storm	Greenwood County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 20	Insulate water lines in all jurisdictional facilities.	Winter Storm	Greenwood County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Greenwood County-21	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Greenwood County Building Department	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Greenwood County 22	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Greenwood County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 23	Increase public and fire department training on wildland-urban interface fires	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding

### Greenwood County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Greenwood County 24	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Greenwood County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Greenwood County 25	Provide hazardous materials response training to first responders and emergency management staff.	Hazardous Materials Event	Greenwood County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Greenwood County 26	Identify and map all structurally deficient bridges.	Infrastructure Failure	Greenwood County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Greenwood County 27	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Greenwood County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Greenwood County 28	Purchase and install new epidemiological tracking software.	Transmissible Disease	Greenwood County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



### Eureka Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Eureka 1	Purchase and install critical facility backup generators.	All hazards	Eureka Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Completed
Eureka 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Eureka Administrator	High	1, 2	\$50,000 annually	HMGP	As required	Completed 4 sirens upgraded in 2023
Eureka 3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Eureka Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Eureka 4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Eureka Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Eureka 5	Conduct a personal water use education program.	Drought	Eureka Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Eureka 6	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Eureka Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Eureka 7	Continue to participate meet requirements of the NFIP.	Flood	Eureka NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Eureka 8	Construct rainwater retention/detention ponds at strategic locations.	Flood	Eureka Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Eureka 9	Clean and repair drainage ditches to maintain capacity.	Flood	Eureka Administrator	Low	1, 2	Location, length, and	HMGP, BRIC,	Ten years	New

### Eureka Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
						size dependent	Jurisdiction budget		
Eureka 10	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Eureka Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Eureka 11	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Eureka Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Eureka 12	Construct community saferooms in select jurisdictional buildings.	Tornado	Eureka Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Eureka 13	Create defensible space buffers at all critical facilities	Wildfire	Eureka Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Eureka 14	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Eureka IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Eureka 15	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Eureka Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Fall River Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Fall River 1	Purchase and install critical facility backup generators.	All hazards	Fall River Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Fall River 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Fall River Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Fall River 3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Fall River Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Fall River 4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Fall River Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fall River 5	Conduct a personal water use education program.	Drought	Fall River Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Fall River 6	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Fall River Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Fall River 7	Continue to participate meet requirements of the NFIP.	Flood	Fall River NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Fall River 8	Construct rainwater retention/detention ponds at strategic locations.	Flood	Fall River Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fall River 9	Clean and repair drainage ditches to maintain capacity.	Flood	Fall River Administrator	Low	1, 2	Location, length, and	HMGP, BRIC,	Ten years	New

**Fall River Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
						size dependent	Jurisdiction budget		
Fall River 10	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Fall River Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Fall River 11	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Fall River Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Fall River 12	Construct community saferooms in select jurisdictional buildings.	Tornado	Fall River Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Fall River 13	Create defensible space buffers at all critical facilities	Wildfire	Fall River Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fall River 14	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Fall River IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Fall River 15	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Fall River Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Hamilton Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Hamilton 1	Purchase and install critical facility backup generators.	All hazards	Hamilton Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Hamilton 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Hamilton Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Hamilton 3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Hamilton Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Hamilton 4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Hamilton Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Hamilton 5	Conduct a personal water use education program.	Drought	Hamilton Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Hamilton 6	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Hamilton Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Hamilton 7	Continue to participate meet requirements of the NFIP.	Flood	Hamilton NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Hamilton 8	Construct rainwater retention/detention ponds at strategic locations.	Flood	Hamilton Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hamilton 9	Clean and repair drainage ditches to maintain capacity.	Flood	Hamilton Administrator	Low	1, 2	Location, length, and	HMGP, BRIC,	Ten years	New

### Hamilton Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
						size dependent	Jurisdiction budget		
Hamilton 10	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Hamilton Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Hamilton 11	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Hamilton Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Hamilton 12	Construct community saferooms in select jurisdictional buildings.	Tornado	Hamilton Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Hamilton 13	Create defensible space buffers at all critical facilities	Wildfire	Hamilton Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Hamilton 14	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Hamilton IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Hamilton 15	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Hamilton Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Madison Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Madison 1	Purchase and install critical facility backup generators.	All hazards	Madison Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Madison 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Madison Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Madison 3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Madison Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Madison 4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Madison Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Madison 5	Conduct a personal water use education program.	Drought	Madison Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Madison 6	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Madison Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Madison 7	Continue to participate meet requirements of the NFIP.	Flood	Madison NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Madison 8	Construct rainwater retention/detention ponds at strategic locations.	Flood	Madison Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Madison 9	Clean and repair drainage ditches to maintain capacity.	Flood	Madison Administrator	Low	1, 2	Location, length, and	HMGP, BRIC,	Ten years	New

**Madison Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
						size dependent	Jurisdiction budget		
Madison 10	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Madison Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Madison 11	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Madison Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Madison 12	Construct community saferooms in select jurisdictional buildings.	Tornado	Madison Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Madison 13	Create defensible space buffers at all critical facilities	Wildfire	Madison Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Madison 14	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Madison IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Madison 15	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Madison Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



### Severy Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Severy 1	Purchase and install critical facility backup generators.	All hazards	Severy Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Severy 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Severy Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Severy 3	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Severy Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Severy 4	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Severy Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Severy 5	Conduct a personal water use education program.	Drought	Severy Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Severy 6	Conduct public education campaign on home retrofits to help mitigation.	All hazards	Severy Administrator	Low	3	Staff time and \$3,000	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Severy 7	Apply to participate in the NFIP..	Flood	Severy Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Severy 8	Construct rainwater retention/detention ponds at strategic locations.	Flood	Severy Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Severy 9	Clean and repair drainage ditches to maintain capacity.	Flood	Severy Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New

### Severy Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Severy 10	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Severy Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Severy 11	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Severy Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Severy 12	Construct community saferooms in select jurisdictional buildings.	Tornado	Severy Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Severy 13	Create defensible space buffers at all critical facilities	Wildfire	Severy Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Severy 14	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Severy IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Severy 15	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Severy Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**USD 389 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 389 1	Purchase and install facility backup generators.	All hazards	USD 389 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 389 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 389 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 389 3	Conduct hazard mitigation education programs for students.	All hazards	USD 389 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 389 4	Conduct a xeriscaping program for all school facilities	Drought	USD 389 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 389 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 389 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 389 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 389 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 389 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 389 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 389 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 389 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 390 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 390 1	Purchase and install facility backup generators.	All hazards	USD 390 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 390 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 390 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 390 3	Conduct hazard mitigation education programs for students.	All hazards	USD 390 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 390 4	Conduct a xeriscaping program for all school facilities	Drought	USD 390 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 390 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 390 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 390 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 390 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 390 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 390 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 390 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 390 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Greenwood County RFD #1 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Greenwood County RFD #1 1	Purchase and install facility backup generators.	All hazards	Greenwood County RFD #1 Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Fire budgets	Five years	Carried over due to lack of funding
Greenwood County RFD #1 2	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Greenwood County RFD #1 Administrator	Medium	1,2	\$105.00 an acre	Federal WUI grant dollars, Fire budget	On going	Carried over due to lack of funding
Greenwood County RFD #1 3	Conduct Wildland Urban Interface defensible space training for firefighters and public.	Wildfire	Greenwood County RFD #1 Administrator	Medium	1,2,3	\$30 per student per training	Federal WUI grant dollars, Fire budget	On going	New

**Butler Electric Cooperative Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Butler Electric Cooperative 1	Purchase and install critical location backup generators.	All hazards	Butler Electric Cooperative Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Butler Electric Cooperative 2	Shorten distance between utility poles.	All hazards	Butler Electric Cooperative Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

### Labette County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Labette County 1	Install generators in all county facilities.	All hazards	Labette County Emergency Manager, Labette County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Labette County 2	Upgrade and enhance sirens throughout county	All hazards	Labette County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Labette County 3	Purchase electronic mobile traffic notification signs.	All hazards	Labette County Emergency Manager, Labette County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Labette County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Labette County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Labette County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Labette County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Labette County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Labette County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Labette County 7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Labette County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New

### Labette County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Labette County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Labette County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Labette County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Labette County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Labette County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Labette County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Labette County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Labette County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Labette County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Labette County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Labette County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Labette County 14	Purchase and demolish flood prone properties	Flood	Labette County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Labette County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Labette County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Labette County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding



**Labette County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Labette County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Labette County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Labette County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Labette County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Labette County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Labette County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Labette County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Labette County-21	Construct snow fences along major transportation routes.	Winter Storm	Labette County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Labette County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Labette County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Labette County 23	Create defensible space buffers at all critical facilities	Wildfire	Labette County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Labette County 24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding

**Labette County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Labette County 25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Labette County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Labette County 26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Labette County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Labette County 27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Labette County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Labette County 28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Labette County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

### Altamont Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Altamont 1	Purchase and install critical facility backup generators.	All hazards	Altamont Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Altamont 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Altamont Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Altamont 3	Institute a tree trimming program near utility lines.	All hazards	Altamont Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Altamont 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Altamont Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Altamont 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Altamont Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Altamont 6	Conduct a personal water use education program.	Drought	Altamont Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Altamont 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Altamont Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Altamont 8	Continue to participate meet requirements of the NFIP.	Flood	Altamont NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Altamont 9	Construct rainwater retention/detention	Flood	Altamont Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Altamont Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Altamont 10	Clean and repair drainage ditches to maintain capacity.	Flood	Altamont Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Altamont 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Altamont Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Altamont 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Altamont Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Altamont 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Altamont Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Altamont 14	Create defensible space buffers at all critical facilities	Wildfire	Altamont Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Altamont 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Altamont IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Altamont 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Altamont Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Chetopa Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Chetopa 1	Purchase and install critical facility backup generators.	All hazards	Chetopa Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Chetopa 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Chetopa Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Chetopa 3	Institute a tree trimming program near utility lines.	All hazards	Chetopa Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Chetopa 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Chetopa Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Chetopa 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Chetopa Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Chetopa 6	Conduct a personal water use education program.	Drought	Chetopa Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Chetopa 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Chetopa Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Chetopa 8	Continue to participate meet requirements of the NFIP.	Flood	Chetopa NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Chetopa 9	Construct rainwater retention/detention	Flood	Chetopa Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Chetopa Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Chetopa 10	Clean and repair drainage ditches to maintain capacity.	Flood	Chetopa Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Chetopa 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Chetopa Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Chetopa 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Chetopa Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Chetopa 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Chetopa Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Chetopa 14	Create defensible space buffers at all critical facilities	Wildfire	Chetopa Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Chetopa 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Chetopa IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

### Edna Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Edna 1	Purchase and install critical facility backup generators.	All hazards	Edna Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Edna 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Edna Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Edna 3	Institute a tree trimming program near utility lines.	All hazards	Edna Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Edna 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Edna Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Edna 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Edna Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Edna 6	Conduct a personal water use education program.	Drought	Edna Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Edna 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Edna Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Edna 8	Continue to participate meet requirements of the NFIP.	Flood	Edna NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Edna 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Edna Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

**Edna Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Edna 10	Clean and repair drainage ditches to maintain capacity.	Flood	Edna Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Edna 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Edna Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Edna 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Edna Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Edna 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Edna Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Edna 14	Create defensible space buffers at all critical facilities	Wildfire	Edna Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Edna 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Edna IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Edna 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Edna Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**Mound Valley Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Mound Valley 1	Purchase and install critical facility backup generators.	All hazards	Mound Valley Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Mound Valley 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Mound Valley Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Mound Valley 3	Institute a tree trimming program near utility lines.	All hazards	Mound Valley Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Mound Valley 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Mound Valley Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Mound Valley 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Mound Valley Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mound Valley 6	Conduct a personal water use education program.	Drought	Mound Valley Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Mound Valley 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Mound Valley Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Mound Valley 8	Apply to participate in the NFIP.	Flood	Mound Valley Administrator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Mound Valley 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mound Valley Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New

### Mound Valley Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Mound Valley 10	Clean and repair drainage ditches to maintain capacity.	Flood	Mound Valley Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Mound Valley 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Mound Valley Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Mound Valley 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Mound Valley Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Mound Valley 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Mound Valley Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Mound Valley 14	Create defensible space buffers at all critical facilities	Wildfire	Mound Valley Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Mound Valley 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Mound Valley IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Mound Valley 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Mound Valley Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Oswego Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Oswego 1	Purchase and install critical facility backup generators.	All hazards	Oswego Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Oswego 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Oswego Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Oswego 3	Institute a tree trimming program near utility lines.	All hazards	Oswego Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Oswego 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Oswego Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Oswego 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Oswego Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Oswego 6	Conduct a personal water use education program.	Drought	Oswego Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Oswego 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Oswego Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Oswego 8	Continue to participate meet requirements of the NFIP.	Flood	Oswego NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Oswego 9	Construct rainwater retention/detention	Flood	Oswego Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Oswego Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Oswego 10	Clean and repair drainage ditches to maintain capacity.	Flood	Oswego Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Oswego 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Oswego Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Oswego 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Oswego Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Oswego 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Oswego Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Oswego 14	Create defensible space buffers at all critical facilities	Wildfire	Oswego Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Oswego 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Oswego IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Oswego 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Oswego Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Parsons Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Parsons 1	Purchase and install critical facility backup generators.	All hazards	Parsons Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Parsons 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Parsons Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Parsons 3	Institute a tree trimming program near utility lines.	All hazards	Parsons Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Parsons 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Parsons Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Parsons 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Parsons Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Parsons 6	Conduct a personal water use education program.	Drought	Parsons Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Parsons 7	Conduct public education campaign on home mitigation retrofits.	All hazards	Parsons Administrator	Low	3	Staff time and \$3,000	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Parsons 8	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Parsons Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New

### Parsons Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Parsons 9	Continue to participate meet requirements of the NFIP.	Flood	Parsons NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Parsons 10	Construct rainwater retention/detention ponds at strategic locations.	Flood	Parsons Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Parsons 11	Clean and repair drainage ditches to maintain capacity.	Flood	Parsons Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Parsons 12	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Parsons Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Parsons 13	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Parsons Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Parsons 14	Construct community saferooms in select jurisdictional buildings.	Tornado	Parsons Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Parsons 15	Create defensible space buffers at all critical facilities	Wildfire	Parsons Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Parsons 16	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Parsons IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

### USD 506 Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
USD 506 1	Purchase and install facility backup generators.	All hazards	USD 506 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 506 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 506 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 506 3	Conduct hazard mitigation education programs for students.	All hazards	USD 506 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 506 4	Conduct a xeriscaping program for all school facilities	Drought	USD 506 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 506 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 506 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 506 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 506 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 506 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 506 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 506 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 506 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Community Health Center of SE Kansas Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Community Health Center of SE Kansas 1	Purchase and install facility backup generators.	All hazards	Community Health Center of SE Kansas Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Community Health Center of SE Kansas 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Community Health Center of SE Kansas Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Community Health Center of SE Kansas 3	Upgrade ventilation and filtration system.	Transmissible disease	Community Health Center of SE Kansas Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**Labette Health Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Labette Health 1	Purchase and install facility backup generators.	All hazards	Labette Health Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Labette Health 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Labette Health 3	Upgrade ventilation and filtration system.	Transmissible disease	Labette Health Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New



### Divita Dialysis Center Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Divita Dialysis Center 1	Purchase and install facility backup generators.	All Hazards	Divita Dialysis Center Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Divita Dialysis Center 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Divita Dialysis Center Administrator	High	1, 2	\$500,000	HMGP, BRIC, System budgets	Five years	New

### Great Plains Industrial Park Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Great Plains Industrial Park 1	Purchase and install facility backup generators for security systems.	All Hazards	Great Plains Industrial Park Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Great Plains Industrial Park 2	Set up Fire District to cover park.	All hazards	Great Plains Industrial Park Administrator	High	1,2	Staff time	System budget	Two years	New
Great Plains Industrial Park 3	Construct fire station.	All Hazards	Great Plains Industrial Park Administrator	High	1, 2	\$5,000,000	HMGP, BRIC, System budget	Five years	New

#### 4 Rivers Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

#### Heartland Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Montgomery County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Montgomery County 1	Install generators in all county facilities.	All hazards	Montgomery County Emergency Manager, Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	Jurisdiction budget	Ten years	3 Buildings Completed 2 Remaining
Montgomery County 2	Purchase electronic mobile traffic notification signs.	All Hazards	Montgomery County Emergency Manager, Public Works	Medium	1, 2	\$35,000	Local Budget	Five years	Completed 2 Signs bought in 2023
Montgomery County 3	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Montgomery County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Montgomery County 4	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Montgomery County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Montgomery County 5	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Crawford County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Montgomery County 6	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Crawford County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Montgomery County 7	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Montgomery County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

**Montgomery County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Montgomery County 8	Revise building codes to require low water flow toilets and faucets.	Drought	Montgomery County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Montgomery County 9	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Montgomery County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Montgomery County 10	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Montgomery County Facilities Director	Low	1, 2	\$2,000 per facility	BRIC, Jurisdiction budget	Five years	New
Montgomery County 11	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Montgomery County 12	Purchase and demolish flood prone properties	Flood	Montgomery County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 13	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Montgomery County 14	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Public Works	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 15	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, Montgomery County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding

**Montgomery County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Montgomery County 16	Install surge protectors in all jurisdictional facilities.	Severe Weather	Montgomery County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Montgomery County 17	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Montgomery County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Montgomery County 18	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Montgomery County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 19	Construct snow fences along major transportation routes.	Winter Storm	Montgomery County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 20	Insulate water lines in all jurisdictional facilities.	Winter Storm	Montgomery County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Montgomery County-21	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Montgomery County Building Department	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Montgomery County 22	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Montgomery County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 23	Increase public and fire department training on wildland-urban interface fires	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding

**Montgomery County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Montgomery County 24	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Montgomery County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Montgomery County 25	Provide hazardous materials response training to first responders and emergency management staff.	Hazardous Materials Event	Montgomery County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Montgomery County 26	Identify and map all structurally deficient bridges.	Infrastructure Failure	Montgomery County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Montgomery County 27	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Montgomery County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Montgomery County 28	Purchase and install new epidemiological tracking software.	Transmissible Disease	Montgomery County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Caney Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Caney 1	Purchase and install critical facility backup generators.	All hazards	Caney Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Caney 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Caney Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Caney 3	Institute a tree trimming program near utility lines.	All hazards	Caney Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Caney 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Caney Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Caney 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Caney Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Caney 6	Conduct a personal water use education program.	Drought	Caney Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Caney 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Caney Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Caney 8	Continue to participate meet requirements of the NFIP.	Flood	Caney NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Caney 9	Construct rainwater retention/detention	Flood	Caney Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Caney Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Caney 10	Clean and repair drainage ditches to maintain capacity.	Flood	Caney Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Caney 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Caney Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Caney 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Caney Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Caney 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Caney Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Caney 14	Create defensible space buffers at all critical facilities	Wildfire	Caney Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Caney 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Caney IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Caney 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Caney Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**Cherryvale Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Cherryvale 1	Purchase and install critical facility backup generators.	All hazards	Cherryvale Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Cherryvale 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Cherryvale Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Cherryvale 3	Institute a tree trimming program near utility lines.	All hazards	Cherryvale Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Cherryvale 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Cherryvale Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Cherryvale 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Cherryvale Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherryvale 6	Conduct a personal water use education program.	Drought	Cherryvale Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Cherryvale 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Cherryvale Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Cherryvale 8	Continue to participate meet requirements of the NFIP.	Flood	Cherryvale NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Cherryvale 9	Construct rainwater retention/detention	Flood	Cherryvale Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Cherryvale Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Cherryvale 10	Clean and repair drainage ditches to maintain capacity.	Flood	Cherryvale Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Cherryvale 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Cherryvale Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Cherryvale 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Cherryvale Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Cherryvale 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Cherryvale Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Cherryvale 14	Create defensible space buffers at all critical facilities	Wildfire	Cherryvale Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Cherryvale 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Cherryvale IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Cherryvale 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Cherryvale Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Coffeyville Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Coffeyville 1	Purchase and install critical facility backup generators.	All hazards	Coffeyville Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Coffeyville 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Coffeyville Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Coffeyville 3	Continue tree trimming program near utility lines.	All hazards	Coffeyville Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Coffeyville 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Coffeyville Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Coffeyville 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Coffeyville Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Coffeyville 6	Conduct a personal water use education program.	Drought	Coffeyville Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Coffeyville 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Coffeyville Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Coffeyville 8	Continue to participate meet requirements of the NFIP.	Flood	Coffeyville NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Coffeyville 9	Construct rainwater retention/detention	Flood	Coffeyville Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Coffeyville Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Coffeyville 10	Clean and repair drainage ditches to maintain capacity.	Flood	Coffeyville Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Coffeyville 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Coffeyville Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Coffeyville 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Coffeyville Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Coffeyville 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Coffeyville Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Coffeyville 14	Create defensible space buffers at all critical facilities	Wildfire	Coffeyville Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Coffeyville 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Coffeyville IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Coffeyville 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Coffeyville Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Coffeyville 17	Raise the Levee to Accreditation Status	Levee Failure/Flooding	Coffeyville Administrator	Very High		\$10-15M	HMGP, Local, BRIC	Next 3 years	New

### Havana Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Havana 1	Purchase and install critical facility backup generators.	All hazards	Havana Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Havana 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Havana Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Havana 3	Institute a tree trimming program near utility lines.	All hazards	Havana Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Havana 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Havana Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Havana 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Havana Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Havana 6	Conduct a personal water use education program.	Drought	Havana Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Havana 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Havana Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Havana 8	Continue to participate meet requirements of the NFIP.	Flood	Havana NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Havana 9	Construct rainwater retention/detention	Flood	Havana Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Havana Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Havana 10	Clean and repair drainage ditches to maintain capacity.	Flood	Havana Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Havana 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Havana Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Havana 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Havana Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Havana 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Havana Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Havana 14	Create defensible space buffers at all critical facilities	Wildfire	Havana Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Havana 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Havana IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Havana 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Havana Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Independence Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Independence 1	Replace and increase storm sirens.	Tornado	City Emergency Director	High	1,2,4	\$150,000	Grants, Capital	10 years	On-going
Independence 2	Construct flood gate and pumps at the end of the levee by pine street	Flood	City Engineer	Medium	1,2	Unknown – under review	Unknown	Unknown	On-Going
Independence 3	Install emergency generator at WTP	Tornado & Flood, Natural Disaster	City Engineer	High	1,2	\$100,000	Loans	Complete	Complete
Independence 4	Project to mitigate flood damage to high service pumps at WTP	Flood	City Engineer	High	1,2	\$5,000,000	Loans	Two years	On-going
Independence 5	Relocate Main electrical at WTP	Flood, Tornado	City Engineer	High	1,2	\$500,000	Loans	Complete	Complete
Independence 6	Install standby pumps at lift stations when pumps are inoperable	Flood	City Engineer	High	1,2	\$250,000	Loans	-	On-going
Independence 7	Replace pumps with Submersible pumps, elevated electrical and generators at Wald and SE Pump stations	Flood	City Engineer	High	1,2	\$10,000,000	Loans Grants	-	Evaluating options
Independence 8	Construct flood levee to protect WWTP	Levee Failure, Flood	City Engineer	High	1,2	TBD	Army Corp of Engineers	Unknown	On-Going
Independence 9	Continue to participate in National Flood Insurance Program	Flood	City of Independence Commission	Low	1	None	None	On-going	participating
Independence 10	Purchase 100-year floodplain property	Flood	City of Independence	Medium	1	\$3,292,000	FEMA-HMGP KDEM	On-going	Complete
Independence 11	Install standby Generators at City Hall and Fire-EMS	Flood / Tornado	City Emerg Director	High	1,2	\$100,000	Loans	2023	Complete

**Liberty Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Liberty 1	Purchase and install critical facility backup generators.	All hazards	Liberty Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Liberty 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Liberty Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Liberty 3	Institute a tree trimming program near utility lines.	All hazards	Liberty Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Liberty 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Liberty Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Liberty 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Liberty Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Liberty 6	Conduct a personal water use education program.	Drought	Liberty Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Liberty 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Liberty Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Liberty 8	Continue to participate meet requirements of the NFIP.	Flood	Liberty NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going



### Liberty Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Liberty 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Liberty Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Liberty 10	Clean and repair drainage ditches to maintain capacity.	Flood	Liberty Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Liberty 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Liberty Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Liberty 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Liberty Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Liberty 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Liberty Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Liberty 14	Create defensible space buffers at all critical facilities	Wildfire	Liberty Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Liberty 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Liberty IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Liberty 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Liberty Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Coffeyville Community College Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Coffeyville Community College 1	Purchase and install facility backup generators.	All hazards	Coffeyville CC Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Coffeyville Community College 2	Construct safe rooms in all school buildings to required standards.	All hazards	Coffeyville CC Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Coffeyville Community College 3	Conduct hazard mitigation education programs for students.	All hazards	Coffeyville CC Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Coffeyville Community College 4	Conduct a xeriscaping program for all school facilities	Drought	Coffeyville CC Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Coffeyville Community College 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Coffeyville CC Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Coffeyville Community College 6	Construct rainwater gardens adjacent to paved areas.	Flood	Coffeyville CC Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Coffeyville Community College 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Coffeyville CC Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Coffeyville Community College 8	Conduct regular staff and student active shooter trainings.	Terrorism	Coffeyville CC Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Independence Bible School Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Independence Bible School 1	Purchase and install facility backup generators.	All hazards	Independence Bible School Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Independence Bible School 2	Construct safe rooms in all school buildings to required standards.	All hazards	Independence Bible School Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Independence Bible School 3	Conduct hazard mitigation education programs for students.	All hazards	Independence Bible School Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Independence Bible School 4	Conduct a xeriscaping program for all school facilities	Drought	Independence Bible School Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Independence Bible School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Independence Bible School Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Independence Bible School 6	Construct rainwater gardens adjacent to paved areas.	Flood	Independence Bible School Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Independence Bible School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Independence Bible School Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Independence Bible School 8	Conduct regular staff and student active shooter trainings.	Terrorism	Independence Bible School Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Independence Community College Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Independence Community College 1	Purchase and install facility backup generators.	All hazards	Independence CC Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Independence Community College 2	Construct safe rooms in all school buildings to required standards.	All hazards	Independence CC Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Independence Community College 3	Conduct hazard mitigation education programs for students.	All hazards	Independence CC Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Independence Community College 4	Conduct a xeriscaping program for all school facilities	Drought	Independence CC Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Independence Community College 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Independence CC Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Independence Community College 6	Construct rainwater gardens adjacent to paved areas.	Flood	Independence CC Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Independence Community College 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Independence CC Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Independence Community College 8	Conduct regular staff and student active shooter trainings.	Terrorism	Independence CC Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**St. Andrew's Catholic School Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
St. Andrew's Catholic School 1	Purchase and install facility backup generators.	All hazards	St. Andrew's Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
St. Andrew's Catholic School 2	Construct safe rooms in all school buildings to required standards.	All hazards	St. Andrew's Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
St. Andrew's Catholic School 3	Conduct hazard mitigation education programs for students.	All hazards	St. Andrew's Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
St. Andrew's Catholic School 4	Conduct a xeriscaping program for all school facilities	Drought	St. Andrew's Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
St. Andrew's Catholic School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	St. Andrew's Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
St. Andrew's Catholic School 6	Construct rainwater gardens adjacent to paved areas.	Flood	St. Andrew's Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
St. Andrew's Catholic School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	St. Andrew's Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
St. Andrew's Catholic School 8	Conduct regular staff and student active shooter trainings.	Terrorism	St. Andrew's Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**The Holy Name Catholic School Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
The Holy Name Catholic School 1	Purchase and install facility backup generators.	All hazards	The Holy Name Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
The Holy Name Catholic School 2	Construct safe rooms in all school buildings to required standards.	All hazards	The Holy Name Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
The Holy Name Catholic School 3	Conduct hazard mitigation education programs for students.	All hazards	The Holy Name Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
The Holy Name Catholic School 4	Conduct a xeriscaping program for all school facilities	Drought	The Holy Name Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
The Holy Name Catholic School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	The Holy Name Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
The Holy Name Catholic School 6	Construct rainwater gardens adjacent to paved areas.	Flood	The Holy Name Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
The Holy Name Catholic School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	The Holy Name Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
The Holy Name Catholic School 8	Conduct regular staff and student active shooter trainings.	Terrorism	The Holy Name Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Tyro Christian School Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Tyro Christian School 1	Purchase and install facility backup generators.	All hazards	Tyro Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Tyro Christian School 2	Construct safe rooms in all school buildings to required standards.	All hazards	Tyro Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Tyro Christian School 3	Conduct hazard mitigation education programs for students.	All hazards	Tyro Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Tyro Christian School 4	Conduct a xeriscaping program for all school facilities	Drought	Tyro Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Tyro Christian School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Tyro Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Tyro Christian School 6	Construct rainwater gardens adjacent to paved areas.	Flood	Tyro Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Tyro Christian School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Tyro Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Tyro Christian School 8	Conduct regular staff and student active shooter trainings.	Terrorism	Tyro Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 436 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 436 1	Purchase and install facility backup generators.	All hazards	USD 436 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 436 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 436 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 436 3	Conduct hazard mitigation education programs for students.	All hazards	USD 436 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 436 4	Conduct a xeriscaping program for all school facilities	Drought	USD 436 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 436 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 436 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 436 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 436 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 436 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 436 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 436 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 436 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New



**USD 445 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 445 1	Purchase and install facility backup generators.	All hazards	USD 445 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 445 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 445 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 445 3	Conduct hazard mitigation education programs for students.	All hazards	USD 445 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 445 4	Conduct a xeriscaping program for all school facilities	Drought	USD 445 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 445 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 445 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 445 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 445 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 445 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 445 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 445 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 445 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 446 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 446 1	Purchase and install facility backup generators.	All hazards	USD 446 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 446 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 446 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 446 3	Conduct hazard mitigation education programs for students.	All hazards	USD 446 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 446 4	Conduct a xeriscaping program for all school facilities	Drought	USD 446 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 446 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 446 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 446 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 446 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 446 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 446 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 446 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 446 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 447 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 447 1	Purchase and install facility backup generators.	All hazards	USD 447 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 447 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 447 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 447 3	Conduct hazard mitigation education programs for students.	All hazards	USD 447 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 447 4	Conduct a xeriscaping program for all school facilities	Drought	USD 447 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 447 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 447 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 447 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 447 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 447 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 447 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 447 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 447 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**Zion Lutheran School Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Zion Lutheran School 1	Purchase and install facility backup generators.	All hazards	Zion Lutheran Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
Zion Lutheran School 2	Construct safe rooms in all school buildings to required standards.	All hazards	Zion Lutheran Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
Zion Lutheran School 3	Conduct hazard mitigation education programs for students.	All hazards	Zion Lutheran Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
Zion Lutheran School 4	Conduct a xeriscaping program for all school facilities	Drought	Zion Lutheran Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
Zion Lutheran School 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	Zion Lutheran Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
Zion Lutheran School 6	Construct rainwater gardens adjacent to paved areas.	Flood	Zion Lutheran Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
Zion Lutheran School 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Zion Lutheran Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
Zion Lutheran School 8	Conduct regular staff and student active shooter trainings.	Terrorism	Zion Lutheran Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Caney Valley Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Caney Valley Electric 1	Purchase and install critical location backup generators.	All hazards	Caney Valley Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Caney Valley Electric 2	Shorten distance between utility poles.	All hazards	Caney Valley Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Coffeyville Regional Medical Center Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Coffeyville Regional Medical Center 1	Purchase and install facility backup generators.	All hazards	Coffeyville Regional Medical Center Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Coffeyville Regional Medical Center 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Coffeyville Regional Medical Center Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Coffeyville Regional Medical Center 3	Upgrade ventilation and filtration system.	Transmissible disease	Coffeyville Regional Medical Center Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**Labette Health Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Labette Health 1	Purchase and install facility backup generators.	All hazards	Labette Health Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Labette Health 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Labette Health 3	Upgrade ventilation and filtration system.	Transmissible disease	Labette Health Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**Community Health Center of SE Kansas Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Community Health Center of SE Kansas 1	Purchase and install facility backup generators.	All hazards	Community Health Center Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Community Health Center of SE Kansas 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Community Health Center Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Community Health Center of SE Kansas 3	Upgrade ventilation and filtration system.	Transmissible disease	Community Health Center Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

**Neosho County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Neosho County 1	Install generators in all county facilities.	All hazards	Neosho County Emergency Manager, Neosho County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho County 2	Upgrade and enhance sirens throughout county	All hazards	Neosho County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Neosho County 3	Purchase electronic mobile traffic notification signs.	All hazards	Neosho County Emergency Manager, Neosho County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Neosho County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Neosho County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Neosho County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Neosho County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Neosho County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Neosho County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Neosho County 7	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Neosho County Emergency Manager	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New



### Neosho County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Neosho County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Neosho County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Neosho County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Neosho County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Neosho County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Neosho County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Neosho County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Neosho County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Neosho County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Neosho County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Neosho County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Neosho County 14	Purchase and demolish flood prone properties	Flood	Neosho County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Neosho County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Neosho County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding

### Neosho County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Neosho County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Neosho County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Neosho County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Neosho County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Neosho County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Neosho County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Neosho County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho County-21	Construct snow fences along major transportation routes.	Winter Storm	Neosho County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Neosho County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Neosho County 23	Create defensible space buffers at all critical facilities	Wildfire	Neosho County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Neosho County 24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding

### Neosho County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Neosho County 25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Neosho County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Neosho County 26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Neosho County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Neosho County 27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Neosho County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho County 28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Neosho County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Neosho County 29	Install generators in all county facilities.	All hazards	Neosho County Emergency Manager, Neosho County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding

**Erie Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Erie 1	Purchase and install critical facility backup generators.	All hazards	Erie Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Erie 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Erie Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Erie 3	Institute a tree trimming program near utility lines.	All hazards	Erie Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Erie 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Erie Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Erie 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Erie Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Erie 6	Conduct a personal water use education program.	Drought	Erie Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Erie 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Erie Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	Carried over due to lack of staff
Erie 8	Continue to participate meet requirements of the NFIP.	Flood	Erie NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Erie 9	Construct rainwater retention/detention	Flood	Erie Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Erie Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Erie 10	Clean and repair drainage ditches to maintain capacity.	Flood	Erie Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Erie 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Erie Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Erie 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Erie Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Erie 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Erie Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Erie 14	Create defensible space buffers at all critical facilities	Wildfire	Erie Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Erie 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Erie IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Erie 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Erie Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Galesburg Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Galesburg 1	Purchase and install critical facility backup generators.	All hazards	Galesburg Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Galesburg 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Galesburg Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Galesburg 3	Institute a tree trimming program near utility lines.	All hazards	Galesburg Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Galesburg 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Galesburg Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Galesburg 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Galesburg Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Galesburg 6	Conduct a personal water use education program.	Drought	Galesburg Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Galesburg 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Galesburg Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Galesburg 8	Continue to participate meet requirements of the NFIP.	Flood	Galesburg NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Galesburg 9	Construct rainwater retention/detention	Flood	Galesburg Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Galesburg Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Galesburg 10	Clean and repair drainage ditches to maintain capacity.	Flood	Galesburg Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Galesburg 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Galesburg Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Galesburg 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Galesburg Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Galesburg 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Galesburg Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Galesburg 14	Create defensible space buffers at all critical facilities	Wildfire	Galesburg Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Galesburg 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Galesburg IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Galesburg 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Galesburg Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**St. Paul Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
St. Paul 1	Purchase and install critical facility backup generators.	All hazards	St. Paul Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
St. Paul 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	St. Paul Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
St. Paul 3	Institute a tree trimming program near utility lines.	All hazards	St. Paul Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
St. Paul 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	St. Paul Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
St. Paul 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	St. Paul Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
St. Paul 6	Conduct a personal water use education program.	Drought	St. Paul Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
St. Paul 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	St. Paul Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
St. Paul 8	Continue to participate meet requirements of the NFIP.	Flood	St. Paul NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
St. Paul 9	Construct rainwater retention/detention	Flood	St. Paul Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New



**St. Paul Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
St. Paul 10	Clean and repair drainage ditches to maintain capacity.	Flood	St. Paul Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
St. Paul 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	St. Paul Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
St. Paul 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	St. Paul Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
St. Paul 13	Construct community saferooms in select jurisdictional buildings.	Tornado	St. Paul Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
St. Paul 14	Create defensible space buffers at all critical facilities	Wildfire	St. Paul Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
St. Paul 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	St. Paul IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
St. Paul 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	St. Paul Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**USD 101 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 101 1	Purchase and install facility backup generators.	All hazards	USD 101 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 101 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 101 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 101 3	Conduct hazard mitigation education programs for students.	All hazards	USD 101 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 101 4	Conduct a xeriscaping program for all school facilities	Drought	USD 101 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 101 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 101 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 101 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 101 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 101 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 101 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 101 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 101 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 413 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 413 1	Purchase and install facility backup generators.	All hazards	USD 413 Superintendent Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 413 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 413 Superintendent Administrator	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 413 3	Conduct hazard mitigation education programs for students.	All hazards	USD 413 Superintendent Administrator	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 413 4	Conduct a xeriscaping program for all school facilities	Drought	USD 413 Superintendent Administrator	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 413 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 413 Superintendent Administrator	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 413 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 413 Superintendent Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 413 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 413 Superintendent Administrator	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 413 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 413 Superintendent Administrator	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

### Labette Health Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Labette Health 1	Purchase and install facility backup generators.	All hazards	Labette Health Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Labette Health 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Labette Health 3	Upgrade ventilation and filtration system.	Transmissible disease	Labette Health Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

### 4 Rivers Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Heartland Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Wilson County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Wilson County 1	Install generators in all county facilities.	All hazards	Wilson County Emergency Manager, Wilson County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Wilson County 2	Upgrade and enhance sirens throughout county	All hazards	Wilson County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Wilson County 3	Purchase electronic mobile traffic notification signs.	All Hazards	Wilson County Emergency Manager, Wilson County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Wilson County 4	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Wilson County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Wilson County 5	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Wilson County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Wilson County 6	Revise codes to limit lawn watering.	Drought	Wilson County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	New
Wilson County 7	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Wilson County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Wilson County 8	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Wilson County Facilities Director	Low	1, 2	\$2,000 per facility	BRIC, Jurisdiction budget	Five years	New

### Wilson County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Wilson County 9	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Wilson County 10	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New
Wilson County 11	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Wilson County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Wilson County 12	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, Wilson County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Wilson County 13	Install surge protectors in all jurisdictional facilities.	Severe Weather	Wilson County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Wilson County 14	Conduct education campaign on homeowner installed tornado shelters.	Tornado	Wilson County Emergency Manager	Medium	1, 2	\$500 per class	Jurisdiction budget	Five years	New
Wilson County-15	Insulate water lines in all jurisdictional facilities.	Winter Storm	Wilson County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Wilson County 16	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Wilson County 17	Purchase cloud storage backup for all	Cybersecurity Incident	Wilson County IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New

**Wilson County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	jurisdictional electronic records.								
Wilson County 18	Provide hazardous materials response training to first responders and emergency management staff.	Hazardous Materials Event	Wilson County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Wilson County 19	Identify and map all structurally deficient bridges.	Infrastructure Failure	Wilson County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Wilson County 20	Conduct regular active shooter drills and exercises for all county personnel.	Terrorism	Wilson County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Wilson County 21	Purchase and install new epidemiological tracking software.	Transmissible Disease	Wilson County Health Department Director	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**Altoona Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Altoona 1	Purchase and install critical facility backup generators.	All hazards	Altoona Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Altoona 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Altoona Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Altoona 3	Institute a tree trimming program near utility lines.	All hazards	Altoona Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Altoona 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Altoona Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Altoona 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Altoona Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Altoona 6	Conduct a personal water use education program.	Drought	Altoona Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Altoona 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Altoona Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Altoona 8	Continue to participate meet requirements of the NFIP.	Flood	Altoona NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going

### Altoona Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Altoona 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Altoona Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Altoona 10	Clean and repair drainage ditches to maintain capacity.	Flood	Altoona Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Altoona 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Altoona Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Altoona 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Altoona Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Altoona 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Altoona Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Altoona 14	Create defensible space buffers at all critical facilities	Wildfire	Altoona Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Altoona 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Altoona IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Altoona 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Altoona Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Buffalo Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Buffalo 1	Purchase and install critical facility backup generators.	All hazards	Buffalo Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Buffalo 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Buffalo Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Buffalo 3	Institute a tree trimming program near utility lines.	All hazards	Buffalo Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Buffalo 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Buffalo Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Buffalo 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Buffalo Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Buffalo 6	Conduct a personal water use education program.	Drought	Buffalo Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Buffalo 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Buffalo Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Buffalo 8	Continue to participate meet requirements of the NFIP.	Flood	Buffalo NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Buffalo 9	Construct rainwater retention/detention	Flood	Buffalo Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

**Buffalo Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
	ponds at strategic locations.						Jurisdiction budget		
Buffalo 10	Clean and repair drainage ditches to maintain capacity.	Flood	Buffalo Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Buffalo 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Buffalo Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Buffalo 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Buffalo Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Buffalo 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Buffalo Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Buffalo 14	Create defensible space buffers at all critical facilities	Wildfire	Buffalo Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Buffalo 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Buffalo IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Buffalo 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Buffalo Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

### Fredonia Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Fredonia 1	Purchase and install critical facility backup generators.	All hazards	Fredonia Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Fredonia 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Fredonia Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Fredonia 3	Institute a tree trimming program near utility lines.	All hazards	Fredonia Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Fredonia 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Fredonia Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Fredonia 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Fredonia Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fredonia 6	Conduct a personal water use education program.	Drought	Fredonia Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Fredonia 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Fredonia Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Fredonia 8	Continue to participate meet requirements of the NFIP.	Flood	Fredonia NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Fredonia 9	Construct rainwater retention/detention	Flood	Fredonia Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Fredonia Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Fredonia 10	Clean and repair drainage ditches to maintain capacity.	Flood	Fredonia Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Fredonia 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Fredonia Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Fredonia 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Fredonia Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Fredonia 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Fredonia Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Fredonia 14	Create defensible space buffers at all critical facilities	Wildfire	Fredonia Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Fredonia 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Fredonia IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Fredonia 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Fredonia Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

**Neodesha Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Neodesha 1	Purchase and install critical facility backup generators.	All hazards	Neodesha Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Neodesha 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Neodesha Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Neodesha 3	Institute a tree trimming program near utility lines.	All hazards	Neodesha Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Neodesha 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Neodesha Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Neodesha 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Neodesha Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Neodesha 6	Conduct a personal water use education program.	Drought	Neodesha Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Neodesha 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Neodesha Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Neodesha 8	Continue to participate meet requirements of the NFIP.	Flood	Neodesha NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Neodesha 9	Construct rainwater retention/detention	Flood	Neodesha Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Neodesha Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Neodesha 10	Clean and repair drainage ditches to maintain capacity.	Flood	Neodesha Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Neodesha 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Neodesha Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Neodesha 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Neodesha Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Neodesha 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Neodesha Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neodesha 14	Create defensible space buffers at all critical facilities	Wildfire	Neodesha Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Neodesha 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Neodesha IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Neodesha 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Neodesha Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New



**USD 387 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 387 1	Purchase and install facility backup generators.	All hazards	USD 387 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 387 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 387 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 387 3	Conduct hazard mitigation education programs for students.	All hazards	USD 387 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 387 4	Conduct a xeriscaping program for all school facilities	Drought	USD 387 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 387 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 387 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 387 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 387 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 387 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 387 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 387 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 387 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**USD 461 Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
USD 461 1	Purchase and install facility backup generators.	All hazards	USD 461 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 461 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 461 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 461 3	Conduct hazard mitigation education programs for students.	All hazards	USD 461 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 461 4	Conduct a xeriscaping program for all school facilities	Drought	USD 461 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 461 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 461 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 461 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 461 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 461 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 461 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 461 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 461 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

### USD 484 Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
USD 484 1	Purchase and install facility backup generators.	All hazards	USD 484 Superintendent	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, School Budget	Five years	Carried over due to lack of funding
USD 484 2	Construct safe rooms in all school buildings to required standards.	All hazards	USD 484 Superintendent	High	1, 2	\$1,000,000 - per location	HMGP, BRIC, School budget	Ten years	New
USD 484 3	Conduct hazard mitigation education programs for students.	All hazards	USD 484 Superintendent	Medium	1, 2, 3	\$2,000	School Budget	As required	New
USD 484 4	Conduct a xeriscaping program for all school facilities	Drought	USD 484 Superintendent	Low	1, 2	\$10,000 -per location	HMGP, BRIC, School Budget	Ten years	New
USD 484 5	Conduct an extreme temperature awareness seminar to educate on risks and mitigation methods.	Extreme Temperatures, Severe Winter Weather	USD 484 Superintendent	Medium	1, 2	\$500	HMGP, Jurisdiction budget	Five years	New
USD 484 6	Construct rainwater gardens adjacent to paved areas.	Flood	USD 484 Superintendent	Low	1, 2	Location and size dependent	HMGP, BRIC, School Budget	As required	New
USD 484 7	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	USD 484 Superintendent	Low	1, 2	\$100,000 per location	Facility size dependent	Five years	New
USD 484 8	Conduct regular staff and student active shooter trainings.	Terrorism	USD 484 Superintendent	High	1, 2, 3	Location and size dependent	HMGP, BRIC, School Budget	As required	New

**4 Rivers Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

**Heartland Electric Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

### Fredonia Regional Hospital Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Fredonia Regional Hospital 1	Purchase and install facility backup generators.	All hazards	Labette Health Administrator	High	1, 2	\$50,000	HMGP, BRIC, System budgets	Five years	Carried over due to lack of funding
Fredonia Regional Hospital 2	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New
Fredonia Regional Hospital 3	Upgrade ventilation and filtration system.	Transmissible disease	Labette Health Administrator	Medium	1, 2	\$100,000	HMGP, System budget	Ten years	New

### Wilson Medical Center Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Wilson Medical Center1	Expansion of generator to cover backup of whole facility	All Hazards	Wilson Medical Center Administrator	High	1, 2	\$150,000	BRIC, HMGP, System budget	Five years	Carried over due to lack of funding
Wilson Medical Center 2	Expand the ability to lock down at all entrances in the event of Active Shooter	Security	Wilson Medical Center IT Director	High	1, 2	\$65000.00	BRIC, HMGP, System budget	Five years	New
Wilson Medical Center 3	Expand Security Camera throughout the WMC system.	Security	Wilson Medical Center IT Director	High	1, 2	\$55000.00	BRIC, HMGP, System budget	Five years	New
Wilson Medical Center 4	Install shatter resistant film on all facility windows	Severe Weather, Tornado, Wildfire	Labette Health Administrator	High	1, 2	\$100,000	HMGP, BRIC, System budgets	Five years	New

**Woodson County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Woodson County 1	Install generators in all county facilities.	All hazards	Woodson County Emergency Manager, Woodson County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County 2	Upgrade and enhance sirens throughout county	All hazards	Woodson County Emergency Manager	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of funding
Woodson County 3	Purchase electronic mobile traffic notification signs.	All hazards	Woodson County Emergency Manager, Woodson County Public Works Director	Medium	1, 2	\$35,000	HMGP, Jurisdiction budget	Five years	New
Woodson County 4	Conduct a regular tree trimming and tree wire installation program.	All hazards	Woodson County Emergency Manager	High	1, 2	\$25,000 per occurrence	HMGP, BRIC, Jurisdiction budget	On-going	On-going
Woodson County 5	Conduct agricultural education program on water reduction methods.	Agricultural Infestation, Drought	Woodson County Emergency Manager	High	1, 3	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Woodson County 6	Mail updated information to all agricultural producers concerning emerging threats.	Agricultural Infestation	Woodson County Emergency Manager	High	1, 2	Staff Time and \$500	Jurisdiction budget	Five years	Carried over due to lack of staff
Woodson County 7	Install evacuation route and high ground signage in any high	Dam/Levee Failure	Woodson County	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New

### Woodson County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	hazard dam potential inundation areas.		Emergency Manager						
Woodson County 8	Map all infrastructure and facilities within dam inundation areas.	Dam/Levee Failure	Woodson County Emergency Manager	Medium	1, 2, 4	\$10,000 per location	HMGP, Jurisdiction budget	Five years	New
Woodson County 9	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Woodson County Facilities Director	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Woodson County 10	Revise building codes to require low water flow toilets and faucets.	Drought	Woodson County Administrator	High	1, 2	Staff Time	Jurisdiction budget	Five years	Carried over due to lack of staff
Woodson County 11	Modernization HVAC systems in jurisdictional facilities.	Extreme Temperatures	Woodson County Facilities Director	Low	1, 2	\$25,000 per facility	HMGP, BRIC, Jurisdiction budget	-	Completed
Woodson County 12	Identify and prepare county building for usage as heat/cold shelters.	Extreme Temperatures	Woodson County Facilities Director	Low	1, 2	\$2,000 per facility	Local budget	-	Completed
Woodson County 13	Continue to participate in, and enforce provisions of, NFIP.	Flood	NFIP Administrator	High	1, 2	Per property cost	Jurisdiction budget	On-going	On-going
Woodson County 14	Purchase and demolish flood prone properties	Flood	Woodson County Emergency Manager, NFIP Administrator	High	1, 2	Per property cost	FMA, HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County 15	Conduct a flood insurance awareness program.	Flood	NFIP Administrator	High	1, 3	Staff Time	Jurisdiction budget	Five years	New

**Woodson County Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Woodson County 16	Construct rainwater retention/detention ponds at strategic locations.	Flood	NFIP Administrator, Woodson County Public Works Director	Medium	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County 17	Procure permanent signage to warn of flood hazard areas.	Flood	NFIP Administrator, County Emergency Manager	Medium	1, 2	Location dependent	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Woodson County 18	Install surge protectors in all jurisdictional facilities.	Severe Weather	Woodson County Facilities Director	Medium	1, 2	\$10,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Woodson County 19	Install hail resistant roofing on all jurisdictional facilities.	Severe Weather	Woodson County Facilities Director	Medium	1, 2	\$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	New
Woodson County 20	Construct community safe rooms throughout the county to required building standards	Severe Storms, Tornado	Woodson County Emergency Manager	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County-21	Construct snow fences along major transportation routes.	Winter Storm	Woodson County Public Works Director	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County 22	Insulate water lines in all jurisdictional facilities.	Winter Storm	Woodson County Building Department	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Woodson County 23	Create defensible space buffers at all critical facilities	Wildfire	Woodson County Public Works Director	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New



### Woodson County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Woodson County 24	Increase public and fire department training on wildland-urban interface fire prevention.	Wildfire	Emergency Management Coordinator	Low	3	\$30 per student per training session	Kansas Forest Service and federal grants	Three to five years	Not started, lack of funding
Woodson County 25	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Woodson County IT Director	High	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Woodson County 26	Provide hazardous materials response training to first responders and EM staff.	Hazardous Materials Event	Woodson County Emergency Manager	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New
Woodson County 27	Identify and map all structurally deficient bridges.	Infrastructure Failure	Woodson County Public Works Director	Medium	1, 2	\$1,000,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Woodson County 28	Conduct active shooter drills and exercises for all county personnel.	Terrorism	Woodson County Sheriff	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Woodson County 29	Install generators in all county facilities.	All hazards	Woodson County Emergency Manager, Woodson County Facilities Director	High	1, 3	\$10,000 to \$50,000 per location	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding

**Neosho Falls Mitigation Actions**

<b>Action Identification</b>	<b>Description</b>	<b>Hazard Addressed</b>	<b>Responsible Party</b>	<b>Overall Priority</b>	<b>Goal(s) Addressed</b>	<b>Estimated Cost</b>	<b>Potential Funding Source</b>	<b>Proposed Completion Timeframe</b>	<b>Status</b>
Neosho Falls 1	Purchase and install critical facility backup generators.	All hazards	Neosho Falls Administrator	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of funding
Neosho Falls 2	Upgrade warning siren system to expand coverage and capabilities.	All hazards	Neosho Falls Administrator	High	1, 2	\$50,000 annually	HMGP, Jurisdiction budget	As required	New
Neosho Falls 3	Institute a tree trimming program near utility lines.	All hazards	Neosho Falls Administrator	Medium	1, 2	-\$50,000	HMGP, BRIC, Jurisdiction budget	As required	New
Neosho Falls 4	Install evacuation route and high ground signage in any high hazard dam potential inundation areas.	Dam/Levee Failure	Neosho Falls Administrator	Medium	1, 2, 4	\$5,000 per location	HMGP, Jurisdiction budget	Five years	New
Neosho Falls 5	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Neosho Falls Facilities Director	Medium	1, 2	\$5,000 - \$20,000 per facility	HMGP, BRIC, Jurisdiction budget	Ten years	New
Neosho Falls 6	Conduct a personal water use education program.	Drought	Neosho Falls Administrator	Low	3	Staff time	HMGP, BRIC, Jurisdiction budget	Five years	Carried over due to lack of staff
Neosho Falls 7	Identify and prepare local facilities to serve as heating/cooling centers.	Extreme Temperatures	Neosho Falls Facilities Director	Medium	1, 2	\$3,000 per facility	HMGP, Jurisdiction budget	Five years	New
Neosho Falls 8	Continue to participate meet requirements of the NFIP.	Flood	Neosho Falls NFIP Coordinator	High	1, 2	Staff time	Jurisdiction budget	Continuous	On-going
Neosho Falls 9	Construct rainwater retention/detention	Flood	Neosho Falls Administrator	Low	1, 2	Location and size dependent	HMGP, BRIC,	As required	New

### Neosho Falls Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
	ponds at strategic locations.						Jurisdiction budget		
Neosho Falls 10	Clean and repair drainage ditches to maintain capacity.	Flood	Neosho Falls Administrator	Low	1, 2	Location, length, and size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	New
Neosho Falls 11	Install hail and fire-resistant roofing on all jurisdictional facilities.	Severe Weather, Wildfires	Neosho Falls Facilities Director	Low	1, 2	\$50,000 per location	Facility size dependent	Five years	New
Neosho Falls 12	Conduct public education program for driving in winter conditions.	Severe Winter Weather	Neosho Falls Administrator	Low	4	Staff Time	Jurisdiction budget	Five years	New
Neosho Falls 13	Construct community saferooms in select jurisdictional buildings.	Tornado	Neosho Falls Administrator	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	Ten years	Carried over due to lack of funding
Neosho Falls 14	Create defensible space buffers at all critical facilities	Wildfire	Neosho Falls Fire	High	1, 2	Facility size dependent	HMGP, BRIC, Jurisdiction budget	As required	New
Neosho Falls 15	Purchase cloud storage backup for all jurisdictional electronic records.	Cybersecurity Incident	Neosho Falls IT Director	Low	1, 2	Data size dependent	Jurisdiction budget	Five years	New
Neosho Falls 16	Provide hazardous materials response training to local first responders.	Hazardous Materials Event	Neosho Falls Fire	High	1, 2	\$500 per trainee	HMGP, Jurisdiction budget	As required	New

#### 4 Rivers Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
4 Rivers Electric 1	Purchase and install critical location backup generators.	All hazards	4 Rivers Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
4 Rivers Electric 2	Shorten distance between utility poles.	All hazards	4 Rivers Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding

#### Heartland Electric Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Heartland Electric 1	Purchase and install critical location backup generators.	All hazards	Heartland Electric Administrator	High	1, 2	\$10,000 - \$50,000 per facility	HMGP, BRIC, System budget	Five years	New
Heartland Electric 2	Shorten distance between utility poles.	All hazards	Heartland Electric Administrator	Medium	1, 2	Distance and specification dependent	HMGP, System budget	Five years	Carried over due to lack of funding