2025 Regional Multi-hazard Mitigation Plan



For Cass, Clay, Jackson, Platte and Ray counties and their incorporated cities in Missouri.







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FORWORD

To Residents of the Kansas City Region:

Since its beginnings in the early 1800s, the Kansas City metropolitan area has experienced the adverse effects of natural disasters. Historical records indicate that natural hazards, particularly floods and tornadoes, have had a profound effect on the region. Unfortunately, there is no way to prevent disasters from occurring. The impact of disasters, however, can be mitigated. Their effects can be lessened and losses reduced through the development and application of prudent hazard mitigation strategies and actions. In doing so, the Kansas City metropolitan area can be made to be a safer place to live, work and play.

Our climate is changing, and the occurrence and intensity of natural hazard events requires that all local jurisdictions in the Kansas City region focus attention on goals and mitigation strategies.

As of November 1, 2004, all local governments and school districts must have an approved hazard mitigation plan to be eligible to apply for and receive certain FEMA funds. This FEMA program provides funds to communities to mitigate the impact of natural disasters, such as floods and tornadoes. MARC, at the request of SEMA and in partnership with the Missouri Association of Councils of Government (MACOG), has developed this *Regional Multi-Hazard Mitigation Plan* to assist the local governments, school districts, businesses, community groups and residents of Cass, Clay, Jackson, Platte and Ray counties with information on hazards posing risks to life and property, and identifies actions that could be taken to reduce the impacts from disaster events. This plan addresses priority natural hazards that have in the past and may in the future affect the Kansas City region, including tornadoes; floods and dam and levee failures; severe winter weather, drought, heat and wildland fires; and severe thunderstorms and storm winds and hail.

Hazard mitigation is a dynamic and ongoing process. This plan is a continuation of the mitigation planning work begun in 2003; it provides a framework for hazard mitigation planning, both regionally and locally. This plan will be reviewed and updated at least annually to determine the effectiveness of mitigation actions; reflect changes in laws, regulations and/or policies; re-prioritize mitigation actions, if necessary; and consider other issues affecting hazard mitigation in the Kansas City metropolitan area.

MARC, as the facilitator of this mitigation planning effort, welcomes your comments and suggestions for improving this plan. Please direct your comments and suggestions to the Mid-America Regional Council, 600 Broadway, Suite 200, Kansas City, MO 64105 or info@marc.org.

Sincerely,

David A. Warm Executive Director

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Executive Summary

The purpose of hazard mitigation is to reduce loss of life and property by lessening the impact of natural, man-made and technological disasters. Hazard mitigation plans form the foundation for a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage and reconstruction. Cass, Clay, Jackson, Platte and Ray counties and participating jurisdictions developed a *Regional Multi-Hazard Mitigation Plan* that was approved by the Federal Emergency Management Agency (FEMA) in July 2020. The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (DMA 2000). In accordance with DMA 2000 requirements, Cass, Clay, Jackson, Platte and Ray counties and participating jurisdictions must update the plan every five years.

The *Regional Multi-Hazard Mitigation Plan* is a multi-jurisdictional plan that represents a number of local governments, school districts and other jurisdictions within the Kansas City region. The following jurisdictions participated in plan development and are represented by the plan through formal adoption:

Cass County

Belton
Harrisonville
Lake Annette
Lake Winnebago
Peculiar
Pleasant Hill
Raymore

Archie R-V School District Harrisonville School District Pleasant Hill R-III School District Raymore-Peculiar School District Sherwood-Cass R-8 School District

Clay County

Excelsior Springs Gladstone Kearney Lawson Liberty Mosby North Kansas City Smithville

Excelsior Springs School District Lawson School District North Kansas City School District Smithville R-II School District

Jackson County

Blue Springs Grain Valley Grandview Greenwood Independence Kansas City, Mo. Lee's Summit Levasy Oak Grove

Raytown
Central Jackson Co Fire Protection District
Sni Valley Fire Protection District
Blue Springs School District
Fort Osage R1 School District
Grain Valley School District
Independence School District
Kansas City School District
Lee's Summit R-7 School District
Oak Grove R-VI School District
Metropolitan Community Colleges

Platte County

Farley
Lake Waukomis
Northmoor
Parkville
Platte City
Platte Woods
Riverside
Tracy
Weatherby Lake
Weston

Northland Regional Ambulance District West Platte Fire Protection District Park Hill School District Platte County R-3 School District West Platte R-II School District Park University

Ray County Richmond

Richmond School District

The planning process followed the methodology prescribed in FEMA publications *Local Mitigation Planning Handbook* (March 2013) and *Multi-Jurisdictional Mitigation Planning* (August 2006), beginning with the formation of a Regional Multi-Hazard Mitigation Plan Steering Committee (HMSC) comprised of key stakeholders from Cass, Clay, Jackson, Platte and Ray counties and participating jurisdictions. The HMSC reviewed each section of the plan, including the planning process, risk assessment, mitigation strategy and plan maintenance. Revisions were made as appropriate to ensure the plan reflects current vulnerability within each jurisdiction.

The goals of the Regional Multi-Hazard Mitigation Plan are:

Prevention: □ Develop, implement and improve hazard assessment information to prevent hazards from impacting the community where possible. Protection of Life and Property: □ Implement activities that help to protect lives and property by making homes, businesses, public and private buildings, and other structures more resistant to the effects of hazards.

Natural Resources Protection:

☐ Preserve, rehabilitate and restore wetlands and other natural areas to serve hazard mitigation purposes. Minimize negative effects of disasters on the environment. Integrate and coordinate hazard mitigation activities with local land use and park and open space planning.

Integration with Emergency Services:

☐ Enhance local and regional emergency planning, operations and training through collaboration and coordination among local, state and federal government agencies, business and industry, and community groups. Integrate and coordinate hazard mitigation activities with emergency operations plans and procedures.

Increasing Public Awareness:

- Develop and conduct public education and outreach programs to increase awareness of the risks associated with hazards in the Kansas City area.
- ☐ Provide local governments, community groups, businesses and residents with information on opportunities for partnerships, funding, tools and related mechanisms to help communities implement mitigation activities.

To meet plan goals, mitigation actions have been identified and are discussed in Section :5 Mitigation Strategy. Social, technical, administrative, political, legal, economic and environmental factors were considered when identifying and prioritizing mitigation actions. Online tools were updated as part of this plan update. Those tools will enable local jurisdictions to review their information each year and make updates to support the next plan process.

The Regional Multi-Hazard Mitigation Plan will be updated again in five years, by 2030.

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Chapter 1: Introduction and Planning Process

Requirement §201.6(b):

In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 2) An opportunity for neighboring jurisdictions, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and,
- 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

1.1 Purpose

Cass, Clay, Jackson, Platte and Ray counties (the Missouri counties of the MARC region), along with 35 cities, 3 fire/ambulance districts, 20 school districts and 2 colleges/universities, supported this 2025 *Regional Multi-Hazard Mitigation Plan* in order to initiate and sustain actions designed to reduce or eliminate long-term risk to people and property from priority natural hazards. The planning process is as important as the plan itself and creates a framework, both locally and regionally, for the development and implementation of public policy designed to protect residents, critical infrastructure, public and private property, and the environment from the impact of hazards. This updated plan ensures the continuity of mitigation project grant funding through 2030.

1.2 Background and Scope

Hazard mitigation is defined by FEMA as any action taken to eliminate or reduce the long-term risk to human life and property from natural, man-made and technological hazards. In 2005, the National Institute of Building Science's Multi-Hazard Mitigation Council, in response to a congressional mandate, conducted an independent study on savings generated through mitigation activities. The study concluded that mitigation grant funded projects have an overall societal benefit/cost ratio of 4.0 (i.e., for every dollar spent on mitigation activities, four dollars are saved through loss avoidance).

Since the last Plan was approved in early July 2020, seven events occurred in the state of Missouri, which resulted in federal major disaster declarations and federal emergency declarations. All of the storms affecting the state involved severe storms, tornadoes and straight-line winds and flash flooding or riverine flooding. Only one of the seven impacted the 5 Missouri counties in the Kansas City region, the event DR-4612 in June 24 through July 1, 2021. Ray County was included among 21 counties. The consequences of these events have impacted residents of the region economically, socially and emotionally. As such, mitigation planning ranks among the most important initiatives the region can undertake to protect its residents and minimize property damage. While Ray County was the only metro area county impacted by these declared disasters, significant events affected lives and properties in the 5 Missouri counties over the past 5 years, including severe winter weather and extreme temperatures.

Through mitigation planning, each participating jurisdiction has identified areas throughout the region vulnerable to potential hazards and developed strategies to reduce such vulnerability. This updated hazard mitigation plan documents the progress made on established mitigation actions and proposes

new actions designed to reduce the impacts of hazards and increase resilience. The updated plan is the result of a collaborative effort by the following participating jurisdictions:

Cass County*

Belton*

Harrisonville*
Lake Annette*
Lake Winnebago*

Peculiar*
Pleasant Hill*
Raymore*

Archie R-V School District*
Harrisonville School District*
Pleasant Hill R-III School District*
Raymore-Peculiar School District*
Sherwood-Cass R-8 School District*

Clay County*

Excelsior Springs*
Gladstone*
Kearney*
Lawson*
Liberty*

North Kansas City*

Smithville*

Excelsior Springs School District*

Lawson School District*

North Kansas City School District* Smithville R-II School District*

Jackson County*

Blue Springs*
Grandview*
Greenwood*
Grain Valley
Independence*
Kansas City, Mo.*
Lee's Summit*
Levasy

Oak Grove* Raytown*

Central Jackson County Fire Protection District

Sni Valley Fire Protection District*
Blue Springs School District*
Fort Osage R-1 School District*
Grain Valley School District
Independence School District*
Kansas City School District*
Lee's Summit School District*
Oak Grove R-VI School District*
Metropolitan Community Colleges*

Platte County*

Farley*

Lake Waukomis*
Northmoor*
Parkville*
Platte City*
Platte Woods*
Riverside*
Tracy*

Weatherby Lake*

Weston*

Northland Regional Ambulance District*

Park Hill School District*

Platte County R-3 School District* West Platte R-II School District*

Park University*

Ray County*

Richmond*

Richmond School District

^{*}Denotes 2020 Participants

The updated *Regional Multi-Hazard Mitigation Plan* was prepared pursuant to the requirements of Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5165, as amended by Section 104 of the Disaster Mitigation Act of 2000, P.L. 106-390 (DMA 2000) and regulations set forth in 44 CFR §201.6, *Local Mitigation Plans*. With an approved updated hazard mitigation plan, Cass, Clay, Jackson, Platte and Ray counties and certain cities, school districts, colleges and universities will remain eligible for grants under the following federal hazard mitigation assistance programs:

- Hazard Mitigation Grant Program (HMGP)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- Building Resilient Infrastructure and Communities (BRIC)

1.3 Planning Process

Requirement [The plan shall document] the planning process used to develop the plan, specifically including how it was prepared, who was involved in the process, and how the

public was involved.

1.3.1 Background

The plan update process was set in motion on January 11, 2024, with MARC staff informing the Metropolitan Emergency Managers Committee (MEMC) that the five-year update to the Kansas City region's hazard mitigation plan was due by June 2025, with a proposed timeline shared at that time. A monthly report on the plan update has been provided to the MEMC at their regular meetings. The MARC Board of Directors, composed of local elected officials from the region's counties and cities, authorized the preparation of the plan at their February 27, 2024, meeting. Communities, both new and past plan participants, were invited to take part in this planning process. They were encouraged to review the current Regional Hazard Mitigation Plan available on the MARC website at https://www.marc.org/Emergency-Services-9-1-1/MEMC/Activities/Regional-Hazard-Mitigation-Plan and to review their current mitigation strategies.

A Steering Committee met 7 times during the planning process –to provide guidance to the Mid-America Regional Council staff in the preparation of the plan. The Steering Committee began meeting in February 2024 and continued with regular meetings throughout the plan's development and adoption.

A formal kickoff meeting was held on May 20, 2024, at the MARC offices in Kansas City, Missouri, with an online option. Representatives from local jurisdictions and the public were invited to hear from local and national speakers on the importance of mitigation planning, steps that jurisdictions have and could take, resources that FEMA has available to assist with mitigation actions, the plan requirements and schedule for preparing and adopting the plan.

There were 59 representatives from local jurisdictions, nonprofit organizations, and federal agencies who registered for the meeting, and 48 attended, including 32 online. Participant discussions were focused around reviewing possible natural hazards of greatest concern to their jurisdictions and the region, and the selection of the priority hazards for the focus of this plan.

MARC assembled an internal team from Emergency Services, Transportation and Environment, Public Affairs and Research Services to work on the plan, and the team met regularly during the plan's preparation. Representatives from SEMA and FEMA were invited to, and SEMA representatives attended the kickoff meeting on May 20, 2024. MARC submitted monthly status reports and kept in contact with SEMA throughout the planning process.

The Steering Committee for the Hazard Mitigation Plan (HMPSC) was formed to guide and coordinate the planning process and to review the plan materials as they were developed. The HMPSC consisted of selected representatives from the Missouri counties in the Planning area, cities within those counties including Kansas City and Independence, Mo., and representatives from underserved vulnerable populations. For a complete listing of HMPC members and their roles and responsibilities see

Attachment 1 to this section. For the MARC Board and MEMC meeting summaries, see Appendix B: Supporting Documents.

Before the Steering Committee formally convened, MARC staff reviewed the 2020 Regional Hazard Mitigation Plan, the Missouri State Hazard Mitigation Plan, the Kansas City region's Threat Hazard Identification Risk Assessment (THIRA), FEMA's Local Mitigation Planning Handbook, FEMA's Mitigation Plan Review Guide, and multiple Hazard Mitigation plans from communities all across the country. The MARC staff outlined the process and timeline for completing the HMP update. The proposed planning process and timeline was presented in concept at the May 20, 2024, kickoff meeting and to the HMPSC for discussion at their April 25, 2024, meeting.

1.3.2 Planning Team Kickoff Meeting

The 2025 update planning process formally began at the May 20, 2024, kick-off meeting, where local jurisdiction representatives and other stakeholders were provided with background information, FEMA guidance, requirements for the new plan, the importance of participating in the plan, possible mitigation measures, and a nominal timeline for the plan update process. As its first order of business, the HMPSC adopted the Combination Model (FEMA 386-8, 12) as a means to fulfill the requirements of multijurisdictional plan development, similar to the process used for the 2020 update. Through this Combination Model, MARC was designated the Plan Author (authorized to act on behalf of the participating jurisdictions in development of the plan); and the HMPSC was designated the Planning Team. The Planning Team consists of representatives from four of the five participating Missouri counties (Cass, Clay, Jackson and Platte) plus representatives from cities including Kansas City, Missouri, and the city of Independence, and representatives of agencies serving vulnerable populations.

After the model for the Plan update was confirmed, the HMSC identified which threats and hazards would be considered in the update. To assist this determination, the HMSC reviewed hazards identified in the State of Missouri's Hazard Mitigation Plan, the hazards addressed in the region's 2020 Plan (and recommendations for improvements), and hazards identified through the THIRA process. The steering committee decided that the 2025 Plan should focus on priority natural hazards, rather than lower priority natural and man-made hazards. Natural hazards with low occurrence, earthquakes and wildfires, could be removed from the Plan. To consolidate further, similar hazards were grouped together. Drought and heat waves were grouped together as Heat. Flooding (both riverine and flash), levee failures, and dam failures were grouped together as flooding.

Additional business at the kick-off meeting included determination of satisfactory participation requirements for jurisdictions and beginning initial outreach and information collection efforts.

Participation requirements were identified for local jurisdictions to complete in order to obtain the information necessary to inform the update process. For local jurisdictions, eight participation requirements were outlined:

- 1. Attend a meeting (in-person or virtually) to discuss participation in the plan.
- 2. For 2020 plan participants, update the 2020 profile for the local jurisdiction using the MARC provided online tool.
- 3. For new participants, create a new user and complete the online profile.
- 4. Review the hazard profiles and identify the level of risk and vulnerability for each priority hazard for the local jurisdiction.
- 5. Develop goals and identify proposed mitigation actions for the community.
- 6. Prioritize actions emphasizing relative cost-effectiveness.
- 7. Review and comment on draft plan
- 8. Communicate about the plan through social media
- 9. Host opportunities for public involvement (e.g. promote public survey, link local Internet presence to a plan website, share information about the plan at local meetings and events).

In order to achieve the requirements, the HMSC agreed that participating organizations would be asked to provide information for the update through a series of surveys or tools including a Community/ School Profile including a Hazard Mitigation Goals and Actions Status Update for those communities that participated in the last plan, and a 2025 Hazard Mitigation Goals and Actions Tool for new participating organizations to complete. Each county in the planning area agreed to communicate with cities, school districts, universities/colleges, and fire/ambulance districts in summer/fall 2024 to inform them about the hazard mitigation plan update process, the requirements for participation and the various tools for information collection. County emergency managers and MARC staff reached out to jurisdictions that participated in the 2020 plan and others in the five-county area about participating in the 2025 plan. After information had been collected from participants about the hazards most likely to affect their community, their capabilities, and the strategies they selected to address the hazards, preparations were made to share the information with stakeholders and members of the public through posting of the draft plan on the MARC website. Social media was used to promote the draft plan for public review and comment.

All jurisdictions were encouraged to form an internal planning team to review 2020 information and provide updates. All information, including meeting notices, summaries, etc., about the update process was made available in accordance with Missouri Sunshine Law provisions. As such, neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties were provided the opportunity to be involved in the planning process. Additional information regarding Missouri's Sunshine Law can be found on the Web site of Missouri's Attorney General at http://ago.mo.gov/sunshinelaw/. Further, informational updates and participation opportunities were reported at the monthly meetings of the Metropolitan Emergency Managers Committee (MEMC), which are open to the public and other interested parties.

Table 1.1 summarizes the meetings conducted throughout the planning timeline by date held, agenda and attendees (noted by title, agency, organization or jurisdiction). Meeting agendas, summaries and sign-in sheets can be found in **Appendix B: Supporting Documents**.

Table 1.1 Summary of Planning Meetings			
Meeting Date Purpose of Meeting		Purpose of Meeting	Attendees
HMP Review	Staff met regularly across departments throughout the planning process and between Oct and Dec 2024 with consultant ISC	Discuss revisions and plan reformatting, Adding hazards, mitigation actions, and schedule for future meetings.	Planning Team, MARC
Kick-off	May 20, 2024	Background, Planning Team formation, Initial planning, participation requirements.	Local jurisdiction stakeholders, Planning Team, MARC (59 registered, 48 in attendance in person and virtually)
Hazard Mitigation Steering Committee (HMSC)	reering February 27, school district profiles and survey tools. Develop an Initial Approach for Stakeholder and		Steering Committee members, MARC staff
Hazard Mitigation Plan Steering Committee (HMSC)	April 25, 2024	Kickoff Meeting Plans: Audience, Project Success Story, Data Needs; Steering Committee Expansion; Public Outreach Strategy; Data Gathering Tools and Deadline Discussion; Feasibility of Hosting Regional Mitigation Workshop to share ideas for goals and actions.	Steering Committee members, MARC staff
Hazard Mitigation Plan Steering Committee (HMSC)	May 31, 2024	Discuss feedback from kickoff meeting, possible outreach and meetings to engage jurisdictions, documentation of time and in-kind support	Steering Committee members, MARC staff
Hazard Mitigation Plan Steering Committee (HMSC)	July 31, 2024	Public Survey Launch and Distribution, review of promotional flyer, status of local jurisdictions use of online tools to collect profile and goals information, timeframe to analyze data, updated website information.	Steering Committee members, MARC staff

Table 1.1 Summary of Planning Meetings				
Meeting	Meeting Date Purpose of Meeting		Attendees	
Hazard Mitigation Plan Steering Committee (HMSC)	October 15, 2024	Community Profiles/School Profiles Public Survey, initial results, Possible Mitigation Strategies	Steering Committee members, MARC staff	
Hazard Mitigation Plan Steering Committee (HMPSC)	November 7, 2024	Update on Community Profile Information and Participation among Cities, Counties, School Districts, Other Districts, Colleges; Discuss how steering committee might help to encourage cities, counties and school districts to participate; how to ensure Quality control; Update on Community Survey and Use of social media, Need to document local actions. Update on Ch. 2 Regional Profile; Update on Ch. 4 Risk Profile Documentation of In-Kind Support	Steering Committee members, MARC staff, consultant	
Hazard Mitigation Plan Steering Committee (HMPSC)	December 6, 2024	Update on local jurisdictions completion of profiles and goals/actions; status of plan chapter drafts for review; update on public survey	Steering Committee members, MARC staff, consultant	
Metropolitan Emergency Managers Committee	February 13, 2025	Review draft plan and seek feedback	MEMC (emergency managers)	
Total Transportation Policy Committee	February 18, 2025	Review draft plan and seek feedback	TTPC members (local elected officials, public works, planning, consultants)	

1.3.3 Plan Section Review and Update Methodology

To minimize the burden of the update, the HMPSC determined to revise only those sections where information had changed, new or better data was available, or to address FEMA recommendations for improvements from the 2020 Plan. As discussed in the Background Section 1.3.1 above, MARC staff evaluated the plan in its entirety, determining which sections required revision in accordance with FEMA's Local Mitigation Plan Review Guide and FEMA Local Planning Handbook (October 1, 2014 and May 2023) and Multi-Jurisdictional Mitigation Planning, 2006 and presented the HMPSC with recommendations. **Table 1.2** describes the data deficiencies that were present during the 2020 plan update process and the status of those data deficiencies for the current plan update process. Any new data sets they have been utilized in the analysis.

The data deficiencies identified here are from the 2020 Plan Implementation and Maintenance section and new deficiencies identified for the 2020 plan. The "action required" column shows what actions were to be taken in the 2025 plan efforts or future efforts.

Table 1.2 Data Deficiency Corrective Actions 2015 and 2020			
Data Deficiency	Action Required	Status	Responsible Party
1. Dam inundation pathways	Continue to work the MDNR and local dam owners to obtain information/maps showing dam failure inundation pathways as part of EAP update/completion process	Ryan P. Stack ryan.stack@dnr.mo.gov from the DNR provided digital files for Emergency Action Plans with Inundation Maps. MARC staff is reviewing to determine if the digital files address the listed data deficiency.	Planning Team, ISC Consultants
2. Levee failure analysis information largely unavailable	Continue to work with USACE and other entities to obtain levee failure analysis information as it becomes available	Continue to look for this type of information.	Planning Team, ISC Consultants
3. Future land use data unavailable for Ray County	Incorporate future land use maps for Ray County as developed	Ray County was added to the Kansas City MPO planning boundary and MARC has compiled land use information about the county.	Ray County Planning Team representative, MARC
4. Various data collection/interpretation deficiencies were noted for winter weather, heat wave, and drought due to certain inherent limitations	Continue to reassess hazards and data collection methods for next update. As new collection methods and interpretation techniques become available, incorporate into plan update	The drought monitor comprehensive statistics were used to show additional drought information not shown in the 2015 Plan. It displays the percentage of a county in each drought classification on any given week.	Planning Team, MARC, ISC Consultants
5. Utility infrastructure - Research Services of MARC does not currently have access to this data	Through collaboration with jurisdictions and utility companies, MARC continues to work on addressing this.	MARC continues to work on collecting this information.	Planning Team, MARC
6. Data regarding homes without basements to identify neighborhoods most vulnerable in tornado event. The digital database used to provide MARC with data from jurisdictions does not collect this information.	MARC has encouraged local jurisdictions to collect this information to inform hazard planning.	Information is not yet available.	MARC

Table 1.2 Data Deficiency Corrective Actions 2015 and 2020			
Data Deficiency	Action Required	Status	Responsible Party
7. Building counts – not all jurisdictions maintain a GIS layer of building points or building outlines. MARC digitized many buildings by hand as part of a SOLAR grant but will not be able to keep it current.	As jurisdictions develop GIS capabilities this information will be incorporated in future updates.	MARC has developed capacity to quantify building counts based on building outlines and the information was used to assess vulnerable properties in the 100-year floodplain.	Participating Jurisdictions, MARC
8. Critical facilities – don't have measures of size or capacity or capabilities for most of them. This information would help produce more meaningful maps and visualizations.	As jurisdictions continue to implement HAZUS software this information may become more accessible.	MARC has developed extensive databases of critical facilities in the five-county area and that information is provided to each local jurisdiction as part of the online planning tool. Feedback from the local jurisdictions is helping to further refine the datasets. In review of transportation facilities, looking for dataset for low water crossings.	Participating jurisdictions, MARC
9. Addresses of repetitive flood loss properties would have been helpful in mapping the general locations where flooding occurs that is more likely to damage property. (or city or zip code)	Continue to work with jurisdictions and the State Emergency Management Agency to determine options for obtaining this type of information.	Have not collected this information; SEMA provided at county level.	Participating jurisdictions, MARC
10. Map and data of buildings inside the 500-year floodplain to help local officials understand the area vulnerable to large flooding events, particularly as changing climate may increase the potential for impacts in these areas.	Collect and include dataset for 500-year floodplain for five county area and counts of buildings and their values inside the area mapped.	Have not begun this effort.	Participating jurisdictions, MARC

The above table illustrates the results of the plan review and recommendations for revisions, which were subsequently approved by the HMPSC. In addition, **Table 1.3** identifies any format changes that have been made where applicable. MARC staff conducted research, collected information, developed

maps and authored the plan update. As changes, updates and recommendations were drafted into the plan, the HMPSC provided MARC with comments and feedback during planning meetings and via e-mail.

As plan sections were drafted they were posted on the Teams folder for the HMPSC and the MARC website at <u>Hazard Mitigation Plan | MARC</u> and made available to the HMSC members for view and comment.

Table 1.3 Review Process Summary				
Section	Reviewed (Yes/No)	Revisions Made (Yes/No)	Basis for Revisions	Summary of Revisions
Introduction & Planning Process	Yes	Yes	Added information on meetings held and public input received	Updated table with additional information
Planning Area Profile	Yes	Yes	Suggested additional demographic detail	Updated with additional data on specific vulnerable populations.
Capabilities Assessment	Yes	Yes	Plan organization New survey tools SEMA review to add information about NFIP	Assembled data for each local jurisdiction from the online data tool in the Capabilities Assessment chapter; added information about NFIP participation
Risk Assessment	Yes	Yes	Consolidated risk assessment and vulnerability analysis. (Chapter 4)	Added detail consistent with FEMA rules in analyzing priority hazards.
Mitigation Strategy	Yes	Yes	Each local jurisdiction was asked to update their goals and strategies given identification of priority natural hazards, risk profiles and presentations of information on possible goals and strategies for consideration.	Compiled new 2025 goals and action steps; asked jurisdictions to either remove "deferred" items or to show as ongoing

Table 1.3 Review Process Summary				
Section	Reviewed (Yes/No)	Revisions Made (Yes/No)	Basis for Revisions	Summary of Revisions
Plan Maintenance	Yes	Yes	The online planning tool (or a revised version) will be available to each jurisdiction (and to new jurisdictions) beyond the timeframe of the plan preparation to review information and update their capabilities and goals and strategies.	Updated section to reflect feedback from Steering Committee

1.3.4 Review and Incorporation of Existing Plans

Existing plans, codes, ordinances, programs, resources and staffing were reviewed and integrated in the planning process. The Community Profile tool collected information about the different tools available to communities related to administration, financial planning, education and outreach, and planning and regulation. **Table 1.4** lists the different tools that were included in the Community Profile for communities to report onⁱ:

Table 1.4 Community Profile Tools			
Administrative & Technical	Financial		
Administrative Resources:	*Capital Improvement Project Funding		
*Planning and Zoning Commission	*Authority to levy taxes for specific purpose		
*Mitigation Planning Committee	*Fees for water, sewer, gas or electric services		
*Maintenance Program to reduce risk	*Impact fees for new development		
*Mutual aid agreement	*Stormwater utility fee		
	*Incur debt through general and/or special tax		
Staffing Resources:	bonds		
*Chief Building Official	*Incur debt through private activities		
*Floodplain Administrator	*Community Development Block Grant		
*Emergency Manager	*Flood Mitigation Assistance Program		
*Community Planner	*Pre-Disaster Mitigation Program		
*Civil Engineer	*Hazard Mitigation Grant Program		
*Public Health Official			
*IT Support			
*GIS Coordinator			
Technical Resources:			
*Warning System/Services			
*Hazard data and information			
*Critical Facilities Map/APRS			
*HAZUS Analysis			
*Existing Land Use Maps			

Table 1.4 Community Profile Tools			
*Future Land Use Maps			
*State Hazard Mitigation Plan			
*Grant Writing			
Education & Outrooph	Diaming & Degulatem		
Education & Outreach Existing Warning Systems:	Planning & Regulatory Plans:		
*Storm Sirens	*Comprehensive Master Plan		
*Mass Notification Systems	*Capital Improvement Plan		
*MEMC Project Community Alert	*Economic Development Plan		
*National Weather Service	*Local Emergency Operations Plan		
*Kansas City Scout	*Continuity of Operations Plan		
Kunsus City Scout	*Public Health Emergency Preparedness Plan		
Community Partnerships:	*Transportation Plan		
*Regional Homeland Security Coordinating Committee	*Stormwater Management Plan		
*Metropolitan Emergency Managers Committee	*Community Wildlife Protection Plan		
*Mid-America Local Emergency Planning Committee	*Brownfields Redevelopment		
*Metropolitan Official Health Agencies of the Kansas	*Climate Change Adaptation		
City Area	annual annual government		
*SAVE Coalition			
*Kansas City Organization Active in Disaster			
*Community Emergency Response Team			
*Medical Reserve Corps of Greater Kansas City	Codes:		
** Ongoing public education (PrepareKC)	*Building Code		
*Natural disaster or safety related school program	*Fire Code		
*StormReady certification	*Mechanical Code		
*Firewise Communities certification	*Plumbing Code		
*Public-private partnership initiatives (disaster related)	*Dangerous Building Code		
*Media coverage and Public Awareness			
	Land Use Planning Policies:		
	*Stream setback ordinances		
	*Floodplain management ordinances		
	*Soil and erosion ordinances		
	*Burn ordinance		
	*Storm water runoff ordinances		
	*Water conservation measures		
	*Open space acquisition/dedication		
	*Flood buyout		
	*Site plan review requirements.		

For each tool, one of the questions asked was if the jurisdiction had reviewed that tool during the Hazard Mitigation Plan update. Where applicable, the Community Profile requested jurisdictions describe how these documents and measures were integrated in the planning process. School districts, universities and colleges were polled on a different set of tools including:

- ✓ Evacuation plans
- ✓ Storm Sheltering Plan
- ✓ Shelter-In-Place Plan
- ✓ Infectious Disease Plan
- ✓ Water Conservation Measures

✓ Security Plan

Section 3 includes a summary of the tools included in the Community Profile and the School Profile. The tools were web-based through a portal on the MARC website to enable jurisdictions to provide updated information on their jurisdictions' profiles, risks and updated hazard mitigation goals and actions. A GIS tool has allowed jurisdictions to review data through a series of GIS layers to consider further impacts to their jurisdiction from the priority hazards addressed in the plan and review resources for the plan to inform their goals and strategies. <u>Hazard Mitigation</u>

1.3.5 Public Involvement

Hazard mitigation planning is best accomplished when those with a stake in the plan are actively involved. Because hazards can affect everyone, these stakeholders are not just local government officials, but also private industry, nonprofit organizations and most importantly private citizens. Seeking public feedback on the mitigation strategies considered by each jurisdiction ensures that the concerns of the community are adequately addressed and provides insight as to where scarce resources might best be used.

In order to make best use of limited time and resources during the planning process, local jurisdictions were asked to share information about the plan with their stakeholders and to help in promoting a public survey to engage residents and seek their input on hazards of concern, actions that local jurisdictions could take, how residents receive information about emergency events and how they could be better informed. Social media posts were placed as well as some paid media, email communications, use of QR codes and e-news articles were all used to promote the survey. A flyer promoting the survey was posted on the MARC website and made available to the Metropolitan Emergency Managers Committee, the Hazard Mitigation Steering Committee and others that were identified as having possible interest in the Plan.

Table 1.4 details actions taken to promote the plan and encourage participation in the public survey.

Table 1.5 MARC Stakeholder Community Engagement			
Event date	Description of Event, Location	County	Media Used
May 20, 2024	Kickoff Meeting at MARC offices, 600 Broadway, Kansas City, MO and online	Cass, Clay, Jackson, Platte, Ray	Flyer and HMTL invitations sent to large group of local stakeholders Used MARC website to promote event
May 2024	Posted information about the Hazard Mitigation Plan update on the MARC website and a link to a public survey	Cass, Clay, Jackson, Platte, Ray	Promoted the website address to stakeholders of jurisdictions, committee members and the public.
June 2024	Prepared and disseminated a flyer with a QR code about the plan and the public survey. Encouraged residents to complete the online survey.	Cass, Clay, Jackson, Platte, Ray	Worked with steering committee members and others to share the flyer through electronic means and as handouts at community events.

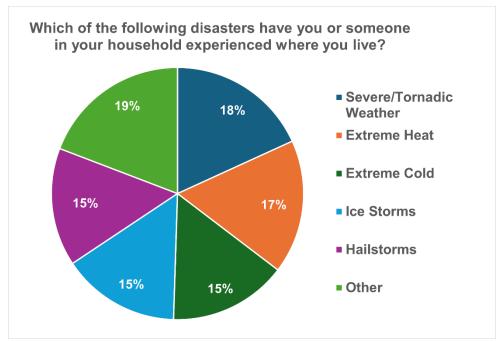
Table 1.5 MARC Stakeholder Community Engagement			
Event date	Description of Event, Location	County	Media Used
June 27, 2024	Community Organizations Active in Disaster (COAD) meeting at MARC and online	Cass, Clay, Jackson, Platte, Ray	Presented information on the HM Plan and solicited input on greatest threats to vulnerable populations and steps that jurisdictions could take to support these populations.
November 2024	Prepared and disseminated a flyer with a QR code about the plan and the public survey. Encouraged residents to complete the online survey.	Cass, Clay, Jackson, Platte, Ray	Used social media - Facebook and Instagram to run through end of November 2024. Message showed up in feeds 15,382 times, reached 7,728 accounts and received 191 clicks on the links. The click rate was above 1%, a reasonable average. Placed print ads for Spanish version in two print newspapers – Dos Mundos and KC Hispanic News. Costs for English and Spanish media \$420.
February 2025	Draft plan posted on MARC website for review. Jurisdiction stakeholders and the public encouraged to review and submit feedback through online survey.	Cass, Clay, Jackson, Platte, Ray	MARC website and email communication

Posts were created on MARC's social media sites including Instagram and Facebook. A homepage story was created on the MARC Web site. E-mail invitations were sent through MARC listservs, requesting regional partners and committees forward to their constituents. Jurisdictions were provided with fliers advertising the plan and public survey for distribution around their community. Webs URL links and QR codes were used to help residents and stakeholders gain access to information. Additionally, jurisdictions were asked to link notices for the plan and public survey to their local government and school district Web sites, where applicable. Jurisdictions were also asked to use any other available outlets to advertise the events, such as e-newsletters and posting information to their own social networking accounts.

Public Survey Results

The public survey was intended to seek input into the plan, gaining an understanding of the public's awareness of natural hazards, hazards that have affected them personally, ones they feel their community is most at risk for in the future, what steps their community has taken to reduce risks to injury and property damage, and what further steps might be helpful.

Q1. Which of the following disasters have you or someone in your household experienced where you live now? Windstorms and tornadoes were most often cited followed by extreme heat, ice storms,



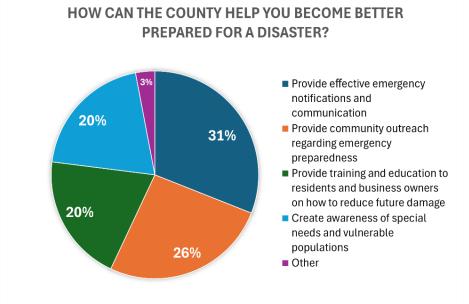
extreme cold and hail. Other disasters mentioned were earthquakes and wildfires.

Q2. Which disasters have you experienced most frequently? Severe

thunderstorms/tornadoes 29%, extreme heat 22%, ice storms and extreme cold 25%.

Q3. Have you experienced flooding? Only 1 of 5 respondents.

Q4. What mitigation actions do you feel could help best protect your community? Protecting utilities and other infrastructure, including drainage systems 36%, protect health care and emergency services' facilities 17%, help provide property owners with dollars 12% and enact local ordinances and building standards 12%.



Q5. How could your county (or city) best support you to lessen your risk from natural hazards? Emergency notification systems and communications 31%, community outreach 25%, create awareness of special needs/vulnerable populations 21% and train and educate residents and business owners on measures to reduce their risks 20%.

One-fourth of respondents did not feel adequately informed about risks to their community, indicating an opportunity to educate the region's population. Social media, television and email were the most often cited ways that respondents received information.

Draft Plan Review

The final plan, prior to submission to SEMA and FEMA, was provided to all participating jurisdictions. The plan was placed in its entirety on MARC's website and an online feedback mechanism was created to provide a concluding opportunity for the public to comment on the plan. MARC staff issued press releases, used social media and sent email notifications through local list servs on how to provide feedback. Jurisdictions were again asked to link these items to their Websites as well as utilize other available outlets to spread the word regarding the final review period.

Following SEMA's approval of the plan "pending adoption" and prior to formal adoption of the plan, jurisdictions were encouraged to hold public meetings to discuss the plan's adoption.

Copies of meeting notices, fliers, advertisements, press releases, etc. are provided in Appendix B: Supporting Documents.

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¹ FEMA. Worksheets 4.1- 4.3 Capability Assessment Worksheet, Safe Growth Audit, National Flood Insurance Program Worksheet. Local Mitigation Planning Handbook, March 2013 and May 2024.

ATTACHMENT 1: HAZARD MITIGATION PLANNING COMMITTEE (HMPC) MEMBERS ROLES AND RESPONSIBILITIES

I. Roles

A. Planning Team:

Justin Crane, Director, Cass County Emergency Management

Representing the following Cass County Communities:

- Belton
- Harrisonville
- Lake Annette
- Lake Winnebago
- Peculiar
- Pleasant Hill
- Raymore
- Archie R-V School District
- Harrisonville School District
- Pleasant Hill School District
- Raymore-Peculiar School District
- Sherwood-Cass School District

Anne Poelzl, Clay County Assistant Emergency Management Director

Representing the following Clay County Communities:

- Excelsior Springs
- Gladstone
- Kearney
- Lawson
- Liberty
- North Kansas City
- Pleasant Valley
- Smithville
- Excelsior Springs School District
- Lawson School District
- North Kansas City School District
- Smithville R-II School District

Troy Schulte, County Administrator, Jackson County

Replaced with: Brian Gaddie, Public Works Director, Jackson County

Representing the following Jackson County Communities:

- Blue Springs
- Grain Valley
- Grandview
- Greenwood
- Independence
- Kansas City
- Lee's Summit
- Oak Grove
- Raytown
- Central Jackson County Fire Protection District
- Sni Valley Fire Protection District
- Blue Springs School District
- Grain Valley School District
- Ft. Osage School District
- Independence School District
- Kansas City School District
- Lee's Summit School District
- Oak Grove R-VI School District
- Metropolitan Community Colleges

Jason Phelps, Deputy, Platte County Sheriff's Department (Appointed by, Capt. Daniel Gates, Platte County Emergency Management Coordinator, Platte County Sheriff's Dept.)

Representing the following Platte County Communities:

- Farley
- Lake Waukomis
- Northmoor
- Parkville
- Platte City
- Platte Woods
- Riverside
- Tracy
- Weatherby Lake
- Weston
- Northland Regional Ambulance District (NRAD)
- Park Hill School District
- Park University

- Platte County R-3 School District
- West Platte R-II School District

Dante Gliniecki, Emergency Manager, City of Independence

Christopher Carroll, Assistant Emergency Manager, Kansas City, Mo. Emergency Management

B. Plan Author, Mid-America Regional Council (MARC):

Marlene Nagel, Community Development Director

Project oversight and plan author

Melinda Cheney, Emergency Services Planner (was deployed in Sept. 2024)

Erin Lynch, Emergency Services and Homeland Security Program Director

Project oversight

John Davis, Emergency Services Fiscal Administrator

• Data management

Jay Hermann, GIS Manager, Research Services

• Research and Data lead

Tim Victor and Sara Hintze, Database Analysts, Research Services

 Developed online tools to collect/update jurisdiction profiles and goals and strategies

Jakob Goldman, GIS Specialist II

• GIS mapping, coordination and research

Tina Sikes, GIS Specialist II

• GIS mapping and research

Catherine Couch, Public Affairs Coordinator

Lead graphic designer; marketing coordinator

Kristin Johnson-Waggoner, Public Affairs Program Director

Editor, graphic design

Nordia Epps, Public Affairs Coordinator II

• Traditional Media and Social Media coordinator

Caroline Knecht, Public Affairs Website Coordinator

Web site design

Sasan Baharaeen, Manager of Information Services

• Database design and maintenance, IT support

Madeline Wetta, Data Librarian

Research and data

II. Responsibilities

A. Plan Author

- 1. Provide administrative support for the update process to include, but not limited to:
 - a. Organize meetings, send mailings, draft and incorporate plan revisions, conduct research, etc.
 - b. Provide the Planning Team with recommendations and advice on plan requirements as well as electronic and/or hard copies of updates to the plan as they are drafted for review and comment
 - c. Assist in the development of mitigation strategies.
 - b. Provide monthly updates and other information as requested to SEMA in accordance memorandum of agreement.
 - d. Compile comments, revisions, evaluations, etc., from future reviews and updates and integrate into plan.

B. Planning Team

- 1. Oversee the update process to include, but not limited to:
 - a. Determine requirements for satisfactory participation.
 - b. Review and approve all revisions to the hazard mitigation plan.
 - c. Provide locations to host meeting opportunities and guide public engagement actions.

- d. Work with represented jurisdictions to assist in gathering required information and developing mitigation strategies.
- e. Organize yearly reviews of the plan for represented jurisdictions. Review all new information submitted and forward to Plan Author for incorporation.

C. Participating Jurisdictions

- 1. Inform the update process by accomplishing the following:
 - a. Complete all requirements for satisfactory participation as determined by the Planning Team.
 - b. Review and comment on the plan as drafts become available. Formally adopt the completed plan by resolution.
 - c. Participate in yearly reviews of the plan and subsequent five-year updates. Submit changes as necessary to Planning Team representative for review and forward to Plan Author.
 - d. Designate a responsible party to coordinate the above and notify Planning Team representative of designee by name, job title, organization or any other satisfactory method upon appointment or when a change occurs. Responsible parties for participating jurisdictions shall be listed in **Attachment 2** to this section.

ATTACHMENT 2: 2024-25 PARTICIPATING JURISDICTIONS' DESIGNATED RESPONSIBLE PARTIES

Jurisdiction	Responsible Party (Name)	Title
1. Cass County	Justin Crane	Emergency Management Director
2. Clay County	Anne Poetzl	Emergency Management Director
3. Jackson County	Troy Schulte, Brian Gaddie	Emergency Management/Public Works Director
4. Platte County	Deputy Jason Phelps Captain Daniel Gates	Assistant Emergency Management Coordinator Emergency Management Coordinator
5. Ray County	Sheila Tracy	Presiding Commissioner
6. Belton	Claire Canaan	Emergency Management Director
7. Blue Springs	Mike Mallon	Senior Development Director
8. Central Jackson County Fire Protection District	Jason Bonney	Asst. Fire Chief/Emergency Management
9. Excelsior Springs	Joe Maddick	Fire Chief
10. Farley	Kathy O'Neal	Chair of the Board of Aldermen
11. Gladstone	Mike Desautels	Emergency Management Director/Fire Chief
12. Grain Valley	Ken Murphy	City Administrator
13. Grandview	Emily Spittler	Planner
14. Greenwood	Mitchell Armer	Police Chief
15. Harrisonville	Rusty Sullivan	Fire Chief/Emergency Services Director
16. Independence	Dante Gliniecki	Emergency Preparedness Planner
17. Kansas City, Mo	Christopher Carroll	Emergency Management Manager
18. Kearney	David Pavlich	Community Development Director
19. Lake Annette	Angela Hansen	Mayor
20. Lake Waukomis	Rick Zelfer	Emergency Management Director
21. Lake Winnebago	Kenneth Smith	Emergency Management Director
22. Lawson	Bruce Summa	Police Chief
23. Lee's Summit	Benjamin Hicks	Assistant Chief of Emergency Management
24. Levasy	Kim Dyer	Mayor
25. Liberty	Chris Young	Fire Chief
26. North Kansas City	Dan Williams	Fire Chief/Emergency Management Director
27. Northland Regional		
Ambulance District	Jason S James	Executive Director
28. Northmoor	Julie Rowden	City Clerk
29. Oak Grove	Mark Sherwood	Emergency Management Director
30. Parkville	Jon Jordan	Captain, Police Dept.
31. Peculiar	Don Shepard	Police Chief and Interim City Administrator
32. Platte City	Tom Cole	City Administrator

Jurisdiction	Responsible Party (Name)	Title
33. Platte Woods	Jim Kerns	EM Director
34. Pleasant Hill	Tommy Wright	Chief of Police
35. Raymore	Tim Baldwin	Emergency Management Coordinator
36. Raytown	Dyon Harper	Police Captain/EM Coordinator, Police Dept.
37. Richmond	Mark Sowder	Fire Chief/EM Director
38. Riverside	Keith Payne	Emergency Manager/Chief of Police
39. Sni Valley Fire		
Protection District	Mark Sherwood	Emergency Management Director
40. Smithville	Jason Lockridge	Police Chief
41. Tracy	Lori Liechti	City Clerk/Collector
42. Weatherby Lake	Donnie Hackman	Chief of Police
43. Weston	Kelly Clark	Chief of Police
44. Archie R-V School		
District	Dr. Michelle Wityk	Superintendent
45. Blue Springs School		
District	Mike Russell	Chief, Director of Public Safety
46. Excelsior Springs School District	Jaret Tomlinson	Superintendent
47. Ft. Osage School	Jaret Tollillison	Superintendent
District	Steve Morgan	Assistant Superintendent
48. Grain Valley School	9	·
District	Dr. Nick Gooch	Assistant Superintendent
49. Harrisonville School		
District	Josh Chastain	Superintendent
50. Independence School		S
District Standard	Greg McGhee	Director of Facilities
51. Kansas City School District	Whitney Morgan	Facilities Manager
52. Lawson School District	Michael Stephenson	Superintendent
53. Lee's Summit School	Wichael Stephenson	Superintendent
District	Ryan Hall	Supervisor of Safety & Environmental Services
54. North Kansas City		
School District	Mitzi Boydston	Director of Safety & Security
55. Oak Grove R-VI School		
District	Tracy Kemp	Principal and Safety Coordinator
56. Park Hill School District	Jaime Dial	Director, Safety and Security
57. Platte County R-III		
School District	Dr. Devin Doll	Exec. Director of Operations
58. Pleasant Hill School	Wayne Burke	Superintendent Director of Eacilities
District	Mike Clevenger	Director of Facilities

Jurisdiction	Responsible Party (Name)	Title
59. Raymore-Peculiar School District	Bryan Pettengill	Assistant Director of Operations
60. Richmond School District	Trey Cavanah	Assistant Superintendent
61. Sherwood-Cass School District	Morris Jeffries	Director of Facilities
62. Smithville R-II School District	Robert Newhart	Director of Operations
63. West Platte R-II School District	Brock Dover	Superintendent
64. Metropolitan Community Colleges	Andrea Schatz	Chief Legal Officer
65. Park University	Jeff Hurley	Director of Campus Safety

Chapter 2: Planning Area Profile

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Chapter 2: Planning Area Profile

This Section discusses the people, economy and jobs, property and infrastructure that, together, comprise the region's assets and capabilities at risk from hazards, should they occur.

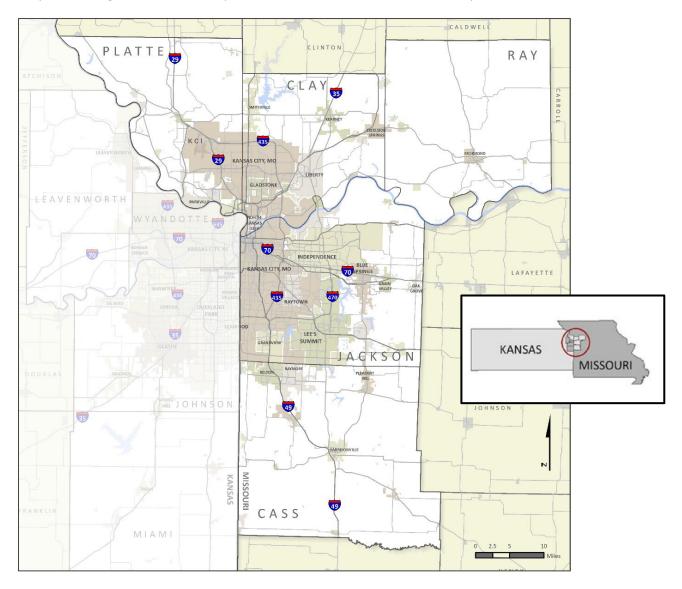


Figure 2.1: The Hazard Mitigation Planning Area

Source: MARC

2.1 Planning Area Description

The planning area for this regional hazard mitigation plan is the five counties on the Missouri side of the Kansas City region – Cass, Clay, Jackson, Platte and Ray (Figure 2.1). Because of the integrated nature of this region, some trends, assets and capacities are best understood if initially described from the point of view of the entire region before describing the jurisdictions in the planning area in more detail, and some important contextual data is only available for the 9-county MARC region or for the entire 14-county Kansas City metropolitan area. The focus of this chapter remains on the five Missouri counties in the planning area.

Mid-America Regional Council

2.2 Planning Area Geography and Environment

2.2.1 Geography

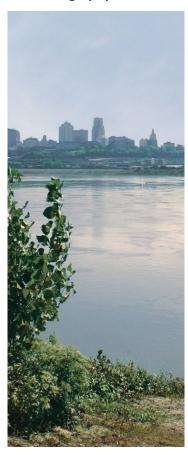


Figure 2.2: Kansas City at the Confluence of the Missouri and Kansas Rivers

Located at the confluence of the Missouri and Kansas rivers, Kansas City began in the mid-1800s as a trading post and jumping-off point for pioneers heading west on the Santa Fe, California and Oregon trails. The five Missouri counties that make up the Regional Hazard Mitigation Planning Area—Cass, Clay, Jackson, Platte and Ray— have a combined area of over 2,700 square miles. The region is located in the west-central and northwest parts of Missouri. It falls within the Central Dissected Till Plains and Osage Plains sections of the Central Lowlands, as defined by the U.S. Geological Survey and the Missouri Ecological Classification System.

Elevations in the region range from a low of 656 feet above sea level in Ray County to a high of 1,181 feet above sea level in Platte County, with most of the area falling between 700 and 1,000 foot elevations. Soils are mostly fertile and well drained, and are formed of loess, residuum and alluvium. The region's underlying bedrock consists of shale, limestone and sandstone.

Topography in the region is heavily influenced by the Missouri and Kansas rivers and their tributaries (Figure 2.2). Much of the land is level to sloping, especially in floodplains and bottomlands, with uplands ranging from moderate slope to occasional steep bluffs and hills.

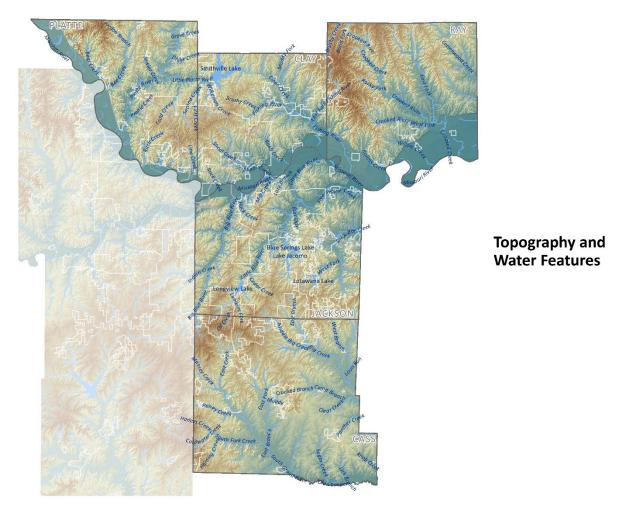
2.2.2 Waterways and Water Resources

Water, particularly surface water, is a great natural resource in the Kansas City area. The region is drained by three river basins: The Lower Missouri-Grand-Chariton River Basin, the Lower Missouri-Blackwater-Lamine River Basin and the Osage River Basin. The vast majority of the region's watersheds drain into the Missouri River, which is one of Missouri's (and the nation's) major rivers. In Cass County, however, watersheds drain into the Osage River Basin. See **Figure 2.3** Waterways and Topography in the Greater Kansas City Region on the following page.

Much of the region's water supply comes from the Missouri River, and in recent years degradation of the riverbed has become a concern. The U.S. Army Corps of Engineers conducted a multiyear study beginning in 2014 to assess riverbed degradation between Rulo, Neb., and St. Louis, Mo., focusing on the stretch of river in the Kansas City area where degradation is the most severe. The final Missouri Riverbed Degradation Feasibility Study Technical Report was completed in May 2017. The study determined the causes of degradation, explored how future degradation can be prevented, and recommended ways public infrastructure can be protected.

According to the U.S. Army Corps of Engineers, the average flow of the region's major rivers and streams range from a high of 35,070 million gallons per day in the Missouri River to a low of less than 13 million gallons per day in some of the region's small streams.

Some of the region's rivers, such as the Missouri River, are subject to minimum flow requirements in order to maintain water quality standards. The minimum flow requirement for the Missouri River is



Source: MARC

Figure 2.3: Waterways and Topography in the Greater Kansas City Region

2,620 million gallons per day. This requirement is maintained by the Corps' regulation of upstream reservoirs and their respective dams in Montana, North and South Dakota and Nebraska — Fort Peck, Garrison, Oahe, Big Bend, Fort Randall and Gavins Point. There are no designated wild and scenic rivers under the National Wild & Scenic Rivers System in the five-county area.

In the Kansas City area, significant quantities of ground water are found only in alluvial deposits along the Missouri River. These alluvial deposits can be more than 100 feet deep in the Missouri river valley (with an average depth of 80 to 90 feet). Saturated water- bearing materials range in depth from 30 to 60 feet, although they are generally found near a depth of 40 feet. Water wells in these alluvial deposits can yield from 1,500 to 2,000 gallons per minute, with an average yield between 500 and 1,000 gallons per minute.

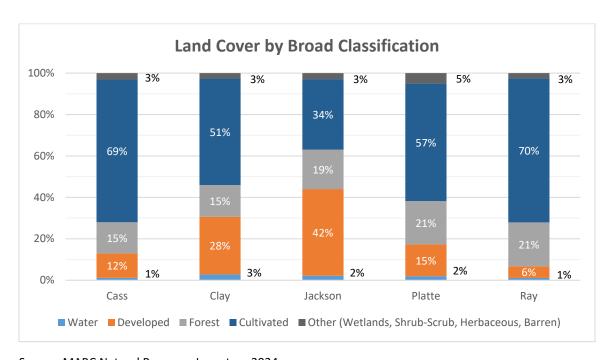
In the region's tributary valleys, the availability of ground water is limited. The alluvial deposits in these areas range in thickness from 20 to 70 feet in the lower reaches to less than 10 feet in the upper reaches. In addition, the large amounts of shale in these tributary valleys results in mainly clay fill sediments in the alluvial aquifer. Because this material has a low water transmissibility, water well yields in these areas

can be as low as one to 10 gallons per minute. Tributaries in areas comprised mainly of sandstone, however, may produce wells with higher yields, since these areas have sediments with greater water transmissibility.

Aquifers in the region's uplands are found in materials of glacial origin or from weathered materials above bedrock. Neither of these areas produces substantial yields of ground water. Although some ground water yields in areas of glacial deposits can exceed 100 gallons per minute, the varying thickness of glacial deposits results in highly variable yields of ground water. Ground water from areas with deposits of material over bedrock provide yields that are generally less than 10 gallons per minute, although some isolated yields can be greater. In addition, water from bedrock tends to be mineralized and contains hardness and iron that exceed national drinking water standards.

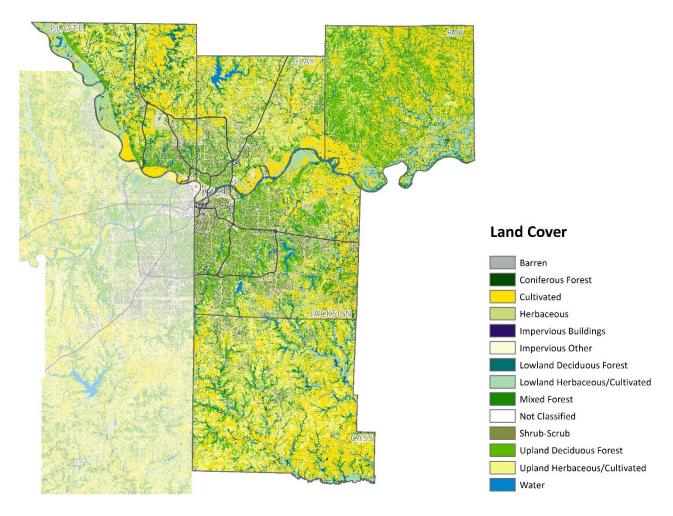
2.2.3 Land Cover

In **Figure 2.4**, Jackson, Clay, and Platte counties are the Planning Area's most urbanized counties with 42 percent, 28 percent and 15 percent impervious surface land cover, respectively. Jackson and Clay counties also have the highest percentages of water in the planning area, at 3 percent each. Ray County is the planning area's most rural county, with 70 percent of its land cultivated, another 21 percent in forests and only 6 percent as impervious surface. The next most forested counties are Jackson and Platte, with 19 percent and 16 percent forest land cover, respectively. Just over two-thirds of the land in Cass is cultivated, as is a majority of the land in Platte and Clay counties. **Figure 2.5** gives a view of the planning area's natural resources.



Source: MARC Natural Resource Inventory 2024

Figure 2.4: Land Cover by County



Source: MARC Natural Resource Inventory

Figure 2.5: Topographical Land Cover

2.3 Demographics

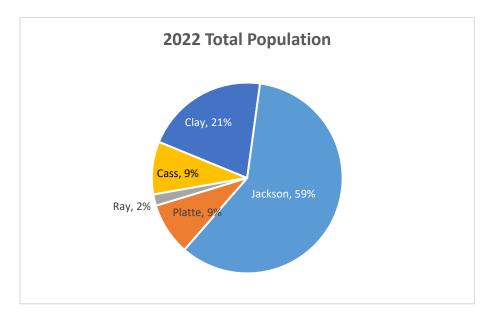


Figure 2.6 Planning Area Population

Source: ACS Census Bureau 2022 Estimates

The population of the planning area in 2022 was an estimated 1,206,971. As the graph above (**Figure 2.6**) shows, almost six in ten people living in the planning area reside in Jackson County, making it the most populous county. Clay County follows, with about two in ten area residents living there. A little less than one in ten people live in Cass and Platte counties, with the remainder in Ray County.

2.3.1 Population Density

Population is densest in Jackson County, especially in Kansas City inside the I-435 loop, where a combination of smaller lot sizes and larger quantities of multi-unit housing. Suburban cities such as Independence, Grandview, Lee's Summit, Blue Springs, Gladstone and Liberty have lower average densities. **Figure 2.7** shows the area's 2022 population density by census tract on the next page.

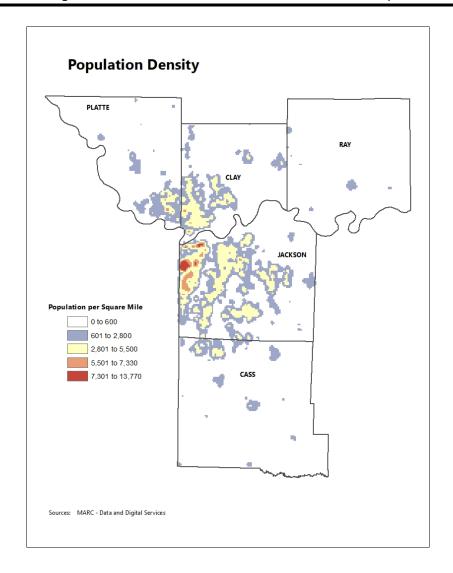


Figure 2.7: Planning Area Population Density, 2022

Source: MARC

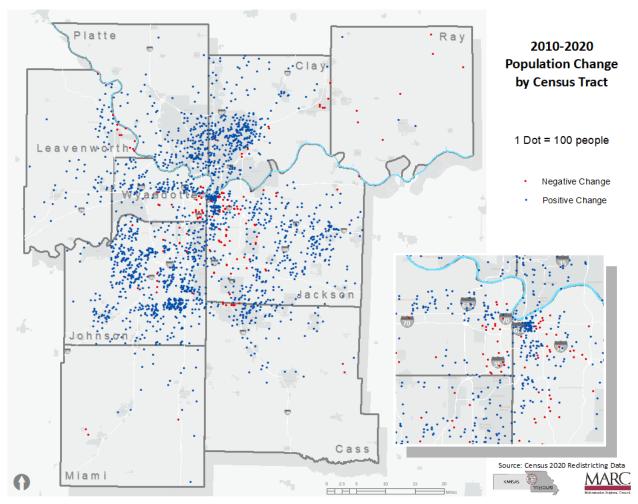
2.3.2 Population Trends – Total Population

The population of the nine-county MARC region grew by over 136,000, or seven percent, from 2015 to 2022, from 1,999,251 to 2,1,03,419 (US Census Bureau, American Community Survey). The planning area's population grew from 1,143,266 in 2015 to 1,206,971 in 2022 and accounted for 51 percent of this growth, or 63,705 individuals. The five-county planning area is growing faster than the MARC region as a whole. (Table 2.1).

Table 2.1: Population, 2015-2022								
County	2015	2020	2022	2015-2022 Change	2015-2022 % Change			
Cass	101,389	107,824	108,205	6,816	7%			
Clay	235,344	253,335	253,085	17,741	8%			
Jackson	687,182	717,204	715,526	28,344	4%			
Platte	96,552	106,718	107,033	10,481	11%			
Ray	22,799	23,158	23,122	323	1%			
Planning Area	1,143,266	1,208,239	1,206,971	63,705	6%			
MARC 9-county Region	1,999,251	2,103,419	2,102,064	102,813	5%			
Kansas City	475,368	508,090	502,597	27,229	6%			

Source: Census Bureau, 2020 decennial census, plus 2015 and 2022 ACS population estimates.

The more suburban counties of Cass, Clay and Platte grew by 7 percent or more between 2015 and 2022. Clay and Platte grew faster than the regional average, with 8 percent and 11 percent, respectively. Jackson County gained the most residents – 28,344 residents over the period. However, Platte had the highest percent increase. Cass County's rate of population growth has slowed somewhat since the growth in that county in the early 2000s. However, the county has grown by almost 7,000 persons since 2015. (US Census Bureau, American Community Survey). Ray County, the region's most rural county, recorded a slight increase over the period, adding 323 residents.



Source: Census Bureau, 2010 and 2020 decennial censuses

Figure 2.8: Area Population Change, 2010-2020

While most of the growth in recent decades has been concentrated in suburban areas, the region's urban center is experiencing growth in many neighborhoods, particularly around downtown and the southwest Kansas City, Missouri corridor. Jackson County's overall rate of growth lags slightly behind the region's, at 4 percent over the period. As the region's largest county, the low rate of growth still translates into adding over 28,000 people during the period, the highest level among Missouri side counties. (Figure 2.8).

The portions of the planning area experiencing population decline are concentrated in the southeast part of the city of Kansas City, Missouri, south of the Missouri River. However, Kansas City is benefiting from the substantial reinvestment and redevelopment in and around its downtown, which has resulted in an increase in the population there for the first time in decades. The 2022 population estimates show a 6 percent increase in Kansas City over the 2015-2022 period. In addition, Kansas City also includes most of the high-growth areas north of the Missouri River in Clay and Platte counties. For the five-county planning area as a whole, the growing areas outweigh the declining areas, resulting in an increase of 63,705 residents between 2015 and 2022, a 6 percent increase.

2.3.3 Population by Age

The data collected for this section came from the Census Bureau and the American Community Survey, Five-Year Estimates. This source offers data that is current through 2022. For this Plan update, the data covers a seven-year period, 2015-2022. Table 2.1: Population, 2015-2022, shows the total population as calculated starting in 2015.

The aging of the population is part of a long-term, national trend, caused by improvements in life expectancy and the aging of the post-World War II baby boom population. This is reflected locally by the median age increasing in all counties between 2017 and 2022 (American Community Survey). Jackson and Clay are the youngest counties, 37.0 and 37.5, respectively. Ray County's population is the oldest, with a median age of 42.0 years, having increased 0.2 years over the seven-year period. Meanwhile, the city of Kansas City is the youngest major jurisdiction, with a median age of 35.4 years. Changing race and ethnicity of the population played a role in moderating the increase in that county's median age. (Census Bureau, American Community Survey 2017-2022).

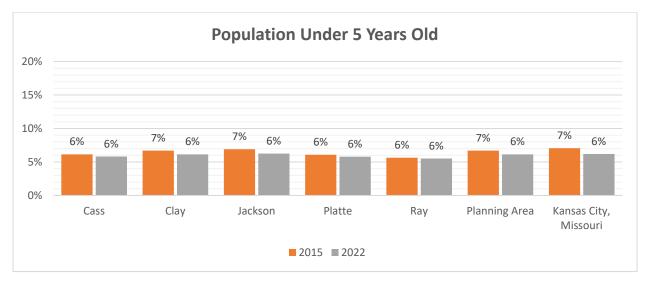
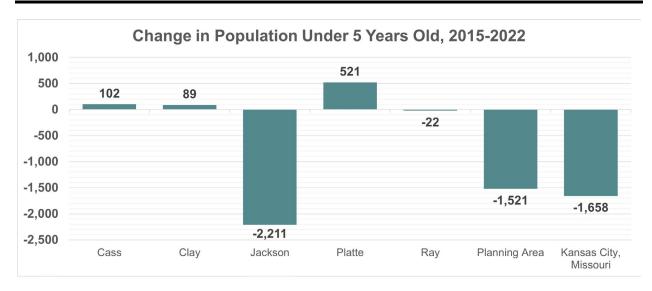


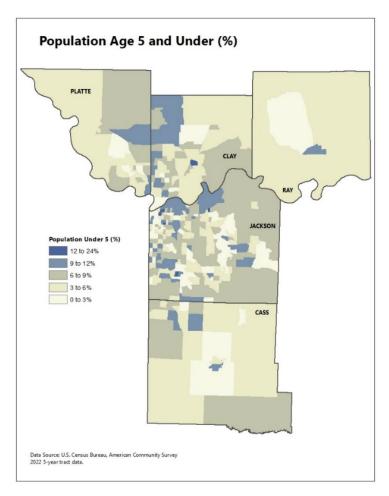
Figure 2.9: Population Under 5 Years Old Source: US Census Bureau, 2015-2022 ACS Estimates

Young children and the elderly are among the region's most vulnerable populations. As might be expected from the planning area's median age, Clay and Jackson counties and the city of Kansas City have the higher proportion of children under the age of five, at 7.0 percent (Figure 2.9). The others recorded 6.0 percent and remained unchanged over the 7-year period. However, all jurisdictions have seen a decline in their population under 5 years during the 2015-2022 period. Platte County was the only jurisdiction to see an increase during the period. (Figure 2.10). Jackson County lost the largest number of young persons, decreasing by 2,211 children under the age of 5 from 2015-2022.



Source: U.S. Census Bureau, ACS Estimates 2015-2022

Figure 2.10: Change in Population Under 5 Years Old, 2015 – 2022

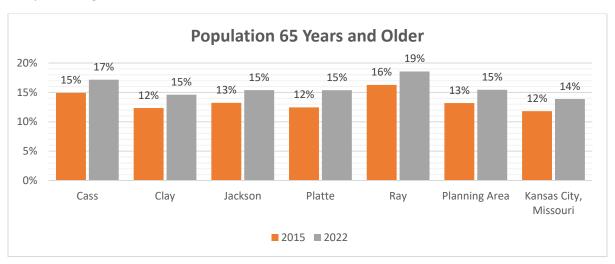


Source: US Census Bureau, American Community Survey 2022 5-year data

Figure 2.11: Population Under 5 years by Census Tract for Planning Area

The population of children under five years old grew very slowly or decreased in all counties except Platte. The overall planning area saw a decline in young children by about 1,500 over this 7-year period. This reflects the national trend of families having fewer children and older generations living longer. (Source: US Census Bureau, American Community Survey). (Figure 2.11)

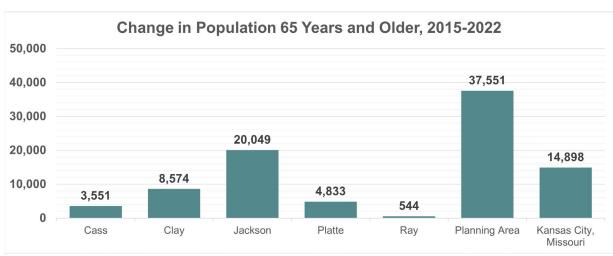
The largest concentration of young children appears to be in central and suburban Jackson County, though Cass, Clay, Platte, and Ray counties also have substantial concentrations of the population under five years of age.



Source: 2015-2022 American Community Survey, 5-year data

Figure 2.12: Percent of Population 65 Years and Older, 2015-2022 and 2017

While the more urban counties have the highest proportion of the young, it is the rural counties of Cass and Ray that have the highest proportion of older adults, with 17% and 19% residents, respectively, being 65 years or over. The five counties experienced an increase of 2 to 3 percent over the 7-year time period. (Figure 2:12)



Source: U.S. Census Bureau, ACS 2015-2022

Figure 2.13: Change in Population 65 and Over, 2015-2022

In absolute numbers, Jackson County experienced the greatest increase in its senior population, adding over 20,000 older adults between 2015 and 2022. This was substantially higher than increases recorded in the other four counties. Much of the increase for Jackson County occurred in Kansas City. (Source: US Census Bureau, American Community Survey).

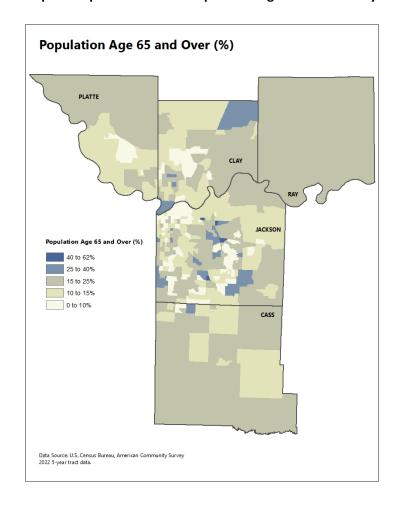
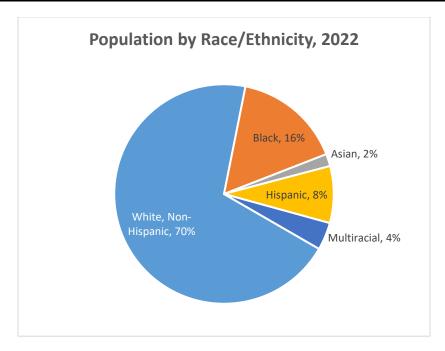


Figure 2.14: Map of Proportion of Total Population Age 65 and Over by Census Tract

Unlike young children, older adults reside throughout the five-county planning area. There are pockets of older adults concentrated in eastern Kansas City in Jackson County as well as western Independence and southeastern Jackson County. There are also concentrations of older adults in North Kansas City and near Gladstone in Clay County, northern and central Cass County, eastern Ray County, as well as some parts of northern Platte County.

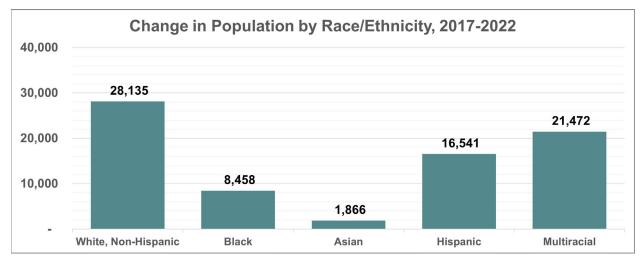
2.3.4 Population by Race and Ethnicity

The population of the Planning Area is mostly white, non-Hispanic, accounting for about 834,681 out of the 1.2 million residents, or 70 percent of the total, up 28,135 from in 2017. Black persons make up the next largest racial segment, at 16 percent of the Planning Area's population. Hispanic persons comprise eight percent of the population in the area, with Asians, multi-racial individuals, and other races comprising the remaining six percent. (Source: US Census Bureau, American Community Survey.)



Source: US Census Bureau, American Community Survey 2022

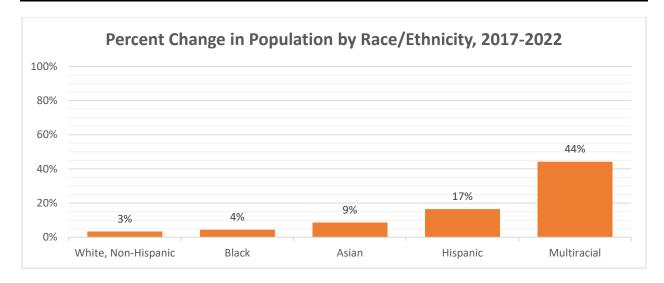
Figure 2.15: Area Population by Race/Ethnicity, 2022



Source: 2017-2022 American Community Survey, 5-year data

Figure 2.16: Planning Area's Change in Population by Race/Ethnicity

The White population grew the most out of any race or ethnic group between 2017 and 2022 in the Planning Area, adding 28,135 people. Hispanics/Latinos grew by 16,541 while Blacks grew 8,458. The multi-racial population grew the most, by 44 percent over the 7-year timeframe. (Figures 2.16 and 2.17)



Source: 2017-2022 American Community Survey, 5-year data

Figure 2.17: Percent Change in Population by Race/Ethnicity, 2017-2022

Forecasts of the region's population by race and ethnicity suggest that if the minority population continues to grow faster than the White population, then at some point portions of the Planning Area may become the majority minority. The Kansas City, Missouri, minority population is 45 percent of the city's total population. The area's more rural counties are the planning area's least racially and ethnically diverse. Ray County has a white non-Hispanic population of 93 percent and Cass County's is 85 percent.

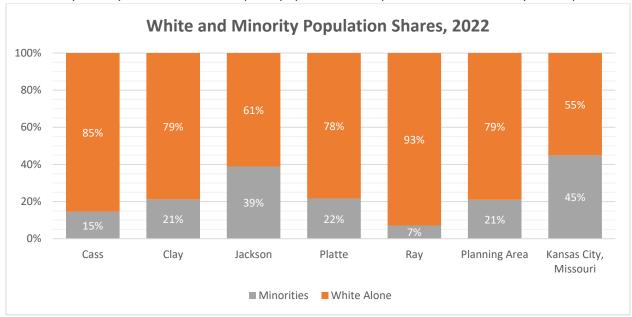
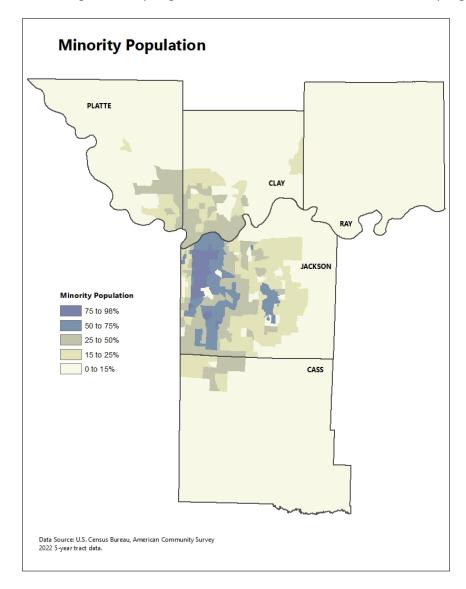


Figure 2.18: White and Minority Population Shares, 2022

While Kansas City, Missouri, has the largest concentration of persons of color, they are not spread uniformly throughout the city. The minority population, particularly the black population, is concentrated east of Troost Avenue, the historic racial dividing line due to legally sanctioned racial practices prior to the Civil Rights era. As a result of historic practices and policies, there remains a strong racial dividing line running north to south along Troost Avenue with blacks concentrated to the east of it

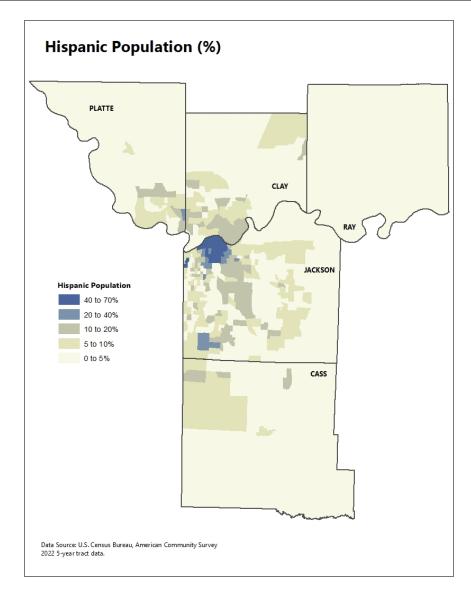
in the portion of Kansas City that is in Jackson County. The black population has grown southeast and south of the urban center, including Kansas City neighborhoods, Grandview, Lee's Summit and Blue Springs. (Figure 2.19)



Source: US Census Bureau, American Community Survey 2022

Figure 2.19: Minority Population 2022 (%)

While the majority of persons of color in central portion of Kansas City is largely Black, Hispanic persons are more dispersed, with some concentrations on the westside of downtown, in the northeast Kansas City area, Kansas City north and, to a lesser extent, to the south in Grandview and northern Cass County.



Source: US Census Bureau American Community Survey 2022

Figure 2.20: Hispanic Population 2022 (% of Persons by Census Tract)

The Planning Area has a growing Hispanic population, and while those persons who have moved to the region over the past five years tend to have greater language barriers, many long-time Hispanic residents speak both languages well. (Figure 2.20) The most prevalent language spoken in the planning area other than English is Spanish. Only 5% of Kansas City, Missouri's population does not speak English well. (Figure 2.21)

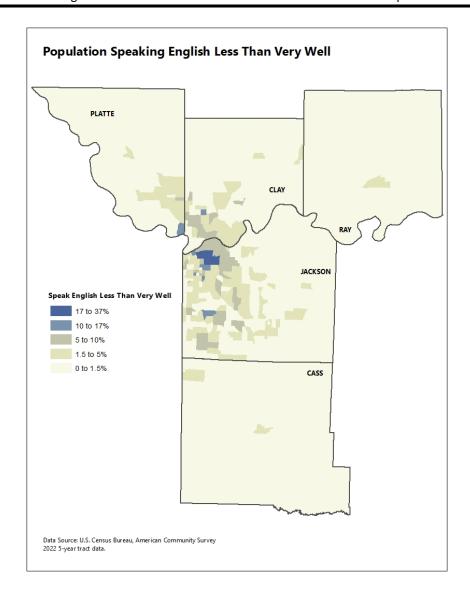
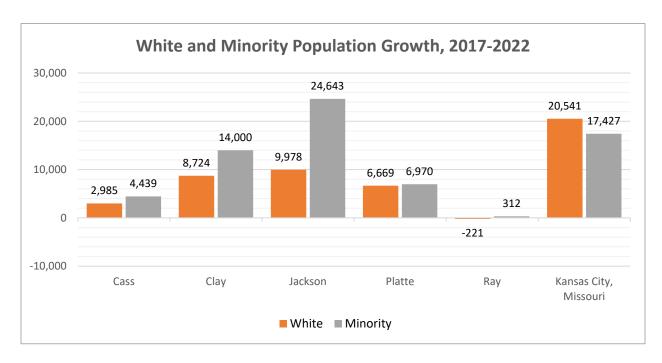


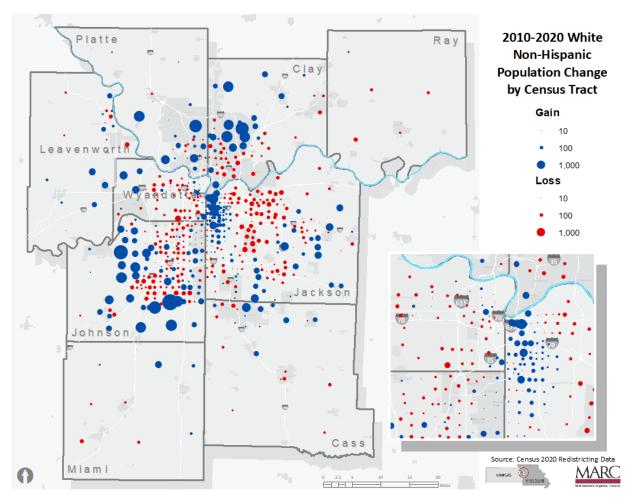
Figure 2.21: Population Speaking English Less than 'Very Well' (% of Hispanic Persons by Census Tract)



Source: 2017 and 2022 American Community Survey, 5-year data

Figure 2.22: White and Minority Population Growth, 2017-2022

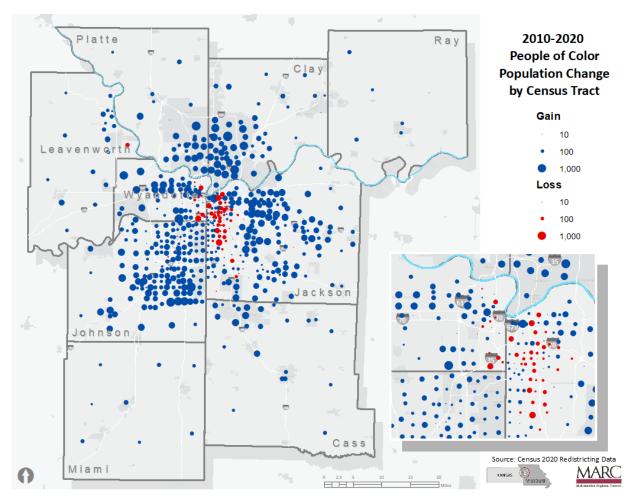
Overall, the white population growth was smaller in comparison with minorities between 2017 and 2022. Jackson County's minority population grew the most among the 5 counties. All of the counties had more growth in their minority population than their white population. In Jackson County, minorities accounted for around 80 percent of the population growth. The city of Kansas City saw a majority of their population growth come from white persons, given that much of their population growth occurred in Clay and Platte counties. (Figure 2.22)



Source: Census Bureau, 2010 and 2020 decennial censuses

Figure 2.23: Change in White Non-Hispanic Population 2010-2020

The county and large city totals mask the underlying dynamics of population shifts in the Planning Area. The area where minorities are most concentrated is also the area of Kansas City experiencing population loss. Similar to whites in previous generations, minorities are also moving outward in search of better opportunities for jobs and housing, safer neighborhoods and better schools. As a result, suburbs have experienced increasing racial and ethnic diversity (US Census Bureau, Decennial Census). (Figures 2.23 and 2.24)



Source: Census Bureau, 2010 and 2020 decennial censuses

Figure 2.24: Change in Minority Population, 2010-2020

2.3.5 Poverty

There is a correlation between concentrations of persons of color and concentrations of poverty. In part, population loss is the result of the loss of households or a reduction in household size. Population loss may also be correlated with an increase in the number of vacant dwellings in urban core neighborhoods or non-residential reinvestment in areas. Some urban core neighborhoods could have experienced population loss while also showing reinvestment.

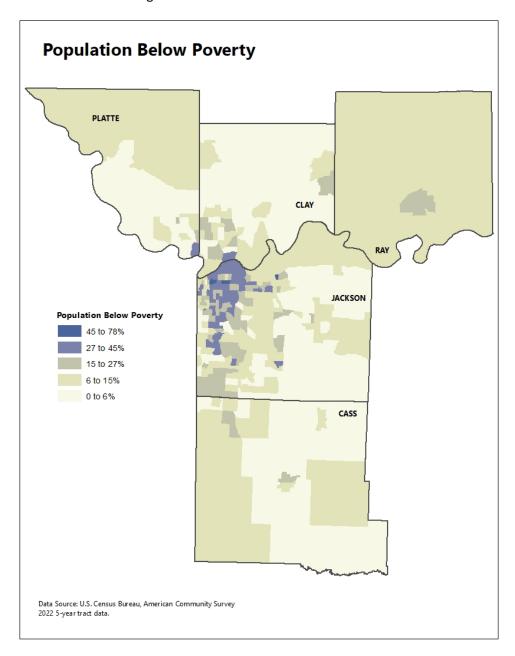


Figure 2.25: Population Below Poverty (% of Persons by Census Tract)

Almost every city and county in the Kansas City region has residents with low incomes, although greater concentrations of poor households are found in older, urban core neighborhoods. Many households on limited incomes live in homes that pose risks related to health due to particulate and lead exposures, as well as inadequate or expensive heating and cooling systems.

Table 2.2 Persons in Poverty by County, 2015 and 2022

	2015		20	22	Change		
COUNTY	Total Population	Population Below Poverty	Total Population	Population Below Poverty	Total Population	Population Below Poverty	
Cass	101,389	9.9%	108,205	7.0%	7,424	-2.9%	
Clay	235,344	8.8%	253,085	8.3%	22,724	-0.6%	
Jackson	687,182	17.9%	715,526	13.9%	34,621	-4.0%	
Platte	96,552	7.7%	107,033	7.0%	13,639	-0.7%	
Ray	22,799	15.9%	23,122	12.2%	91	-3.7%	
Planning Area	1,143,266	12.0%	1,206,971	9.6%	78,499	-2.4%	
Kansas City, MO	475,368	19.0%	505,958	14.9%	37,968	-4.1%	

Source: US Census Bureau, American Community Survey 2015 and 2022

Population Below Poverty

Population Below Poverty

A5 to 78%

To 15 to 27%

6 to 15%

O to 6%

Data Source U.S. Cersus Buresu, American Community Survey
2022 3-year trad data.

Figure 2.26: Change in Population Below Poverty, 2000-2010

Growth in the economy and support from COVID-19 resources resulted in a drop in the population in poverty between 2017 and 2022. Poverty remains the most concentrated in the Jackson County portion of Kansas City where the population in poverty dropped by almost 25,000 over the 7-year period. Clay and Platte counties experienced modest increases of persons in poverty. The percentage of persons in poverty dropped in the planning area from 12% of total persons in 2017 to 9.6% in 2022. Jackson and Ray counties had the largest decline of persons in poverty, 4% and 3.7%, respectively.

Many aspects of population vulnerability are highly correlated with poverty, including unemployment, low levels of education, living in households with no vehicles, and not having health insurance. While other vulnerable populations are more spread throughout the Planning Area, including the disabled and veterans, many of these populations have lower incomes.

Maps 2.68 to 2.71 showing the location of these vulnerable populations may be found at the end of this section.

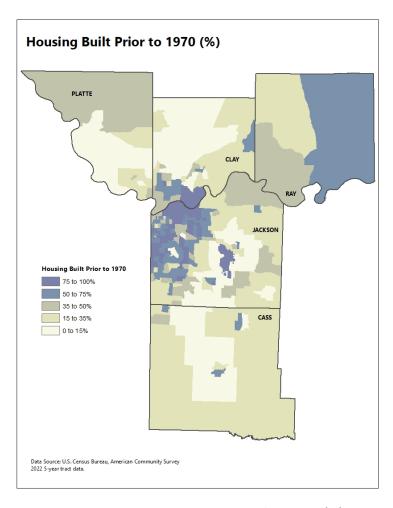


Figure 2.27: Housing Units Built before 1970 (%)

Households with limited incomes often reside in neighborhoods with older housing units. However, age of housing is not always an indicator of household wealth. **Figure 2.27** shows those areas with larger proportions of housing units that were built prior to 1970.

The Planning Area (and the entire Kansas City metro region) has seen a sizable increase in the number of multi-unit buildings over the past decade. As the value and sales price of single-family properties has increased and interest rates for mortgages has gone up, the rate of homeownership in the region has fallen. In addition to the increasing costs of properties and mortgage interest rates, institutional buyers have entered the Kansas City marketplace offering cash for properties, further reducing the supply of housing for homeownership.

Table 2.3: Housing Units by Occupancy: 2022								
County Owner Renter Vacant								
Cass	31,622	9,902	2,489					
Clay	67,850	31,651	6,070					
Jackson	174,963	123,945	31,676					
Platte	28,301	14,305	2,772					
Ray	6,889	1,884	1,105					
Planning Area	309,625	181,687	44,112					

Source: US Census Bureau American Community Survey 2017-2022

The planning area's housing stock data showed 535,424 in 2022, with 48.3% owner-occupied, 41.2% renter-occupied and 10.5% vacant.

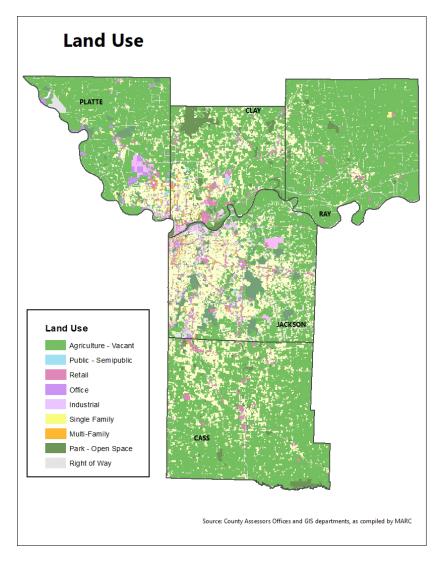
2.4 Planning for the Future

2.4.1 Land Use

As the Kansas City region's Metropolitan Planning Organization (MPO), MARC makes land use forecasts as an input into the region's long-range transportation plan. MARC forecasts population and employment growth by first forecasting land use change, then applying planned densities to those changes. This process begins with the distribution of development as given by the region's current land use (Source: MARC).

Table 2.4: Existing Land Use by Major Type, in acres								
Land Use	Cass	Clay	Jackson	Platte	Ray	Planning Area		
Single Family	38,740	42,997	71,188	22,316	10,537	185,779		
Multi-Family		2,396	6,192	1,585		10,173		
Commercial	5,857	7,818	8,875	1,791	2,242	162		
Mixed Use			104	58	-	91,858		
Office		542	3,784	10,958	-	15,284		
Industrial/Business Park		2,820	15,576	5,272		50,110		
Public/Semipublic	14,999	30,964	9,917	2,998	4,864	29,324		
Parks and Open Space		787	30,176	5,730	-	36,693		
Vacant or Agricultural	380,377	144,698	188,818	199,444	332,961	1,246,299		
Other		2,567	16,111	4,129	4	22,811		
Total	439,974	235,589	350,743	254,281	350,607	1,631,194		

Source: County Assessors Offices and GIS departments, as compiled and tabulated by MARC



Source: County Assessors Offices and GIS departments, as compiled and tabulated by MARC

Figure 2.28: Area Land Use

Vacant or agricultural land is still the dominant land use in the Planning Area, comprising two-thirds of the total land area. Adding parks and open space to this total, more than three-quarters (78 percent) of the Planning area is undeveloped. This varies by county, from Ray and Cass counties, with 96 percent and 88 percent undeveloped, respectively, to Jackson County, with 56 percent undeveloped.

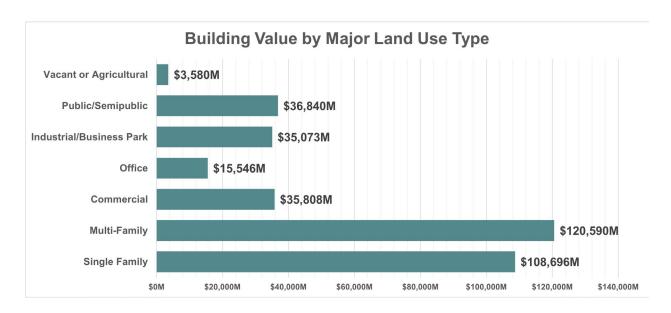
Among the land devoted to developed uses in the Planning Area, single-family residential areas comprise half of it, and right-of-way—principally for roads—make up another quarter. Public/semi-public facilities, such as Kansas City International Airport (KCIA), city halls, schools and churches, sit on nine percent of the developed land, while commercial areas consume six percent, as do office/warehouse parks and industrial areas. The highest density uses take up the least amount of land, as multifamily and office uses comprise only two percent and one percent of the developed land area, respectively. (Figure 2.28)

Given its relative share of developed land uses, single-family homes dominate the structure count, comprising 86 percent of the total structures in the Planning Area (See Table 2.5).

Table 2.5: Building Counts by Major Land Use Type									
Land Use Type	Cass	Clay	Jackson	Platte	Ray	Total			
Single Family	53,159	86,657	259,396	35,470	19,207	453,889			
Multi-Family	86	6,894	18,367	3,767		29,114			
Commercial	2,002	2,654	6,571	822	527	12,576			
Office		509	3,057	590		4,156			
Industrial/Business Park	3	989	5,054	749		6,795			
Public/Semipublic	1,013	1,993	3,668	545	466	7,685			
Vacant or Agricultural	773	622	8,624	917	398	11,334			
Total	57,036	100,318	304,737	42,860	20,598	525,549			

Source: City and County GIS departments and MARC 2023 estimates

The share of total building value attributed to single family structures drops to 30.5 percent. Multifamily buildings comprise 33.9 percent of the building value in the planning area. This is followed by the value of buildings in commercial (other than office), public/semi-public and industrial at about 10 percent each. Over half (51.1%) of the Planning Area's building value is in Jackson County. (**Figure 2.29 and Table 2.6**)



Source: County assessors, city and county Planning and GIS departments, as compiled and tabulated by MARC.

Figure 2.29: Building Value by Major Land Use Type

	Table 2.6: Building Value by Use Type									
Building Type	Cass	Clay	Jackson	Platte	Ray	Total				
Single Family	\$13,795,778,240	\$21,042,203,300	\$3,057,593,611	\$8,617,341,255	\$2,183,039,200	\$108,695,955,606				
Multi-Family	\$21,408,810	\$39,283,782,900	\$47,646,743,692	\$33,638,101,648		\$120,590,037,050				
Commercial	\$1,485,674,940	\$13,301,612,600	\$15,597,872,868	\$5,297,656,848	\$125,562,300	\$35,808,379,556				
Office	\$-	\$706,655,800	\$11,226,156,092	\$3,612,725,098		\$15,545,536,990				
Industrial/ Business Park	\$74,607,170	\$2,317,910,200	\$18,201,925,828	\$14,478,439,788		\$35,072,882,986				
Public/Semipublic	\$871,134,670	\$8,855,844,800	\$23,070,990,830	\$4,038,217,919	\$3,399,010	\$36,839,587,229				
Vacant or Agricultural	\$66,879,435	\$132,622,570	\$3,286,834,026	\$81,182,940	\$12,022,630	\$3,579,541,601				
Total	\$16,315,483,265	\$85,640,632,170	\$182,088,116,947	\$69,763,665,496	\$2,324,023,140	\$356,131,921,018				

Source: County assessors, city and county planning and GIS departments, as compiled and tabulated by MARC.

2.4.1a Planned Land Use

After collecting existing land use, MARC surveys cities and counties to obtain their future land use plans. Typically, these plans are designed to visualize what the jurisdiction will look like once it is fully built-out or, in older areas, when anticipated redevelopment is completed. As such, these plans provide guidance for MARC's forecast concerning what kinds of development will occur and where, provided there is sufficient demand to make the development economically feasible (See Table 2.7).

Table 2.7: Planned Land Use by Major Type, in acres								
Land Use (in acres)	Cass	Clay	Jackson	Platte	Ray	Total		
Single Family	46,358	58,094	129,236	36,639	10,605	280,932		
Multi-Family	2,741	7,998	14,128	5,867	5	30,739		
Mixed use	46,649	34,035	10,120	3,526		94,331		
Commercial	8,238	4,419	10,574	2,508	1,839	30,629		
Office	985	1,001	3,040	411		5,436		
Industrial/Business Park	7,426	13,558	21,830	9,461	30	52,304		
Public/Semipublic	2,329	4,815	6,746	11,641	4.980	30,511		
Parks and Open Space	4,615	18,437	38,156	8,887		70,096		
Vacant or Agricultural	312,194	92,950	116,316	175,099	333,146	1,029,705		
Other	8,439	281	597	32	3	9,353		
Total	449,514	350,743	254,281	350,607		1,631,194		

Source: City and County Planning and GIS departments, as compiled and tabulated by MARC.

Planned land use maps in local land use plans are not as precise as the data for existing land use, so most of the land in right-of-way is classified according to its surrounding land use. The planned land use map (Figure 2.30) shows that local governments expect most of the planning area's vacant and agricultural land to be developed as single-family housing at some point in the future. Given that the population in the Kansas City region is only projected to grow by 17.5 percent between 2020 and 2050 indicates that suburbanization trends are expected to continue with new development on green field sites but at a slower rate during the 30-year planning horizon.

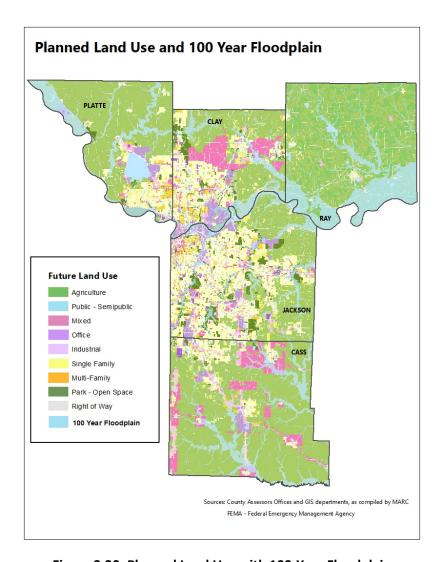


Figure 2.30: Planned Land Use with 100-Year Floodplain

To forecast where development is expected to occur between 2020 and 2050, given the vast quantity of land where growth could theoretically occur, MARC uses a series of statistical models to estimate the land most likely to develop. These history-based probabilities are augmented with information concerning local priorities for development that jurisdictions are encouraging with policies, investments and incentives. In general, local plans exclude future development from flood plains, so no new growth is forecast there.

Additionally, most local governments plan to focus future development in activity centers (Figure 2.31) along transportation corridors to increase walkability, better serve growing senior population, and make growth more affordable by limiting infrastructure extensions (Source: MARC information from local land use plans).

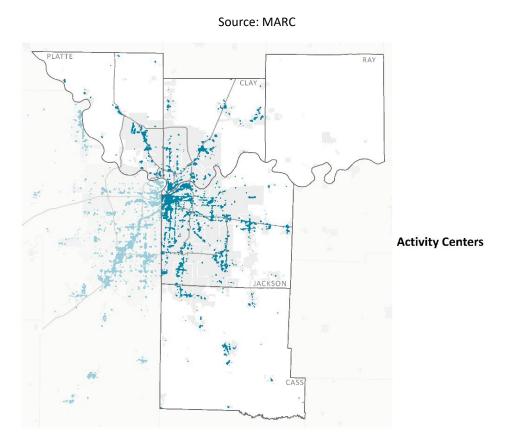


Figure 2.31: Planning Area Activity Centers

2.4.1b Land Use Forecast

Future land use is forecast based on 1) the expected growth in total population and employment, 2) the probability a given parcel of land will newly develop, redevelop, or decline based on existing land use and historical trends, and 3) current local land use policy and public investments designed to focus growth where it can be most efficiently and successfully accommodated. These forecasts also include as a policy that no new development will occur in floodplains (Source: MARC).

As a result, most new development (Figure 2.32) is projected to occur adjacent to or near existing development, especially along existing transportation corridors and in existing or planned activity centers.

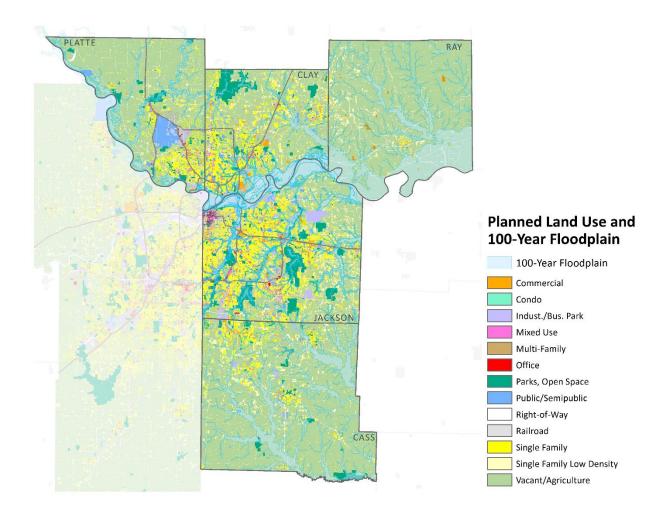


Figure 2.32: Forecast Future Land Use with 100-Year Floodplain

2 4 2 Demulation Females

2.4.2 Population Forecasts

This future land use forecast is then converted to a population and employment forecast by applying the planned densities, along with expected persons per household and employees per square foot, to the forecast land use. When aggregated to a county level, Clay County is forecast to experience the greatest population growth, adding more than 106,000 people between 2010 and 2040, while Platte County is expected to grow the fastest, increasing its population by 57 percent over the period, a gain of some 51,000 people. Jackson County will remain the planning area's largest county, adding about 68,000 people—second most in the planning area—to reach 742,000 by 2040, a 10 percent increase over 2010 levels. Cass County is expected to add 41,000 people during the 30-year period, an increase of 41 percent. Population forecasts were not available for Ray County in the MARC 2040 Forecast and American Community Survey sources. The 2020 forecast listed for Ray County is the current 2018 population to show change over a period. Combined, the planning area's population is forecast to grow by more than one-quarter million by 2040, a 24 percent increase over its population in 2010. (See Table 2.8)

Source: MARC

Table 2.8: Population Forecast								
				2020-2050	2020-2050 %			
County/Area	2020	2030	2050	Change	Change			
Cass	107,743	116,637	132,986	25,242	23%			
Clay	253,124	273,108	306,074	52,954	21%			
Jackson	716,641	763,275	814,324	97,665	14%			
Platte	106,614	122,234	146,244	39,628	37%			
Ray	23,142	21,922	21,227	-1,916	-8%			
Planning Area	1,207,263	1,297,176	1,420,854	213,573	18%			
Planning Area								
Share	57%	58%	58%	0.1%	0.2%			
MARC Region	2,101,548	2,249,167	2,469,120	367,571	17%			

Source: Census Bureau, MARC.

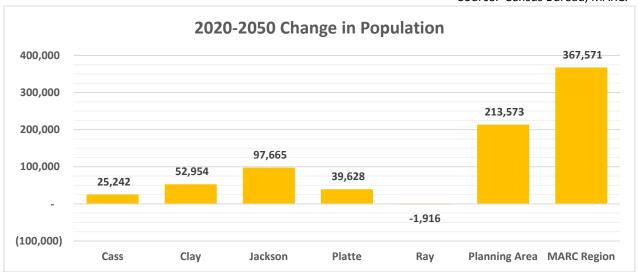


Figure 2.33: Population Forecasts 2020-2050

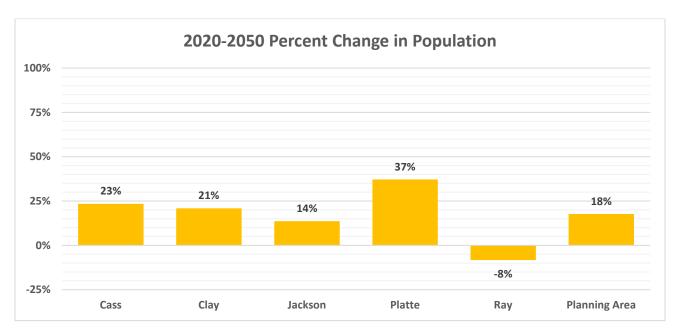


Figure 2.34: Population Forecasts Percent Change 2020-2050 Source:

Source: Census Bureau, MARC

Source: Census Bureau, MARC

The city of Kansas City population in households is expected to grow by 72,385 people between 2020 and 2050, a 14.5 percent increase. Most of its growth will be concentrated in the Northland—i.e., the portions in Clay and Platte counties, which lie north of the Missouri River. Besides Kansas City, Liberty, Kearney, Smithville, Gladstone and Parkville are expected to experience population growth over the period. In Jackson County, the urban core portions of Kansas City are forecast to continue to decline, albeit at reduced rates compared to historical trends. This decline is partially offset by the continued redevelopment in and around downtown Kansas City, MO. Most of the growth in Jackson County, however, is concentrated in the eastern portions, particularly in Independence, Lee's Summit and Blue Springs and, to a lesser extent, Grandview. In Cass County, population growth is expected to continue to be concentrated in its northern tier of cities — Belton, Raymore, Peculiar and Pleasant Hill. However, Harrisonville is also expected to see population growth between 2020 and 2050 (Figure 2.35).

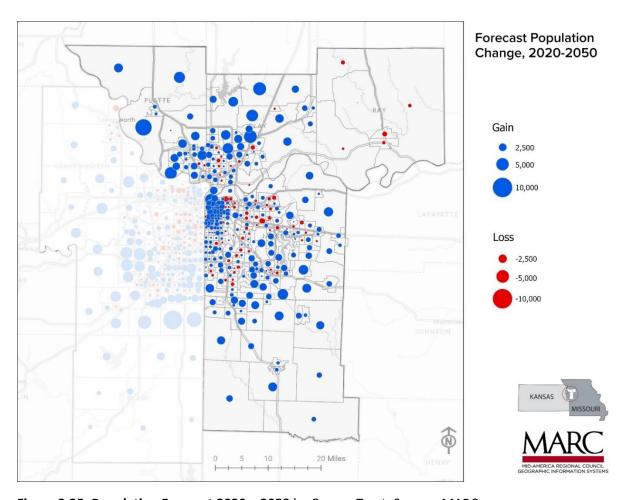


Figure 2.35: Population Forecast 2020 – 2050 by Census Tract. Source: MARC

Chapter 2: Planning Area Profile

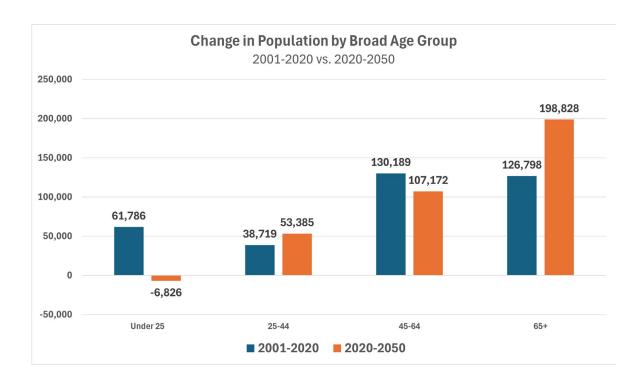
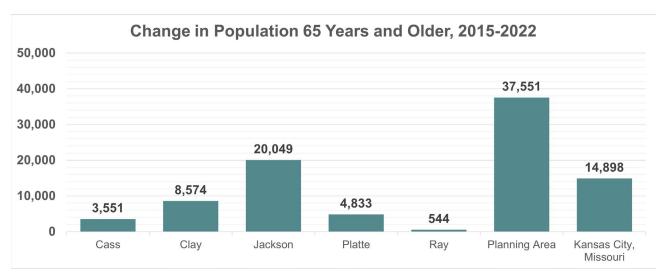


Figure 2.36: Kansas City MSA Population Change by Broad Age Group, 2001-2020 and 2020-2050 Source: U.S. Census Bureau and MARC

Perhaps the biggest demographic change expected in the future is the aging of the population. The number of older adults—defined as those 65 years old and above—in the Kansas City metropolitan area is expected to increase by 233,000 between 2020 and 2050 (Figure 2.36).

In 2015, older adults were 13 percent of the planning area's population. With the 2022 population estimates from the American Community Survey, older adults over 65 years old make up 15 percent of the five-county planning area. The number of older adults increased by 37,551 between 2015 and 2022, with 53 percent of the increase occurring in Jackson County. All counties in the planning area gained older adults. The aging of the baby boom generation means the senior share of the region's population is expected to increase to 20 percent by 2030. As a result, the population 65 and older will approximately double between 2010 and 2030 bringing their total to nearly one-half million. In fact, fully 58 percent of the Kansas City metropolitan area's total population growth between 2010 and 2030 is expected to be as a result of the increase in adults 65 years of age and older.



Source: U.S. Census Bureau ACS

Figure 2.37: Change in Population 65 Years and Older 2015–2022

Conversely, the younger adult share of the population will decline from 28 percent to 24 percent, while the middle-aged adult share will decline from 27 percent to 24 percent between 2010 and 2030. (See Figure 2.49) Because the region's overall population is expected to grow by some 600,000, however, these age groups are still projected to increase in numbers despite their declining share.

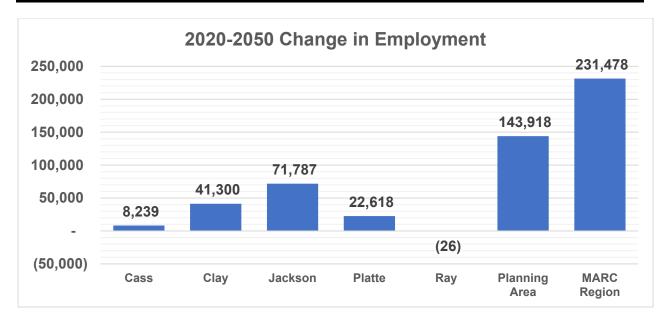
These changes in the age structure of the population have implications for how the region accommodates its population growth in terms of its land use. Compared to the prior 20 years, most of the growth in the future will be from households who may seek a smaller rather than a larger home in which to live, with amenities near-by and accessible by multiple means—walking, transit, ride sharing—rather than only by way of driving a private motor vehicle.

2.4.3 Employment Forecasts

The five-county planning area is expected to add almost 144,000 new jobs between 2020 and 2050, a 26% increase. Growth is expected to be greatest in Jackson County, with the addition of 71,787 jobs. Platte County is expected to see the largest percentage job growth over the forecast period, growing 48%.

Table 2.9: Employment Forecast by County							
COUNTY	2020	2030	2050	2020-2050 Change	2020-2050 % Change		
Cass	27,370	31,614	35,607	8,239	30%		
Clay	105,335	133,248	146,636	41,300	39%		
Jackson	370,602	404,287	442,368	71,787	19%		
Platte	47,392	61,603	70,005	22,618	48%		
Ray	3,795	3,791	3,768	(26)	-0.7%		
Planning Area	554,494	634,542	698,385	143,918	26%		
Planning Area Share	54%	55%	56%	1.5%	2.7%		
MARC Region	1,022,823	1,154,485	1,254,270	231,478	23%		

Source: Bureau of Labor Statistics, Census Bureau, MARC.



Source: Bureau of Labor Statistics, Census Bureau, MARC

Figure 2.38: Employment Change, 2020-2050

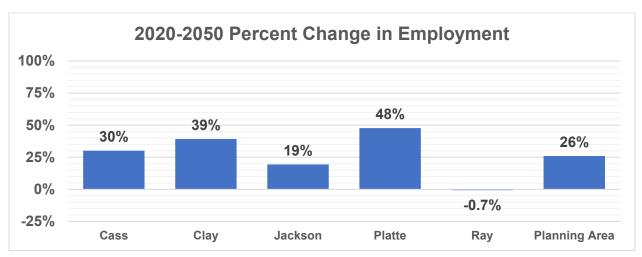


Figure 2.39: Employment Change, 2020-2050 (%)

Platte County's job growth is expected to be the next fastest, as it is forecast to increase its 2020 employment levels by 48 percent, resulting in a gain of 22,618 jobs. Meanwhile, Ray County's jobs will drop slightly over the period. (See Table 2.8 and Figures 2.38 and 2.39)

The city of Kansas City accounts for 45 percent of the Planning Area's projected employment growth. In addition to the area near KCl, significant employment increases are expected in and around Downtown, in Kansas City north in Clay County, in eastern Jackson County, and in south Kansas City. Professional and scientific services, health care, manufacturing and wholesale trace are among the growth industry sectors in the planning area.

Other cities in the Planning Area expecting to add a significant number of jobs include Liberty in Clay County, Lee's Summit. Independence and Blue Springs in Jackson County. (Figure 2.40)

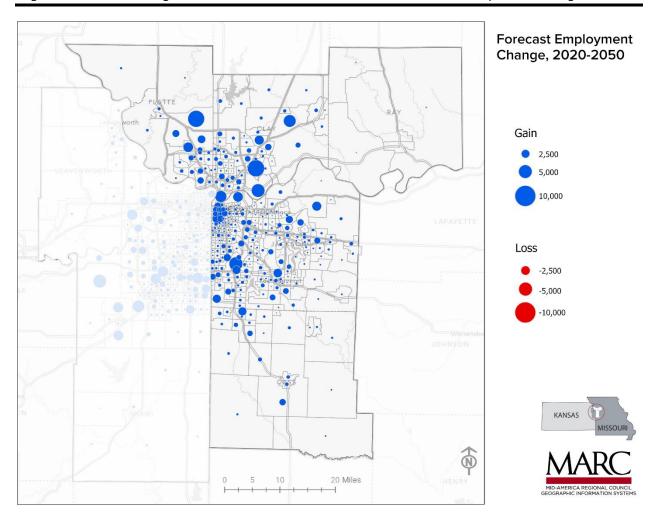


Figure 2.40: Forecast Employment Change 2020-2050

2.5 Kansas City Regional Economy

2.5 Kansas City Regional Economy

MARC serves as the Economic Development District for the 9-county Kansas City metro area, including the Missouri side Planning Area. A new Comprehensive Economic Development Strategy Plan was adopted by the MARC Board of Directors in September 2024. The Plan reviewed updated demographic and economic data, included a SWOT analysis and outlined goals and strategies to strengthen the region's economy and support inclusive prosperity. Economic Development | MARC

In exploring the region's economic resiliency and prosperity, the economy's overall growth rate is measured by its growth in workers and their productivity. However, growth, all by itself, isn't enough. Inclusion allows everyone to experience the benefits of that growth through a rise in their standard of living.

The 2024-2029 CEDS aligns with the region's business-led civic collaborative – KC Rising – and its *Pillars of Prosperity* focused on economic prosperity for all. KC Rising established four long-term metrics key to determining how well the Kansas City region is simultaneously achieving both greater economic growth and greater inclusion in receiving the benefits from that growth.

Two of the four are overarching growth metrics followed by two overarching inclusion metrics.

- Net migration rate, a key component of population growth thus labor force growth
- **GDP** per job, a measure of productivity, or how much each worker produces.
- **Percent of workers living in self-sufficient households**, a measure of whether jobs that people have are sufficient to cover bills for necessities such as housing, transportation, childcare and healthcare.
- Black/white housing wealth gap, based on a measure of homeownership. Even self-sufficient incomes
 may not be sufficient to cover unexpected expenses. It takes wealth to be resilient in the face of adversity
 and this starts with owning a home.

Benchmark Metros

To measure progress, KC Rising benchmarks the **region against ten aspirational metros** that historically have done a little better than KC on growth, inclusion, or both, and that we continuously compete against for economic development projects. These metros are Austin, Charlotte, Cincinnati, Columbus OH, Denver, Indianapolis, Minneapolis, Nashville, Portland, and Raleigh.

What enables the population of some metros to grow faster than others is their ability to attract people from outside the area. This makes net migration a measure of a region's ability to attract and retain talent, which is essential to business attraction and retention.

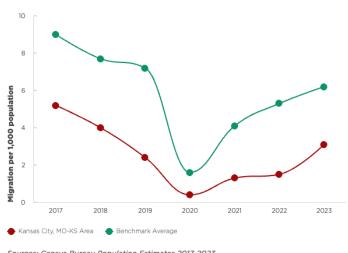
BENCHMARK METROS

Austin
Charlotte
Cincinnati
Columbus
Denver
Indianapolis
Minneapolis
Nashville
Portland
Raleigh

Net Migration

Kansas City's *net migration rate* is half that of the benchmark metro average, though in the last year the region began to close a gap that had been widening post-pandemic. Its net migration rate doubled in the past year and currently ranks 8 out of 11.

Figure 2.41: Net Migration Rate Over Time



Sources: Census Bureau Population Estimates 2017-2023

Note: Calculation based on 3-year moving average.

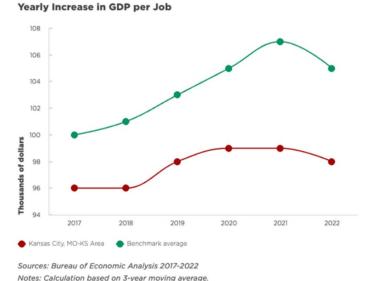
Net Migration Rate Over Time

Gross Domestic Product (GDP)

GDP measures the total economic value generated by an economy's businesses in the process of employing workers to transform inputs into finished goods and services for sale. GDP per job measures the average amount the region's workers are able to contribute to GDP. As such, it is a measure of business productivity.

High levels of business productivity tend to attract other businesses. Unfortunately, Kansas City's *GDP per job* currently ranks 10 out of 11 and the gap compared to benchmark metros has grown by \$3,000 per worker over the past five years. Considering the region has more than 1 million workers, this increase costs the economy \$3B annually.

Figure 2.42: Yearly Increase in GDP per Job

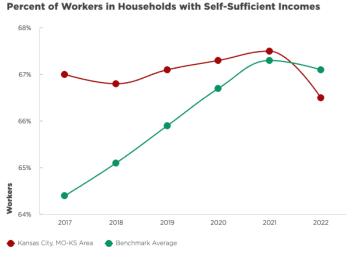


Self-Sufficient Households

Growth, all by itself, isn't enough. We want everyone to experience the benefits of that growth through a rise in their standard of living. One measure of whether everyone is benefiting is whether all households earn enough to pay their bills. If they do, then we can consider them to be **self-sufficient households**. Increases in self-sufficiency generally mean incomes are rising faster than costs.

Kansas City's historical affordability advantage is slipping and currently ranks 8 out of 11. While most metros saw significant progress in becoming more affordable between 2017 and 2022, Kansas City's progress stagnated and appears to have reversed in the last year.

Figure 2.43: Percent of Workers in Households with Self-Sufficient Incomes



Sources: American Community Survey PUMS 2017-2022. Note: Calculation based on 3-year moving average.

Wealth Gap

Self-sufficiency alone is not enough either. While a self-sufficient income can pay the bills, it can also be fragile if there are unexpected expenses, such as a serious illness, or unexpected loss of income, as when one of the earners in the household loses their job. **Resiliency in the face of unexpected adversity requires wealth** and, for most households, wealth-building begins with home ownership.

Black households in Kansas City average about 37% of the housing wealth of white households, a rate that ranks 10th among its benchmark metros in 2022. While up from 32% in 2017, Kansas City's advancement has not enabled it to improve its performance relative to the benchmark average.

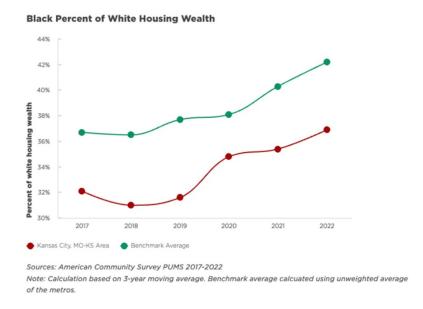


Figure 2.44: Black Percent of White Housing Wealth

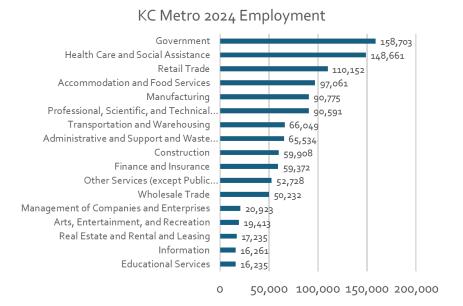


Figure 2.45: KC Metro Area Employment Source: Lightcast 2024

What explains the region's sluggish economic performance? Kansas City's industrial structure is heavily oriented toward production of services rather than goods. This is similar to the nation. How similar can be measured by comparing each industry's proportion of total regional and total national jobs. When they are the same, the ratio of these proportions, called a "location quotient," is equal to 1.

In the Kansas City region, over 85% of employment in industry sectors with a location quotient between 0.9 and 1.2. Those include Professional, Scientific and Technical Services; Wholesale Trade, Management of Companies; Other Services; Arts, Entertainment and Recreation; Construction and Retail Trade. Only two sectors have LQ's greater than 1.2 – Transportation and Warehousing and Finance and Insurance. Manufacturing is just below 1.0 at .98. Yet, regions grow by serving a larger economy through exports. The dollars they bring to region are used to hire workers whose spending on homes, transportation, food, education, and entertainment create the demand that supports all of a region's local-serving jobs. In general, for regions the size of the Kansas City metropolitan area, each dollar earned from the sale of an exported good or service generates at least one additional dollar of sales for local-serving industries.

While having a broad-based economy that mirrors the nation promotes economic stability, it also suggests the region's capacity to export goods and services to the rest of the world is relatively weak. Exporting depends on being the superior producer of something the rest of the world needs or wants but does not produce or produce it as well. Therefore, specialization is a key to having product to export.

EXPORTS

Location quotients, then, measure the level of specialization and so are one indicator of export capacity. If we look at more detailed industries than the broad sector level, definite employment specializations emerge. These industries all have location quotients greater than 1.5, with small- arms manufacturing, electronics manufacturing, monetary authorities and communications equipment manufacturing all having LQs greater than 10.

Source: Lightcast

KC Largest Exporting Industries Ranked by 2022 Relative Employment Specialization



Figure 2.46: KC Largest Exporting Industries

However, by ranking the same industries by their number of employees, a clearer picture emerges of the industries on which the Kansas City regional economy depends – warehousing, computer systems design, insurance, engineering, hospitals, auto manufacturing, electronic manufacturing, freight-related transportation, medical labs. These, then, are the economic clusters that have historically powered the region's economy.

KC Largest Exporting Industries Ranked by 2022 Jobs



Figure 2.47: KC Largest Export Industries Ranked by 2022 Jobs Source: Lightcast

2.5.1 Planning Area Economy

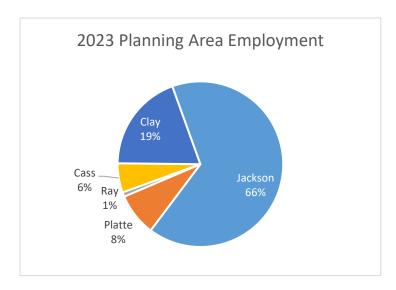


Figure 2.48: Planning Area Employment, 2023 Source: Lightcast 2023

Jackson County comprises 66 percent of the planning area jobs, with 409,409 jobs of the planning area's total job count of 622,677. Clay and Platte counties form the next largest portion of the Planning Area economy with 27 percent of its jobs, combined. Clay County's 120,000 jobs account for 19 percent of the area job total, while Platte County's 52,000 jobs contribute another 8 percent. The remaining 7 percent of the Planning Area's jobs are mostly in Cass County, with Ray County contributing one percent.

The 2020 Plan update characterized the Planning area as showing strong employment growth. The plan was published just prior to COVID-19 pandemic, which caused a dramatic but temporary loss of jobs. The region has recovered most of the jobs lost during the pandemic but is growing at a slower pace.

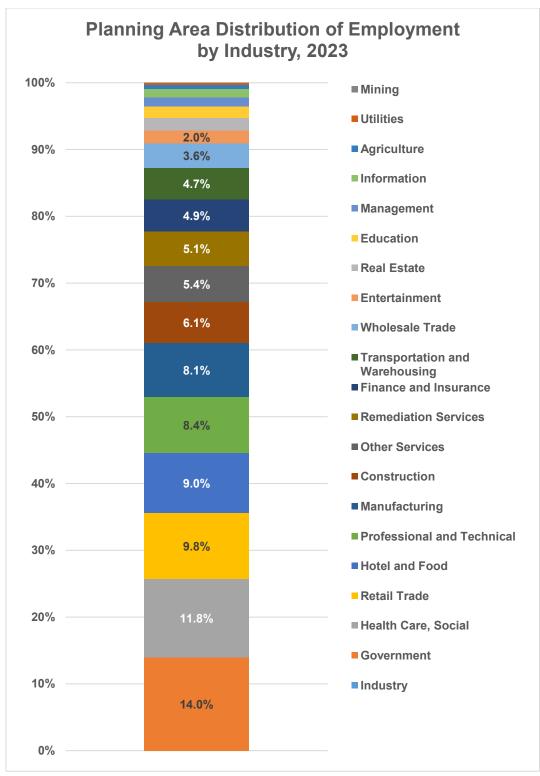
2.5.2 Employment by Industry

Government is the largest industry in the Planning Area, compromising 14 percent of its total employment. The vast majority of government is local government, and within that sub-sector, public schools make up the largest component.

The next largest industry is health and social services, with 11.8 percent of the area's employment, followed by retail (9.8%), hotel and food (9%) and the professional services industry (8.4%) of the planning area's overall employment.

Retail, hotel and food workers tend to have wages that are lower than average. The next three largest industries, however—manufacturing, finance and insurance, and administrative —employ people making above average wages. Jobs in skilled trades have become a larger segment of the workforce, with construction trades, manufacturing, wholesale trade and transportation/logistics accounting for over 22 percent of the jobs in the planning area. (Source: Lightcast 2023)

Different counties specialize in different industries, however, so it is useful to compare their distribution of employment with the Planning Area overall.



Source: Lightcast 2023

Figure 2.49: Planning Area Distribution of Employment by Industry

See Table 2.10: Employment by Industry by County for the Planning Area 2023 (Bureau of Economic Analysis). Each county has a specialized combination of employers and employment. Cass County's largest employment sectors include government, retail trade, warehousing, hotel and food establishments, and construction. Clay County's employment led in government, manufacturing, retail trade and hotel and food establishments. Jackson County's major employment sectors are government, health care, professional and technical services, hotel and food establishments, manufacturing and construction. Plate County's largest employment sectors are retail trade, government, hotel and food establishments, warehousing and construction. Ray County's detail was not available.

Table 2.10: 2023 Jobs by Industry and by County 2023

Table 2.10. 2023 Jobs by Mudstry and by County 2023						
Jobs by Industry	Cass	Clay	Jackson	Platte	Ray	Planning Area
Government	5,158	16,792	58,300	5,361	N/A	86,932
	·	•	ŕ	•	•	•
Health Care, Social	3,428	9,853	55,099	4,518	N/A	73,231
Retail Trade	4,915	12,882	36,126	6,718	N/A	61,290
Hotel and Food	3,639	10,640	36,298	5,233	N/A	56,233
Professional and						
Technical	1,156	8,041	40,227	2,516	N/A	52,109
Manufacturing	2,145	14,621	28,962	3,987	N/A	50,202
Construction	3,008	6,723	25,098	2,970	N/A	38,165
Other Services	1,665	6,160	23,302	2,197	N/A	33,927
Remediation Services	2,018	8,875	17,013	3,748	N/A	31,759
Finance and Insurance	795	2,793	24,919	1,594	N/A	30,223
Transportation and						
Warehousing	3,849	8,131	12,598	4,484	N/A	29,336
Wholesale Trade	983	6,431	11,777	3,263	N/A	22,523
Entertainment	375	2,907	7,684	1,427	N/A	12,449
Real Estate	376	2,099	7,243	1,535	N/A	11,290
Education	282	1,254	8,640	974	N/A	11,167
Management	33	1,037	6,840	297	N/A	8,224
Information	125	543	6,677	577	N/A	7,942
Agriculture	1,458	290	1,353	313	N/A	3,602
Utilities	191	161	1,226	225	N/A	1,828
Mining	78	103	28	16	N/A	246
	35,676	120,337	409,409	51,954	5,301	622,678

Source: Bureau of Economic Analysis

2.5.3 Employment Location

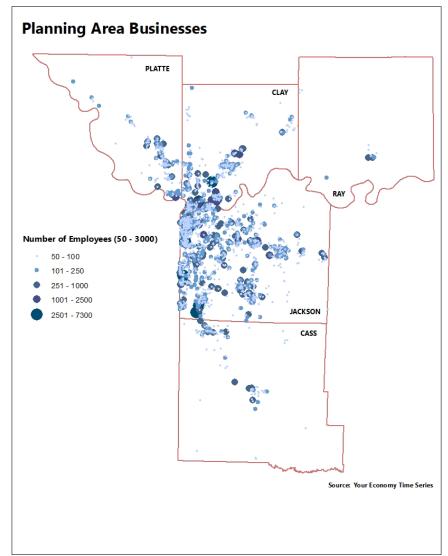


Figure 2.50: Areas of Business by Number of Employees

Businesses tend to locate where there is a combination of high demand in terms of population and income and good access to a talented workforce. As a result, businesses tend to cluster along major roadway facilities in areas with significant population density. Exceptions are industrial and warehouse facilities, where access to large tracts of land with good rail access is more important than access to population. The region's most recent large employment centers tend to be located along major highways in outlying suburban areas, such as major logistics centers, new data centers and the new Panasonic EV battery plant and associated development.

Shopping centers are located near major arterials and highway interchanges to maximize their access to the biggest possible consumer market. This is especially apparent when examining some of the Planning area's largest shopping areas (See Figure 2.51: Area Shopping Centers below). For example, Independence Center, with 1.4 million square feet of space, is located at the intersection of I-70 and U.S. 291. Zona Rosa, Tiffany Springs Market Center, and Boardwalk Square all sit at in different quadrants of the I-29/M-152 Interchange while Barry Towne is near the intersection of U.S. 169 and M-152 in Clay County, and Summit Fair and Summit Woods Crossing in Lee's Summit are located at the intersection of I-470 and U.S. 50.

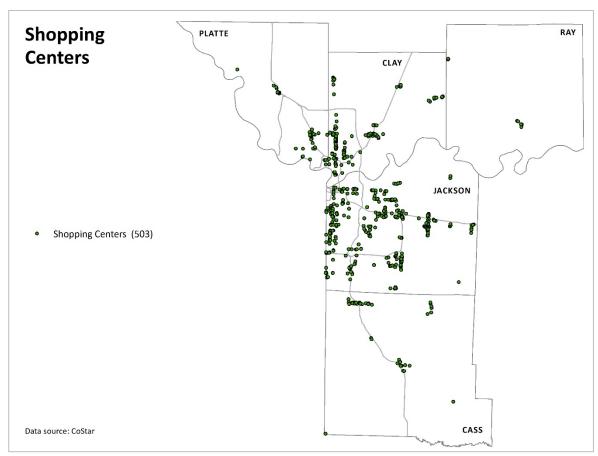
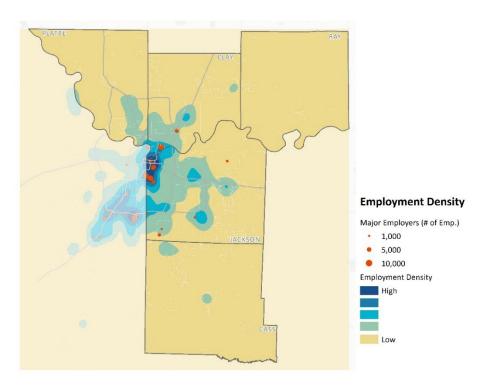


Figure 2.51: Area Shopping Centers

The nation's oldest shopping center, and still one of the region's most successful, the Country Club Plaza, is located along Ward Parkway near Broadway and Main, all principal arterials. It anchors the south end of the region's densest cluster of employment, which stretches from the River Market area, through Downtown, the Crossroads and Crown Center to the Plaza.

Downtown has seen a remarkable economic turnaround, with the opening of the Sprint Center and Power and Light District in 2007. Considerable conversions of older buildings to loft spaces and significant new multifamily and hotel construction is occurring throughout the downtown from the City Market through the Crossroads area, especially along the KC Streetcar line that opened in 2016. Due to overwhelming success of the first phase of the transit system, the extension from Union Station to the Country Club Plaza and UMKC along Main Street is expected to begin operation in 2025. Additionally, a new 800-room convention hotel immediately adjacent to the Bartle Hall Convention Center opened in 2020.

Major employers located principally or headquartered in the planning area include Cerner and North Kansas City Hospital in Clay County; HCA Midwest Health System, Saint Luke's and Children's Mercy Hospitals, Hallmark Cards, DST (State Street), Truman Medical Centers, Honeywell, Burns & McDonnell, and Commerce and UMB Banks in Jackson County; and Farmland and Citi Cards in Platte County. Several plant closings, including the Harley-Davidson plant in Platte County, will impact employment. (MARC)

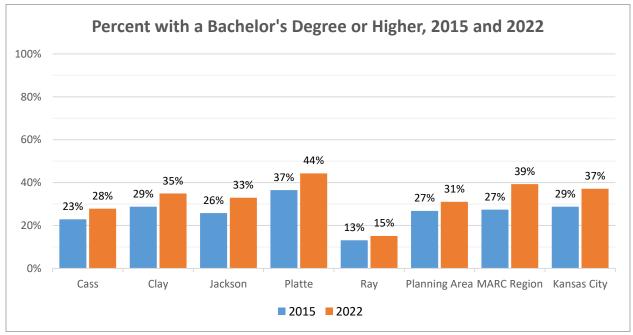


Source: Census Bureau, Longitudinal Employer-Household Dynamics (LEHD)
Origin-Destination Employment Statistics (LODES), 2011

Figure 2.52: Area Employment Density

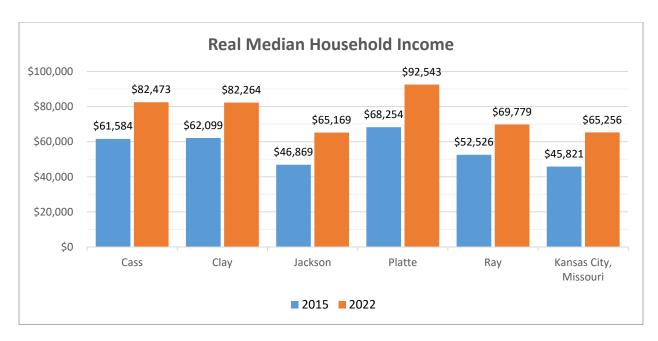
2.5.4 Education & Income

In recent years, all counties in the planning area have seen significant increases in adult educational attainment, as measured by the percentage of their residents 25 years and older who have earned a bachelor's degree or higher. The planning area saw a four percent increase in the overall educational attainment average between 2015 and 2022. It was led by Platte County, whose residents' attainment of a bachelor's degree increased seven percentage points over the period, to 44 percent. Clay County has the second highest average level of educational attainment in the planning area, with 35 percent of its residents earning at least a bachelor's degree. Kansas City, Missouri, increased by 8 percent to 37 percent of all adults. In the 2015-2022 period, Ray County has increased the slowest, at 0.08 percent. (Figure 2.53)



Source: U.S. Census Bureau 2015-2022 American Community Survey

Figure 2.53: Bachelor's Degree or Higher, 2015 and 2022 (%)



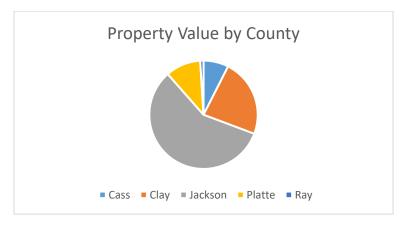
Source: U.S. Census Bureau, American Community Survey

Figure 2.54: Real Median Household Income

Like educational attainment, the real median household income increased in every county in the planning area. The real median household income annual income of the household right in the middle – half the area's households earn more, and half earn less. Real incomes are those after adjusting for inflation and so measure the purchasing power of households. The data is based on inflation adjusted dollars for that year. Because the consumer price index increased 30 percent across the nation between 2015 and 2022, in the Kansas City metropolitan area over this period, nominal incomes would have needed to increase 30 percent simply to keep up. Ray County had the lowest in 2015 and Jackson County had the lowest in 2022. Median household incomes increased between 32 and 39 percent across the 5 counties with the highest in Jackson County, a 39 percent gain.

Platte County has the highest median household income of all planning area counties with \$92,543 in 2022. Households residing in Clay and Cass counties have the next highest incomes, with their median households earning over \$84,000. Jackson County has the lowest median household income of any county in the planning area, at \$65,169. This is largely due to the concentrated poverty in the city of Kansas City, which itself has a median household income of \$65,256.

2.6 Property Value



Source: County Assessors 2023

Figure 2.55: Total Property Value by County

Despite having the lowest household incomes among the counties in the planning area, Jackson County contains a significant majority of real estate value due to its relative size and its function as an employment center. Jackson County is home to 59 percent of the planning area's population, and 58 percent of its property value, approximately the same as its percentage of the planning area employment. Clay County contains 23 percent of the real estate property value in the planning area and Platte County contains 10.5 percent, both of which are also about the same as their share of the area's employment. (See Figure 2.55)

The total value of real estate property in the planning area in 2023 was approximately \$102.5 billion. Jackson County accounted for \$59.3 billion of that, followed by Clay with \$23.8 billion, Platte with \$10.8 billion, Cass with \$7.7 billion, and Ray with \$1 billion. The city of Kansas City alone accounted for over one-fourth (26 percent) of the property value in the planning area with \$28.9 billion.

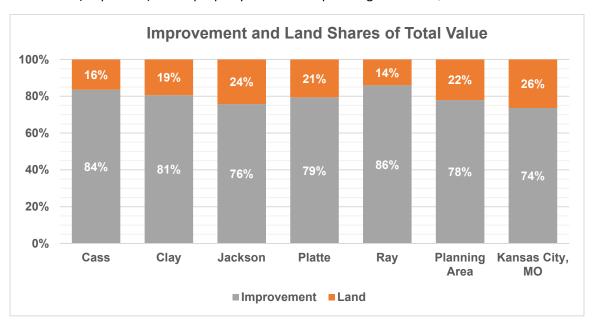


Figure 2.56: Improvement and Land Shares of Total Value

Improvements, principally buildings, comprise 78 percent of the total property value in the planning area, with land value accounting for the remaining 22 percent. These shares are remarkably stable across the counties in the area. Land's share of total property value ranges from a low of 14 percent in Ray County to a high of 24 percent in Jackson County.

Table 2.11: Improvement, Land, and Total Property Value							
County/Area	Land	Improvement	Total				
Cass	\$1,265,531,563	\$6,413,229,155	\$7,678,760,718				
Clay	\$4,628,898,360	\$19,188,024,099	\$23,816,923,100				
Jackson	\$14,373,386,758	\$44,889,149,446	\$59,262,536,204				
Platte	\$2,217,831,190	\$8,546,167,805	\$10,763,998,995				
Ray	\$142,571,942	\$870,240,724	\$1,012,812,666				
Planning Area	\$22,628,219,813	\$79,906,811,229	\$102,535,031,683				
Kansas City, MO	\$7,061,433,338	\$21,275,078,316	\$28,891,081,845				

Source: County Assessors, 2023

2.7 Critical Infrastructure

2.7.1 Transportation

The Kansas City region, a major transportation hub, sits at the intersection of four interstate highways — Interstates 70, 35, 29 and 49 — which connect the region to both coasts, Canada and Mexico. In addition, the region is served by numerous interstate beltways, U.S., and state highways.

Streets and highways form the foundation of the transportation system. According to the latest data, nearly 16,000 miles of public roadways in the region carry about 47 million vehicle miles of travel each day. Based on the Federal Highway Administration 2012 Highway Statistics Report, the bistate Kansas City urbanized area ranks 28th in the nation for roadway miles per capita, far ahead of larger urbanized areas such as St. Louis, Atlanta and Chicago.

Major trucking companies operate out of the Kansas City area. Air transportation, including considerable air freight operations and general aviation activity, is served by Kansas City International Airport, Charles B. Wheeler Downtown Airport and a number of smaller general aviation airports. Kansas City is the second busiest railroad center in the nation, with major rail yards for Union Pacific, Burlington Northern, and Canadian Pacific. The region is also served by barge transportation, with about a dozen regulated barge lines transporting goods through the metropolitan area on the Missouri River (MARC Transportation Plan).

2.7.2 Roadway System Infrastructure

Kansas City's system of roadways is among the most extensive in the nation. According to Federal Highway Administration 2012 statistics, the Kansas City region ranks 28th nationally among major metropolitan areas on the most freeway miles per person of urbanized areas with populations greater than 500,000.

These rankings are due in large part to the extensive highway projects implemented in the Kansas City region during the 1970s and 1980s, such as the construction of the Interstate 435 loop. **Table 2.12** shows the functional class miles for major freeways and roadways in the Kansas City Area. Data was collected by the MARC transportation department, no data reported for Ray County.

Table 2.12: Transportation Facilities by Functional Class Miles							
Roadway Type	Cass	Clay	Jackson	Platte	Planning Area		
Interstate	60	93	177	99	429		
Freeway / Expressway	0	109	119	25	254		
Principal Arterial	49	60	189	34	332		
Minor Arterial	100	145	507	90	842		
Major Collector	249	197	310	160	915		
Minor Collector	45	11	2	8	66		
Total	503	616	1,305	415	2,839		

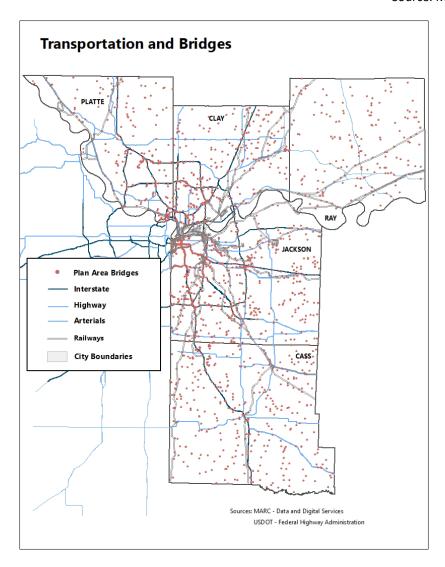


Figure 2.57: Regional Transportation System

2.7.3 Roadway System Condition

According to The Road Information Program's (TRIP) report *Missouri Transportation by the Numbers: meeting the State's Need for Safe, Smooth, and Efficient Mobility,* one-third of the nation's major urban roads are rated in poor condition. In the 2018 report, Kansas City's average pavement conditions showed significant increase in the percentage of roads with "poor" conditions in comparison to the 2013 Bumpy Roads Ahead research report.

In the 2013 report, only 15 percent of Kansas City's roads were classified as "poor" pavement conditions. In 2018, 26 percent of the roads were classified as "poor". The 2018 report found 27 percent of the Kansas City region's roads to be in mediocre condition; 17 percent fair; and 30 percent good. The Bumpy Road Ahead report also breaks down the hidden costs of deficient roads. In Kansas City, drivers should expect to pay \$667 in additional vehicle operating cost, \$334 in traffic crashes, and \$988 in lost time and wasted fuel due to congestion. TRIP's report uses FHWA data for its analysis.

2.7.4 Bicycle/Pedestrian Trails

Bicycle and pedestrian trails in the Kansas City metropolitan area are being developed at an increasing rate as local communities hear from their residents about desires for safe facilities to walk and bicycle. Many of the local trail facilities are part of MetroGreen®, a plan for a 1,100-mile, area-wide, interconnected system of public and private open spaces, greenways and trails that will link seven counties in the Kansas City metropolitan area. Error! Reference source not found. MARC's Long-Range Transportation Plan shows Bicycle and Pedestrian Trails and on-road facilities in the MARC area (Cass, Clay, Jackson, Johnson, Leavenworth, Miami, Platte, Ray, Wyandotte) and the Hazard Mitigation planning area (Cass, Clay, Jackson, Platte, Ray). Additionally, many communities in the region have adopted local plans for both on-road and off-road facilities.

Table 2.13: Bicycle and Pedestrian Trails (Miles)						
Mobility Type	MARC Region	Planning Area				
Bike Lanes	104.46	37.48				
Cycle Track	0.89	0.89				
Mountain Bike Trails	117.76	71.4				
Walking/Hiking Trails	241.64	144.86				
Bike Routes	220.43	220.43				
Share-the-Road Bikeways	506.92	147.93				
Paved Trails	755.09	397.24				

Source: MARC

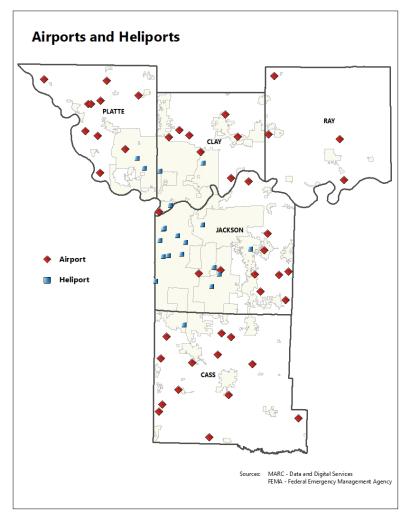
2.7.5 Freight and Goods Movement Facilities

Kansas City's rail system consists of five Class I railroads and several regional or short line carriers. The extensive rail network throughout the region serves local industry with major intermodal yards and provides connection to international markets. BNSF Railway's Transcontinental Route runs diagonally through the region from the southwest to the northeast. The "Transcon" connects the Ports of Los Angeles and Long Beach to Chicago via Kansas City with 80 to 90 trains per day. The Union Pacific (UP) Railroad's major coal route runs east-west through the region from Topeka into Missouri where it parallels the Missouri River. This route carries upwards of 80 trains per day of loaded unit coal trains. (A unit train is typically one mile long.) Other significant routes in the region include Kansas City Southern

(KCS) north-south route that connects to Mexico at Laredo, Texas and Norfolk Southern (NS) east-west route that ends in Kansas City. Canadian Pacific now serves Kansas City over the ICE route.

There are currently five intermodal yards in Kansas City. BNSF, KCS and NS each have one facility and UP has two facilities in the region. Along with intermodal activity there are numerous switching yards, classification yards, transload facilities and other rail operations that occur in the region. Kansas City Southern recently moved its intermodal operations to the former Richards Gebaur Airport site, which allows for more opportunities for complimentary development at the CenterPoint Intermodal Center – Kansas City. BNSF is moving its intermodal operations to Logistics Park KC in southern Johnson County, Kan., where significant warehouse space is also under development.

Kansas City International Airport (KCI) is home to the region's air cargo terminal, one of the highest-volume air freight hubs in the six-state region. KCI has plans to expand service capabilities and enhance the attractiveness of aviation facilities associated with manufacturing and industrial operations. An initial phase includes a 800-acre master planned site, the KCI Intermodal Business Centre, which could include more than 5 million square feet of distribution, air cargo and on-ramp, airport-related logistics buildings.



Source: FEMA and MARC Data and Digital Services.

Figure 2.58: Airports and Heliports

Other airports in the region with runways of sufficient length to support large aircraft for air cargo operations include Kansas City's Charles B. Wheeler downtown airport, and New Century Air Center in Johnson County (Source: MARC).

The Kansas City Port Authority operates the area's only public port, located along the Missouri River near the confluence of the Kansas and Missouri Rivers. The port is an intermodal facility, transferring freight between barge, truck, and rail. In addition, the Kansas City region benefits from numerous private ports, which are used by companies shipping commodities that include grains, sand and gravel, fertilizer, chemicals, coal and coke. Currently, river flows are managed by the U.S. Corps of Engineers' Missouri River Master Manual which limits the navigation season to approximately six months each year.

The Kansas City area is also one of the nation's top five trucking centers. Truck volumes in the region are heavily concentrated on interstates and U.S. highways. I-70 in Missouri is the most heavily traveled truck route in the region with some segments exceeding 12,000 trucks per day. The region's national freight corridors are estimated to carry approximately 70 percent of truck vehicle miles traveled (Center for Transportation Analysis), with historic trends indicating a high rate of growth which is likely to continue. In 2019, the regional system handled an estimated 214 million tons of freight with an estimated value of \$298 billion. It is estimated that by 2045, the region will move over 295 million tons valued over \$447 billion.

	Domestic and (Th	% Change in Tons	
Transportation Mode	2019	2045 forecast	
Truck	149,814	217,184	45%
Rail	34,237	38,089	11.3%
Water	101.8	124.865	22%
Air (include truck-air)	100	231	131%
Multiple Modes and Mail	6,418	11,219	74.8%
Pipeline	23,265	28,832	23.9%
TOTAL	213,940	38.2%	

Table 2.14 Domestic and International Freight in Tons Through the KC Region

Source:

2.7.6 Transit Service

The five transit agencies in the Kansas City region — KCATA, Johnson County Transit, Unified Government Transit, IndeBus and the KC Streetcar — are working together to coordinate services, creating a seamless system from the rider's perspective. In October 2015, the agencies adopted the RideKC brand and create a single transit website for the entire region: RideKC.org. Ridership among these 2five systems totaled 16 million riders in 2018. Since their 2015 system coordination, the agencies have coordinated in other ways as well:

- Created one regional fare (\$1.50) and standard monthly fare pass.
- Made the system free to ride for all qualified paratransit users.
- Expanded the U-Pass program from serving only University of Missouri–Kansas City students to include Metropolitan Community College and Kansas City Art Institute students.

- Made the RideKC system free for veterans.
- Began branding buses and bus stops with the RideKC colors and logo.
- Created a new RideKC system map.
- Initiated a route renumbering plan to make route numbers correspond geographically.

In 2019, the five systems served the public with 553 vehicles. Fixed-route transit is made up of buses, streetcars and other vehicles that follow prescribed routes and stop at regular, scheduled intervals. There are currently 87 bus routes and one streetcar route in the RideKC system. Each fixed-route bus belongs to one of four network categories: Fast and Frequent, 30-Minute, Express, or Other Local.

Currently, there are six existing bus routes and a streetcar line that can be considered Fast and Frequent service. These are the two bus rapid transit (BRT) routes, Main and Troost MAX, the KC Streetcar and the following bus routes:

- 71 (which runs on Prospect and will be partially replaced by the Prospect MAX BRT route that started operating in 2019)
- 39 (which runs on 39th Street)
- 31 (which runs on 31st Street)
- 24 (which runs on Independence Avenue)

(Source: MARC Smart Moves 3.0 Plan)

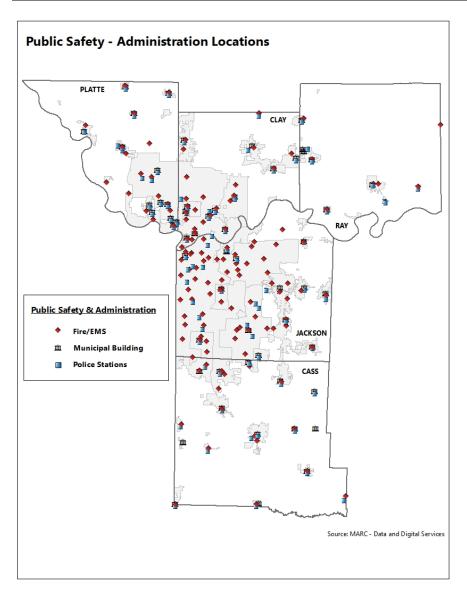
Two new extensions of the KC Streetcar to be completed in 2025 and 2026 will run from the downtown north to the Missouri River area where the new KC Current Soccer stadium opened along with major new development and south from Union Station to the Country Club Plaza and UMKC. Additional routes are being planned for an east-west corridor in Kansas City, Missouri, and a route north across the Missouri River. A recent federal transportation grant is allowing MARC to work with the Unified Government of Wyandotte County, Kansas, Kansas City, Missouri and Independence, Missouri, to plan for a connected high speed transit corridor from western Wyandotte County through Kansas City's downtown to the center of Independence.

2.7.7 Other Critical Infrastructure

Table 2.15: Critical Facility Types							
Asset (critical facility)	Cass	Clay	Jackson	Platte	Ray	Planning Area	Kansas City
Child Care	49	92	331	29	6	507	231
Nursing Home	10	21	85	12	0	128	72
Public Housing	0	145	574	31	84	834	587
School	47	84	276	37	12	456	193
College & University	1	6	53	7	0	67	48
Hospital	2	6	17	1	1	27	15
Other Health Facility	23	41	153	14	7	238	98
Police	15	16	25	17	9	82	13
Fire	17	26	67	17	7	134	37
PSAP	5	6	15	2	1	29	5
Local (city, county, other) Government	13	12	13	13	6	57	1
Shopping Center	38	117	303	36	8	502	186
Grocery (large, small, farmers)	13	42	142	12	1	210	110
Airport	13	8	10	10	4	45	3
Amtrak	0	0	2	0	0	2	1
Heliport	1	3	15	2	0	21	14
Hotels	8	40	133	39	0	220	136
Apartments	51	192	1727	101	9	2080	1524
Trailer Parks	5	6	10	2	0	23	8
Major League Sports Stadiums	0	0	3	0	0	3	3
Arena or Convention Center	0	0	3	0	0	3	2
Tier II	110	213	584	116	41	1064	451
RMP	6	3	9	4	4	26	8
Waste Water Treatment	16	13	19	16	9	73	7
Total	443	1092	4569	518	209	6831	3753

Source: MARC from city and county governments data.

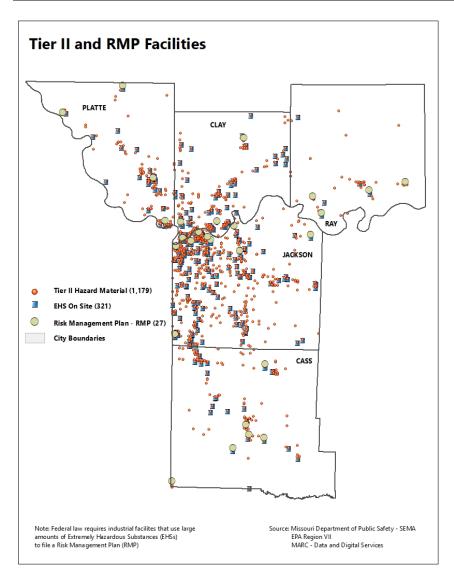
Table 2.15 demonstrates the significance of major facilities by category and county in the planning area that could be impacted by natural hazards.



Source: MARC compiled from local governments and agencies

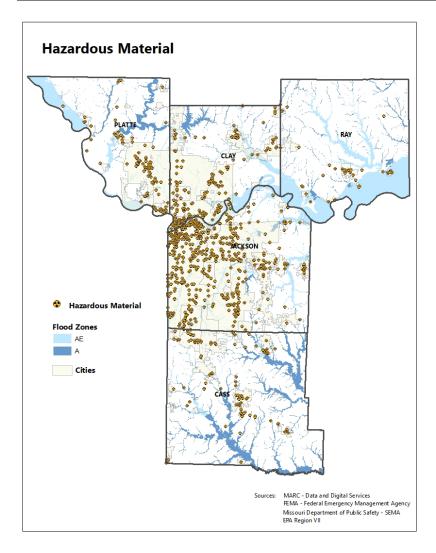
Figure 2.59: Public Safety and Administrative Facilities

The planning area has an extensive network of public safety and governmental facilities.



Sources: MO DPS/SEMA, EPA Region VII, MARC

Figure 2.60: Tier II and RMP Facilities



Source: MARC, FEMA, MO DPS/SEMA

Figure 2.61: Chemical and Hazardous Materials

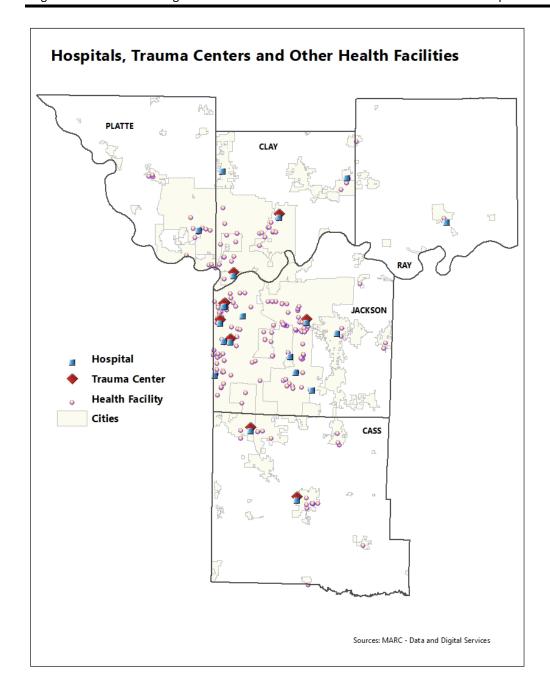


Figure 2.62: Hospitals, Trauma Centers, and Other Health Facilities

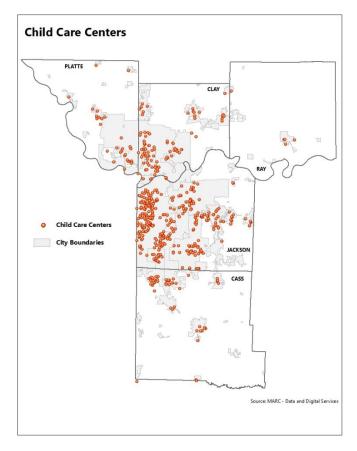


Figure 2.63: Child Care Centers

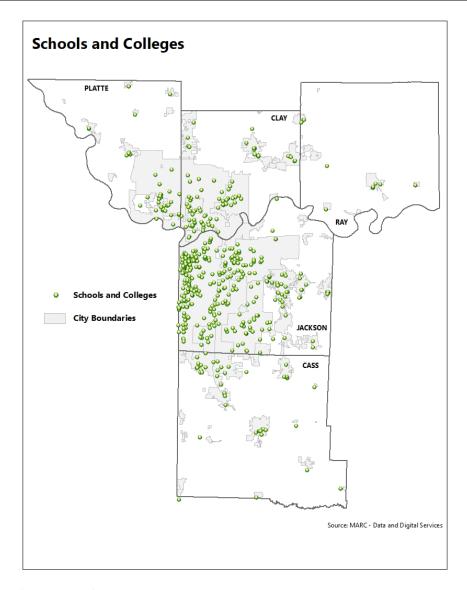
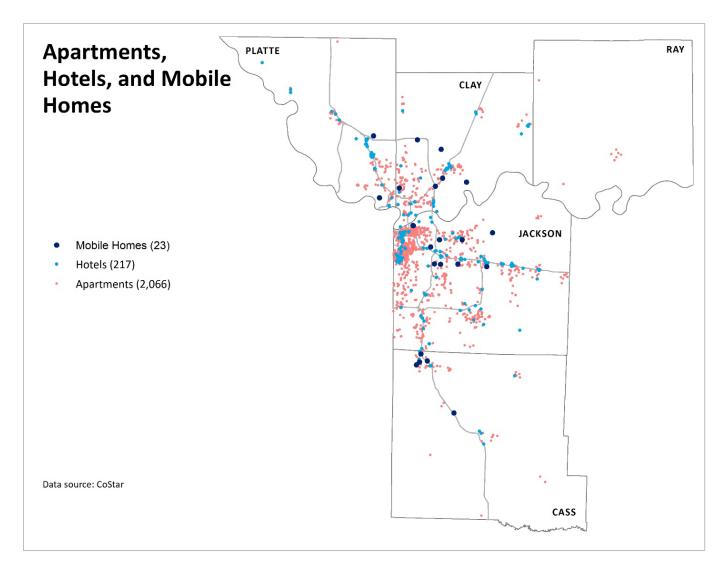
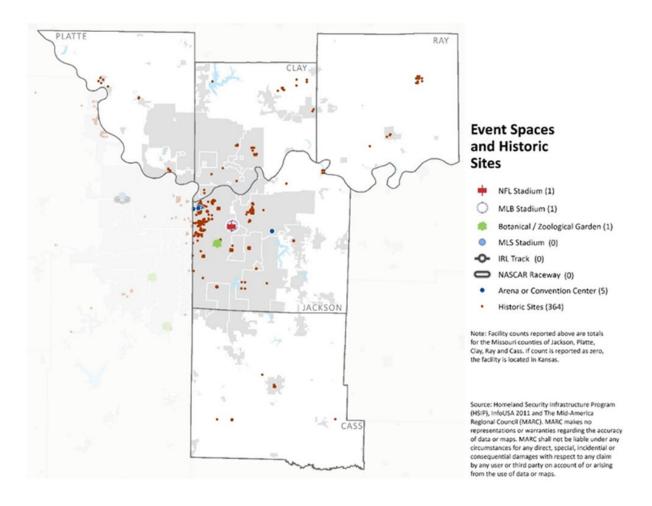


Figure 2.64: Schools and Colleges/Universities



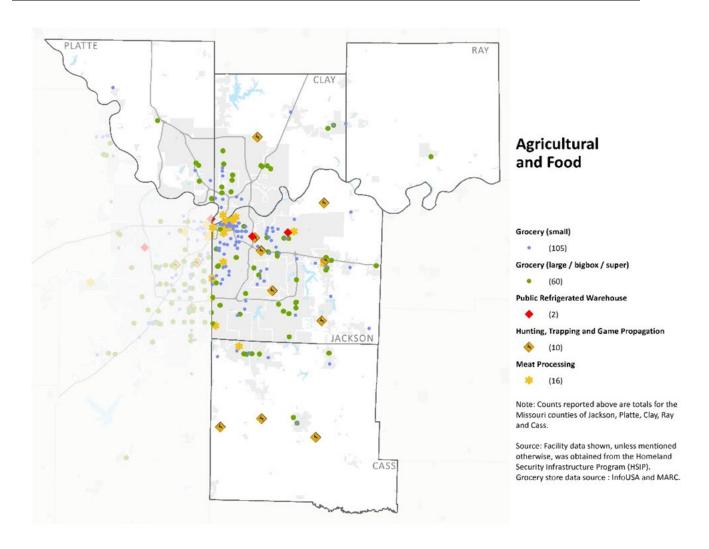
Source: Co-Star, local governments

Figure 2.65: Apartments, Hotels, and Mobile Homes



Source: City and county governments

Figure 2.66: Event Spaces and Historic Sites



Source: City and county governments

Figure 2.67: Agricultural and Food Facilities

Vulnerable Populations

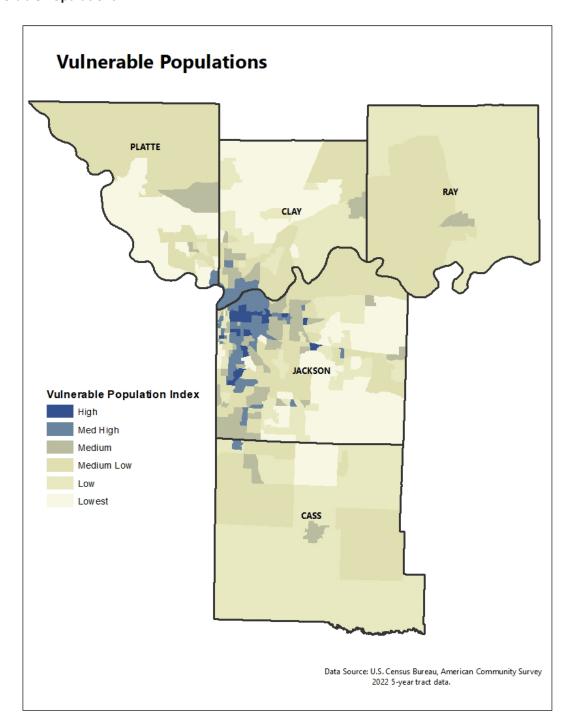
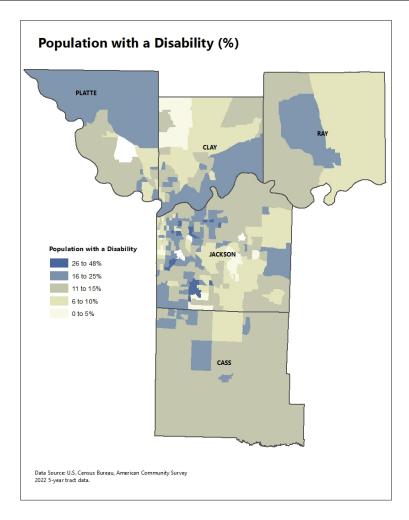


Figure 2.68: Vulnerable Populations in Planning Area by Census Tract Prepared by MARC

Vulnerable populations are those at-risk due to low income, lack of health insurance, minority status, social determinants of health such as housing instability and food insecurity, and those very young children and older adults.



Source: US Census Bureau, ACS 2022 5-year data

Figure 2.69: Map of Population with a Disability (%) of Persons in Census Tracts

The Census Bureau's 2017-2021 American Community Survey found 150,000 disabled residents in the 5-county planning area, representing about 12 percent of all persons. Disabled persons have sight, hearing, physical mobility or cognitive challenge abilities. Jackson County had the largest disabled population at over 90,000 persons representing 12.7 percent of that county's population. Cass and Ray counties had the largest proportion of disabled population at 13.7 and 13 percent, respectively.

Source: Kansas City Regional Digital Equity Plan, May 2023 https://www.marc.org/document/kansas-city-regional-digital-equity-plan Adults with less than a high school education are often unemployed or hold a low-paying job. Of those adults 25 years and older in the 5-county planning area, 59,202 did not have a high school education. This ranged from 9.8 percent of the Ray County adult population to a low of 3.3 percent in Platte County.

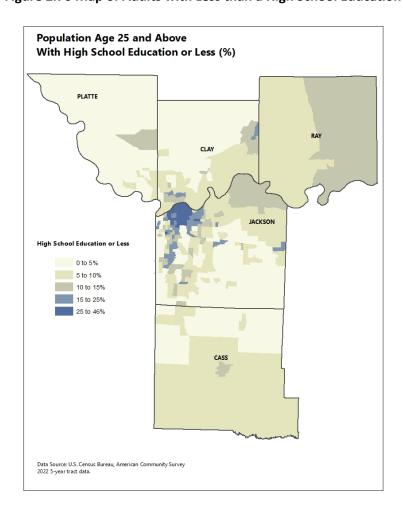


Figure 2.70 Map of Adults with Less than a High School Education

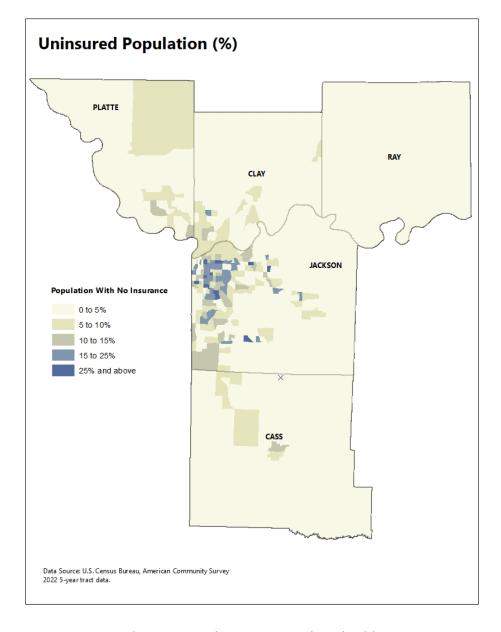


Figure 2.71: Persons without Health Insurance (Percentage of those in Census Tracts)

There were 116,230 persons in the 5-county planning area without health insurance in 2023. Jackson County had both the largest number and greatest proportion of its population without coverage, 80,615 people and 11.3 percent of all persons.

Chapter 3: Capabilities Assessment

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Chapter 3: Capabilities Assessment

The purpose of the capabilities' assessment is to identify and consider each community's unique set of capabilities that currently reduce disaster losses or could be used to reduce losses in the future. For the purposes of this plan "community/jurisdiction" is used interchangeably and refers to all plan participants – cities, counties, special districts, school districts, colleges and universities. Capabilities include policies, plans, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability.

3.1 Data Gathering Methods

To facilitate data gathering from the participating jurisdictions, online profile surveys were developed for communities and school districts based on the FEMA Capabilities Worksheets 4.1-4.3. The survey instruments were created as online tools. Community and school profile survey instruments are included in **Appendix F**.

The survey tools collected information on the hazards communities face, their capabilities to support development and implementation of Mitigation Strategies, (See Section 5: Mitigation Strategy), existing planning mechanisms that were incorporated in the hazard mitigation planning process, information on how their jurisdiction might carry out safe growth and plans and policies and actions to demonstrate continued compliance with the requirements of the National Flood Insurance Program (NFIP).

The following subsections provide highlights from both community and school profile surveys completed by the 2025 Plan update participants. Sections 3.3.1 through 3.3.6 apply only to cities and counties; Section 3.3.7 applies only to school districts, colleges and universities.

- 3.3.1. Planning and Regulatory Capabilities
- 3.3.2. Administrative and Technical Capabilities
- 3.3.3. Financial Capabilities
- 3.3.4. Education and Outreach Capabilities
- 3.3.5. Safe Growth Audit
- 3.3.6. Floodplain Management and NFIP Participation
- 3.3.7. School District Capabilities

Key observations:

The profile represents a snapshot of a community's mitigation capabilities and provides the foundation for inclusive mitigation planning. The 2025 profile survey used the 2020 plan survey tools as a foundation and was more comprehensive than prior assessments. As a result in some cases, the tools allowed for increased overall awareness of the variety of community plans that intersect with mitigation intent.

Planning and Regulatory: An added benefit of compiling this information into a regional plan is it allows a jurisdiction to compare their responses to other jurisdictions. This can be especially valuable for those jurisdictions who may not previously have considered developing or adopting the referenced plans for their own community or school district. It may offer opportunities in the future to expand mitigation planning efforts and reinforce successful implementation. The survey results also illustrate the complexity of planning within and across jurisdictions.

Administrative and Technical: Many jurisdictions possess a number of technical and administrative tools to support ongoing mitigation efforts. Codes, policies and ordinances can be extremely effective tools available to local government to control, to the extent possible, negative impacts from a variety of hazards. This is especially true for floodplain management, where most jurisdictions indicate they have effective measures in place. Smaller jurisdictions have more limited access to these tools, but generally also have more limited exposure to hazard risks. While nearly every jurisdiction has emergency management staff, 35 percent of these personnel are part-time. Small communities rely on their county emergency manager for guidance and support.

Financial: Most jurisdictions are leveraging existing capabilities in order to be able to fund mitigation projects. A strong motivating factor for most jurisdictions is the opportunity to apply for FEMA or other grants to help support the implementation of specific investments to mitigate future risks.

Education and Outreach: Over the last several decades, the region has built and continues to build a robust alert and warning system. With the advent of social media and opportunities for broad text messages, alert systems have been able to be customized for individual user experience. The increased use of systems to enable mobile devices and computers to receive alerts increases public awareness, but too many messages may reduce effectiveness as some members of the public may ignore alerts altogether. The increased alert options have also created new avenues for residents to participate in and take more responsibility for their own preparedness. Local officials suggested that by working together, jurisdictions could review available tools and cooperatively procure systems to save money and standardize operations.

Regional collaboration continues to expand and can be an effective tool for leveraging limited resources, and most of the planning area's local governments participate in a variety of regional committees and community partnerships. There may be opportunities to increase participation by schools in regional work.

Data limitations: Survey responses are the best available information reported by the jurisdiction or school at the time of the survey. Completion of the survey should not be interpreted to mean the information itself is complete or accurately reflects the current status of the capability. Limitations of the survey tool include the inability to accurately interpret false statements; therefore, data marked as false is depicted as blank or as not reported in the following summary tables. In some cases, the lead contact person completing the surveys may not have full knowledge of plans and policies adopted through other departments or offices.

Weather Adaptation: Many jurisdictions are focusing more attention on the increased impacts from more extreme weather conditions; however, many smaller jurisdictions are challenged in considering increased risks along with their ongoing needs to maintain infrastructure and serve their constituents.

Table 3.1: Adopted or Updated Plans and Policies

		ושמובי	lable 5.1. Aubpieu of Opualeu Fialls allu Policies	area Pians an	a rollers			
JURISDICTION HAS AN ADOPTED OR UPDATED PLAN	Cass County	Belton	Harrisonville	Lake Annette	Гаке Winnebago	Peculiar	lliH Jneseəlq	узутоге
Comprehensive/Master Plan	2010	1992	2022		2014	2015	2022	2014
Capital Improvement Plan		2014	2024		2014	2019	2024	2014
Local Emergency Operations Plan	2023	2014	2022		2014	2019	2016	2018
Continuity of Operations Plan	2010	2014	2014		2019	2019		
Public Health Emergency Plan	2023							2014
Storm Water Management Plan	2007	2011	2023		2014	2018	2013	2002
Community Wildfire Protection Plan or Burn Ordinance	No	No	No	No	No	Burn	Burn	Burn
Brownfields Redevelopment	No	No	No	No	No	No	No	No
Climate Change Adaption	No	No	No	No	No	No	No	No
RELATED PLANNING ACTIVITIES:								
Building Codes adequately enforced	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Land Use Planning utilized by community	Existing & Future	Existing & Future	Existing & Future	No	Existing & Future	Existing & Future	Existing & Future	Existing & Future
Zoning Ordinance	Yes	yes	Yes	Yes	Yes	Yes	Yes	Yes
Subdivision Ordinance	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Natural Hazard-related Ordinance(s) adopted	Stream setback Soil & erosion Floodplain mgmt. Stormwater runoff	Stream setback Soil & erosion Floodplain mgmt. Stormwater runoff; open space	Soil & erosion Floodplain mgmt. Stormwater runoff; open space dedication	Floodplain mgmt.; open space dedication	Soil & erosion Floodplain mgmt. Stormwater runoff	Soil & erosion Floodplain mgmt Stormwater runoff; open space dedication	Floodplain mgmt. Stormwater runoff; open space dedication	Stream setback Soil & erosion Floodplain mgmt. Stormwater runoff, open space dedication

	ı	ı	,	ı	1			-					-			
yəlleV tnezeəl9			Yes								ХөХ				Soil & erosion Floodplain mgmt	
əllivhtim2	0707	2024	2022			2023	Yes	No	No		sə _k	Existing & Future	Yes	Yes	Soil & erosion Floodplain mgmt	stormwater runoff
North Kansas City	2022	2024	2024		2024	2023	No	No	No		Yes	Existing & Future	Yes	Yes	Soil & erosion Floodplain mgmt Stormwater	Li non
Liberty	1999		2012	2012			Yes	No	No		Yes	Existing & Future	Yes	Yes		rioodpiain mgmt
uosmeŢ	2017		2016			2003					Yes	Existing	Yes		Stormwater mgmt floodplain management	
Қөзкиеλ	2016		5009	5005			Yes	No	No		Yes	Existing & Future	Yes	Yes	Floodplain mgmt Stormwater runoff	
9no1sbel	2024	2024	2024	2024	2024	2024	Yes	No	yes		Yes	Existing & Future	Yes	Yes	Floodplain mgmt Stormwater runoff	
egning2 roielsox∃	2024	2019	2022	2022	2022	2013	Yes	No	No		Yes	Existing & Future	yes	Yes	Water mgmt. Stream setback Soil & erosion Floodplain	mgmt Stormwater runoff
Clay County	2008		2023	2024	2020		No	No	No		Yes	Existing & Future	Yes	Yes	Stream setback Soil & erosion Floodplain	mgmt Stormwater runoff
JURISDICTION HAS AN ADOPTED OR UPDATED PLAN	Comprehensive/Master Plan	Capital Improvement Plan	Local Emergency Operations Plan	Continuity of Operations Plan	Public Health Emergency Preparedness Plan	Storm Water Management Plan	Community Wildfire Protection Plan or Burn Ordinance	Brownfields Redevelopment	Climate Change Adaption	RELATED PLANNING ACTIVITIES:	Building Codes adequately enforced	Land Use Planning utilized by community	Zoning Ordinance	Subdivision Ordinance	Natural Hazard-related Ordinance(s) adopted	

JURISDICTION HAS AN ADOPTED OR UPDATED PLAN	Jackson County	sgnings sulB	wəivbns1	Greenwood	əวuəpuədəpul	Kansas City, MO	timmu2 səəJ	Oak Grove	Raytown	Central Jackson County FPD	Sni Valley FPD
Comprehensive/Master Plan	2014	2015	2020		2018	2022	2021	2021	2025	NA	2023
Capital Improvement Plan	2010	2024	2024		2015	2024	2024	2024	2006		
Local Emergency Operations Plan	2014	2014	2013	2007	2015	2020	2021	2024	2014		2007
Continuity of Operations Plan	2012				2015	2019					
Public Health Emergency Preparedness Plan	2013				2024	2019					
Storm Water Management Plan	2013	2018	2018			2019	2024	2004	2023		
Community Wildfire Protection Plan or Burn Ordinance	Yes	Yes	No	Burn	Yes	No	Yes	Yes	No	Yes	Yes
Brownfields Redevelopment	No	No	No	No	No	2015	No	No	No	No	No
Climate Change Adaption	No	No	oN	No	No	Yes	ON	No	No	No	No
RELATED PLANNING ACTIVITIES:											
Building Codes adequately enforced	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	NA	NA
Land Use Planning utilized by	Existing Future	Existing & Future	Existing & Future	Existing & Future	Existing & Future	Existing & Future	Existing & Future	Existing & Future	Existing & Future		Existing & Future
Zoning Ordinance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	AN	AN
Subdivision Ordinance	Yes	Yes	ХөУ		sə _k	SəY	SӘД	Yes	Yes	NA	NA
Natural Hazard-related Ordinance(s) adopted		Stream setback Floodplain mgmt.	Stream setback floodplain mgmt.	Floodplain mgmt.; open space	Stream setback floodplain mgmt.	Stream setback Floodplain mgmt.	Stream setback floodplain mgmt.	Stream setback floodplain mgmt.	Floodplain Mgmt Soil & Erosion;	∀ Z	N A
		Stormwater	stormwater	dedication	stormwater	stormwater	stormwater	stormwater			
		runoff soil 8	runoff coil 8.		runoff ceil 8	runoff seil 8	runoff soil 8	runoff	runoff,		
		erosion	erosion		erosion	erosion	erosion	erosion	dedication		

JURISDICTION HAS AN ADOPTED OR UPDATED PLAN	Platte County		Farley	Ferrelview	Гаке Waukomis	Northmoor	Parkville
Comprehensive/Master Plan	2010			2013		2010	2019
Capital Improvement Plan	2015				2024		2019
Local Emergency Operations Plan	2023			2013	2024	2010	2015
Continuity of Operations Plan	2023				2020		2015
Public Health Emergency Preparedness Plan	2019				2019		2015
Storm Water Management Plan	2000				2024		2019
Community Wildfire Protection Plan or Burn Ordinance	ON		No	No	Burn	No	No
Brownfields Redevelopment	No		No	No	No	No	No
Climate Change Adaption	No		No	No	No	No	No
RELATED PLANNING ACTIVITIES:							
Building Codes adequately enforced	Yes		Yes		Yes	Yes	Yes
Land Use Planning utilized by community	Existing and Future	Ê	Existing			Existing	Existing & Future
Zoning Ordinance utilized by community	Yes		Yes	Yes	Yes		Yes
Subdivision Ordinance utilized by community	Yes						Yes
Natural Hazard-related Ordinance(s) adopted	Stormwater runoff Floodplain mgmt. Stream setback	Floodp mgmt	lain	Floodplain mgmt	Floodplain mgmt.	Stormwater runoff; Floodplain mgmt.	Stormwater runoff Floodplain mgmt Stream setback soil & erosion
	א פו טפוטוו						ש ווטונטוים א ווסנ

JURISDICTION HAS AN ADOPTED OR UPDATED PLAN	Platte City	sbooW 911sI9	Riverside	Тгасу	Меатһегbу Lаке	notseW	Uorthland RAD	West Platte FPD
Comprehensive/Master Plan	2020		2024		2020	2003	AN	NA
Capital Improvement Plan	2015		2024		2014	2014		
Local Emergency Operations Plan	2020	2024	5009		2009	2010		
Continuity of Operations Plan	2019	2024			5005			
Public Health Emergency Preparedness Plan	2020	2024						
Storm Water Management Plan	2012	2024	2018		2020			
Community Wildfire Protection Plan or Burn Ordinance	Yes	Yes	Yes	Yes	Yes			
Brownfields Redevelopment	No	No	No	No	No		No	No
Climate Change Adaption	No	No	No	No	No		No	No
RELATED PLANNING ACTIVITIES:								
Building Codes adequately enforced	Yes	Yes	Yes	Yes	Yes	Yes	NA	NA
Land Use Planning utilized by community	Existing & Future	Existing	Existing & future		Existing & future	Existing & future		
Zoning Ordinance utilized by community	Yes		Yes			Yes		
Subdivision Ordinance utilized by community	Yes		Yes			Yes		
Natural Hazard-related Ordinance(s) adopted	Stormwater runoff Floodplain	Stormwater runoff	Stormwater runoff, floodplain	Stormwater runoff, floodplain	Stormwater runoff, floodplain			
	mgmt.		Mgmt.	Mgmt.	Mgmt.			
	Stream		soil &	soil &	soil &			
	Setback Soil &		108019		water			
	erosion				conservation			

JURISDICTION HAS AN ADOPTED OR UPDATED PLAN:	λ County	puowy:
Comprehensive/Master Plan	្ត ខ្លួ	호 2022
Capital Improvement Plan		2019
Local Emergency Operations Plan	2017	2024
Continuity of Operations Plan		
Public Health Emergency Preparedness Plan		
Storm Water Management Plan	2005	2023
Community Wildfire Protection Plan	No	Yes
Brownfields Redevelopment	No	No
Climate Change Adaption	No	No
RELATED PLANNING ACTIVITIES:		
Building Codes adequately enforced	Yes	Yes
Land Use Planning utilized by community	Existing & Future	Existing & Future
Zoning Ordinance utilized by community	Yes	Yes
Subdivision Ordinance utilized by community	Yes	Yes
Natural Hazard-related Ordinance(s) adopted	Floodplain mgmt	Floodplain mgmt.
	Stormwater runoff	Stormwater runoff
	Soil & erosion	Soil & erosion
	Stream setback	Stream setback

3.2 Review and Incorporation of Existing Plans

In accordance with statutory requirements, the plan must describe each jurisdiction's existing authorities, policies, programs, and resources available to accomplish hazard mitigation. **Table 3.2** highlights how specific plans are being utilized by jurisdictions throughout the planning area to support and enhance mitigation activities.

Table	e 3.2: Local Plans and Regulations Adopted by Local Jurisdictions
Plan or Regulation	Significance to Hazard Mitigation
Emergency Management Plans (EOP)	Assists local jurisdictions in clarifying roles and responsibilities prior to, during and following a disaster. EOPs include or reference the policies and procedures and authorities to support emergency response and initial recovery that are in place. EOP helps identify resources prior to and during an emergency, including natural hazard events. A jurisdiction's EOP is a document that assigns responsibility for carrying out specific actions that exceed routine responsibility at projected times and places during an emergency. The EOP identifies the lines of authority, organizational relationships and outlines steps for coordination strategy. The EOP describes how people and property are protected and identifies resources available within the jurisdiction or by agreement with other jurisdictions. The EOP facilitates prevention, protection, response, and short-term recovery, which sets the stage for successful long-term recovery. These plans help local jurisdictions assess locations of vulnerable populations and areas within their communities and how to address these areas during an emergency. This plan is a good source of information for local risk assessment activities. Some of the recommendations considered for the Goals and Strategies section of the Hazard Mitigation Plan could be incorporated as actions in the EOP.
Floodplain Management Regulations/Ordinance	Assists jurisdictions in effectively managing floodplain areas. These regulations are usually part of a jurisdiction's land use regulations. Depending on the jurisdiction, regulations may take the form of a stand-alone municipal or county ordinance. Regulations may require specific minimum design, construction, or development elements; compliance required for health and safety reasons. These regulations are important to communities to comply with participation in the Federal Flood Insurance Program, limiting development in 100-year floodplain areas.
Land Use Regulations (e.g., zoning regulations, subdivision regulations, storm water regulations stream setback)	Primary tools for jurisdictions to shaping the character and development of a community. Land use regulations may restrict certain land use or structures from being located in hazard vulnerable areas. These regulations may also require specific minimum design, construction, or development elements; compliance required for health and safety reasons. Stream setback ordinances require development to be located at farther distances from streams or rivers and the 100-year floodplain in order to increase area for stormwater runoff to be absorbed before entering waterways.
Plan or Regulation	Significance to Hazard Mitigation
Wetland Regulations	Helps jurisdictions maintain and protect the integrity of wetland resources. Local wetland areas often coincide with FEMA-delineated floodplain areas. These areas often include important natural resources or habitat for wildlife.
Local Building Codes	Critical tools to maintain adequate safety and building integrity factors in construction. These codes may limit structure size, type, and place additional requirements in the construction of structures located in an identified hazard area (i.e., high wind, floodplain, wildland/urban interface area, etc.). Energy codes provide standards for construction to improve comfort during cold or heat weather and to conserve energy costs.

To demonstrate compliance, the following represents how jurisdictions reviewed and integrated the following topics into the 2025 Plan review process. Responses displayed in Table 3.3 were gathered from the community profile survey relative to plans and regulations.

- Types of natural hazards that affect or concern local governments
- Plans related to natural hazard mitigation, land use or development
- Local ordinances related to natural hazard mitigation
- Building, fire and related codes
- Participation in federal hazard mitigation programs, e.g., NFIP, FMA, PDM
- Existing mitigation practices
- Use of technical documents

Table 3.3: Rele	vant Measures Incorporated into HMP (Plans/Regulations)
CAPABILITY	CASS COUNTY
Capital Improvements Plan	Pleasant Hill: Includes plan for community shelter (tornado mitigation) Raymore: Inflow and infiltration system improvements (drought mitigation) Cass County: identifies bridge projects and allocates funding for culvert and pipe replacement.
Emergency Operations Plan	Harrisonville: Updated every year (all hazards mitigation) Pleasant Hill: Looking to update their LEOP
Continuity of Operations Plan	Belton: Included in Emergency Operations Plan (all hazards mitigation)
Public Health Emergency Preparedness Plan	Most public health emergency preparedness and response plans are prepared and maintained by county and city public health departments Raymore: Revisions ongoing at County Health Department
Storm Water Management Plan	Lake Winnebago: Submitted under MS4 Management Plan (flood mitigation) Cass County: Soil and Sediment Ordinance integrated into this plan
Burn Ordinance	Cass County: Responsibility of fire districts
CAPABILITY	CLAY COUNTY
Comprehensive Plan	Kearney: Recommends floodplains for open space and park land
Comprehensive Plan	Rearriey. Recommends hoodplains for open space and park land
Emergency Operations Plan	Kearney: Draft emergency operations plan is headed by Kearney Fire (all hazards mitigation) Kearney also has the Emergency Operations Plan for public works supplies (2015) for the city's water plant. Pleasant Valley has adopted the county's LEOP
	Kearney: Draft emergency operations plan is headed by Kearney Fire (all hazards mitigation) Kearney also has the Emergency Operations Plan for public works supplies (2015) for the city's water plant.
Emergency Operations Plan	Kearney: Draft emergency operations plan is headed by Kearney Fire (all hazards mitigation) Kearney also has the Emergency Operations Plan for public works supplies (2015) for the city's water plant. Pleasant Valley has adopted the county's LEOP

Table 3.3: Rele	vant Measures Incorporated into HMP (Plans/Regulations)
CAPABILITY	JACKSON COUNTY
	Blue Springs plan update underway
	Kansas City: The city prepared a new comprehensive plan in 2022
Comprehensive Plan	Lee's Summit: Development and impact on infrastructure (all hazards
	mitigation)
	Raytown: Completing update of the plan in 2025
	Lee's Summit: Storm water management and transportation (flood
Capital Improvements Plan	management)
	Oak Grove: Annually reviewed with budget (all hazards mitigation)
	Sni Valley FPD: Updated as part of annual budget (all hazards mitigation)
	Oak Grove: Continuous updates to Annexes since adoption (all hazards
	mitigation)
Emergency Operations Plan	Sni Valley: Basic Plan 2007; Annexes in continual update process (all hazards
	mitigation)
	Greenwood is working on an update
	Independence: Available in Community Development (all hazards mitigation)
	Kansas City, Mo: Utilize MARC's products (all hazards mitigation)
Continuity of Operations Plan	Lee's Summit: FEMA floodplain maps (flood mitigation/management)
	Oak Grove: Ongoing GIS data project (identification of hazard areas)
	Most public health emergency preparedness plans are prepared and
Public Health Emergency	maintained by county and city public health agencies
Preparedness Plan	Lee's Summit: Jackson County Health Department (emerging infectious disease
	mitigation)
	Kansas City: addresses buyouts, retrofitting, flood risk infrastructure
Storm Water Management	Lee's Summit: Management of storm water (supports flood mitigation)
Plan	Kansas City, Independence and Lee's Summit have contributed to a regional
	effort to produce new APWA Stormwater Management design standards in 2025
CAPABILITY	PLATTE COUNTY
CAL ALDIELL I	Platte County: Supports ongoing mitigation projects.
	Parkville: Supports ongoing mitigation projects through resource preservation;
	setbacks; access strategies
Comprehensive Plan	Riverside: Address sustainability and natural resource management
	Weatherby Lake: Roads and sewers mitigation work to support flood
	mitigation efforts
	Platte County: Supports ongoing mitigation projects
C : 11	Parkville: Supports infrastructure; flood mitigation projects
Capital Improvements Plan	Platte City: Currently adopted this year, will support ongoing mitigation
	projects.
	Platte County: Ongoing yearly by Emergency Management (all hazards
	mitigation) Updating to ESF format in 2019/2020
	Parkville: Follow county Plan (all hazards mitigation)
Emergency Operations Plan	Platte City: Adopted on County Plan (all hazards mitigation)
	Riverside: Updated to meet ESFs
	Weatherby Lake: Follow and participate through Platte Co EM (all hazards
	mitigation)
	Platte County: Updated and practiced in planning by Emergency Management
Continuity of Operations Plan	(all hazards mitigation)
	Parkville: Follow county plan

Table 3.3: Rele	vant Measures Incorporated into HMP (Plans/Regulations)
	Platte City: Currently under development (all hazards mitigation) Weatherby Lake: County and city have this capability (all hazards mitigation)
Public Health Emergency Preparedness Plan	Platte County: Platte County Health Department (emerging infectious disease mitigation) develops and maintains public health emergency plans for the county; Kansas City Health Department prepares and maintains emergency plans for the portion of the city in Platte County Platte City, Weatherby Lake: Platte County Health Department (emerging infectious disease mitigation)
Storm Water Management Plan	Parkville: Supports flood Mitigation/Prevention Platte City: Supports Comprehensive Plan and ongoing mitigation projects Parkville and Riverside have contributed to a regional effort to produce new APWA Stormwater Management design standards in 2025
Brownfields Redevelopment	Platte City: Community Center
CAPABILITY	RAY COUNTY
Emergency Operations Plan	Ray County: Reviewed to address threats and hazards
Stormwater Management Plan	Ray County: Planning and Zoning regulations
Public Health Emergency Preparedness Plan	Ray County Health Department prepares and maintains public health emergency preparedness plans

3.3 Community Profile Survey Results

3.3.1 Planning and Regulatory Capabilities

The Community Profile survey collected information about the planning and regulatory capabilities of cities and counties including special districts. Jurisdictions were asked to identify all adopted building and fire codes and any measures complementary to local mitigation actions. Table 3.4 represents an overview of building-related codes. Most of the participating jurisdictions have adopted building, fire, plumbing and mechanical codes. The versions vary with many having adopted 2012 and 2018 as the most current versions. Over half of the jurisdictions have adopted Dangerous Building Codes, some using national codes and some adopting local ordinances.

Table 3.5 indicates if the code is adequately enforced and whether the code was related to or reviewed as part of the HMP update. Most jurisdictions indicated that they adequately enforce their building and related code. ManyPublic Health Agency Template - 2025.docx

of the smaller jurisdictions have greater challenges with implementation due to staffing limitations.

Table 3.6 describes how codes and other relevant measures were incorporated into the HMP by each jurisdiction. Table 3.8 describes how land use-related ordinances and policies are relevant to the HMP.

Building Codes (Community Profile, Part 2D, Question 2)

Ordinances and Policies (Community Profile, Part 2D, Question 3)

				ĭ	Table 3.	4: Buil	3.4: Building Codes Adopted by Local Jurisdictions	Adopt	ed by	Local Jur	isdictic	Suc						
40:40:21	Building			Fire			Mechanical			Plumbing			Dangerous			Other		
Jurisaiction	Code	Year	Class	Code	Year	Class	Code	Year	Class	Code	Year	Class	Buildings	Year	Class	Codes	Year	Class
Cass County	IC	2006		IFC	2006		IMC	2006		IPC	2006			2019		NEC	2002	
Belton	IBC	2018	4	IFC	2018	2	IMC	2018		UPC	2018		UCADB	2018		NEC	2018	
Harrisonville	IBC	2012	3	IFC	2012	4	IMC	2012	3	IPC	2012	3	IBC	2012	3			
Lake Annette	IBC																	
Lake Winnebago	IRC	2018		IFC	2018		IMC	2018		IPC	2018		IBC	2018		NEC	2017	
Peculiar	IBC	2003		IFC	2006		IMC	2003		IPC	2003		IBC	2003		NEC	1999	
Pleasant Hill	IBC	2012	2	JEC	2012	4	IMC	2012	5	IPC	2012	5	Local					
Raymore	IBC	2012		JEC	2012		UMC	2012		UPC	2012			2006				
Clay County	IBC	2012	9	IFC	2012		IMC	2012	7	IPC	2012	7	Local	1996		NEC	2011	
Excelsior Springs	IBC	2012	2	JEC	2012	5	IMC	2012	5	IPC	2012	5		1992				
Gladstone	IBC	2020	2	IFC	2020	2	IMC	2020	2	IPC	2020	2	IBC	2020		NEC	2020	
Kearney	IBC	2018	6	IFC	2018	4	IMC	2018	6	IPC	2018	6	IPMC	2018		NEC	2017	6
Lawson	IBC	2006		IFC	2006		IMC	2006		IPC	2006		Local	1995		NEC	2005	
Liberty	IBC	2012		IFC	2012	2	IMC	2012		IPC	2012							
North Kansas City	IBC	2018	1	IFC	2018	1	IMC	2018	1	IPC	2018	1	IPMC	2018	1	NEC	2018	
Smithville	IBC	2018	4	IFC	2018		IBC	2018		IBC	2018		IPMC	2018		NEC	2017	
Pleasant Valley	IBC	2012		IFC	2012		IMC	2012		IPC	2012		UCADB	2012				
Jackson County	IBC	2018	5	IFC	2018	5	IMC	2018	5	IPC	2018	5						
Blue Springs	IBC	2018	4	IFC	2018	3	IMC	2018	4	IPC	2018	4	UBC	2018				
Grandview	IBC	2018		IFC	2018		IMC	2018		IPC	2018					NEC	2018	
Greenwood	IBC	2012	2	IFC	1997	2	IMC	2012		IPC	2012							
Independence	IBC	2012	4	IFC	2012	2	IMC	2012	4	IPC	2012	4		2012				
Kansas City, Mo.	IBC	2018	2	IFC	2018	1	IMC	2012	2	UPC	2012	2	IBC	2014	7			
Lee's Summit	IBC	2018	4	IFC	2018	3	IMC	2018	4	IPC	2018	4	Local					
Oak Grove	IBC	2018	2	IFC	2018	2	IMC	2018	2	IPC	2018	2				NEC	2008	
Raytown	IBC	2018	5	IFC	2018	2	IMC	2018	5	IPC	2018	2	IPMC	2018	2	NEC	2017	5
Grain Valley	IBC	2018		IFC	2018		IMC	2018		IPC	2018							
Sni Valley FPD	IBC	2003		IFC	2003		IMC	2003		IPC	2003			2003			2003	
Central Jax Co FPD	IBC	2018	4	IFC	2018	3	IMC	2018										

			Tê	Table 3.4:	4: Bui	ding (Building Codes Adopted by Local Jurisdictions (Continued)	ted by	Local	Jurisdictic	ons (Co	ntinu	ed)					
و ابن امنیدا	Building			Fire			Mechanical			Plumbing			Dangerous			Other		
Jailsaiction	Code	Year	Class	Code	Year Class Code Year Class	Class	Code	Year	Class	Code	Year Class	Class	Buildings	Year		Class Codes Year	Year	Class
Platte County	IBC	2018		IFC	2003	2	IMC	2018	2	IPC	2018	2		1993		NEC	2017	
Farley	IRC	2009																
Lake Waukomis	DBI	2012	4	IFC	2018	4	IRC	2009		IRC	2009		IBC	2003				
Northmoor	IBC	2012		IFC	2012		IMC	2012		IBC	2012		IBC	2012				
Parkville	IBC	2012	4	IFC	2012	4	IMC	2012	4	IPC	2012	4				NEC	2010	4
Platte City	IBC	2013	5	IBC	2013	5	IBC	2013	2	IBC	2013	5	IBC	2013	5			
Platte Woods	IBC	2007		IBC	2007		IBC	2007		IBC	2007		IBC	2007				
Riverside	JBI	2018	2	IFC	2018	2	IMC	2018	2	IPC	2018	2				NEC	2018	
Tracy	IBC	2006	4	IBC	2006	4	IBC	2006	4	IBC	2006	4	IBC	2006	4	NEC	2011	4
Weatherby Lake	IRC	2015	3	IFC	2015	4	IRC	2015	3	IRC	2015	3	IRC	2015	3			
Weston	IBC	2000		IBC	2000		IBC	2000		IBC	2000		IBC	2000				
Ray County	IBC	2015		IFC	2015		IMC	2015		IPC	2015					NEC	2014	
Richmond	IBC	2021	4	IFC	2021	3	IMC	2021	4	IPC	2021	4	IBC	2021	4	NEC	NEC 2020	4

IC - International Code

IBC – International Building Code

IFC – International Fire Code

IMC – International Mechanical Code

IPC – International Plumbing Code

IPMC – International Property Maintenance Code

IRC – International Residential Code

NEC – National Electric Code

NFC – National Fire Code

UCABD - Uniform Code for Abatement of Dangerous Buildings

UMC – Uniform Mechanical Code

UPC – Uniform Plumbing Code

						Table 3	Table 3.5: Codes Adequately Enforced	es Adec	uately	Enforce	þe							
		Building			Fire		Ğ	Mechanical		Ь	Plumbing		Danger	Dangerous Buildings	lings	Ot	Other Codes	S
Jurisaiction	TYPE	ADEQ	HMP	TYPE	ADEQ	HMP	TYPE	ADEQ	HMP	TYPE	ADEQ	HMP	TYPE	ADEQ	HMP	TYPE	ADEQ	HMP
Cass County	C	×	×	IFC	×		IMC	×		IPC	×		Local	×		NEC	×	
Belton	IBC	×		IFC	×		IMC	×		IPC	X		IBC	X				
Harrisonville	IBC	X	×	IFC	×	×	IMC	×	×	IPC	Х	X	IBC	X	X			
Lake Annette	IBC	X																
Lake Winnebago	IRC	X		IFC	×		IMC	×		IPC	Х					NEC	X	
Peculiar	IBC	X		IFC	×		IMC	×		IPC	Х		IBC	X		NEC	X	
Pleasant Hill	IBC	X		IFC	×		IMC	×		IPC	Х		Local	X				
Raymore	IBC	X	×	IFC	×	×	UMC	×	×	UPC	Х	X		X	X			
Clay County	IBC	X	×	IFC	×	×	IMC	×	×	IPC	X	×				IRC		
Excelsior Springs	IBC	X	×	IFC	×	×	IMC	×	×	IPC	Х	X		X	X			
Gladstone	IBC	×	×	IFC	×	×	IMC	×	×	IPC	X	X				NEC		
Kearney	IBC	X	×	IFC	×	×	IMC	×	×	IPC	Х	X	IPMC			NEC	X	×
Lawson	IBC	×		IFC			IMC	×		IPC	X		Local			NEC	×	
Liberty	IBC	×		IFC	×		IMC	×		IPC	×							
North Kansas City	IBC	X		IFC	×		IMC	×		IPC	Х					NEC	X	
Smithville	IBC	X					IBC	×		IBC	Х		IPMC					
Pleasant Valley	IBC	×																
Jackson County	IBC	×	×	IFC	×	×	IMC	×	×	IPC	X	X						
Blue Springs	IBC	X	×	IFC	×	×	IMC	×	×	IPC	Х	X	IBC	X	X	JBI	X	×
Grain Valley	IBC	×		IFC	×		IMC	×		IPC	×							
Grandview	IBC	X		IFC	×		IMC	×		IPC	X					NEC	×	
Greenwood	IBC	×		IFC			IMC			IPC								
Independence	IBC	×		IFC	×		.IMC	×		IPC	X		Local	X		Multi		
Kansas City, Mo.	IBC	×		IFC	×		IMC	×		UPC	×		IBC	Х				
Lee's Summit	IBC	×		IFC	×		IMC	×		IPC	×		UCADB					
Oak Grove	IBC	×		IFC	×		IMC	×		IPC	×					NEC		
Raytown	IBC	×	×	IFC	×	×	IMC	×	×	IPC	×	×	IPMC	×	×	NEC	×	×

				Та	Table 3.5:		Reviewe	d Adeq	uately	Codes Reviewed Adequately Enforced (Continued)	(Contin	(pen						
Jurisdiction		Building			Fire		Mec	Mechanical		1Id	Plumbing		Dangero	Dangerous Buildings	lings	Oth	Other Codes	S
Platte County	JBI	X	X				IMC	Х	X	IPC	Х	×			X			
Farley	IRC	X																
Lake Waukomis	JBI	X		IFC			IRC			IRC			IBC					
Northmoor	JBI	X	X	IFC		×	IMC		X	IBC		×	IBC		X			
Parkville	JBI	X	X	IFC	×	×	IMC	Х	X	IPC	Х	×				NEC	×	×
Platte City	JBI	X	X	IBC	X	X	IBC	Х	X	JBI	Х	×	IBC	X	X			
Platte Woods	JBI	X	X	IBC	X	×	IBC	Х	X	IBC	Χ	×	IBC	X	X			
Riverside	ЭI	X	X	C	×	×	IC	Х	X)I	Х	×	C	X	X	C	×	×
Tracy	IBC	×		IBC	×		IBC	X		IBC	X		IBC	X		NEC	×	
Weatherby Lake	IRC	X	X	IFC	×	×	IRC	Х	X	IRC	Х	×	IRC	X	X			
Weston	IBC	×		IBC	×		IBC	×		IBC	X		IBC					
Ray County	IBC	×		IFC	×		IBC/IRC	×		IPC/IRC	X		IPMC	X		NEC	×	
Richmond	IBC	×		IFC	×		IMC	×		IPC	×		IBC	×		NEC	×	

HMP = Reviewed for HMP Update Key: ADEQ = Adequately Enforced

IC – International Code

IBC – International Building Code

IFC – International Fire Code

IMC - International Mechanical Code

IPC – International Plumbing Code

IPMC – International Property Maintenance Code

IRC – International Residential Code

NEC – National Electric Code

NFC – National Fire Code

UCABD – Uniform Code for Abatement of Dangerous Buildings

UMC – Uniform Mechanical Code

UPC – Uniform Plumbing Code

Table 3.6: Re	elevant Measures Incorporated into HMP (Building Codes)
CAPABILITY	CASS COUNTY
Building Code	Pleasant Hill: Additional safe room standards established
Dangerous Building Code	Cass County: Local code regulations Lake Winnebago: Does not apply to current City R-1 Zoning Raymore: Local code regulations Pleasant Hill: Local code regulations
Other Codes	Lake Winnebago: NEC Peculiar: NEC
CAPABILITY	CLAY COUNTY
Building Code	Kearney: 2018 IRC and IBC Clay County: IBC and IRC 2012
Fire Code	Kearney: IFC Class 3 Clay County: IFC 2012
Dangerous Building Code	Excelsior Springs: City has local ordinance; Kearney IPMC 2018 & local ordinance
Other Codes	Excelsior Springs NEC 2011 Kearney NEC 2017 North Kansas City: NEC 2018 Clay County: NEC 2011
CAPABILITY	JACKSON COUNTY
Building Code	Grandview: Has updated to 2018 version Kansas City: Has updated incorporating stronger energy conservation provisions in 2024
Fire Code Mechanical Code Plumbing Code	Grandview: Updated to 2018 versions
Dangerous Building Code	Blue Springs: All IBC modules Independence: City has local ordinance Lee's Summit: City has local ordinance Oak Grove: Oak Grove Municipal Ordinance
Other Codes	Jackson County: NEC Grandview: Updated NEC to 2018 Independence: IFGC, IRC, NEC, IEBC Oak Grove: NEC; 2009 IFGC; Int'l Private Property
CAPABILITY	PLATTE COUNTY
Building Code	Platte County: Planning and Zoning
Fire Code	Lake Waukomis: Contract with Kansas City, MO Fire Department
Mechanical Code	Platte County: Planning and Zoning
Plumbing Code	Platte County: Planning and Zoning
Dangerous Building Code	Platte County: County-only code
Other Codes	Tracy: NEC
CAPABILITY	RAY COUNTY
Other Codes	Richmond: NEC 2018

IBC – International Building Code

IC – International Code

IEBC – International Existing Building Code

IFGC – International Fuel Gas Code

ISPSC – International Swimming Pool and Spa Code

NEC – National Electric Code

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	Grandview	^	>	^		>		>		>
	Blue Springs	^	^	^	^	>	^	>		>
	Jackson County	^	^	^	^	>	^	>	>	>
	Pleasant Valley	^	^			^				
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tion	North Kansas City		>	>		>		>		>
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dinances and Policies Adopted by Local Jurisdictions	lliH tnasa9l9		1		^	1		^		>
nanc	Peculiar		^	^	^	^		^	^	>
Ordi	Lake Winnebago		>	>		>				>
Table 3.7: Or	Harrisonville		^	^	^	^	>	>	^	>
	Belton	^	^	^	^	^	^	^	^	>
	Cass County	>	>	>	>	>	`			>
	ORDINANCES ADOPTED BY JURISDICTION	Stream setback ordinances	Floodplain management ordinances	Soil and erosion ordinances	Burn ordinances	Storm water runoff ordinances	Water conservation measures	Open space acquisition/dedication	Flood buyout	Site plan review requirements
		Stre	Floo	Soil	Burr	Stor	Wat	Ope	Floo	Site

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Table 3.8: Relevant Mea	sures Incorporated into HMP (Ordinances/Policies)
CAPABILITY	CASS COUNTY
Soil and Erosion Ordinance	Cass Co has incorporated provisions into Stormwater requirements
Burn Ordinance (i.e., farmland, prairie)	Cass Co. – Under local fire protection district authority Raymore: As needed through South Metro Fire Protection (wildland fire mitigation) Pleasant Hill has local burn ordinance
Flood Buyout	Raymore: No structures are within the flood hazard area (Supports continued NFIP participation)
CAPABILITY	CLAY COUNTY
Floodplain Management Ordinance	Kearney: Development required to meet floodplain ordinance (Supports continued NFIP participation)
Burn Ordinance (i.e., farmland, prairie)	Kearney: burn permits required; issued by fire district Smithville: adopted and enforced by Smithville Area FPD
Storm Water Runoff Ordinance	Kearney: Detention facilities required to minimize flooding (Supports continued NFIP participation)
Flood Buyout	Kearney: No residential structures within floodplain (Supports continued NFIP participation)
CAPABILITY	JACKSON COUNTY
Stream Setback Ordinance	Oak Grove: Uniform Development Code (UDC) (Supports continued NFIP participation)
Floodplain Management Ordinance	Lee's Summit: Chapter 6 of the Unified Development Ordinance (Supports continued NFIP participation)
Soil and Erosion Ordinance	Grandview: Land disturbance permit greater than 1 acre Kansas City: MS4 Program Levasy: Challenge to implement Oak Grove: Follow Federal Clean Water Act
Burn Ordinance (i.e., farmland, prairie)	Oak Grove: Permits by Sni-Valley FPD required each day; banned except for designated days. Sni-Valley permit based on fire danger and air quality.
Storm Water Runoff Ordinance	Grandview: Follows KCAPWA design standards Lee's Summit: Chapter 34 of the City Code of Ordinances (Supports continued NFIP participation) Oak Grove: UDC incorporates requirements on developers (Supports continued NFIP participation)
Water Conservation Measures	Grandview: Uses detention areas to hold runoff Lee's Summit: As needed during drought conditions Oak Grove: Emergency Powers under Emergency Management Ordinance

Table 3.8 Relevant Measures I	ncorporated into HMP (Ordinances/Policies) (Continued)
Open Space Acquisition/Dedication	Lee's Summit: Being evaluated to acquire stream corridors (Supports continued NFIP participation) Oak Grove: Flood Plain and Uniform Development Code (Supports continued NFIP participation)
Flood Buyout	Lee's Summit: Limited scale (Supports continued NFIP participation) Oak Grove: No developed property eligible to buyout (Supports continued NFIP participation)
Site Plan Review Requirements	Kansas City: floodplain, airport zones, historic preservation Oak Grove: Site plans reviewed according to UDC standards Lee's Summit: Being used to acquire stream corridors
CAPABILITY	PLATTE COUNTY
Stream Setback Ordinance	Platte County: Planning and Zoning (Supports continued NFIP participation). New development is required to be setback. Lake Waukomis has adopted Ord. 468
Floodplain Management Ordinance	Platte County: Planning and Zoning and Emergency Management (Supports continued NFIP participation) Parkville: Adopting Update January 2015 (Supports continued NFIP participation) Platte City: Adopting February 2015 (Supports continued NFIP participation)
Soil and Erosion Ordinance	Platte County: Planning and Zoning applies to land under development Lake Waukomis: HOA / silt management Weatherby Lake: City ordinance enforced by Public works
Burn Ordinance (i.e., farmland, prairie)	Houston Lake: Open burning ordinance adopted into city code 2013 Lake Waukomis: Small campfire; grill Weatherby Lake: City ordinance enforced by Public Works
Storm Water Runoff Ordinance	Platte County: Planning and Zoning (Supports continued NFIP participation) applies to land under development Weatherby Lake: City ordinance monitored by MS4 Committee (Supports continued NFIP participation)
Water Conservation Measures	Platte County: Voluntary Green Build
Open Space Acquisition/Dedication	Platte County: Planning and Zoning (Supports continued NFIP participation) required for new development
Flood Buyout	Platte County: last used after 1993 flood
Site Plan Review Requirements	Platte County: Planning and Zoning part of development process Weatherby Lake: This is part of the planning code ordinance

3.3.2 Administrative and Technical Capabilities

The profile survey collected information about administrative functions, staffing, and technical resources to identify whether capabilities were available at the local level to assist with mitigation planning and implementation of mitigation actions. Smaller jurisdictions were asked to indicate any public resources available at the next higher level of government (i.e., technical assistance).

Administrative Resources (Community Profile, Part 2A, Question 1)

In Part 2A of the Community Profile Survey, jurisdictions were asked to identify administrative resources available to assist with mitigation activities. **Table 3.9** provides a list of administrative functions fulfilled at the local level by each jurisdiction.

The profiles provide responses on the following items: is assistance available at the next level of government; is coordination between governments effective for mitigation purposes; and were functions reviewed as part of the HMP update.

Staffing Resources (Community Profile, Part 2A, Question 2)

Jurisdictions were next asked to describe staffing resources available to assist with mitigation efforts. **Table 3.10** lists all relevant full- and part-time positions. Many communities have limited staff to carry out planning and building responsibilities, including floodplain management.

Technical Resources (Community Profile, Part 2A, Question 3)

Jurisdictions were asked to identify all technical resources available to assess and mitigate risk. **Table 3.11** lists the tools that were useful to meet local planning needs.

Table 3.12 describes relevant measures incorporated into the HMP as stated by the jurisdiction.

Refer to the following pages for the Administrative and Technical tables referenced above.

	Oak Grove	>	>	>	>
	Lee's Summit	^	^	>	>
	Kansas City, MO	^	^	>	>
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	Greenwood	^			>
	Grandview	^			
	Blue Springs	^	>	>	>
	Jackson County	^	>	>	>
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_	Smithville	^	^	^	^
tion	North Kansas	>	>	>	>
isdic	Pleasant Valley	>	>	>	>
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trati	Clay County	^		>	>
inist	Ваутоге	^	^	^	\
Mp	lliH tnasaalq	^	^	\	^
Table 3.9: Local Administrative Resources by Jurisdiction	Peculiar	^	>	>	>
	гяке	>	>	>	>
	Lake Annette	^		>	
	Harrisonville	^		\	^
	Belton	^		>	>
	Cass County	^	^	>	>
	ADMINISTRATIVE FUNCTION AT THE LOCAL LEVEL	Planning & Zoning Commission	Mitigation Planning Committee	Maintenance program	Mutual aid agreement

	Richmond	>	>	>	>
	Ray County	>	>	>	>
	Uorthland RAD	>	>		>
	Weston	~		1	>
	Меатһегbу Lake	>		^	>
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ntinu	Riverside	>	~	\	>
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ctior	Platte City	>		>	>
ırisdi	Parkville	>	>	>	>
nr yd	Northmoor			^	>
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lnos	Farley	~		\	
ve Re	Platte County	>	>	^	>
trati	Sni Valley FPD				>
ninist	Central Jackson County FPD				>
Adn	Grain Valley	>	>	>	>
Local	Raytown	^		~	>
Table 3.9 Local Administrative Resources by Jurisdiction (Continued)	ADMINISTRATIVE FUNCTION AT THE LOCAL LEVEL	Planning & Zoning Commission	Mitigation Planning Committee	Maintenance program	Mutual aid agreement

Harrisonville Lake Annette Lake Winnebago Peculiar
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Ray County	PT	PT	PT			ᇤ	PT	PT	
UAA bnaldtroM							PT		
Weston	ΡΤ	ե	F				PT		
Меатһегbу Lake	Ы		Ħ	Ħ	PT		PT		
Тгасу		PT							
Riverside	Ы	Ħ	Ħ	ㅂ	Ħ		ㅂ	ㅂ	
Platte Woods	ΡΤ	Ħ	H	PT	ΡΤ	ΡΤ	PT		TIME
Platte City	Ы	ե	ե	ᇤ	PT	ե	PT	PT	PART 7
Parkville	ΡΤ	ᇤ	ᇤ	ᇤ	PT	ᇤ	PT	PT	PT = P
Northmoor	РТ	PT	PT	PT	PT		PT	РТ	
Lake Waukomis	РТ	PT	PT	PT	PT		PT	PT	
Farley	ΡΤ	PT	PT						TIME
Platte County	FT	Ħ	Ħ	Ħ	Ħ	Ħ	Ħ	Ħ	FULL
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Sni Valley FPD	РТ						PT	PT	
Central Jackson County FPD	Ħ	Ħ	F	Ħ	Ħ	Ħ	Ħ	Ħ	
Raytown	FT	PT	PT	ㅂ	ㅂ	PT	ㅂ	PT	
LOCAL STAFFING (FULL-TIME OR PART-TIME)	Chief Building Official	Floodplain Administrator	Emergency Manager	Community Planner	Civil Engineer	Public Health Official	IT Support	GIS Coordinator	

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Lee' s Summit	>	>	>		>	>		
Vansas City, MO	>	>	>	>	>		>	>
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Greenwood	>				>	>		
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Blue Springs	>		^		>	>		>
Jackson County	^	^	^	^	>	^	^	>
Grain Valley	>		>		>	>		
Smithville	>				>	>		>
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Liberty	1	1			^	1	1	
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Kearney	^	^	1		>	^	~	
eladstone	^	^	1		>	^	~	~
Excelsior Springs	^							
Clay County	>				>	^		^
Ваутоге	^	^	^		/	^	^	>
Pleasant Hill		^	^		^	^		
Peculiar	1	1	1	/	1	1	1	^
Lake Winnebago	>	^	1		>	^	V	
Lake Annette	1					1	1	
Harrisonville	>	>	^	^	>	>	^	>
Belton	>	>	>		>	>		
Cass County	^	^	^	^	^	>	^	<i>></i>
TECHNICAL RESOURCE USEFUL TO LOCAL PLANNING	Warning system/services	Hazard data and information	Critical Facility Map/APRS	HAZUS Analysis	Existing Land Use Maps	Future Land Use Maps	State Hazard Mitigation Plan	Grant Writing
	Cass County Belton Lake Annette Lake Winnebago Peculiar Pleasant Hill Ray County Clay Coun	Cass County Harrisonville Lake Annette Lake Winnebago Lake Winnebago Raymore Raymore Clay County Clay	Cass County Harrisonville Lake Annette Lake Annette Lake Winnebago Raymore Raymore Clay County Clay County Cladstone Clay County Cladstone Cla	Cass County Harrisonville Lake Annette Lake Annette Lake Winnebago Lake Winnebago Raymore Raymore Clay County Cla	FSOURCE Cass County	S agi, S Cass County Cass Cass Cass Cass Cass Cass Cass Cas	S and selection of the control of th	Part of the control o

Richmond	>		>			>	^		>
Ray County	>				^	^	^	>	^
Morthland RAD	>		>		^	>		>	
Weston	>					>	^	>	
Меатһегbу Lake	>		>	^		~	^	>	^
Tracy									
Riverside	>		>	1		>	1		^
Platte Woods	>		>			1		^	
Platte City	>		>	1		>	1	^	^
Parkville	>		>			1	1	^	1
Northmoor	>					~		>	^
Lake Waukomis									
Farley	>					>			
Platte County	>		>	^	^	>	>		
Гечаѕу									
Grain Valley	>			^		^	^	>	^
Sni Valley FPD	>		>	^		>	/	>	
Central Jackson County FPD	>		>						
Raytown	>		>	^		>		<u> </u>	
Оак Grove	>		>	>		>	>	>	>
TECHNICAL RESOURCE USEFUL TO LOCAL PLANNING	Warning system/services	Hazard data and	information	Critical Facility Map/APRS	HAZUS Analysis	Existing Land Use Maps	Future Land Use Maps	State Hazard Mitigation Plan	Grant Writing

Table 3.12: I	Relevant Measures Incorporated into HMP (Technical Resources)
CAPABILITY	CASS COUNTY
	Cass Co: Everbridge mass notification system, social media Belton: outdoor warning siren, Everbridge text alert
Warning Systems	Pleasant Hill: multiple options include text alerts, opt in to Everbridge, and storm sirens Peculiar: Uses electronic texting to participating residents
Hazard Data	Belton: City of Belton EOP
Grant Writing	Cass County: interested in exploring HMPG and EMPG grant opportunities Raymore: Continue to explore multiple grant opportunities in addition to EMPG
Existing Land Use Map	Belton: WebGIS and website Raymore: Local GIS specialist continues to assess and analyze land use
	Cass County: Needs more information to collect data Belton: WebGIS
Critical Facilities Map	Lake Winnebago: Maps are available hard copy and laptop Pleasant Hill: critical facilities identified in emergency management SOP
	Raymore: Need to collect more information on critical facilities
CAPABILITY	CLAY COUNTY
Warning Systems	Gladstone: PM system BVPS, Everbridge Kearney: Used for tornadoes and severe weather. Social media; mass email to registered water customers Liberty: Warning sirens, mass texts to cell phones, email Pleasant Valley: tornado siren and public alert system North Kansas City: warning sirens Smithville: Citywide sirens in place
Hazard Data	Clay County: Outdoor Warning Sirens Gladstone: Critical facilities map, identify and pre-plan for critical infrastructure Clay County: LEOP
Existing Land Use Map	Kearney: Future Land Use Map identified future open space that correlates with floodplain areas (Supports continued participation in the NFIP) Liberty: Used to ensure no structures are built
Future Land Use Map	Liberty: Used to ensure no structures are built
CAPABILITY	JACKSON COUNTY
Warning Systems	Independence: SMS Texting System and outdoor siren system Kansas City: Multiple platforms Lee's Summit: Tornado sirens, Everbridge Oak Grove: Outdoor warning sirens, phone app/text/email, social media, indoor warning pager (also for Sni-Valley FPD) Raytown: Outdoor warning sirens, weather radios and communication equipment
Hazard Data	Kansas City, Mo: Information is contained within LEOP; MARC maintains data Oak Grove and Sni-Valley FPD: Lists and GIS maps in LEOP Raytown: Awareness of historical data helps provide hazard analysis
Grant Writing	Sni Valley FPD: have administrative personnel
HAZUS	Sni Valley FPD: Available but insufficient staff time to adequately utilize
Existing Land Use Map	Independence: Available in Community Development Kansas City, Mo: Utilize MARC's products Lee's Summit: FEMA floodplain maps Oak Grove and Sni-Valley FPD: Ongoing GIS data project Raytown: Maps updated

elevant Measures Incorporated into HMP (Technical Resources)
Independence: Available in Community Development Kansas City, Mo: Utilize MARC's products Lee's Summit: FEMA floodplain maps (Supports continued participation in the
NFIP) Oak Grove: Ongoing GIS data project Sni Valley FPD: Available for Oak Grove only
Kansas City, Mo: Reviewed and incorporated into the LEOP Sni Valley FPD: Reviewed for LEOP
PLATTE COUNTY
Platte County: looking at locations for additional sirens with new population growth Parkville: 4 sirens and weather radios in all city buildings Platte City: social media, audible sirens for severe weather Riverside: Use social media sites and Textcaster Weatherby Lake: updated storm sires, use Textcaster
Platte County: Use of NWS, historical and Tier II data Lake Waukomis: Updating GIS data Northland RAD: Data is kept at county level and through dispatch software Riverside: NWS data
Platte County: Staff in department help with grants Platte City: In-house person helps with grants Riverside: Grant writing resources available on an as-needed basis
Platte County: Floodplain manager keeps update (Supports continued participation in the NFIP)
Platte County: County planning team Platte City: Currently used by the city Parkville: in city plan Weatherby Lake: County and city have this capability
Platte County: County planning team Parkville: included in city masterplan Riverside: Limited development in floodplain areas Platte City: Currently used by the city Weatherby Lake: County and city have this capability
Platte County: SEMA plans are incorporated in county by reference Platte City: Working knowledge Weatherby Lake: Works along with current plan
Platte County: Updated in GIS Platte City: In-house use for the city Riverside: Evaluation of Critical infrastructure/facilities for entry into APRS Northland RAD: Data kept at county level and through dispatch software
RAY COUNTY
Ray County: NIXLE mass communication systems Richmond: Monthly testing and maintenance contract
Richmond: Floodplain and Storm water ordinances (Supports continued participation in the NFIP)
Richmond: Utilize MARC
Richmond: Comprehensive Plan Richmond: Comprehensive Plan

3.3.3 Financial Capabilities

The profile survey collected information about financial capabilities to determine whether the jurisdiction has current or potential funding resources to assist with planning and implementation of mitigation actions. **Table 3.13** shows the type of mitigation actions funded in the last five years for the entire planning area.

Table 3.13: Type	es of Mitigation	Activities Fund	ded by Fundir	ng Source	
Funding Resource	Structure and Infrastructure Projects	Local Plans and Regulations	Natural Systems Protection	Education and Awareness Programs	Total Mitigation Activities Funded
Capital Improvement Project		_		_	
Funding	15	4	1	0	20
Authority to levy taxes for specific					
purposes	13	1	0	0	14
Fees for water, sewer, gas or					
electric services	11	1	0	0	12
Impact fees for new development	4	2	0	0	6
Storm water utility fee	5	0	0	0	5
Incur debt through general and/or					
special tax bonds	3	0	0	0	3
Incur debt through private					
activities	0	0	0	0	0
Community Development Block					
Grant	3	2	0	2	7
Flood Mitigation Assistance					
Program	2	0	0	1	3
Pre-Disaster Mitigation Program	3	2	1	0	6
Hazard Mitigation Grant Program	1	1	0	0	2
Other	0	0	0	0	0
Type of Mitigation Activities Total)	60	13	2	3	78

Funding Resources (Community Profile, Part 2B, Question 1)

In Part 2B of the Community Profile Survey, jurisdictions were asked to describe the types of funding resources a jurisdiction has access to and is eligible to use funds for hazard mitigation.

Table 3.14 on the following page shows access or eligibility to use funding resources for hazard mitigation by jurisdiction.

Table	Table 3.14 Juri	1 Jur	isdict	ion H	sdiction Has Ability to Access These Funding Resources	oillity	to A	cces	s The	se Fi	undi	ng Re	inosa	ces									
Funding Resources	Cass County	Belton	əllivnozimeH	Lake Annette	Lake Winnebago	Peculiar	lliH tneseal9	gaymore .	Clay County	Excelsior Springs	Gladstone Keamey	Lawson	Liberty	North Kansas	əllivhtim2	Pleasant Valley	Jackson County	sgning2 əul8	wəivbnerə	Greenwood	əɔuəpuədəpu	OM ,(Yii) sesneN	timmu2 s'991
Capital Improvement Project Funding		>	^	^	^	^		,	^	^		^	>	>	^	1	^	^	1		^	^	^
Authority to levy taxes for specific purposes	^	>	>	>		>	>	` `^	>	^	>	<i>></i>	>	>	>	/	>	>	^		>	>	>
Fees for water, sewer, gas or electric services	^	>	^	>	^	>	>	_	<u> </u>	`	>	<i>></i>	>	>	>	1	>	>	^		>	>	>
Impact fees for new development		>		>	>	>	>			_	^	<u> </u>	>		^		^				^	>	>
Storm water utility fee				>		>	>	` `^	<u> </u>	`	>	<i>></i>	>	>	>		>		^		>	>	
Incur debt through general and/or special tax bonds	^	>	^	^	^	^	>	,	<u> </u>	^	<i>></i>	/	>	>	^	1	^	>	^		^	_	^
Incur debt through private activities								~			>			>							^		
Community Development Block Grant		>	>			>		•	^	_	>	^	>	>	^	1		>	~		^	^	^
Flood Mitigation Assistance Program		>	^	>	^	>		_	<i>></i>		>		>		^		^		~		^	_	^
Pre-Disaster Mitigation Program				^	^	>		_	_	^	^	,	>		^		^	>	~		^		^
Hazard Mitigation Grant Program			>	>	>	>			<u> </u>	>	<i>></i>		>	>	^		>	>			>		>

Bichmond	>	>	>	>		>		>			
кау County				>					>	>	>
Weston	<u> </u>	<u> </u>	<u> </u>			<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Меатһегbу Lake	>	^	^	^		>		>	>	^	>
Тгасу											
Riverside	^	>	^			>		^	>	>	
sbooW əttel9	^		^							^	
Platte City	1	1	1	1		1					
Parkville	1	1	1	1	1	^			1	1	
Northmoor	1										
Гаке Waukomis	/	/	^			/				/	^
Farley											
Platte County	^	^	^	>	^	>		^	>	^	>
Grain Valley	^	>	>			>		^			
ςenssy		>	>			>		<i>></i>			
Raytown	^	^	^			^		^			>
Oak Grove	^	^	>	>		>		^	>	>	>
TABLE 3.14 JURISDICTION HAS ABILITY TO ACCESS THESE FUNDING RESOURCES	Capital Improvement Project Funding	Authority to levy taxes for specific purposes	Fees for water, sewer, gas or electric services	Impact fees for new development	Storm water utility fee	Incur debt through general and/or special tax bonds	Incur debt through private activities	Community Development Block Grant	Flood Mitigation Assistance Program	Pre-Disaster Mitigation Program	Hazard Mitigation Grant Program

3.3.4 Education and Outreach Capabilities

The profile survey collected information about access to existing education and outreach programs that could be used to implement mitigation activities.

Programs and Organizations (Community Profile, Part 2C, Question 1)

In Part 2C of the Community Profile Survey, jurisdictions were asked to state the usefulness of regional and local outreach programs and methods to implement mitigation activities and/or communicate hazard-related information.

Table 3.15 shows which methods were considered useful for implementation.

Table 3.16 describes relevant measures incorporated into the HMP as stated by the jurisdiction.

Table 3.15: Useful Outreach and Awareness Programs for Mitigation Activities by Jurisdiction	and	Awar	eness	Prog	rams	for Mit	igatio	n Activ	vities	by Juri	sdictic	<u> </u>				
PROGRAM/ORGANIZATION IS USEFUL TO IMPLEMENT MITIGATION STRATEGIES	Cass County	Belton	Harrisonville	Lake Annette	Гаке Winnebago	Peculiar	lliH Jnsseal9	Каутоге	Clay County	Excelsior Springs Gladstone	Қезкие у	иоѕмет	Liberty	Morth Kansas City	Smithville	YelleV tneseel9
Existing Warning Systems																
Storm sirens	>	>	>	>	^	>	>	<i>></i>	>	>	>	>	>	>	>	>
Mass notification systems	>	>	>	>	^	>	>	<u> </u>		>	>	>	>			
CMAS																
MEMC Project Community Alert	>				^					>			>			
National Weather Service	>	>	>	>	^	>	>	` `	>	>	>	>	>	>	>	>
Kansas City Scout	^	^	^			^							^	^	^	>
Community Partnerships																
Regional Collaboration	^	>	>		/		<u> </u>	<u> </u>	^	>	>		>	^		>
SAVE Coalition	^		>		^									^		
Kansas City Organizations Active in Disaster	^		^		1			^								
Community Emergency Response Team		^	^	^	1			^ /		^			^	<i>/</i>		
Medical Reserve Corps of Greater Kansas City	/				1			^ /		^			^			
Ongoing public education or information program	^	^	^		^	^	/	^ /		^				/		
Natural disaster or safety-related school program	/	^				^	/	/				^	^			
StormReady certification	/	^				/		<u>^ </u>		^			^			
Public-private partnership initiatives (disaster-related)			^		1		^	/					^			
Media coverage and public awareness	>	>	>	>		>	>	<u>,</u>	_	>	>	>	>	>		>

Table 3.15: Useful Outreach and Awareness Programs for Mitigation Activities by Jurisdiction (Continued)	eness.	Progr	ams f	or Mi	tigatio	n Activ	/ities k	y Juri	sdictior	ر (Cor	ntinue	Q	
PROGRAM/ORGANIZATION IS USEFUL TO IMPLEMENT MITIGATION STRATEGIES	Jackson County	sgnings sulB	Weivbnard	Greenwood	əɔuəpuədəpu	Kansas City, MO Lee's Summit	Oak Grove	Ваутоwn	Central Jackson County FPS	Sni Valley FPD	Platte County	Farley	Lake Waukomis
Existing Warning Systems													
Storm sirens	<i>^</i>	^	>	<u> </u>	<i>></i>	>	>	^	>	^	>	>	>
Mass notification systems	/	/	^	^	<i>^</i> / <i>^</i>	/	^	^	^	^	^		`
CMAS	<i>/</i>					^	>		<i>></i>	^			
MEMC Project Community Alert	1				<i>^</i>	^	^	^	^	^	^		
National Weather Service	/	^			<i>^</i>	<i>></i>	^	^	^	^	^		
Kansas City Scout	1	^	^		<i>^</i>	<i>></i>	^	^	^	^	^		
Community Partnerships													
Regional Collaboration	/	/		^	<i>^</i>	/	^	^	~	^	^		
SAVE Coalition	>	`			>		>	>	~	>	^		
Kansas City Organizations Active in Disaster	>			·	\ \		>	>	~	>	^		
Community Emergency Response Team	1	^			<i>^</i>	<i>></i>	^	^	^	^	^		
Medical Reserve Corps of Greater Kansas City	1				<u> </u>		/	>			^		
Ongoing public education or information				>				>					
program	>			,	<u> </u>	<u>,</u>	>		~	>	^		
Natural disaster or safety-related school				>				>					
program	^					>	>		~	>	^		
StormReady certification	>			·	<i>></i>	<u> </u>					^		
Public-private partnership initiatives (disaster-				>									
related)	>												
Media coverage and public awareness	\	>	>	<u> </u>	<u> </u>	<u> </u>	>	>	>	>	>		

Table 3.15: Useful Outreach and Awareness Programs for Mitigation Activities by Jurisdiction (Continued)	rams	for N	litigati	on Acti	ivities b	y Juri	sdictic	on (Cc	ntinu	(pa	
PROGRAM/ORGANIZATION IS USFFUL TO IMPLEMENT MITIGATION STRATEGIES	Northmoor	Parkville	Platte City Platte Woods	Riverside	Тгасу	Меатһегbу Lake	Weston	Morthland RAD	Pleasant Valley	Ray County	Bichmond
Existing Warning Systems											
Storm sirens	>	^	<u> </u>	<i>/</i>	<i>></i>	/	^	>	>		>
Mass notification systems	^	/	<i>^</i>	/		/	^	/	^	/	
CMAS				^		/					
MEMC Project Community Alert		<i>></i>	^	^		^					
National Weather Service	>	<u> </u>	<u> </u>	<i>\</i>	>	~	^	^		<u> </u>	>
Kansas City Scout	~		^	^		^					
Community Partnerships											
Regional Collaboration	^	\	^	^		/			^	>	
SAVE Coalition	^		^	^		/	/				
Kansas City Organizations Active in Disaster	>	>	>			>	>			`	
Community Emergency Response Team	>	>	>			>	>				
Medical Reserve Corps of Greater Kansas City	>	>	^	>		~					
Ongoing public education or information program	>	<u> </u>	<u> </u>	<i>></i>		~	>		,	//	>
Natural disaster or safety-related school program			>			~	>				>
StormReady certification	>	<u> </u>	>	>		~	>		^		
Public-private partnership initiatives (disaster-related)	^	<u> </u>		>			>				>
Media coverage and public awareness	>	>	<u> </u>	>		>	>		>	>	>

Table 3.16: Relevant Me	t Measures Incorporated into HMP (Education and Outreach Resources)
Outreach Resource	Cass County
	Cass Co: all sirens in county maintained by either a city or fire protection district Lake Annette: Working to install appropriate early warning system/siren Lake Winnebago: New warning system in place
Storm Sirens	Peculiar: Emergency sirens are maintained by city and fire district Raymore: Uses Everbridge and social media
	Cass Co: Everbridge; social media
	Harrisonville: CodeKed program Peculiar: Mass email and cell phone notification available
Mass Notification Systems	Raymore: Internal CodeRed; Mass CodeRed; and Social Media
SAVE Coalition	Raymore: City could request SAVE if needed
National Weather Service	Pleasant Hill: city has personnel in NWS office during emergency events
Water Natural Resources Protection (NRI, WRP3)	Raymore: Part of city's illicit elimination and detection program
Storm Shelter Model Ordinance	Belton: Review with Planning Commission
Natural Disaster or Safety-Related School Program	Peculiar: School Resource Officer Raymore: Full-time community and school outreach officer
	Harrisonville: Have applied in the past
StormReady Certification	Peculiar: Chief of Police is certified
Public-Private Partnership Initiatives (disaster-related)	Raymore: Local churches and businesses are routine mitigation partners Pleasant Hill: Partnership for disaster shelter
Media Coverage and Public Awareness	Raymore: Local media, social media, and community outreach all used to raise public awareness
Outreach Resource	Clay County
	Kearney: Used to communicate tornado warnings and other severe weather
	Liberty: utilized for outdoor notification for tornadic activity
Storm Sirens	Clay Co: 7 outdoor storm sirens maintained by the county
	Kearney: Kearney Police Department (KPD) participates in NIXEL and has an active Facebook page. City has the
	ability to send mass emails to registered water customers.
	Lawson: Lext messaging and social media Liberty: Send mass texts and emails
Mass Notification Systems	Clay County: social media
CMAS	Kearney: KPD participates in NIXEL
	Clay County: Works closely with NWS during weather events
National Weather Service	Kearney: MERS is received on KPD radios
Kansas City Scout	Kearney: Scout cameras have been installed along I-35, but not message board.

Table 3.16: Releva	Table 3.16: Relevant Measures Incorporated into HMP (Education and Outreach Resources) (Continued)
Outreach Resource	Clay County
Regional Homeland Security Coordinating Committee	Clay County Emergency Management is part of this committee.
KC Organizations Active in Disasters	Clay County: Kansas City VOAD, Kansas City COAD
Storm Ready Certification	Clay County: County Wide StormReady Certification
Community Emergency Response Team	Kearney: No such team in Kearney, though the KFRPD is considering
Ongoing Community Outreach	Clay County: Regular outreach events to engage and educate the public
Storm Shelter Model Ordinance	Kearney: Building Code includes provisions for constructing safe rooms
Natural Disaster or Safety-Related School Program	Kearney: KPD participates in the school districts fire/disaster/intruder safety drills Liberty: Teach fire safety in the schools
Media Coverage and Public Awareness	Kearney: Local channel 2 is made available by Fairport
Outreach Resource	Jackson County
	Blue Springs: Weather warning Oak Grove: Emergency Management uses Outdoor Warning Sirens with voice public address for numerous other
	Independence: Contract with Blue Valley Public Safety to maintain 31 sirens
	Grandview: some sirens not available
Storm Sirens	Kansas City; goals and actions include adding sirens to increase coverage Sni Valley FDD: Outdoor warning siren in Rates City only: Oak Grove Voice System
	Blue Springs: CodeRed reverse 911
	Grandview: NIXLE
	Kansas City: Alert KC is utilized, goal and action to improve system
	Independence: EP uses Readytohelp.org for SMS-Currently do not have a comprehensive mass notification system
	that can be used for contact with the general public.
	Oak Grove: Emergency Management uses NIXLE.com for emergency messaging
	Raytown: Nixle is used to broadcast critical information to large audiences
Mass Notification Systems	Sni Valley FPD: NIXLE.com use for mass notification
	Oak Grove: WEA will be used through Jackson County for emergency messaging in addition to NIXLE when all end
	user capability is in place.
	Sni Valley FPD: Available through Jackson County EMA
CMAS	Kansas City: iPAWS is utilized, action is to increase usage

Table 3.16: Relev	Table 3.16: Relevant Measures Incorporated into HMP (Education and Outreach Resources) (Continued)
	Independence: EP staff participated in Weather Radio programming event in May 2014 Oak Grove: This is not a warning system-public education/community partnership to educate about and sell NOAA radios
MEMC Project Community Alert	Sni Valley FPD: This is not a warning system-public education/community partnership to educate about and sell NOAA radios Lee's Summit: recommend use of weather radios for indoor notification
National Weather Service	Jackson County: Annual County level weather training Blue Springs: Weather information sharing Independence: EP staff distributes NWS forecast daily to all city employees. EP uses NWS chat during weather events Oak Grove: NOAA Radio Sni Valley: NOAA Radio
Kansas City Scout	Jackson County: Emergency Services (EOC) Belton: Information sharing Independence: Utilized during EOC activations for increased situational awareness Oak Grove: Used to provide notice of incidents affecting highways; provides weather emergency information on message boards and text messages Sni Valley FPD: Same as Oak Grove
Regional Homeland Security Coordinating Committee	Jackson County: Active member Independence: Attended by EP Staff Oak Grove: Provides overall oversight of emergency programs Sni Valle FPD: Provides overall oversight of MARC emergency programs
SAVE Coalition	Oak Grove: SEMA sponsored damage assessment program using architects, engineers, and building officials Sni Valley: Same as Oak Grove
Kansas City Organizations Active in	Jackson County: KC VOAD Independence: Attended by EP Staff Oak Grove: Coordinates community and voluntary organizations Sni Valley FPD: Same as Oak Grove
Disaster Community Emergency Response Team	Grandview: works with American Red Cross Independence: EP has a team in place-Two classes scheduled each year, one in Spring, one in the fall. Oak Grove: Trains citizens to become basic level emergency responders Sni Valley: Same as Oak Grove

Medical Reserve Corps of Greater Kansas City	Independence: EP currently meeting with MRC to try and house program here Oak Grove: Provides organized group of medical personnel available for disasters Sni Valley: Same as Oak Grove
	Independence: EP distributes information at several events throughout the year Oak Grove: Oak Grove EMA Safety Information Program
Ongoing Public Education or Information Program	Sni Valley FPD: Same as Oak Grove Greenwood: Beginning work
Natural Disaster or Safety-Related	Oak Grove: 4th Grade Safety Education at Oak Grove R-VI Schools by Sni Valley FPD Sni Valley: Same as Oak Grove
School Program	Greenwood: Beginning work
	Jackson County: County level StormReady Certification Independence: EP Staff renewed in November 2014
	Oak Grove: Not applicable for Oak Grove-Sni Valley due to program requirements
StormReady Certification	Greenwood: Reviewing information
Media Coverage and Public Awareness	Independence: City recently hired PIO; Public awareness campaign is under development Sni Valley: EMA uses combination for pamphlets, Local Access TV, Websites, print media, and public events
Outreach Resource	Platte County
Storm Sirens	Platte County: Monthly tests and statewide testing Platte City: New siren by city hall and recently upgraded and integrated Emmy Lane siren to the county activation Parkville: 4 sirens overlap with the county's system Platte Woods: Siren system activated by KCMO Tracy: Platte County sirens heard throughout city Weatherby Lake: Storm sirens tested every month on the first Wednesday
	Platte County: Numerous forms (Textcaster, Nixle, Nextdoor, facebok, twitter) Lake Waukomis: Nixle, facebook Parkville: TextCaster Platte City: NIXLE
Mass Notification Systems	Platte Woods: NIXLE Weatherby Lake: TextCaster; NIXLE
CMAS	Weatherby Lake: Available within the city limits and surrounding areas
MEMC Project Community Alert	Platte County: promote every year during storm seasons Platte City: Annual severe weather week at local Price Chopper Weatherby Lake: Done yearly at the local Price Chopper and local events Lake Waukomis, Platte Woods: work with the county

National Weather Service	Platte County: work with local NWS in Pleasant Hill Dearborn: County works with this organization Houston Lake: Member of NWS Weather Ambassador Lake Waukomis: Television; Internet Parkville: use Event service and work closely with their team Tracy: Get Alert Emails through City Hall Internet Weatherby Lake: Have this group in MEMC meetings and online with NWS Chat
Outreach Resource	Platte County
Kansas City Scout	Platte County: Platte County uses message boards and cameras to view traffic Dearborn: County works with this service Parkville: monitor for highway traffic incidents Platte City: In the last five year this has incorporated I29 in Platte City Weatherby Lake: In use on the major highways (I29, 1635)
	Platte County: Emergency Management is part of this organization Dearborn: Through the county Parkville: Through the county
Regional Homeland Security Coordinating Committee	
SAVE Coalition	Platte County: Emergency Management specialist are members Dearborn: Through the county Platte City: Through the State of Missouri Weatherby Lake: Several CERT members are part of this group
Kansas City Organizations Active in Disaster	Platte County: Emergency Management is a member Dearborn: Through the county Platte City: Through the county Weatherby Lake: Attend meetings on a regular basis
Community Emergency Response Team	Platte County: Platte County has been involved in CERT since 2003 Lake Waukomis: Pay through the county Platte City: Through the county and city classes Weatherby Lake: Several residents have taken the class
Medical Reserve Corps of Greater Kansas City	Platte County: Platte County recognizes this group Platte City: MARC Weatherby Lake: Aware of the group

Ongoing Public Education or Information Program	Platte County: Continued education throughout the year Platte City: Monthly Newsletter; NIXLE Weatherby Lake: With special events
Natural Disaster or Safety-Related School Program	Platte County: Emergency Management reviews fire drills, tornado drills Platte City: Platte County RIII Weatherby Lake: Park Hill School District
StormReady Certification	Platte County: 2019-2022 Parkville: Through the county Weatherby Lake: Through the county Platte City: Through the county
Media Coverage and Public Awareness	Platte County: PIO on a regional effort Platte City: City Administrator and use Platte County PIO Weatherby Lake: Local media works well with the community
Outreach Resource	Ray County
Mass Notification Systems	Ray County: Included as local warning capability
National Weather Service	Ray County: Work with routinely for storm information

3.3.5 Safe Growth Audit

Data Limitation: The Safe Growth Audit Tables are presented for Cass, Clay, Jackson, Platte and Ray Counties and their respective jurisdictions. Responses are based on data received from the community profile survey.

See Excel File labeled

Tables 3.17 through 3.21: Safe Growth Audit in Appendices

3.17 Cass County

3.18 Clay County

3.19 Jackson County (including KCMO)

3.20 Platte County

3.21 Ray County

Mid-America Regional Council

3.3.6 Floodplain Management and NFIP Participation

All of the city and county jurisdictions participating in the 2025 Plan are also participants in the National Flood Program. See **Table 3.22** for a list of participants. According to the information on the SEMA website, there are 12 small communities in the Planning Area that have not entered the NFIP or have not remained current with the FEMA requirements — Camden Point, Camden, Elmira, Fleming, Loch Lloyd, Lone Jack, Ridgely, Sibley, Unity Village, Weatherby Lake, West Line and Wood Heights.

	Table 3.22: National Flood Program (NFIP) Participation				
				CAV	
	NFIP	Good	Compliance	(last 5	
Participant	Participant	Standing	Issues	years)	Reason if not an NFIP Participant
Cass County	Х	Х			
Belton	X	Х			
Harrisonville	X	Х		Х	
Lake Annette	Х	Х			
Lake Winnebago	Х	Х		Х	
Peculiar	Х	Х			
Pleasant Hill	Х	Χ			
Raymore	Х	Χ			
Clay County	Х	Χ			
Excelsior Springs	Х	Χ			
Gladstone	Х	Х			
Kearney	Х	Χ		Х	
Lawson	Х	Χ			
Liberty	Х	Х			
North Kansas City	Х	Х		Х	
Smithville	Х	Х			
Jackson County	Х	Χ		Х	
Blue Springs	Х	Χ		Х	
Grandview	Х	Χ		Х	
Greenwood	Х	Х			
Independence	Х	Х		Х	
Kansas City, Mo.	Х	Х		Х	
Lee's Summit	Х	Х		Х	
Oak Grove	Х	Х		Х	
Raytown	Х	Х			
Platte County	Х	Х		Х	
Farley	Х	Х			
Lake Waukomis		Х			
Northmoor	Х	Х			
Parkville	Х	Х			
Platte City	Х	Х			
Platte Woods	Х	Х			
Riverside	Х	Х		Х	

Table	3.22: Nation	al Flood P	rogram (NFIP) Particip	ation (Continued)
				CAV	
	NFIP	Good	Compliance	(last 5	
Participant	Participant	Standing	Issues	years)	Reason if not an NFIP Participant
Tracy	Х	Χ			
Weatherby Lake			Х		
Weston	Х	Х		Х	
Ray County	Х	Χ		Х	
Richmond	Х	Х			

CAV = Community Assistance Visit

Sources: FEMA Community Status Book/Community Profile Survey

	Table 3.23: NFIP FI	oodplain Administrator and Current F	IRM
Participant	NFIP Entry Date	Floodplain Administrator	Most Current FIRM
		Valerie M. McCubbin, Director	
		Building Codes, Environmental Health, Planning and Zoning	
Cass County	2006	https://ecode360.com/29288821	1/2/2012
Cass County	2006	Ryan Haupt	1/2/2013 1/2/2013
		Public Works Permit Center – City of	1/2/2015
Belton	2006	Belton	
Deiton	2000	Ted Martin	1/2/2013
		City of Harrisonville, MO Floodplain	_, _, _ = = = = = = = = = = = = = = = =
Harrisonville	3/15/74	Management Regulations	
Lake Annette	3/16/06	Angela Hansen, Mayor	1/2/2013
Lake Winnebago	2/25/77	Steve Beserman	1/2/2013
Peculiar	1992	Bartlet & West	1/2/2013
		Missy Gentry	1/2/2013
		<u>Chapter 18 - ENVIRONMENT Code</u>	
		of Ordinances Pleasant Hill, MO	
		<u>Municode Library</u>	
Pleasant Hill	9/15/72		
		Lori Crandell	1/2/2013
		City of Raymore, MO Flood	
		<u>Protection</u>	
Raymore	12/27/74		
		Kipp Jones	
		Section 151-11.6 (C) of the <u>Land</u>	
Clay County	1974	Development Code (PDF)	8/3/2015
		Melinda Mehaffy	8/3/2015
		City of Excelsior Springs, MO	
		Floodway and Floodway Fringe	
Excelsior Springs	4/5/74	Overlay District	
Gladstone	5/17/74	Timothy Nebergall	8/3/2015
Kearney	1978	David Pavlich	8/3/2015
Lawson		Stan Dobbins, City Administrator	8/3/2015

		City of Lawson, MO Floodplain	
		Management	
		John Findlay	8/3/2015
		ARTICLE XVI SITE DEVELOPMENT	• •
		AND DESIGN STANDARDS Code of	
		Ordinances Liberty, MO	
Liberty	10/18/74	Municode Library	
,	, ,	Anthony Sands	8/3/2015
		Chapter 15.48 - FLOODPLAIN	, ,
		MANAGEMENT Code of	
		Ordinances North Kansas City, MO	
North Kansas City	1976	Municode Library	
Pleasant Valley		Chris Cronk, PW Director	8/3/2015
Treasure valley		Mayra Toothman	8/3/2015
Smithville	1972	iviayra rootiiinan	0,3,2013
Jackson County	1979	Randy Diehl	1/20/2017 & 12/7/2023
		Jake Farrell	, , ,
		City of Blue Springs, MO	1/20/2017 & 12/7/2023
Blue Springs	1978	Supplemental Standards	_,,
Grain Valley		Mark Trosen	1/20/2017 & 12/7/2023
Grain valley		Doug Wesselschmidt	1,20,201. @ 12,7,2020
		Chapter 16 - ENVIRONMENT Code	
		of Ordinances Grandview, MO	1/20/2017 & 12/7/2023
Grandview	7/19/74	Municode Library	
Greenwood	6/4/1976	Mitch Armer	1/20/2017 & 12/7/2023
Greenwood	0/4/1970	Brad Phelps	1/20/2017 & 12/7/2023
		Ordinance No. 19502 Code of	
		Ordinances Independence, MO	1/20/2017 & 12/7/2023
		Municode Library	1/20/2017 & 12/7/2023
Independence	1978	Article 7	
independence	1378	Bob Lawler	
		Chapter 28 - FLOODPLAIN	
		MANAGEMENT Code of	1/20/2017 & 12/7/2023
		Ordinances Kansas City, MO	1/20/2017 & 12/7/2023
Kansas City, Mo.	1978	Municode Library	
Karisas City, Mio.	1378		
		George Binger III Ordinance No. 10040 Unified	
		Development Ordinance Lee's	1/20/2017 & 12/7/2023
Lee's Summit	6/21/74	Summit, MO Municode Library	
Lee 5 Julillill	0/21/74	Corey Alford	
		Oak Grove, MO Zoning Ordinance	1/20/2017 & 12/7/2023
Oak Grove	2004	Zoneomics	1/20/201/ & 12///2023
Oak Glove	2004	Jason Hansen	
		Sec. 50-285 Statutory	
		authorization, findings of fact, and	1/20/2017 & 12/7/2023
		purposes. Code of Ordinances	1/20/201/ & 12///2023
Raytown	12/21/73	Raytown, MO Municode Library	
Naytown	12/21/13	Daniel Erickson	
Platte County	1982	ZONING OVERLAY DISTRICT	1/20/2017 & 12/7/2023
•	+	Mark Manville	1/20/2017 & 12/7/2023
Farley	2010		
Lake Waukomis	1976	Rick Zelfer	1/20/2017 & 12/7/2023

Northmoor	1974	Joe Harris	1/20/2017 & 12/7/2023
		Stephen Lachky	1/20/2017 & 12/7/2023
		City of Parkville, MO Supplemental	
Parkville	1973	<u>Standards</u>	
Platte City	1990	Summer Lutz	1/20/2017 & 12/7/2023
Platte Woods	1973	Jim Kerns	1/20/2017 & 12/7/2023
		Mike Duffy	1/20/2017 & 12/7/2023
		City of Riverside, MO Floodplain	
Riverside	9/30/1977	Management Regulations	
Tracy	11/22/74	Mark Manville	1/20/2017 & 12/7/2023
Weatherby Lake			1/20/2017 & 12/7/2023
Weston	1979	Kent Stelljes	1/20/2017 & 12/7/2023
Ray County	01-19-83	Stacy Wolfe	6/9/2012
Richmond	10/22/76	Lisa Hastings	6/9/2012

Question: What has been done to implement and enforce local floodplain regulations?

Each jurisdiction has adopted a floodplain management ordinance, has designated a full or part-time floodplain administrator, has an application or questionnaire for development applications that require information about addressing floodplain management if the property is within in whole or part a 100-year floodplain, and maintains the current FIRM maps for public review.

Question: How are substantial improvements/substantial damage provisions implemented after a flood event?

Each jurisdiction has provisions in their floodplain management ordinance to address this issue.

NFIP Insurance Status: Table 3.24 provides a summary of policies in force for jurisdictions in the five-county planning area. This information was obtained from the FEMA NFIP online database.

Table 3.24: NFIP Policy Statistics	as of Dece	ember 2024 by Jurisdi	ction
			Total Written
Community			Premium +
Communicy	Policies	Insurance	Federal Policy
	In-force	In-force	Fee
CASS COUNTY	31	8,772,000	38,223
CLAY COUNTY	18	5,058,000	18,099
JACKSON COUNTY	28	7,764,000	28,640
PLATTE COUNTY	60	1,517,900	52,147
RAY COUNTY	44	7,787,000	53,605
LEE'S SUMMIT, CITY OF	4	1,600,000	61,891
ARCHIE, CITY OF	1	88,000	980
BELTON, CITY OF	5	106,700	2,623
HARRISONVILLE, CITY OF	21	5,669,000	20,681
LAKE ANNETTE, CITY OF	2	260,000	2,130
LAKE WINNEBAGO, CITY OF	6	2,125,000	5,300
PECULIAR, CITY OF	10	1,999,000	11,913
PLEASANT HILL, CITY OF	23	2,491,000	21,786
RAYMORE, CITY OF	17	4,230,000	11,097
EXCELSIOR SPRINGS, CITY OF	8	2,245,000	19,103
GLADSTONE, CITY OF	23	4,723,000	20,898
INDEPENDENCE, CITY OF	111	24,810,000	112,705
KANSAS CITY, CITY OF	419	172,700,000	735,504
KEARNEY, CITY OF	14	4,185,000	18,148
LAWSON, CITY OF	1	109,000	1,702
LIBERTY, CITY OF	35	3,313,000	35,274
PLEASANT VALLEY, CITY OF	5	1,071,000	2,655
MOSBY, CITY OF	6	676,000	5,192
NORTH KANSAS CITY, CITY OF	68	19,688,000	75,714
SMITHVILLE, CITY OF	58	10,515,000	69,187
BLUE SPRINGS, CITY OF	18	5,513,000	17,021
GRAIN VALLEY, CITY OF	14	3,640,000	15,660
GRANDVIEW, CITY OF	16	5,343,000	15,660
GREENWOOD, CITY OF	2	1,000,000	3,894
OAK GROVE, CITY OF	1	350,000	569
RAYTOWN, CITY OF	10	2,017,000	5,173
LEVASY, CITY OF	6	1,155,000	6,523
EDGERTON, CITY OF	2	106,000	1,784
FARLEY, VILLAGE OF	5	1,601,000	6,528
FERRELVIEW, VILLAGE OF	4	2,088,000	2,737
NORTHMOOR, CITY OF	1	500,000	4,464
PARKVILLE, CITY OF	20	6,771,000	14,644
PLATTE CITY, CITY OF	1	304,000	408
RIVERSIDE, CITY OF	24	11,020,000	35,799
WESTON, CITY OF	1	350,000	661
RICHMOND, CITY OF	1	105,000	739

Table 3.25 provides a summary of loss statistics in the five-county planning area. This information was obtained from the FEMA NFIP online database. Data from 2024 Database showing 1998-2023 losses.

Table 3.25 NFIP Loss Stati	istics as	of 9/30/2	2023 by Ju	risdictio	n
Community	Total	Single	2+	Non-	Total
Community	Losses	Family	housing	Resid	Payments
CASS COUNTY	27	27	0	0	810,437.75
CLAY COUNTY	3	3	0	0	39,642.56
JACKSON COUNTY	11	9	0	2	356,925.09
PLATTE COUNTY	35	33	0	2	1,159,393.08
RAY COUNTY	4	4	0	0	81,222.03
LEE'S SUMMIT, CITY OF	18	6	12	0	374,288.69
BELTON, CITY OF	3	2	0	1	25,212,42
HARRISONVILLE, CITY OF	19	13	3	3	1,001,986
LAKE ANNETTE, CITY OF	10	10	0	0	415,997.86
EAST LYNNE, CITY OF	11	0	0	11	197,562.95
FREEMAN, CITY OF	3	3	0	0	35,950.45
PECULIAR, CITY OF	16	0	0	0	440,669.04
PLEASANT HILL, CITY OF	3	2	0	1	0
RAYMORE, CITY OF	3	3	0	0	5,769.08
AVONDALE, CITY OF	5	5	0	0	44,987.51
CLAYCOMO, CITY OF	28	1	23	4	755,750.44
EXCELSIOR SPRINGS, CITY OF	15	5	0	11	1,356,183.13
GLADSTONE, CITY OF	6	6	0	0	90,266.78
INDEPENDENCE, CITY OF	21	20	0	1	235,310.72
KANSAS CITY, CITY OF	178	99	20	85	10,542,622,50
KEARNEY, CITY OF	1	1	0	0	0
LIBERTY, CITY OF	5	3	0	2	96,393.24
MOSBY, CITY OF	17	17	0	0	193,696.76
NORTH KANSAS CITY, CITY OF	0	0	0	0	0
SMITHVILLE, CITY OF	2	2	2	0	0
BLUE SPRINGS, CITY OF	5	4	1	0	50,441.71
BUCKNER, CITY OF	3	3	0	0	50,866.05
GRAIN VALLEY, CITY OF	1	1	0	0	0
GRANDVIEW, CITY OF	9	6	0	3	428,297.56
GREENWOOD, CITY OF	1	1	0	0	0
LEVASY, CITY OF	13	13	0	0	649,576.51
OAK GROVE, CITY OF	0	0	0	0	0
RAYTOWN, CITY OF	3	2	1	0	15,688.06
SUGAR CREEK, CITY OF	7	0	0	7	104,268.39
LAKE WAUKOMIS, CITY OF	0	0	0	0	0
NORTHMOOR, CITY OF	0	0	0	0	0
PARKVILLE, CITY OF	18	12	0	6	83,003.72
PLATTE CITY, CITY OF	0	0	0	0	0
RIVERSIDE, CITY OF	1	0	0	1	54,413.14
HARDIN, CITY OF	2	2	0	0	6,000
ORRICK, CITY OF	6	6	0	0	45,526.61
TOTAL	2991	2439	2	550	54,943,965.79

Source: Online FEMA LIMITED ACCESS

Repetitive Loss Properties

The Missouri State Hazard Mitigation Plan summarizes repetitive loss properties (RPL) by county. Due to Privacy Act requirements, supplemental information on repetitive loss properties was not provided by SEMA. Therefore, a map depicting mitigated and unmitigated properties was not possible. Table 3.26 depicts the information provided by SEMA for the 2015 plan. Updated information is currently not available from FEMA.

Table	e 3.26: Number of	Repetitive Loss	Properties by C	ounty and Ty	pe
County	Number of Repetitive Loss Properties	Number of Losses	Residential	Commercial	Total Building Loss
Cass County	37	122	32	5	\$1,475,049.32
Clay County	181	611	338	243	\$8,542,687.58
Jackson County	25	71	25	2	\$425,914.22
Platte County	16	43	13	3	\$723,992.19
Ray County	6	17	5	1	\$173,968.50

Source: http://bsa.nfipstat.fema.gov/reports/1040.htm and SEMA

According to the Missouri State Hazard Mitigation Plan, Missouri has 159 Severe Repetitive Loss (SRL) Properties in the state, of which 25 have been mitigated. However, none of those properties were located in the Kansas City planning area. Thirteen of the state's remaining 134 unmitigated properties are located in Cass, Clay, Jackson and Ray Counties. Platte County has no SRL Properties. See Table 3.27: Number of Unmitigated Severe Repetitive Loss Properties.

Tal	ble 3.27: Number of	f Unmitigated Severe Re	petitive Loss Properti	es
Cass County	Clay County	Jackson County	Platte County	Ray County
3	8	1	0	1

Floodplain Management Regulations

Table 3.28 briefly summarizes the status of a jurisdiction's regulatory components to maintain compliance with the NFIP requirements.

All but one jurisdiction, Weatherby Lake, participates in the program. All of those in the NFIP comply with federal insurance requirements to limit redevelopment or new development in the 100-year floodplain.

The latest FIRM maps have been provided to all of the participating jurisdictions. The dates on file with SEMA include (the county maps include all cities):

Cass County January 2, 2013 Clay County August 3, 2015

Jackson County January 20, 2017, and December 7, 2023
Platte County January 20, 2017, and December 7, 2023

Ray County June 19, 2012

Source: Wornson, Jacob <u>Jacob.Wornson@sema.dps.mo.gov</u> email dated 3/14/25

		1	able 3.28:	: NFIP Regula	Table 3.28: NFIP Regulatory Overview by Jurisdiction
	Floodplain	NFIP			
:	Ordinance	Entry	FIRMS	Floodplain	
Jurisdiction	Adopted	Date	Format	Regulations	Permitting Process
Cass County	×	2006	Paper	Exceeds	Apply for permit. Any work that is proposed to be done within the special Flood Hazard areas and requires engineering documenting prior and post work for the floodplain Development permit. County does pre site inspection. After construction another inspection is done to ensure compliance.
Belton	×	2006	Digital	Meets	Floodplain development permit must be submitted to the City Engineer and reviewed.
Harrisonville	×	3/15/74	Digital	Meets	Apply, review, accept or reject
Lake Annette	×	3/16/06	Paper	Meets	Review 100-year flood plain may prior to issuing building permit
Lake Winnebago	×	2/25/77	Paper	Meets	Floodplain management/development Regulation Forms are part of the Building Permit packet information that must be completed for all construction permits.
Peculiar	×	1992	Digital	Meets	An applicant/developer submits our Floodplain Development Permit Application and application fee. The City Engineer then reviews the proposed improvement as to whether or not the property is within the jurisdiction of the City and numbered zone on the FIRM Map.
Pleasant Hill	×	9/15/72	Digital	Meets	Construction in the floodplain requires permit. Elevation where necessary. Listed as a floodplain ordinance and also as a floodway zoning district overlay.
Raymore	×	12/27/74	Digital	Meets	Floodplain impacts are identified during the development application process. Developers must submit appropriate floodplain impact studies to FEMA for approval before they may proceed with the development.
					Review/notify adjacent communities and SEMA prior to FEMA. Assure that maintenance is provided within the altered or relocated portion. Verify and record of the actual elevation of substantially 8mproved structures. When
Clav County	×	1974	Paper	Meets	floodproofing is utilized for a non-residential structure, the Director of P&Z shall review. Review all subdivision proposals for flooding. Issue flood development permits.
Excelsior Springs	×	4/5/74		Meets	Development permit must be submitted to the Comm Dev Dept for review
					Development in the floodplain requires submittal of a floodplain development permit, which is forwarded for review by City's Floodplain Administrator. Construction and building plans must meet the city's floodplain ordinance, including certification of compliance from an
Gladstone	×	5/17/74	Digital	Meets	engineer registered in the State of Missouri.

		Table 3	3.28: NFIP	Regulatory (.28: NFIP Regulatory Overview by Jurisdiction (Continued)
	Floodplain Ordinance	NFIP Entry	FIRMS	Floodplain	
Jurisdiction	Adopted	Date	Format	Regulations	Permitting Process
					Development in the floodplain requires submittal of a floodplain development permit, which is forwarded for review by the city's Floodplain Administrator. Construction and building plans must meet the city's floodplain ordinance, including certification of compliance from an engineer registered in the State of
Kearney	×	1979	Paper	Exceeds	Missouri.
Lawson	×		Paper	Meets	Use outside resources if have any type of issue. No one on staff is trained.
Liberty	X	1978	Digital	Meets	Must follow UDO Unified Development Ordinance
Mosby	×	10/18/74	Paper	Meets	Review 100-year flood plain may prior to issuing building permit obtained through the ordinance requirements.
North Kansas City	×	1976	Paper	Meets	Permit obtained through the ordinance requirements.
Smithvillo	>	1072	7000	Moote	Parcels in a flood zone must have engineered and surveyed drainage and
אווונוואוווע	<	7/61	rapei	ואובבוי	subillitied for leview.
	;				During the building permit process the site is reviewed against current NFIP data. Once the review and corrections or adjustments are made then the building
Jackson County	×	1979	Digital	Meets	permit is either approved and issued or held for corrections.
Blue Springs	×	1978	Digital	Exceeds	Included in building permit process. State floodplain development permit
					Public works, engineer reviews plans for conformance with city code, forwards
Grandview	×	7/19/74	Paper	Exceeds	comments, public works issues permit after coordination with CD department to ensure no conflicts with other parts of building permit process.
Greenwood	×	6/4/1976	Paper	Meets	Included in building permit process, review plans with NFIP flood plain maps
Independence	×	1978	Digital	Exceeds	When a building permit comes in, the site plan is checked for location and utilities. If it is close to a floodplain it is checked to see if it is located in the SFHA. If it is, applicant is notified they need a Floodplain Development permit and an EC before they get a final inspection approval which is required for a CO.
					Properties checked at time of project submittal for floodplain location, Floodplain Development Permit/Elevation Certificate required for properties in the 100-year floodplain. Floodplain applications reviewed either independent of the construction document building code review or construction document building code reviews or construction document building code reviews or construction.
Kansas City, Mo.	×	1978	Digital	Exceeds	of the applicant. Floodplain Development Permit issuance required prior to issuance of construction permits.

		Table	e 3.28: NF	IP Regulatory	Table 3.28: NFIP Regulatory Overview by Jurisdiction (Continued)
	Floodplain	NFIP			
	Ordinance	Entry	FIRMS	Floodplain	
Jurisdiction	Adopted	Date	Format	Regulations	Permitting Process
					A floodplain development permit from the City is required for all work within a floodplain as defined on the Flood Insurance Rate Maps (FIRM) issued by FEMA. If work which places fill within the designated floodplain is hydraulically modeled by a registered Professional Engineer, a City of Lee's Summit "No Rise Certification" may be obtained if and only if the work had no impact to the Base Flood Elevation, in
Lee's Summit	×	6/21/74	Paper	Meets	addition to the FEMA-requirements for work or placement of fill within a floodplain.
Oak Grove	×	2004	Paper	Meets	Permit application with plot plan showing location. Permit issued depending on compliance with regulations.
			Paper and		
Raytown	×	12/21/73	Digital	Meets	Permit obtained through the ordinance requirements
Platte County	×	1982	Paper	Exceeds	FIRMs will be adopted by April 2015 and digital available afterwards.
Farley	X.	2010	Digital	Meets	
Lake Waukomis	×	1976	Paper	Meets	
Northmoor	×	1974	Paper	Meets	
Parkville	×	1973	Digital	Meets	Floodplain applications, no-rise certification.
Platte City	×	1990	Paper	Meets	
Platte Woods	×	1973	Paper	Meets	Not an NFIP member; not in a floodplain
Divareida	>	0/30/1077	Oiaita 	Moote	Each project within the floodplain is also required to obtain a floodplain permit recommended by the Planning and Zoning Commission and approved by the Board of Aldermen. The City requires projects in the floodplain to provide an elevation certificate indicating that the lowest finished floor is located at least 1 foot above base flood elevation or that the structure is flood-proofed in accordance with the City's adopted floodplain ordinares which is based on the EEMA model ordinares
Tracy	× ×	11/22/74	Paper	Meets	
Weatherby Lake					

		Table 3.	3.28: NF	IP Regulator	.28: NFIP Regulatory Overview by Jurisdiction (Continued)
					No development shall be permitted except through the issuance of a floodplain development permit, granted by the Board of Aldermen or its duly designated representative under such safeguards and restrictions as the Board of Aldermen or the designated representative may reasonably impose for the promotion and maintenance of the general welfare, health of the inhabitants of the community. All floodplain development permits will follow the Weston Code Chapter 415 on Floodplain Management.
Weston	×	1979	Paper	Meets	-
Ray County	×	01-19-83	Paper	Meets	
Richmond	×	10/22/76	Digital	Exceeds	Plan review committee reviews all plans. Engineering and storm water studies are required to be submitted.

Floodplain Management Staffing

Most NFIP participants staff, with just under half having full-time staff to NFIP administration.

Т	able 3.29: St	tatus of Sta	ffing Res	ource	for Effecti	ve NFIP Adn	ninistration	
	Dedicated	Auxiliary	Permit		Education			
Jurisdiction	Staff	Function	Review	GIS	Outreach	Inspections	Enforcement	Engineering
Cass County	Part time		Е	Е	Е	Е	Е	E
Belton	Full time	Χ	Е	Е	Е	E	Е	Е
Harrisonville	Part time		Е	NI	NI	Е	Е	Е
Lake Annette	Part time	Χ	NI	Е	NI	Е	Е	
Lake Winnebago	Part time	Χ	Е		E	E	E	E
Peculiar	Part time		NI	NI	NI	NI	NI	NI
Pleasant Hill	Part time	Χ	Е	Е	NI	Е	Е	Е
Raymore	Part time	Χ	Е	Е	Е	Е	Е	Е
Clay County	Full time	Х	Е	Е	NI	Е	Е	NI
Excelsior Springs	Part-time	Х	Е	Е	NI	Е	Е	NI
Gladstone	Full-time	Х	Е	Е	Е	Е	Е	Е
Kearney	Full time	Х	Е	NI	Е	Е	Е	Е
Lawson	Part-time	Х	NI	NI	NI	NI	NI	NI
Liberty	Full time	Х	Е	Е	E	Е	Е	E
Pleasant Valley	Part time		Е	NI	NI	NI	NI	NI
N. Kansas City	Full time	Х	Е	Е	Е	Е	E	E
Smithville	Full time		Е	NI	NI	Е	E	E
Jackson County	Full time		Е	Е	Е	Е	Е	Е
Blue Springs	Full time	Х	Е	Е	E	Е	Е	E
Grain Valley	Part-time							
Grandview	Part time	Х	Е	Е	NI	Е	Е	Е
Greenwood	Part time							
Independence	Full time	Х	Е	Е	NI	Е	Е	Е
Kansas City, Mo.	Part time	Х	Е	Е	NI	Е	Е	Е
Lee's Summit	Part time	Х	Е	Е	NI	NI	E	Е
Oak Grove	Part time	Χ	Е	Е	NI	Е	E	Е
Raytown	Part-time	Χ	Е	NI	NI	E	Е	Е
Platte County	Full time	Χ	Е	E/NI	E	E	E	E
Farley	Part time	Χ	NI			NI	NI	
Lake Waukomis	Full time	Χ	NI	NI				
Northmoor	Part time							
Parkville	Full time	Х	Е	Е	E	Е	E	Е
Platte City	Full time	Х	E	Е	E/NI	Е	E	Е
Platte Woods	Part-time							
Riverside	Full time	Χ	Е	Е	E	Е	E	Е
Tracy	Part time	Х	NI					
Weatherby Lake	Full time							
Weston	Full time		Е	Е	Е	Е	Е	E
Ray County	Part time	Х	NI	NI	NI	NI	NI	NI
Richmond	Part time	Х	E/NI	E/NI	E/NI	E/NI	E/NI	E/NI

E = Effective

NI = Needs Improvement

E/NI = Effective and Needs Improvement

Community Rating System Participants

Five jurisdictions are currently participants in NFIP's voluntary Community Rating System (CRS) incentive program. This program recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. See **Table 3.31** for details on current activities. X = Included

Table 3.30. 30		ing Jurisdictions in th		_	1 / - 6
CRS ACTIVITIES	Independence	Kansas City, Mo.	Platte Co	Blue Springs	Lee's Summit
	Class 8	Class 8	Class 6	Class 7	Class 9
	300 F	Public Information Activition	es		
Elevation Certificates	Χ	X	X	Х	
Status			Scheduled		
Map Information Service	Х	Х	X		
Status	Scheduled	Improved/Scheduled	Scheduled		
Outreach Projects	Х	X	X	Х	
Status	Scheduled	Improved/Scheduled	Scheduled		
Hazard Disclosure			X		
Status		Improved/Scheduled	Scheduled		
Flood Protection Info	Χ	Х	X		
Status	Scheduled		Scheduled		
Flood Protection Asst.			Х		
Status			Scheduled		
Flood Insurance Promo		Х	Х		
Status		Improved	Scheduled		
	40	0 Mapping & Regulations			
Floodplain Mapping	Х	X X	Х	Х	
Status		Improved/Scheduled	Scheduled		
Open Space Preservation	Х	X	X		
Status		Improved/Scheduled	Scheduled		
Higher Regulatory Standards	Х	X	X	Х	
Status		Improved/Scheduled	Scheduled		
Flood Data Maintenance	Х	Improvedy seriedarea	Х	Х	
Status			Scheduled	^	
Stormwater Management	Х		Х	†	
Status	Λ		Scheduled		
Status	500 Floo	d Damage Reduction Acti			
Floodplain Mgmt Planning	X	X	X		
Status	^	Improved/Scheduled	Scheduled		
	X	X	Х		
Acquisition and Relocation	^	Improved/Scheduled	Scheduled	+	
Status Flood Protection	X	X	Х	+	
		Improved/Scheduled	Scheduled		
Status Status		improved/scheduled	Scrieduled		
Drainage System	V				
Maintenance	X Sahadulad				
Status	Scheduled	O Mouning or d Door over			
Flood Wassing and Brown	60	O Warning and Response	v		
Flood Warning and Response	C-1 1 1 1	C-l I I I	X	1	
Status	Scheduled	Scheduled	Scheduled	1	
Levees			X	1	
Status	Scheduled		Scheduled	1	
Dams				 	
Status	Scheduled				
Does the HMP effort satisfy					
CRS requirements?			Yes]

3.3.7 School Profile Survey Findings

	Та	Table 3.31: School Plans and Policies Inventory	ol Plans and Po	olicies Invento	ıry
1. EVACUATION					
		Includes	0+ 2001		
	Dlan	Identified for	Used to Implement Mitigation	Reviewed for HMP	
School Entity	Adopted	Strategy	Actions	Update	Measures incorporated into HMP, if applicable
Archie R-V School District	Yes		Yes		
Harrisonville School District	Yes		Yes		
Pleasant Hill R-III School District	Yes	Yes	Yes		Have identified areas to go in case of emergency
Raymore-Peculiar School District	Yes	Yes	Yes		
Excelsior Springs School District	Yes				
Sherwood-Cass School District	Yes				
Lawson School District	Yes	Yes	Yes		
North Kansas City School District	Yes			Yes	
Smithville R-II School District	Yes	Yes	Yes	Yes	
Plus Carings School District	>			>	All buildings' evacuation plans are updated,
Fort Osage R1 School District	Yes	γΑΥ	Vec	S A	
Grain Vallev School District	Yes	Yes		Yes	All buildings' evacuation plans updated
Independence School District	Yes		Yes		
Kansas City School District	Yes	Yes	Yes	Yes	Have identified areas to go in case of emergency.
Lee's Summit School District	Yes	Yes	Yes		
Oak Grove R-VI School District	Yes	Yes	Yes	Yes	Included in community, district LEOP
Metropolitan Community College	Yes	Yes	Yes	Yes	All evacuation plans have been updated
Park Hill School District	Yes	Yes	Yes	Yes	Adopted crisis manual/plan
Park University	Yes				
Platte County R-3 School District	Yes			Yes	Relocation sites updated; ID doors & spaces
Richmond School District	Yes	Yes	Yes		Adopted crisis manual/plan
West Platte R-II School District	Yes		Yes	Yes	

	Table 3	ble 3.31: School Plans and Policies Inventory (Continued)	ins and Polici	es Inventor	/ (Continued)
2. STORM SHELTER					
School Entity	Plan Adopted	Includes Projects Identified for Mitigation Strategy	Used to Implement Mitigation Actions	Reviewed for HMP Update	Measures incorporated into HMP, if applicable
Archie R-V School District	Yes			Yes	
Harrisonville School District	Yes	Yes	Yes	Yes	
Pleasant Hill R-III School District	Yes	Yes	Yes	Yes	
Raymore-Peculiar School District	Yes	Yes	Yes	Yes	
Sherwood-Cass School District	Yes				Regular Tornado Drills conducted
Excelsior Springs School District	Yes	Yes			
Lawson School District	Yes	Yes	Yes		
North Kansas City School District	Yes	Yes	Yes		
Smithville R-II School District	Yes	Yes	Yes		
Blue Springs School District	Yes	Yes	Yes	Yes	All Buildings' Shelter plans are updated, and Drills are conducted per RsMO. Raptor Alert and SRP have been implemented district wide. 16 out of 22 school buildings have high wind shelters. 5 more will be completed by 2026.
Fort Osage R1 School District	Yes	Yes	Yes	Yes	
Grain Valley School District	Yes	Yes	Yes		
Independence School District	Yes	Yes	Yes		
Kansas City School District	Yes	Yes	Yes	Yes	Tornado drills executed regularly
Lee's Summit School District	Yes	Yes	Yes	Yes	
Oak Grove R-VI School District	Yes	Yes	Yes		
Metropolitan Community College	Yes	Yes	Yes	Yes	Have constructed storm shelter on every campus
Park Hill School District	Yes	Yes	Yes		
Park University	Yes		Yes		
Platte County R-3 School District	Yes				
West Platte R-II School District	Yes		Yes		Built storm shelter as part of a gym project
Richmond School District	No				

	Table 3.3	ble 3.31: School Plans and Policies Inventory (Continued)	s and Policies	Inventory (Co	intinued)
3. SHELTER-IN-PLACE					
School Entity	Plan Adopted	Includes Projects Identified for Mitigation Strategy	Used to Implement Mitigation Actions	Reviewed for HMP Update	Measures incorporated into HMP, if applicable
Archie R-V School District	Yes				
Harrisonville School District	Yes		Yes	Yes	
Pleasant Hill R-III School District	Yes	Yes	Yes	Yes	
Raymore-Peculiar School District	Yes	Yes	Yes	Yes	Updated to address active shooter
Excelsior Springs School District	Yes			Yes	
Sherwood-Cass School District	Yes				Regular shelter in place drills
Lawson School District	Yes				
North Kansas City School District	Yes			Yes	
Smithville R-II School District	Yes		Yes	Yes	
Blue Springs School District	Yes				All Buildings' Shelter Plans are updated & drills are conducted per RsMO, Raptor & SRP have been implemented district-wide.
Fort Osage R1 School District	Yes	Yes	Yes	Yes	
Grain Valley School District	Yes	Yes	Yes	Yes	
Independence School District	Yes		Yes		
Kansas City School District	Yes	Yes	Yes	Yes	District wide active shooter training annually and training module at Franklin Operations Center
Lee's Summit School District	Yes		Yes	Yes	
Oak Grove R-VI School District	Yes		Yes		
= 0	>		>	>	Ongoing installation of surveillance equipment across campuses. Upgraded communications systems allowing communications across jurisdictional lines between MCC and other law enforcement agencies and emergency
Metropolitali College	res	Les Yes	res	Sal 15%	service providers.
Park Hill School District	Yes	Yes	Yes	Yes	Adopted crisis manual/plan
Park University	Yes				

Platte County R-3 School District	Yes	Yes		
West Platte R-II School District	Yes		Yes	
Richmond School District	Yes	Yes		Adopted crisis manual/plan

	Table 3.	Table 3.31: School Plans and Policies Inventory (Continued)	ans and Polici	es Inventor	y (Continued)
4. INFECTIOUS DISEASE					
		Includes Projects Identified	Used to		
	neld	for	Implement Mitigation	Reviewed for HMP	
School Entity	Adopted	Strategy	Actions	Update	Measures incorporated into HMP, if applicable
Archie R-V School District	Yes				
Harrisonville School District	Yes	Yes	Yes		
Pleasant Hill R-III School District	Yes		Yes	Yes	
Raymore-Peculiar School District	Yes	Yes	Yes	Yes	
Excelsior Springs School District	Yes			Yes	
Sherwood-Cass School District					
Lawson School District					
North Kansas City School District	Yes				Coordinate with Health Departments
Smithville R-II School District	Yes	Yes	Yes		
Blue Springs School District					Have Partnership with Jackson Co Health Dept. (MOU executed) for POD locations and FOG in-place.
Fort Osage R1 School District	Yes	Yes	Yes	Yes	
Grain Valley School District	Yes		Yes		COVID Plan
Independence School District	Yes				
Kansas City School District	Yes	Yes	Yes	Yes	Procedures are in place using health dept resources
Lee's Summit School District	Yes		Yes		
Oak Grove R-VI School District					
Metropolitan Community College	Yes	Yes	Yes	Yes	COVID plan in place. MCC implemented contact tracing, monitored entry points, online instructional modalities, cleaning/sanitizing stations with policies and phased reopening of its campuses, infection disease policy in place.

Park Hill School District	Yes	Yes	Yes	
Park University				
Platte County R-3 School District				
West Platte R-II School District				
Richmond School District	Yes	Yes	Yes	

	Table 3.31	L: School Plan	s and Policies	Table 3.31: School Plans and Policies Inventory (Continued)	ntinued)
5. WATER CONSERVATION MEASURES					
		Includes Projects Identified for	Used to	Reviewed	
School Entity	Plan Adopted	Mitigation Strategy	Mitigation Actions	for HMP Update	Measures incorporated into HMP, if applicable
Archie R-V School District					
Harrisonville School District					
Pleasant Hill R-III School District	Yes			Yes	
Raymore-Peculiar School District	Yes	Yes	Yes	Yes	
Excelsior Springs School District					
Sherwood-Cass School District					
Lawson School District					
North Kansas City School District					
Smithville R-II School District					
Blue Springs School District					
Fort Osage R1 School District					
Grain Valley School District	Yes				
Independence School District					
Kansas City School District	Yes	Yes			Maintenance staff does regular checks
Lee's Summit School District					
Oak Grove R-VI School District					
Metropolitan Community College	Yes	Yes	Yes	Yes	Majority of campus faucets and flush valves are on motion sensors and low flow

Park Hill School District	X A	A A	Yes	Yes	Some older bldgs. Do not have automatic on/off
		9		2	
Park University					
Platte County R-3 School District					
West Platte R-II School District					
Richmond School District	Yes				

	Table	Table 3.31: School Plans and Policies Inventory (Continued)	nd Policies In	ventory (Co	ntinued)
6. SECURITY PLAN (Intruder, Lockdown)					
	Plan	Includes Projects Identified for	Used to Implement Mitigation	Reviewed for HMP	
School Entity	Adopted	Mitigation Strategy	Actions	Update	Measures incorporated into HMP, if applicable
Archie R-V School District	Yes		Yes	Yes	
Harrisonville School District	Yes		Yes	Yes	
Pleasant Hill R-III School District	Yes		Yes	Yes	Adopted crisis manual plan
Raymore-Peculiar School District	Yes	Yes	Yes	Yes	
Sherwood-Cass School District	Yes				Replaced windows and doors, installed locks and alarms
Excelsior Springs School District	Yes	Yes	Yes	Yes	
Lawson School District	Yes				
North Kansas City School District	Yes	Yes	Yes	Yes	
Smithville R-II School District	Yes	Yes			
Blue Springs School District Fort Osage R1 School District Grain Valley School District Independence School District Kansas City School District	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes	updated, and Drills are conducted per RsMO. Raptor Alert and SRP have been implemented district wide. Intruder training with all district staff conducted annually. Metal Detectors (wands) at all secondary buildings. Protective window film at all ground level entry doors and the majority of windows. Secure perimeter and Access Control in place. Updated all bldgs. With secure entry Metal detectors at all secondary schools, security plans in place, training for staff/children regarding intruders.
Lee's Summit School District	Yes	Yes	Yes	Yes	
Oak Grove R-VI School District	Yes	Yes	Yes		

					Installed intrusion detection systems and security cameras, implemented a mass notification system, as well as the Rave texting emergency
Metropolitan Community College	Yes	Yes	Yes	Yes	response system.
Park Hill School District	Yes	Yes	Yes	Yes	
Park University	Yes				
					Adopted crisis manual/plan; trained staff for
Platte County R-3 School District	Yes	Yes	Yes	Yes	violent intruder
West Platte R-II School District	Yes			Yes	Yearly practices as part of plan and policies
Richmond School District					

	Table	3.31: School	Plans and Polic	Table 3.31: School Plans and Policies Inventory (Continued)	inued)	
7. OTHER PLANS						
School Entity	Plan Tvpe	Plan	Includes Projects Identified for Mitigation Strategy	Used to Implement Mitigation Actions	Reviewed for HMP Update	Measures incorporated into HMP, if applicable
Blue Springs School	Security resource		State 67			1400+ cameras in place. More cameras as needed with 5mp upgrades. Implemented in the 24-25SY: DataSource used to conduct national background checks on all volunteers (1500 screening in 24-25SY). E911 migration complete.
Excelsior Springs School District	Active Shooter/Schoolwide Crisis Management Plan Guide	Yes	Yes	Yes	Yes	Install cameras as needed; all building lobbies secured to prevent visitors beyond the access point; evaluate and improve security and safety of buildings and access; all visitors must submit to background check; adopted plan at Nov 2019 Board of Education meeting.
Kansas City School District	Bullying and Individual Assaults	Yes				Added curriculum to raise awareness
Kansas City School District	Vandalism	Yes	Yes	Yes	Yes	Implementing integrated security system
Kansas City School District	Active Shooter and/or Intruder	Yes	Yes	Yes	Yes	Implementing integrated security system
Park Hill School District	Active Shooter Training and Crisis Plan	Yes	Yes	Yes	Yes	Security camera and communication
Metropolitan Community College	District-wide EAS	Yes	Yes	Yes	Yes	Creation of Continuity of Business Operations Plan
2025 Independence School District	District Wide EAS	Yes	Yea	Yes		Implemented district wide Emergency Alert System Raptor

	Table 3.31: Sch	ble 3.31: School Plans and Policies Inventory (Continued)	licies Inventory ((Continued)	
	∞ i	6	10.	11.	
School Entity	Updated Building	Provisions to Elevate	Strengthen Construction	Safe Room Requirements	Profile Survey Completed
	Codes	Construction			
Archie R-V School District					Yes
Harrisonville School District					Yes
Pleasant Hill R-III School District	Yes	Yes	Yes		Yes
Raymore-Peculiar School District					Yes
Excelsior Springs School District					Yes
Sherwood-Cass School District			Yes		Yes
Lawson School District					Yes
North Kansas City School District					Yes
Smithville R-II School District					Yes
Blue Springs School District	Yes	Yes	Yes	Yes	Yes
Fort Osage R1 School District	Yes				Yes
Grain Valley School District					Yes
Independence School District	Yes				Yes
Kansas City School District	Yes	Yes	Yes		Yes
Lee's Summit School District	Yes	Yes	Yes	Yes	Yes
Oak Grove R-VI School District	Yes	Yes	Yes	Yes	Yes
Metropolitan Community College	Yes	Yes	Yes	Yes	Yes
Park Hill School District	Yes	Yes	Yes	Yes	Yes
Park University	Yes				Yes
Platte County R-3 School District	Yes	Yes		Yes	Yes
West Platte R-II School District			Yes	Yes	Yes
Richmond School District					

Mitigation Projects Awarded Funding

The state of Missouri reported on Mitigation grants awarded to local jurisdictions since 1993. The following school districts have received grants primarily for safe room projects to mitigate the impacts from tornadoes.

CASS COUNTY

Archie R-V School District

Safe Room Structure - Awarded 4/30/2013; Federal \$1,087,661 Non-federal \$362,554

Belton School District

Multi-Purpose Safe Room – Awarded (7/28/2015); Federal \$1,626,664 Non-federal \$542,222

CLAY COUNTY

Smithville School District

Safe Room Structure - Awarded 12/13/2010; Federal \$1,191,237 Non-federal \$397.079

Metropolitan Community Colleges District

Maple Woods Community Safe Room - Awarded 8/31/2005; Federal \$2,398,603 Non-federal \$799,534

Excelsior Springs School District

Safe Room Structure – Awarded 3/31/2023 Total Project \$1m009,572

JACKSON COUNTY

Oak Grove School District

Community Safe Room - Awarded 12/07/2012; Federal \$2,098,627 Non-federal \$699,543

Blue Springs School District

James Lewis Elementary School Safe Room – Awarded 5/3/2016; Federal \$1,417,317 Non-federal \$472,439

Metropolitan Community Colleges District

Mitigation Planning – Awarded 3/30/2004; Federal \$100,000 Non-federal \$33,334

Blue River Community Safe Room – Awarded 8/31/2005; Federal \$1,273,631 Non-federal \$419,101

Longview Community Safe Room – Awarded 8/31/2005; Federal \$2,553,286 Non-federal \$851,095

Pioneer Campus Safe Room – Awarded 7/10/2005; Federal \$566,360 Non-federal \$188,787

Penn Valley Community Safe Room – Awarded 8/31/2005; Federal \$3,000,000 Non-federal \$1,384,811

BTC Community Safe Room – Awarded 8/31/2005; Federal \$993,853 Non-federal \$331,284

PLATTE COUNTY

North Platte R-I School District

Safe Room – Awarded 7/10/2014; Federal \$362,293 Non-federal \$120,765

RAY COUNTY

Richmond R-XVI School District

Safe Room – Awarded 6/11/2013; Federal \$587,322 Non-federal \$195,774

3.4 Regional Capabilities

In addition to local capabilities there are regional capabilities that aid in mitigation efforts. These regional capabilities were included in the community profile survey for jurisdictions' consideration as noted above.

Warning Systems

The planning area still utilizes a variety of warning systems discussed in the 2020 Plan update. These include Project Community Alert; Kansas City Scout; NWS advisories, watches, warnings; NOAA weather radio; EMWIN through the National Weather Service; and, as necessary, the Emergency Alert System. River and stream sensors also monitor water level and stream flow in certain flood-prone waterways. Most school districts in the region provide text/voice/email messaging to the parents of their students to convey information regarding school closings or emergencies.

Virtually all of the urban and suburban portions (i.e., major population centers) of the Kansas City metropolitan area have outdoor warning sirens. However, some rural areas and smaller jurisdictions tend to rely on radio and television broadcasts and the Internet. As the use of social media grows, technological advances have created a new layer of complexity in how warnings are received, disseminated and coordinated.

Community Partnerships

As identified in the 2020 Plan update, many community partnerships and organizations enhance the planning area's overall capability to mitigate and recover from disasters. In particular, emergency management committees have matured since the last plan update. Existing efforts strive to preserve these connections and allow for continued coordination and improved community preparedness. For example, the inclusion of faith-based organizations and organizations serving the functionality and accessibility needs of vulnerable populations. Examples of these community partnerships, committees and programs include:

- Metropolitan Emergency Managers Committee (MEMC)
- Mid-America Local Emergency Planning Committee
- Mid-America Regional Council Emergency Rescue Committee
- Metropolitan Official Health Agencies of the Kansas City Area
- Regional Public Information Officers Organization (RAPIO)
- Regional Homeland Security Coordinating Committee
- MEMC Integrated Warning Team
- Regional 9-1-1 System
- Metropolitan Chapter, American Public Works Association
- SAVE Coalition
- Kansas City Organizations Active in Disaster
- Community Emergency Response Teams
- Medical Reserve Corps of Greater Kansas City
- Community Disaster Resiliency Network

Stormwater Management Design Standards: A consortium of over 30 local governments provided funds to MARC to support the update of the resilience-focused stormwater engineering standards known as APWA Section 5600. MARC is facilitating the process to update these standards with consulting support from a team lead by Burns and McDonnell under the auspices of the Kansas City Chapter of the American Public Works Association (APWA).

Reducing the risk of flooding is a shared concern for stormwater management engineers, natural hazard mitigation, and sustainability planners. Given that the Kansas City region has a long history of flooding, and that flood risks are expected to increase in the future, this project has a strong nexus to the hazard mitigation plan. Adoption and implementation of these new standards by participating communities would reduce future risks and vulnerabilities to flooding across the region.

The consultant expects to complete the draft standards in the spring of 2025, and gain feedback from participating local governments. Subsequently, members of the local APWA chapter are anticipated to vote on the adoption of the standards in June 2025. Local governments would then adopt and implement the standards. MARC will continue to provide training and coordination among local governments to support the implementation of the new standards. MARC is encouraging local governments to consider a mitigation action for the new plan to include adoption of the new standards.

The following local governments provided financial support to MARC for this APWA standards' update, demonstrating their interest in new stormwater standards as important mitigation measures.

- Kansas City, MO
- Excelsior Springs, MO
- Riverside, MO
- Independence, MO
- Liberty, MO
- North Kansas City, MO
- Gladstone, MO
- Parkville, MO

The Kansas City Climate Action Coalition formed by local elected officials in 2018 held regular convenings, the largest in September 2019 with over 700 elected and appointed local government officials and members of the public learning about the impacts of a changing climate and steps that could be taken to mitigate impacts. A Climate Action Playbook was released in late fall 2019, a greenhouse gas inventory and reduction plan for the region was completed in 2020 and an update to the Climate Action Playbook was completed in 2024.

Safe Shelter Partnership, advanced by the Eastern Jackson County Emergency Management group (Jackson County/Independence), continues to work in conjunction with the Faith-Based Organization Initiative. Efforts have increased the capability of local faith-based organizations to help congregations, church facilities and surrounding community to be prepared in advance of a crisis or disaster.

Community Disaster Resiliency Network established by MARC in 2018 brings local emergency managers, representatives of nonprofit organizations serving vulnerable populations together to work toward

increasing the resiliency of the agencies and their clients during and after disaster events. Special groups focusing on older adults, young children and faith-based organizations meet on a regular basis. *Core 4* is a collaborative effort between four of the region's largest jurisdictions: City of Kansas City and Jackson County in Missouri and Johnson and Wyandotte Counties in Kansas. This initiative brings together department directors with city/county managers and department heads on a regular basis to collaborate on specific issues and increase communications. This collaboration was used successfully to increase coordination during winter weather events in the past several years. Eastern Jackson County communities, particularly Lee's Summit, Independence and Blue Springs, are also working together. MARC is pursuing additional opportunities for shared services.

Media Coverage and Public Awareness

A wide variety of broadcast and print media outlets serve the region. A list of the Kansas City area's television stations, radio stations and newspapers were provided in the 2010 Plan. The media coverage remains an important venue for information dissemination. Additionally, local governments and other stakeholders involved in hazard mitigation conduct outreach and awareness through the Internet and social media communication methods. The Metropolitan Emergency Managers Committee and Regional Association of Public Information Officers work together on a website for the public on emergency preparedness, www.preparemetrokc.org and on other promotion regarding preparedness for natural hazards.

ⁱ FEMA. Worksheets 4.1- 4.3 Capability Assessment Worksheet, Safe Growth Audit, National Flood Insurance Program Worksheet. Local Mitigation Planning Handbook, March 2013.

Cass County	Cass County	Belton	Harrisonville	Lake Winnebago	Pleasant Hill	Raymore
Land Use						,,
Do the jurisdiction's land use policies define an urban services area?	Yes	No	Yes	No	No	No
Do the land use policies contain provisions for hazard zone identification?	Yes	No	Yes	No	No	No
Do the land use policies discourage development or redevelopment within natural hazard						
areas?	Yes	No	Yes	No	No	No
Does the future land use map clearly identify natural hazard areas?	No	No	Yes	No	No	No
Does the plan provide adequate space for expected future growth in areas located outside	110	110	100	110	110	110
natural hazard areas?	Yes	No	Yes	No	No	No
Do the land use policies require storm water engineering studies prior to development?	Yes	No	Yes	No	No	No
How does your jurisdiction assess the potential impacts of land use changes on hazard						
vulnerability and disaster risk?						
We conduct regular assessments of land use patterns and hazards.						
We collaborate with urban planning experts to analyze potential impacts.			Х			
Land use changes are not currently a focus in our hazard assessments.				Х		
We are exploring methods to integrate land use considerations.	Х					
How does your jurisdiction engage with urban planners and land use experts to inform			•			
hazard mitigation strategies?						
We regularly collaborate with planners to integrate land use considerations.			Х			
We include urban planners in discussions, but improvements are needed.						
Urban planning perspectives are not currently integrated into our strategies.				Х		
We are considering ways to involve urban planners in our planning process.	Х					
Are there specific areas within your jurisdiction that are identified as vulnerable due to						
recent or anticipated land use changes?						
Yes, we have identified vulnerable areas due to land use changes.			Х			
We consider general vulnerability, but specific areas are not defined.	Х					
Vulnerability due to land use changes is not a current focus.				Х		
We are in the process of assessing vulnerability related to land use.						
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to						
coordinate land use changes for hazard mitigation?						
Yes, we have established regional collaborations for this purpose.			Х			
We consider regional coordination, but it is not fully integrated.	X					
Land use coordination is not a significant part of our plans.				X		
We are considering the potential for regional coordination.						
How does your jurisdiction plan to communicate land use changes and their potential						
impact on hazard vulnerability to the public?						
We have comprehensive communication plans for land use changes.						
We include land use information in our general communication efforts.	X		X			
Land use communication is not a significant part of our plans.				X		
We are developing strategies for effective land use communication.						
Is your jurisdiction actively involved in advocating for sustainable land use practices and						
policies at higher levels of government?						
Yes, we actively advocate for sustainable land use practices.						
We participate in advocacy efforts, but it is not a primary focus.			Х			

Sustainable land use advocacy is not a current priority for us.				Х		
We are considering engagement in land use advocacy.	Х					
The are considering engagement in tand acc darroady.						
	Adoption of					
	International					
	Building Codes					
	Flood Protection					
Describe any land use measures incorporated into hazard mitigation plan.	requirements			none		
Transportation			.	N.	, , , , , , , , , , , , , , , , , , ,	
Does the transportation plan limit access to hazard areas?	No	No	No	No	No	No
Is transportation policy used to guide growth to safe locations?	No	No	Yes	No	No	No
Are movement systems designed to function under disaster conditions (e.g., evacuation)?	No	No	Yes	No	No	No
	Identification of					
	major road routes					
	within the county					
	and identified					
	resources for					
	movement of					
Describe any transportation measures incorporated into hazard mitigation plan.	people.					
Environmental Management					<u> </u>	
Are environmental evetement has protected develor month from horseld identified and according	Yes	No	Yes	No	No	No
Are environmental systems that protect development from hazards identified and mapped?						
Do environmental systems that protect development from nazards identified and mapped? Do environmental policies maintain and restore protective ecosystems?	No	No	Yes	No	No	No
	No	No	Yes	No	No	No
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective	No No	No No	Yes No	No No	No No	No No
Do environmental policies maintain and restore protective ecosystems?						
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems?	No		No	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems?	No		No 3 Fuel	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change?	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change?	No		No 3 Fuel	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments.	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes.	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions.	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments.	No 4		No 3 Fuel Consumption,	No		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of climate-related hazards?	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		·
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of climate-related hazards? Climate-related hazards are not explicitly addressed in our plan.	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of climate-related hazards? Climate-related hazards are not explicitly addressed in our plan. We consider climate change, but it is not a primary focus.	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		
Do environmental policies maintain and restore protective ecosystems? Do environmental policies provide incentives to development located outside protective ecosystems? On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on hazards and disaster risks We regularly conduct climate vulnerability assessments. We consider historical data to estimate future changes. We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of climate-related hazards? Climate-related hazards are not explicitly addressed in our plan.	No 4 Flooding		No 3 Fuel Consumption, water supply	No 2		

			Reviewing site		
			development and		
			infrastructure		
			design standards		
			to incentivize the		
			use of green		
			development		
			practices and to		
			ensure		
			compliance with		
			the MARC 2050		
			Climate Action		
			Plan to mitigate		
			effects of industry		
			on the		
What are those strategies?	n/a		environment.		
How does your jurisdiction engage with climate science and data to inform hazard	1174		chiviloninicht.		
mitigation strategies?					
We regularly update our strategies based on the latest climate data.					
We incorporate climate projections into long-term planning.					
Climate science has a minimal impact on our mitigation plans.					
We are still exploring how to incorporate climate data effectively.	Х		Х	Х	
How does your jurisdiction plan to integrate climate adaptation measures into its hazard		II			
mitigation strategies?					
We have clear adaptation measures outlined in our plan.					
We are considering adaptation, but it is not fully integrated yet.					
Climate adaptation is not yet addressed in our strategies.					
We are currently exploring options for climate adaptation.	Х		Х	Х	
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to					
address shared climate-related hazards?					
Yes, we have established regional collaborations for this purpose.	Х				
We consider regional collaboration but have limited initiatives.			Х		
Climate-related collaboration is not a current focus.				Х	
We are considering the potential for regional collaboration.					
How does your jurisdiction plan to communicate climate-related risks and adaptation		•			
strategies to the public and stakeholders?					
We have comprehensive communication plans for climate risks.					
We include climate information in our general communication efforts.			Х		
Climate communication is not a significant part of our plans.				Х	
We are developing strategies for effective climate communication.	Х				
Is your jurisdiction actively involved in advocacy for climate change mitigation policies at					
higher levels of government?					

Yes, we actively advocate for climate mitigation policies.						
We participate in advocacy efforts, but it is not a primary focus.						
Climate advocacy is not a current priority for us.			Х			
We are considering engagement in climate advocacy.	Х					
	- Storage of					
	hazardous					
	substances must					
	be set back 150					
	feet from any					
	active stream					
	channel or water					
	bodySubmit an					
	operational plan					
	describing how					
	products will be					
	stored,					
	processed,					
	manufactured or					
	destroyedThe					
	storage or					
	processing of					
	materials that are					
	in time of flooding					
	buoyant,					
	flammable,					
	explosive, or					
	could be injurious					
	to human, animal					
Describe any environmental management measures incorporated into hazard mitigation	or plant life is					
plan.	prohibited.					
Public Safety						
Are the goals and policies of the comprehensive plan related to those of the HMP?		No	Yes		No	No
Is safety explicitly included in the plan's growth and development policies?	No	No	Yes	No	No	No
Does the monitoring and implementation section of the plan cover safe growth objectives?	No	No	Yes	No	No	No

Describe any public safety measures incorporated into hazard mitigation plan.	- Identify low- water crossings - Posted signage for flood areas - Notify the public of severe weather using - Coordinate with Public Works for setting up barricades		Dual-role Certified Emergency Managment Director on staff, Mutual aid agreements with are agencies, Warning systems for general public, update Emergency Operations Plan.	none at present time		
Building Codes	barrioudos		operations run.	timo		
Does the building code contain provisions to elevate construction to withstand hazard						
forces?	Yes	Yes	Yes	No	No	No
Does the building code contain wind resistance provisions to strengthen construction to						
withstand hazard forces?	Yes	Yes	Yes	No	No	No
Does the building code contain safe room or storm shelter requirements?	No	No	Yes	No	No	No
Describe any building code measures incorporated into hazard mitigation plan.	Adoption of International Codes - National Electrical Code - Post Frame Building Standards for agricultural and residential accessory buildings - Minimum construction standards					
Zoning Ordinances	Standards					
Does the zoning ordinance conform to the comprehensive plan in terms of discouraging						
development or redevelopment within natural hazard areas?	Yes	No	Yes	No	No	No
Does the ordinance contain natural hazard overlay zones or districts that set conditions for	. 55		. 55			
land use within such zones?	Yes	No	Yes	No	No	No
Does the zoning ordinance contain mitigation performance standards?	No	No	Yes	No	No	No
2 - 2 - 1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 -	110	110	100	110	110	110

Does the ordinance prohibit development within, or filling of, wetlands, floodways, and						
floodplains?	Yes	No	Yes	No	No	No
Do rezoning procedures recognize natural hazard areas as limits on zoning changes that	100	110	100	110	110	110
allow greater intensity or density of use?	Yes	No	Yes	No	No	No
attow greater intensity of density of use.	103	140	103	110	110	110
	Development					
	Requirements: -					
	Residences must					
	be elevated at					
	least 2 feet above					
	base flood					
	elevation -Must					
	be anchored to					
	prevent					
	flotation/collapse					
	-Requires permit					
	for any					
	development in					
	flood hazard					
	areas -Prohibits					
	development that					
	would increase			none at present		
Describe any zoning ordinance measures incorporated into hazard mitigation plan.	flood levels			time		
Subdivision Regulations						
Do the subdivision regulations contain an adopted hazard disclosure?	No	No	No	No	No	No
Do subdivision regulations contain a provision for soil report evaluations?	Yes	No	No	No	No	No
Do the subdivision regulations restrict the subdivision of land within or adjacent to natural						
hazard areas?	No	No	No	No	No	No
Do the regulations provide for conservation subdivisions or cluster subdivisions in order to						
conserve environmental resources?	No	No	Yes	No	No	No
Do the regulations allow density transfers where hazards exist?	No	No	No	No	No	No

						1
	Division of one					
	parcel into two					
	parcels by a					
	single dividing					
	line - Cannot split					
	a lot more than					
	once under lot					
	split					
	procedures Large					
	Parcel					
	Subdivisions: -					
	Division of parent					
	parcel into					
	multiple parcels					
	each exceeding					
	20 acres - Not					
	intended for					
	further					
	development/con					
	struction Minor					
	Subdivisions: -					
	Division into 2-5					
	parcels Regular					
	Subdivisions					
	Division into 2+					
	parcels requiring			none at procent		
Describe any subdivision regulation measures incorporated into hazard mitigation plan.	infrastructure/im			none at present time		
Capital Improvement Program and Infrastructure Policies	IIII a structure/IIII			time		
Does the capital improvement program limit expenditures on projects that would						
encourage development in areas vulnerable to natural hazards?	No	No	No	No	No	No
Do infrastructure policies limit extension of existing facilities and services that would	INO	INO	INO	INO	INO	NO
encourage development in areas vulnerable to natural hazards?	No	No	No	No	No	No
encourage development in areas vulnerable to natural nazarus:	INO	NO	INU	INO	INO	INO
Does the capital improvement program provide funding for hazard mitigation projects?	No	No	No	No	No	No
Does the capital improvement program provide funding for nazara influgation projects:	Does not	INU	INU	INU	INU	INU
	currently have a					
	,					
Describe any capital improvement program and infrastructure nation management	capital					
Describe any capital improvement program and infrastructure policy measures	improvement			nono		
incorporated into hazard mitigation plan.	program			none		
Underserved Populations						-
How does your jurisdiction identify and define underscarded nonulations for the assessed						
How does your jurisdiction identify and define underserved populations for the purpose of						
hazard mitigation planning?						

We use a combination of data sources and community input.	Х	Х		
We have not explicitly defined underserved populations.	Λ	Λ	Х	
we have not explicitly defined underserved populations.			Λ	
What steps has your jurisdiction taken to assess the specific vulnerabilities and challenges				
faced by underserved populations during hazards and disasters?				
We have not yet focused on this aspect of vulnerability assessment.				
We have conducted vulnerability assessments targeting these populations.				
We have analyzed historical disaster impacts on different groups.				
We have engaged with community organizations to gather insights.	X	 X		
	Hospitals,			
	domestic	Community Non-		
	violence shelters,	profits,		
	food banks,	Community		
	libraries, senior	Heath		
	centers, long	organizations,		
	term care	Community		
	facilities,	Churches, Red		
	mental/behaviora	Cross, Cass		
	l health orgs	County Health		
	(Compass), West	Department, Take		
	Central	it to the Streets		
	Community	Organization,		
	Action Agency,	Harrisonville		
List community organization(s):	coalitions	CAP.		
How does your jurisdiction plan to ensure equitable access to hazard information,		2,		
evacuation plans, and emergency resources for all community members, including				
underserved populations?				
We use a variety of communication channels and languages.				
We work with community leaders to disseminate information.				
We have plans for accessible formats and resources.				
·	X	Х	Х	
We are still developing strategies for inclusive communication. How does your jurisdiction intend to involve representatives from underserved populations		^	^	
in the hazard mitigation planning process?				
We have established advisory groups with diverse community members.				
We regularly hold public meetings to gather input.	V			
We collaborate with community-based organizations.	Х			
We are exploring ways to improve community engagement.		Х	Х	
Are there plans to collaborate with local community organizations, NGOs, or advocacy				
groups that have expertise in working with underserved populations during hazards and				
disasters?				
Yes, we have established partnerships and collaborations.	Х			
We are considering such collaborations for future efforts.		Х		
We have not actively explored these partnerships yet.				

No, we do not plan to collaborate with external organizations.				Х		
How does your jurisdiction plan to address financial barriers that might prevent						
underserved populations from accessing essential resources during emergencies?						
We have plans to provide subsidies or financial support.						
We are working on ways to ensure resource equity.	Х					
Financial barriers are not a focus of our plans.						
We have not yet considered financial barriers.			Х	Х		
Does your jurisdiction plan to review and update its plan to reflect changes in the						
vulnerabilities and needs of underserved populations over time?						
Yes, we have a scheduled review process that includes this aspect.						
We plan to incorporate changes if they are significant.	Х		Х			
We have not yet considered regular updates for this purpose.	^		Λ			
				Х		
No, we do not plan to review or update the plan.				Λ		
	Specifically					
	seeking out their					
	participation in					
	the planning			this is a small		
	process and			upper class		
	ensuring that			community that		
	barriers to that			does no have an		
Do you have suggestions on how the community can actively engage underserved	participation are			underserved		
populations in the planning and decision-making process?	being addressed			population/		
	Yes, community					
	organizations,					
	city/county					
Are there local organizations or community members who can act as advocates or liaisons	leaders, libraries,					
to help communicate emergency information and resources to underserved populations?	schools		CASCO	no		
Access and Functional Needs	30110013		0,000	110		
Does your jurisdiction's Local Emergency Operations Plan address provisions for						
	Voc	No	No	No	No	No
individuals with access and functional needs?	Yes	No	No	No	No	INO
If no, when will the plan be updated to include these community members?			yes			
How does your jurisdiction currently identify individuals with access and functional needs						
within the community?						
Access and functional needs are not yet a focus in identification.						
We are exploring methods to identify these individuals.			X			
We maintain a registry of individuals with specific needs.						
We collaborate with community organizations to identify such individuals.	X					
	Hospitals, long-					
	term care		CASCO, School			

To what output are access and functional mode considered in your jurisdiction's plane?					
To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan.		X	Х		
		Λ	^		
We are in the process of developing strategies for these needs.	,,				
We consider these needs, but they are not fully integrated.	Х				
We have dedicated strategies to address access and functional needs.					
	The county has				
	compiled				
	information on				
	the availability of				
	local				
	transportation				
	resources				
	including				
	wheelchair-				
List strategies	accessible buses.				
How does your jurisdiction engage with organizations that support individuals with access					
and functional needs in the planning process?					
We have active partnerships with such organizations.	Х				
We collaborate occasionally, but it is not a consistent practice.		Х			
We have not yet engaged with these organizations.			Х		
We are considering ways to involve them in the planning process.					
Are there specific shelters or facilities designated to accommodate individuals with access					
and functional needs during emergencies?					
Yes, we have designated accessible shelters and facilities.					
We consider accessibility but do not have specific facilities.	Х				
Accessibility is not a priority in our shelter planning.			Х		
We are exploring options for accessible shelters.		Х			
How does your jurisdiction ensure that emergency communication methods are accessible					
to individuals with various communication needs?					
We have accessible communication methods established.					
We consider diverse communication needs but need improvement.	Х				
Accessibility in communication is not yet well addressed.		Х	Х		
We are developing plans for accessible communication.					
	Radio, print,				
	social media,				
	multiple				
List methods	languages				
How does your jurisdiction plan to provide transportation assistance to individuals with	U U				
mobility challenges during evacuations?					
We have established transportation assistance plans.					
We consider transportation but need clearer strategies.					
Transportation assistance is not yet part of our plans.			Х		
We are discussing options for transportation assistance.	Х	Х			
		-		ļ	

Does your jurisdiction actively engage individuals with access and functional needs in your						
planning processes?						
Yes, we involve them as key stakeholders.						
We involve them to some extent, but improvements are needed.						
We have not yet engaged them in planning discussions.	Χ			Х		
We are considering ways to involve them in the process.			Х			
How does your jurisdiction plan to ensure that recovery efforts after a disaster prioritize the						
unique needs of individuals with access and functional needs?						
We have established strategies for inclusive recovery.						
We consider recovery needs, but more specific plans are needed.	Χ					
Recovery efforts are not yet focused on these needs.				Х		
We are discussing potential recovery strategies.			Х			
Other						
Do small area or corridor plans recognize the need to avoid or to mitigate natural hazards?	No	No	Yes	No	No	No
Is there an adopted evacuation and shelter plan to deal with emergencies from natural						
hazards?	No	No	Yes	No	No	No
Do economic development or redevelopment strategies include provisions for mitigation of						
natural resources?	No	No	Yes	No	No	No

Clay County	Clay County	Excelsior Springs	Gladstone	Lawson	Kearney	Liberty	Pleasant Valley	North Kansas City	Pleasant Valley	Smithville
Land Use Do the land use policies define an urban services area? Do the land use policies contain providings for based one identification?	Yes	No No	No No	Yes	No No	No Yes	No You	Yes Yes	No Yes	No You
Do the land use policies contain provisions for hazard zone identification? Do the land use policies discourage development or redevelopment within natural hazard	Yes Yes	No No	No No	Yes	No Yes	Yes Yes	Yes	Yes	Yes	Yes
areas? Does the future land use map clearly identify natural hazard areas?	Yes	No No	No No	No No	Yes	Yes	Yes No	No No	No No	Yes Yes
Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	Yes	No	No	Yes	Yes	Yes	No	No	No	Yes
Do the land use policies require storm water engineering studies prior to development? How does your jurisdiction assess the potential impacts of land use changes on hazard	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
now does your jurisdiction assess the potential impacts of tand use changes on nazard vulnerability and disaster risk? We conduct regular assessments of land use patterns and hazards.	х		x					×		
We collaborate with urban planning experts to analyze potential impacts. Land use changes are not currently a focus in our hazard assessments.	^	Y	^	Y	Х	Y		^	v	v
We are exploring methods to integrate land use considerations. How does your jurisdiction engage with urban planners and land use experts to inform		^		^		^			^	^
hazard mitigation strategies? We regularly collaborate with planners to integrate land use considerations.	Y		v			Y		v		
We include urban planners in the state of th	^	×		X	х	~		,	x	x
Wear per considering ways to involve urban plannings in our planning process. Are there specific areas within your jurisdiction that are identified as vulnerable due to		Ŷ		^					,	, and the second
recent or anticipated land use changes? Yes, we have identified vulnerable areas due to land use changes.	I		x		I			×		
We consider general vulnerability, but specific areas are not defined. Vulnerability due to land use changes is not a current focus.	x	×	^	x	х	x		^	x	x
We are in the process of assessing vulnerability related to land use. Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to		· ·								
coordinate land use changes for hazard mitigation? Yes, we have established regional collaborations for this purpose.	X		x							
We consider regional coordination, but it is not fully integrated. Land use coordination is not a significant part of our plans.		Х		Х	Х	Х		Х	X	X
We are considering the potential for regional coordination. How does your jurisdiction plan to communicate land use changes and their potential										
impact on hazard vulnerability to the public? We have comprehensive communication plans for land use changes.	х					х		х		
We include land use information in our general communication efforts. Land use communication is not a significant part of our plans.		X	х	Х	Х				X	Х
We are developing strategies for effective land use communication. Is your jurisdiction actively involved in advocating for sustainable land use practices and										
policies at higher levels of government? Yes, we actively advocate for sustainable land use practices.			x							
res, we actively advocacy efforts and use principles. We participate in advocacy efforts, but it is not a principle focus. Sustainable land use advocacy is not a current priority for us.	х			х	x	Х		х	х	x
We are considering engagement in land use advocacy.		х								
			All development plans must be approved through a mutiliayer review to include Fire/EM approval before being submitted to Planning and		development in floodplain areas is restricted per the					
Describe any land use measures incorporated into hazard mitigation plan. Transportation			Zoning		floodplain ordinance					
Does the transportation plan limit access to hazard areas? Is transportation policy used to guide growth to safe locations?	Yes Yes	No No	No No	No No	No No	No No	No No	No No	No No	No No
Are movement systems designed to function under disaster conditions (e.g., evacuation)?	Yes	No	No	No	No	No	No	No	No	No
Describe any transportation measures incorporated into hazard mitigation plan.			Utilization of Mass Transit resources for MCI or evacuation needs	No						
Environmental Management Are environmental systems that protect development from hazards identified and										
mapped? Do environmental policies maintain and restore protective ecosystems?	No Yes	No No	Yes Yes	No No	Yes No	Yes Yes	No No	No Yes	No No	No No
Do environmental policies provide incentives to development located outside protective ecosystems?	No	No	No	No	No	No	No	No	No	No
On a scale of 1 - 5 how concerned is your jurisdiction about climate change?	Changing weather patterns, more severe storms, and changes in weather seasons, affect on crops, serve changes in temperatures		Impacts to infrastructure and at-risk demographic groups such as the elderly and young	3 Severe weather	4 Rash flooding during rain events	3 Drought & Flooding	1 No concern	4 Unknown	2	Cost to miligate
What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on havantee and discate take.	in cemperatures		and young.	Severe weather	events	Drought & Hooding	ivo concern	JINKNOWN	1	Cost to mitigate
hazards and disaster risks We regularly conduct climate vulnerability assessments. We operate historical data to estimate future observe.										
We consider historical data to estimate future changes. We collaborate with climate experts and research institutions.		X	Х					X		Х
Climate change impacts are not yet integrated into our assessments. To what extent does your jurisdiction account for the increased frequency and intensity of	X			Х	Х	Х	Х		X	
Climate-related hazards? Climate-related hazards are not explicitly addressed in our plan.				Х	×	х	Х		Х	
We consider climate change, but it is not a primary focus. We are in the process of developing strategies for climate-related hazards. We have specific strategies to address climate-related hazards.	X	X	X					X		X
We have specific strategies? What are those strategies? How does your jurisdiction engage with climate science and data to inform hazard militigations strategies? We regulation strategies?			Built into existing extreme weather incidents			Other than discouraging development in floodplain, stream or riparian corridors, we do not address this issue.	N/A	Done via Community Development.		
We regularly update our strategies based on the latest cumate data. We incorporate climate projections into long-term planning. Climate science has a minimal impact on our mitigation plans.	Х	Y		Y	Y	Y	γ	Y	Y	Y
We are still exploring how to incorporate climate data effectively. How does your jurisdiction plan to integrate climate adaptation measures into its hazard mitigation strategies?		^		Α	^	^	۸	^	^	^
We have clear adaptation measures outlined in our plan. We are considering adaptation, but it is not fully integrated yet.			х							
Climate adaptation is not yet addressed in our strategies. We are currently exploring options for climate adaptation.	X	X		Х	X	Х	Х	Х	Х	Х
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to address shared climate-related hazards?								1		
Yes, we have established regional collaborations for this purpose. We consider regional collaboration but have limited initiatives.	Х		Х							
Climate-related collaboration is not a current focus: We are considering the potential for regional collaboration. How does your jurisdiction plan to communicate climate-related risks and adaptation strategies to the public and stakeholders?		х		х	х	х	х	х	Х	Х
We have comprehensive communication plans for climate risks. We include climate information in our general communication efforts.	x		x							
Climate communication is not a significant part of our plans. We are developing strategies for effective climate communication.		х		Х	Х	х	Х	Х	Х	Х
Is your jurisdiction actively involved in advocacy for climate change mitigation policies at higher levels of government?										
Yes, we actively advocate for climate mitigation policies. We participate in advocacy efforts, but it is not a primary focus.			Х					x		
Climate advocacy is not a current priority for us. We are considering engagement in climate advocacy.	Х	Х			Х	X	Х		Х	X
Describe any environmental management measures incorporated into hazard mitigation plant. Public Safety			Based on historical trends and predicted changes, resources are allocated to at-risk areas of the city.							
Are the goals and policies of the comprehensive plan related to those of the HMP?	Yes	No	Yes	No	No	No	Yes	Yes	No	No
Are the goals and policies of the comprehensive plan related to mose of the MMP? Is safety explicitly included in the plan's growth and development policies? Does the monitoring and implementation section of the plan cover safe growth	Yes	No No	Yes	No No	No No	No No	No No	Yes	No No	Yes
Does the monitoring and imprementation section of the plan cover safe growth objectives?	Yes	No	No	No	No	No	No	No	No	No
Describe any public safety measures incorporated into hazard mitigation plan.			current planning is incorporating cyber, severe weather and infrastructure failure into planning and exercise.							
Building Codes										

Does the building code contain provisions to elevate construction to withstand hazard forces?	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No
Does the building code contain wind resistance provisions to strengthen construction to withstand hazard forces?	Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No
Does the building code contain safe room or storm shelter requirements?	No No	No No	No	No No	No No	No No	Yes	No No	Yes	Yes
			The City will be transitioning to the latest							
Describe any building code measures incorporated into hazard mitigation plan. Zoning Ordinances			2024 code set							
Does the zoning ordinance conform to the comprehensive plan in terms of discouraging			_							
development or redevelopment within natural hazard areas? Does the ordinance contain natural hazard overlay zones or districts that set conditions	Yes	No.	Yes	No	Yes	Yes	Yes	No	Yes	Yes
for land use within such zones? Does the zoning ordinance contain mitigation performance standards?	Yes Yes	No No	Yes Yes	No No	Yes No	Yes No	Yes No	No Yes	Yes Yes	Yes Yes
Does the ordinance prohibit development within, or filling of, wetlands, floodways, and floodplains?	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	No
Do rezoning procedures recognize natural hazard areas as limits on zoning changes that										
allow greater intensity or density of use?	Yes	No	Yes	No	Yes	No	No	Yes	Yes	Yes
Describe any zoning ordinance measures incorporated into hazard mitigation plan. Subdivision Regulations										
Do the subdivision regulations contain an adopted hazard disclosure?	No	No	Yes	No	No	No	Yes	No	Yes	No
Do subdivision regulations contain a provision for soil report evaluations? Do the subdivision regulations restrict the subdivision of land within or adjacent to natura	No	No	Yes	No	Yes	No	No	No	Yes	Yes
hazard areas? Do the regulations provide for conservation subdivisions or cluster subdivisions in order to	No	No	Yes	No	Yes	No	No	No	Yes	Yes
conserve environmental resources?	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes
Do the regulations allow density transfers where hazards exist?	Yes	No	Yes	No	Yes	No	No	No	No	No
Describe any subdivision regulation measures incorporated into hazard mitigation plan. Capital Improvement Program and Infrastructure Policies										
Does the capital improvement program limit expenditures on projects that would encourage development in areas vulnerable to natural hazards?										
Do infrastructure policies limit extension of existing facilities and services that would	Yes	No	Yes	No	No	No	No	No	Yes	Yes
encourage development in areas vulnerable to natural hazards?	Yes	No	Yes	No	No	No	No	No	Yes	Yes
Does the capital improvement program provide funding for hazard mitigation projects?	Yes	No	Yes	No	No	No	No	No	Yes	Yes
	The 5-year Capital									
	Improvement Plan includes bridge projects		Emergency notification							Stormwater
Describe any capital improvement program and infrastructure policy measures incorporated into hazard mitigation plan.	and funding for culvert replacements.		and crisis communication policy							improvements / flooding prevention
Underserved Populations			poncy							presentati
How does your jurisdiction identify and define underserved populations for the purpose of hazard mitigation planning?										
We rely on census data and demographics. We conduct community assessments and consultations.					Х	Х				Х
We use a combination of data sources and community input.	Х		Х				Х		Y	
We have not explicitly defined underserved populations.		X						X	X	
What steps has your jurisdiction taken to assess the specific vulnerabilities and challenges faced by underserved populations during hazards and disasters?										
We have not yet focused on this aspect of vulnerability assessment. We have conducted vulnerability assessments targeting these populations.		Х		*	Х	Х	*	X	X	Х
We have analyzed historical disaster impacts on different groups.	х									
We have engaged with community organizations to gather insights.			Clay County Senior				X			
			Services, MODHHS, Census, City Data Local						Pleasant Valley Civic	
			NGO's, United Way, A						Organization Pleasant	
List community organization(s): How does your jurisdiction plan to ensure equitable access to hazard information,			Turning Point.						Valley Seniors	
evacuation plans, and emergency resources for all community members, including underserved populations?										
We use a variety of communication channels and languages.			х				X	х		
We work with community leaders to disseminate information. We have plans for accessible formats and resources.		×								
We are still developing strategies for inclusive communication. How does your jurisdiction intend to involve representatives from underserved	Х				х	х			х	х
populations in the hazard mitigation planning process? We have established advisory groups with diverse community members.			x				Х			
We regularly hold public meetings to gather input.		х	^				^		Х	
We collaborate with community-based organizations. We are exploring ways to improve community engagement.	X				x	x		x		x
Are there plans to collaborate with local community organizations, NGOs, or advocacy groups that have expertise in working with underserved populations during hazards and										
disasters?										
Yes, we have established partnerships and collaborations. We are considering such collaborations for future efforts.	Х	х	Х		х					
We have not actively explored these partnerships yet. No, we do not plan to collaborate with external organizations.						Х	Х	X	Х	х
How does your jurisdiction plan to address financial barriers that might prevent										
underserved populations from accessing essential resources during emergencies?										
We have plans to provide subsidies or financial support. We are working on ways to ensure resource equity.			х				X			
Financial barriers are not a focus of our plans. We have not yet considered financial barriers.	Х	х		x	х	х		x	x	х
Does your jurisdiction plan to review and update its plan to reflect changes in the										
vulnerabilities and needs of underserved populations over time? Yes, we have a scheduled review process that includes this aspect.			х							
We plan to incorporate changes if they are significant. We have not yet considered regular updates for this purpose.	Х	x		х	x	x	Х	x		
No, we do not plan to review or update the plan.									Х	Х
Do you have suggestions on how the community can actively engage underserved			Was listed as 2025 Goal of the City Council.							
populations in the planning and decision-making process?										
Are there local organizations or community members who can act as advocates or liaisons	CDRN, Life Unlimited, SPICE, Faith-based		Yes, discussions have begun with community							
to help communicate emergency information and resources to underserved populations? Access and Functional Needs	organizations, Schools		stakeholders							
Does your jurisdiction's Local Emergency Operations Plan address provisions for	W	A1-	W	Alle.			W		W	
	Yes	No	Yes	No	No		Yes	No 2025	Yes	No
individuals with access and functional needs? If no, when will the plan be updated to include these community members?				Unknown						
If no, when will the plan be updated to include these community members? How does your jurisdiction currently identify individuals with access and functional needs within the community?				Unknown						
If no, when will the plan be updated to include these community members? How does your jurisdiction currently identify individuals with access and functional needs within the community? Access and functional needs are not yet a focus in identification.				Unknown	Y		Y	Y	х	х
If no, when will the just be spaded to lectude these community members? How does you thin plant be spaded to lectude these community members? How does you did not consult needs within the community members. Access and functional needs are not yet a focus in identification. We are exploring methods to identify these includuals. We multitude a registry of identification the procedure needs.				Unknown	х		х	X	х	х
If no, when will the Jahn be updated to include these community members? How does your jurisdiction currently identify individuals with access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exposing membeds to identify these individuals.	X		x	Unknown	Х		х	х	х	х
If no, when will the plan he updated by include these community members? How does your jurisdiction currently identify individuals with access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals.	CDRN, Life Unlimited,		Variety, united way, red	Unknown	х		X	X	х	X
If no, when will the plan he updated by include these community members? How does your jurisdiction currently defeating individuals with access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s)				Unknown	x		х	X	X	x
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If no, when will the plan he updated be include these community members? How does your jurisdiction currently individual wash access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a negloty of midwidus with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not organization and our plans. We consider these needs, but the ran on they jurisdict no prains. We consider these needs, but the ran on they jurisdict for these needs.	CDRN, Life Unlimited,		Variety, united way, red	Unknown	x		X	x	x	
If no, when will the plan he updated be include these community members? How does your jurisdiction currently individual was becase and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a negoty of individuals with peocific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly diddressed in our plan. We are in the process of developing strategies for these needs. We consider these needs, but they are not fully integrated. We have declared strategies to address access and functional needs.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Unknown	x		x	x	x	
If no, when will the plain he updated to include these community members? How does your jurisdiction currently disently individuals what access and functional needs within the community? Access and nuctional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of individuals with appendic needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are into approach of ordering strategies for the needs. We consider these needs, but they are not fully integrated. We have decided strategies and direct source and nucritional needs. List strategies How does your jurisdiction engage with organizations that support individuals with access.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Unknown	X		X	x	x	
If no, when will the plan he updated be include these community members? How does your jurisdiction currently disentify individual was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a negyty of individuals with peocific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are in the process of developing strategies for the needs. We consider these needs, but they are not fully integrated. We have decladed strategies in address access and functional needs. List strategies How does your jurisdiction engage with organizations that support individuals with access and functional needs in the planning process? We have deep partnerships with acceptantations.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Usknown	x		X X	x	x	
If no, when will the plan he updated be include these community members? How does your jurisdiction currently disentify individuals what access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We make a registry of individuals with specific needs. We cotlaborate with community organizations to identify such individuals. Let organizations; To what extent are access and functional needs considered in your jurisdiction's plans? Access and infortional needs are organizely addressed in our guisse. We consider information access and functional needs considered in your jurisdiction's plans? Access and infortional needs are organizely addressed in our guisse. We consider these needs, but for explority plans and the plans access and functional needs. List strategie. We have dedicated strategies to address access and functional needs. List strategies. We have explored medicated strategies to address access and functional needs. List strategies are desired to the planning process? We have active pathenticips with such organizations that support individuals with access and functional needs in the planning process? We have active pathenticips with such organizations.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Unknown	X X		· ·	X	X	
If no, when will the plan he updated be include these community members? How does your jurisdiction currently disentify individuals what access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to dentify these individuals. We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly publicated in our plan. We are in the process of developed to shedes to three needs. We collaborate with the process of developed to shedes to three needs. We will not be process of developed to shedes to three needs. We have on the process of developed to shedes to the media. We have deed to the plant of the principaled. We have deed to the plant of the principaled. We collaborate makes the plant of the principaled and functional needs in the planting process? We have entire and the planting process? We have not yet engaged with these organizations. We are to yet engaged with these registrations and splanting process.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Unknown			· ·	x	X	X
If no, when will the plan he supdated be include these community members? How does your jurisdiction currently indesting hindividuals what access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of widenticions with specific needs. We contain an ageity of widenticions with specific needs. We contain the an access and functional needs considered in your jurisdiction's plans? To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are not be process of developing strategies for the needs. We consider these process of developing strategies for the needs. We consider these process of developing strategies for the needs. We consider these process of developing strategies for the medical. We will not not official strategies to others access and functional needs. We have not exceed the strategies to other access contained in functional needs. We contain them ends in the planning process? We have earlier partnerships with such or grantations. We called the accessionally, but the not accessionally name process. We have not vet engaged with these organizations. We have not vet engaged with these organizations. We have not vet engaged with these organizations.	CDRN, Life Unlimited, Fire Departments		Variety, united way, red cross, Northland Shepard	Usknown			x	X X	X	X
If no, when will the plan he supdated be include these community members? How does your jurisdiction currently indentify individuals what aces and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a negoty of withdraws with appendic needs. We contain ran a negoty of withdraws with people needs. We contain the community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are not processed developing stategies for them needs. We consider these needs, but they are not fully integrated. We have not desired stategies to address access and functional needs. List arranges We have declined stategies to address access and functional needs. We consider these needs, but they are not fully integrated. We have not make the pathemetric than a consistent practice. We have exceeded with the such organizations. We contain the contained of the planning process? We have not vet engaged with these organizations. We are contained accessionly, but on the min the planning process. Are there specific shelters or facilities designated to accommodate individuals with access and functional needs during engegencies? Yee, we have designated accessible shelters and facilities.	CDRN, Life Unlimited, Fire Departments	x	Variety, united way, red cross, Northland Shepard	Usknown			· ·	x	X	X
If no, when will the place he updated to include these community members? How does your jurisdiction currently individual was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring method to identify these individuals. We maintain a negloty of midwidus with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction splane? Access and functional needs are not enginely addressed in our plan. We are in the process of developing strategies for these needs. We consider these needs, but they are not fully impress of no up plan. We have decicated strategies to address access and functional needs. List strategies How does your jurisdiction engage with organizations that support individuals with access and functional needs in the planning process? We consider excessibility in a not a considered particular particular and functional readers. We consider consisting hus for an access and functional readers. We are considered to the planning grocess? We have active partnerships with such organizations. We consider consisting hus for an access and functional readers. We are consistent with the planning grocess? We have active partnerships with such organizations. We consider accessibility hus the one have beginning process. We are consistent and the designated to accommodate individuals with access and functional needs during emergencies? Ye we have not engage and the consistent partnership and could be accessed and consistent partnership. Accessibility is not a priority in order there are facilities. We consider accessibility hus do not have specific facilities.	CDRN, Life Unlimited, Fire Departments X	X	Variety, united way, red cross, Northland Shepard	Unknown			x	X X X	X	X
If no, when will the plan he supdated to include these community members? How does your jurisdiction currently individual was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organizations: To what extent are access and functional needs considered in your jurisdiction's plane? Access and injuricular individuals or the city of the plane of the p	CDRN, Life Unlimited, Fire Departments X	x	Variety, united way, red cross, Northland Shepard	Unknown			x	X X X	X	X
If no, when will the place he updated to include these community members? How does your jurisdiction currently indentify individuals what aces and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We make a registry of individuals with appectic needs. We collaborate with community organizations to identify such individuals. List organizations() To what extent are access and functional needs considered in your jurisdiction y place? Access and functional needs are not enginely addressed in our jurisdiction or place? We consider the enceds, but they are not fully impact for these needs. We consider these needs, but they are offully impact and the company of the control of t	CDRN, Life Unimited, Fire Departments X X	X	Variety, united way, red cross, Northland Shepard	Unknown			x	x x x x	x	X
If no, when will the plate he updated be include these community members? How does your jurisdiction currently individual was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain an angiety of individuals was inpected needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plane? Access and functional needs are not explicitly addressed in our plan. We are in the process of developing strategies for these needs. We consider these needs, but they are not fully integrate for the needs. We have dedicated strategies to address access and functional needs. List storages. We have dedicated strategies to address access and functional needs. List storages. We consider the needs, but the organizations that support individuals with access and functional needs. We consider the company and the organizations. We collaborate occasionality, and it is not a consistent practice. We have ended in whether or facilities before a practice. We have ended to ender up any to invoke them in the planning process? Ye was the endegated accessibility fund on orthine specific incines. Accessibility in which practice is not have specific facilities. We consider accessibility fund on orthine specific facilities. We consider accessibility fund on orthine specific facilities. We consider accessibility had not not have specific facilities. We consider accessibility in the one of these specific facilities. We consider accessibility for the orthine specific facilities. We consider accessibility communication methods are accessible to definition of the specific facilities. We con	CDRN, Life Unlimited, Fire Departments X	X	Variety, united way, red cross, Northland Shepard X X	Usknown			x	X X X	X	X
If no, when will the plan he supdated to include these community members? How does your jurisdiction currently individuals was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We make a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organizations; To that extent are access and functional needs considered in your furtifications in the control of the co	CDRN, Life Unimited, Fire Departments X X	X	Variety, united way, red cross, Northland Shepard X X X	Unknown			x	X X X X	x	X
If no, when will the place he updated to include these community members? How does your jurisdiction currently individual was access and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain an agingty of individuals with peocle needs. We collaborate with community organizations to identify such individuals. List organizations() To what extent are access and functional needs considered in your jurisdiction's plans? Access and inactional needs are not engined properties. We are in the process of developing to along for these needs. We consider these needs, but they are not fully integrated. We have decidicated strategies to address access and functional needs. List strategies How does your jurisdiction engage with organizations that support individuals with access and functional needs in the palaming process? We have decideded strategies to address access and functional needs. List strategies We have decideded strategies to address access and functional needs. List strategies We have decideded strategies to address access and functional needs. List strategies We have decideded strategies to address access and functional needs. List strategies We have decide primerologies with such organizations that support individuals with access and functional needs in the palaming process? We have accessfully the excession of the palaming process. We are considering was to involve them in the planning process. Accessibility in a department process and functional needs access and functional needs of the palaming process. Accessibility in communication in endos or accessible shelters and calcilles. We are developing plans for accessible shelters.	CDRN, Life Unimited, Fire Departments X X	X	Variety, united way, red cross, Northland Shepard X X X X X Vision and hearing impaired TTD, online	Unknown			x	x	x	X
If no, when will the place he updated be include these community members? How does your jurisdiction currently disentify individuals wha ceas and functional needs within the community? Access and functional needs are not yet a focus in identification. We are exploring methods to identify these individuals. We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organizations are access and functional needs considered in your jurisdictions place? To what extent are access and functional needs considered in your jurisdictions place? Access and inforctional needs are not enginetry addressed in our plan. We are in the process of developing strainged for these needs. We consider these needs, but they are not fully impairing parties. We have dedictand straingles to address access and functional needs. List strategies How does your jurisdiction engage with organizations that support individuals with access and functional needs in the planning process? We have catche pathers only with such organizations. We are some considerable, much fine to a considered practice. We have not very denigated with these organizations. We are settle processed or accessions by not them to the planning process. Accessibility in a planning which the much the planning process. Accessibility in very long and printing which the much their glanning. We are exploring organization for accessibility the interest planning. We are exploring organization for accessibility the interest planning. We want to individuals with various communication methods are accessible to individuals with various communication needs? We have not printing the communication needs and need improvement. Accessibility in communication in one of the need improvement.	CDRN, Life Unimited, Fire Departments X X	X	Variety, united way, red cross, Northland Shepard X X X X X Vision and hearing	Unknown			x	X X X X X	x	x

We have established transportation assistance plans.		X					Х			
We consider transportation but need clearer strategies.	Х									
Transportation assistance is not yet part of our plans.					Х			X	Х	Х
We are discussing options for transportation assistance.			Х							
Does your jurisdiction actively engage individuals with access and functional needs in										
your planning processes?										
Yes, we involve them as key stakeholders.			Х				Х			
We involve them to some extent, but improvements are needed.										
We have not yet engaged them in planning discussions.		Х			Х			Х	Х	Х
We are considering ways to involve them in the process.	Х									
How does your jurisdiction plan to ensure that recovery efforts after a disaster prioritize										
the unique needs of individuals with access and functional needs?										
We have established strategies for inclusive recovery.			X				Х			
We consider recovery needs, but more specific plans are needed.	Х									
Recovery efforts are not yet focused on these needs.					Х			X	Х	
We are discussing potential recovery strategies.										X
Other										
Do small area or corridor plans recognize the need to avoid or to mitigate natural hazards?	No	No	Yes	No	No	No	No	No	No	No
Is there an adopted evacuation and shelter plan to deal with emergencies from natural										
hazards?	Yes	No	Yes	No	No	No	Yes	No	Yes	No
Do economic development or redevelopment strategies include provisions for mitigation										
of natural resources?	Yes	No	Yes	No	No	No	No	No	No	No

Do the land use policies define an urban services area? Yes No Yes No Yes No Yes No	Jackson County	Blue :	Springs	Central Jackson Co FPD	Grain Valley	Grandview	Greenwood	Independence	Jackson County	Kansas City	Lee's Summit	Levasy	Oak Grove	Raytown	Sni Valley FPD
Section of the content of the cont	Land Use Do the land use policies define an urban condess area?	T T	Voc	No	Voc	No	T	Voc	No	Voc	No	No	No	No	Mo
Mary	Do the land use policies contain provisions for hazard zone identification?														
Mary															
Manufacture 10	areas?														
Companies Comp	Does the future land use map clearly identify natural hazard areas?		Yes	No	Yes	No		Yes	No	Yes	Yes	No	No	Yes	No
March Marc	Does the plan provide adequate space for expected future growth in areas located outside		V	N-	V	V		V		V	V		N-	N-	N-
Marches Marc	natural nazard areas?		Yes	NO NO	Yes	Yes		Yes	No	Yes	Yes	No	No	N0	NO
Marches Marc	Do the land use policies require storm water engineering studies prior to development?		Yes	No	Yes	Yes		Yes	No	Yes	No	No	No	Yes	No
The state of the															
A															
The content of the	We conduct regular assessments of land use patterns and hazards.									X	Х			Х	
The content of the	We collaborate with urban planning experts to analyze potential impacts.			X	X			X							
The content of the	Land use changes are not currently a focus in our hazard assessments.					Х						X			
Section Sect	We are exploring methods to integrate land use considerations.		X										Х		X
Column C	how does your jurisdiction engage with urban planners and land use experts to inform														
Column C				Y						Y	Y				
The content of the				^	Х			Х							
The control of the			х									Х			
Control Cont	We are considering ways to involve urban planners in our planning process.					Х									Х
March Marc	Are there specific areas within your jurisdiction that are identified as vulnerable due to														
Company Comp	recent or anticipated land use changes?														
The part Par	Yes, we have identified vulnerable areas due to land use changes.										Х				
Column C	We consider general vulnerability, but specific areas are not defined.				X			Х				X			Х
Property			X	v		X				X					
The part of the						1	1	1	1	1	1	1	1	1	I
Manufacture															
No. 0.000 1										X				Х	
The control of the	We consider regional coordination, but it is not fully integrated.				Х			Х			Х	Х			X
Note Property Pr	Land use coordination is not a significant part of our plans.		Х												
West Control	We are considering the potential for regional coordination.			Х			1					L			
Manual construction for the control of the contro	How goes your jurisdiction plan to communicate land use changes and their potential														
This part Pa							1			Y				Y	
March Marc						x				^	x			^	x
Second processes and expenditure in the processes and expenditur			х		х	-					^	X			^
Properties Pro	We are developing strategies for effective land use communication.			Х				Х							
The state of the						•	•						•	•	•
Mary	policies at higher levels of government?														
The controlling registers below from all sources of the controlling registers below from all sources and state of the controlling registers below from all sources and state of the controlling registers below from all sources and state of the controlling registers below from all sources and state of the controlling registers below from all sources and state of the controlling registers and state of the con	Yes, we actively advocate for sustainable land use practices.		Х							X					Х
The controlling registers in tool and abdotion; The controlling registers in the controlling regist	We participate in advocacy efforts, but it is not a primary focus.				V						X	v			
Describe any land and mastern through displaying from the control from the				Y	^			Y				^		Y	
Describe any transportation measures incorporated into hazard integration plan. Describe any transportation measures incorporated into hazard integration plan. Personal Processing States and Telegraphics of the Company transportation plan. Personal Processing States and Telegraphics States	Describe any land use measures inconnected into based milligation plan									provide overview and	Plan identifies hazard areas for development including flood plains, abandoned gas wells, etc. The Unified Development Ordinance has regulations for development and redevelopment review including subdivision and land development rejudiently and address identify and address			provisions for flood	
Introduction policy used to guide growth to selfe locations? Are movement splaned esigned to function under disaster conditions (e.g., evacuation)? Yes Yes Yes Yes 100 No No No No No No No No No	Transportation							rtoodpiairmanager.		unive gouts.	nazaras.			nazara minganon	
Are movement systems designed to function under disaster conditions (e.g., Yes Yes No															
execusation)? Ves Ves No	Is transportation policy used to guide growth to safe locations?		Yes	No	No	Yes	1		No	No	Yes	No	No	No	No
The city adopted of Transportation transportation reason within the City adopted of Transportation processed the City formatly exceeds the City formative exceeds the City formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training domain and pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal training to the city formative exceeds the consistency capability to meet anomal pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal pack fluctuations is training to the city formative exceeds the consistency capability to meet anomal pack fluctuations is training to the city formative exceeds the consistency capability to train the many pack fluctuations is training to the city formative exceeds the consistency capability to the city formative exceeds the consistency capability is consistent to the consistency capability to the city formative exceeds the consistency capability of the city formative exceeds the consist	Are movement systems designed to function under disaster conditions (e.g.,		Voc	Ve-	Vc-	N-			b1-	b1-	N-	b1-	Al-	b1-	A1-
Exercise any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Describe any transportation measures incorporated into hazard mitigation plan. Transportation measures incorporated into hazard miti	evacuation)?		Yes	Yes	Yes	No			NO	NO NO	NO NO	NO	NO NO	N0	NO NO
### A Process										have a specific	Transportation Level of Service "C". By having a higher level of service, the design of roads within the City normally exceeds the necessary capability to meet normal traffic durand and peak fluctuations in traffic that may be related to incident management, evacuations, detours,				
Are environmental systems that protect development from hazards identified and mapped? No.	Describe any transportation measures incorporated into hazard mitigation plan.						1			transportation plan.	etc.				authority
mapped	Environmental Management														
Do environmental policies maintain and restore potective ecosystems? No N	are environmental systems that protect development from nazards identified and mapped?		No	No	No	No			No	Yes	Yes	No	No	No	Yes
Do environmental policies provide incentives to development located outside protective No	Do environmental policies maintain and restore protective ecosystems?														
	Do environmental policies provide incentives to development located outside protective														
On a scale of 1-5 how concerned is your jurisdiction about climate change? 2 3 2 5 3 4 1				No	No	No			No				No	No	
	On a scale of 1-5 how concerned is your jurisdiction about climate change?		2	3	2					5	3	4			1

							1						
			Heat and cold waves,					Flooding, Extreme Heat, Thunderstorms, Tornado, Winter Weather,	water quality and other				The chief concern is the lack of agreement among experts on magnitude and specific effects of
What are some of your jurisdiction's biggest concerns about climate change?			drought					Community Resiliency	environmental impacts.	More frequent flooding			climate change.
How does your jurisdiction currently assess the potential impacts of climate change on													
hazards and disaster risks					1				1		1		
We regularly conduct climate vulnerability assessments.								X					X
We consider historical data to estimate future changes.			X						X				
We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments.		v		v						v			
To what extent does your jurisdiction account for the increased frequency and intensity of	1		1							^			
climate-related hazards?													
Climate-related hazards are not explicitly addressed in our plan.		Х		Х						Х			
We consider climate change, but it is not a primary focus.			Х										
We are in the process of developing strategies for climate-related hazards.													X
We have specific strategies to address climate-related hazards.								Х	Х				
What are those strategies?								Outlined in Kansas City, Missouri's, Climate Protection and Resiliency Plan 2022	Specific weather related climate events will be addressed in improved city EOP.				First, to gather reliable information
How does your jurisdiction engage with climate science and data to inform hazard							1		,		1		
mitigation strategies?													
We regularly update our strategies based on the latest climate data.								X					
We incorporate climate projections into long-term planning.									Х				X
Climate science has a minimal impact on our mitigation plans.		Х								X			
We are still exploring how to incorporate climate data effectively.			Х	X									
How does your jurisdiction plan to integrate climate adaptation measures into its hazard mitigation strategies?													
mitigation strategies? We have clear adaptation measures outlined in our plan.								v	v				
We have clear adaptation measures outlined in our plan. We are considering adaptation, but it is not fully integrated yet.								^	^				
Climate adaptation is not yet addressed in our strategies.		Х		х						х			
We are currently exploring options for climate adaptation.			Х										Х
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to		•			•	•		•	•	•			
address shared climate-related hazards?													
Yes, we have established regional collaborations for this purpose.								X	X				
We consider regional collaboration but have limited initiatives.			Х	X									X
Climate-related collaboration is not a current focus.		Х								Х			
We are considering the potential for regional collaboration.													
How does your jurisdiction plan to communicate climate-related risks and adaptation strategies to the public and stakeholders?													
We have comprehensive communication plans for climate risks.		I			ı	I		· ·	1	I			
We include climate information in our general communication efforts.								^					Y
we include climate information in our general communication enorts.													
Climate communication is not a cignificant part of our plans		v	^	v						v			
Climate communication is not a significant part of our plans.		Х	^	Х					x	Х			
Climate communication is not a significant part of our plans. We are developing strategies for effective climate communication.		Х	*	Х					х	х			
Climate communication is not a significant part of our plans. We are developing strategies for effective climate communication. Is your jurisdiction actively involved in advocacy for climate change mitigation policies at		х	^	х					Х	х			
Climate communication is not a significant part of our plans. We are developing strategis for effective climate communication. Is your jurisdiction actively involved in advocacy for climate change mitigation policies at higher levels of government? Yes, we actively advocace for climate mitigation policies.		х	^	Х					х	х			X
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development or redevelopment within natural hazard areas?		
Does the ordinance contain natural hazard overlay zones or districts that set conditions for land use within such zones? Ves No Yes No No Yes Yes Does the zoning ordinance contain mitigation performance standards? Yes No Yes No No Ye	No No	Yes No
	NO NO	103
Does the zoning ordinance contain mitigation performance standards? Yes No Yes No No Yes No No Yes No No No No No No No No No N	No No	No No
	No No	No No
Does the ordinance prohibit development within, or filling of, wetlands, floodways, and		
floodplains? Yes No Yes Yes No Yes Yes	No No	Yes No
Do rezoning procedures recognize natural hazard areas as limits on zoning changes that		
allow greater intensity or density of use? Yes No Yes Yes No Yes Yes No Yes	No No	Yes No
The Unified development		
Ordinance(UDO) has		
or regulations for		
development and		
redevelopment review		
including subdivision and		
land development		
regulations designed to		
addess hazards such as		
flood plains, storm runoff,		
erosion control, etc. The		
ections continue, etc. time City encourages Trest		
Cuy encurages uest practice techniques practice techniques		
pascue recumiques including the use of		
ill.culturing one to the or of the control of the c		
pervious proteinent, and bio swalles where		
tio swates where possible to slow ension		
possible to slow ensuring information used to be information used to be and preserve natural a		.N/A Not within
Describe any zoning ordinance measures incorporated into hazard mitigation plan. determine goals. features.		.N/A Not within authority
Describe any coming commance measures incorporated miningation plant. Understanding States and Commance measures incorporated miningation plant. Understanding States and Commance measures incorporated miningation plant.		authority
Supportson Regulations To the supplicion regulation regulation scontain an adopted Nazard disclosure? Yes No Yes No No Yes No Yes No Yes No Yes No No Yes No No Yes No Yes No No Yes No	No No	No No
00 tres supports some regulations contain an artisprise market source from the containing and	No No	No No
Do the subdising regulations estirct the subdiships on dand within or adjacent to	NO NO	140 140
DO IN EQUIPMENT PERSON ESTINAL UNE SUDMINISTRUM MINIMO PROJECTION OF THE SUDMINISTRUM PROJECTION OF THE SUDMINIS	No No	No No
neuranaeau urasea. Tes Institution provide for conservation subdivisions or cluster subdivisions in order Tes Institution provide for conservation subdivisions or cluster subdivisions in order Tes Institution provide for conservation subdivisions or cluster subdivisions in order	140	140 140
DO the regulations province for Conservation administration of Conservation administration admini	No No	No No
to unserve environment resources: 1es 100 100 100 1es	No No	No No
Do the regulations allow behaving statistics where hazards exist? Tes NO NO NO NO 165	NO NO	.N/A Not within
Describe any subdivision regulation measures incorporated into hazard mitigation plan.		authority
		authority
Capital improvement Program and infrastructure Policies Does the capital improvement program and infrastructure Policies Ones the capital improvement program limit expenditures on projects that would		
Uoes the capitat improvement program unite expendrures on projects that would be considered and the consider	No No	No No
encourage development in areas vulnerance to natural nazards? NO NO NO NO NO YES YES TO Infrastructure policies limit extension of existing facilities and services that would	NO NO	NO NO
	No No	No No
encourage development in areas vulnerable to natural hazards? No No No Yes No Yes Yes	NO NO	NO NO
Does the capital improvement program provide funding for hazard mitigation projects? No No No Yes No Yes	No No	Yes Yes
Public Works		
collaborates closely with		
the Planning Department		
and Water Department to		
discourage development		
in areas vulnerable to		
natural hazards, namely		
flooding. All three The City's		
departments review Comprehensive plan		
development plans from identifies certain hazard		
development prans norm Identities certain nazard		
private developers to areas for development		
private development province development prevent development including forod plain,		
private developers to areas for development		Not applicable
private development province development prevent development including forod plain,		Not applicable differing time :
private developers to prevent development including flood plain, within floodways and steep slopes, in order for within floodways. Public by the properties of the preventies of the properties		differing time : Hazard mitigati
private development to prevent development to prevent development to including fitted plain. Within flooring house, but of the fitted plains, well at steep slopes, in order for flooring house, in order for the fitted plains. Public the fitted plains, and the flooring house, in order for flooring house, and the flooring house, in order for flooring house, and the floo		differing time : Hazard mitigati measures are ne
private development program and infrastructure policy measures prover development program and infrastructure policy measures prover development program and infrastructure policy measures projects to military and an adverse development program and infrastructure projects to military the projects to military through engineering		differing time : Hazard mitigati
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private development prevent development produced points. Put including fitted plain. Put including fitted plain in cluding fitted plain part of the prevent program and fitted plain part of the prevent program and infrastructure policy measures develops infrastructure policy measures projects to nnitigate as to the proven incorporated into hazard mitigation plain. Underserved Populations Underserved Populations For underserved populations define underserved populations for the purpose		differing time : Hazard mitigati measures are ne incorporated into
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How does your jurisdiction intend to involve representatives from underserved													
populations in the hazard mitigation planning process? We have established advisory groups with diverse community members													
We have established advisory groups with diverse community members. We regularly hold public meetings to gather input.													
We collaborate with community-based organizations.								x					
We are exploring ways to improve community engagement.			Х	Х					X	X	X		х
Are there plans to collaborate with local community organizations, NGOs, or advocacy													
groups that have expertise in working with underserved populations during hazards and	j												
disasters?													
Yes, we have established partnerships and collaborations.								X	X		X		
We are considering such collaborations for future efforts.			X										X
We have not actively explored these partnerships yet.				X						X		X	
No, we do not plan to collaborate with external organizations.													
How does your jurisdiction plan to address financial barriers that might prevent	j												
underserved populations from accessing essential resources during emergencies?	j												
We have plans to provide subsidies or financial support.													
We are working on ways to ensure resource equity.			х					Х	Х		X		х
Financial barriers are not a focus of our plans.													
We have not yet considered financial barriers.				Х						X		X	
Does your jurisdiction plan to review and update its plan to reflect changes in the	j												
vulnerabilities and needs of underserved populations over time?													
Yes, we have a scheduled review process that includes this aspect.								X					×
We plan to incorporate changes if they are significant.			X	Y					Х		X	Y	X
We have not yet considered regular updates for this purpose. No. we do not plan to review or update the plan.	+			X						X		X	
No, we do not plan to review or appeare the plan.													
Do you have suggestions on how the community can actively engage underserved populations in the planning and decision-making process?							and	insas City partners with id supports established organizations adept at oviding for underserved populations	External stakeholder engagement on community resouce needs.		No suggestions		
Are there local organizations or community members who can act as advocates or	1										Yes, Ministerial Alliance,		
liaisons to help communicate emergency information and resources to underserved populations?								Yes	Faith Based collaboratives in place.		Community Services League		Undetermined at this time.
populations? Access and Functional Needs								res	contabolatives in place.		League		ume.
Does your jurisdiction's Local Emergency Operations Plan address provisions for													
individuals with access and functional needs?	}	No	Yes	Yes	No		No	Yes	No	No	Yes	Yes	Yes
If no, when will the plan be updated to include these community members?									2025	Not in the near future			The LEOP is updated a resources and method become available
How does your jurisdiction currently identify individuals with access and functional									2023	ivot ili tile ileai iutule			Decome available
needs within the community?	}												
Access and functional needs are not yet a focus in identification.										X		X	
We are exploring methods to identify these individuals.	,		Х							~			х
We maintain a registry of individuals with specific needs.								Х			X		
We collaborate with community organizations to identify such individuals.				X					Х				
											Ministerial Alliance,		Minisiterial Alliance,
List organization(s)				CIC					Faith based and social organizations	none	Community Services League,		Community Services League,
To what extent are access and functional needs considered in your jurisdiction's plans?	}												
										X			
Access and functional needs are not explicitly addressed in our plan.									x	X	×		
We are in the process of developing strategies for these needs. We consider these needs, but they are not fully integrated.			X	X					X		X	X	X
We have dedicated strategies to address access and functional needs.			^	^				x				^	^
List strategies													
How does your jurisdiction engage with organizations that support individuals with access and functional needs in the planning process? We have active partnerships with such organizations. We collaborate processingly in this loss precedent practice.							util	re dispatch maintains a database. Housing lilzes direct assistance, mmunity outreach, and other strategy tools. X	Communications in order to make sure important hazard information is being passed to include LSAWARE				
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Yes, we involve them as key stakeholders.							Х					
We involve them to some extent, but improvements are needed.		Х										Х
We have not yet engaged them in planning discussions.			X						X		Х	
We are considering ways to involve them in the process.								Х		X		
How does your jurisdiction plan to ensure that recovery efforts after a disaster prioritize												
the unique needs of individuals with access and functional needs?												1
We have established strategies for inclusive recovery.										X		
We consider recovery needs, but more specific plans are needed.		Х	X				Х	X			Х	Х
Recovery efforts are not yet focused on these needs.									X			
We are discussing potential recovery strategies.												
Other					•							
Do small area or corridor plans recognize the need to avoid or to mitigate natural												
hazards?	Yes	No	No	No		No	Yes	Yes	No	Yes	No	Yes
Is there an adopted evacuation and shelter plan to deal with emergencies from natural												
hazards?	Yes	Yes	No	No		No	Yes	No	No	Yes	No	Yes
Do economic development or redevelopment strategies include provisions for mitigation												
of natural resources?	No	No	No	Yes		No	Yes	Yes	No	Yes	No	Yes

Platte County Land Use Do the Land use colicies define an urban services area? Do the Land use colicies contain provisions for hazard zone identification?	Farley	Lake Waskomis	Northland Region Ambu	Northmoor	Parkville	Platte City	Platte County	Weston	Platte Woods	Riverside	Tracy	Weatherby Lake
Do the land use policies contain provisions for hazard zone identification?			No				Yes	No	Yes	No		No
Do the land use policies discourage development or redevelopment within natural	No	Yes	No	No	Yes	No	Yes	No	Yes	No		No
hazard areas?	No No	Yes No	No No	No No	Yes	No No	Yes Yes	Yes No	Yes No	No No		No No
Does the future land use map clearly identify natural hazard areas? Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	No	No	No	No	Yes	Yes	Yes	Yes	No	No		No
Do the land use policies require storm water engineering studies prior to development?	No	No	No	No	Yes	Yes	Yes	No	Yes	No		Vers
How does your jurisdiction assess the potential impacts of land use changes on hazard	NO.	100	THE .	100	144	144	183	160		140	1	1100
vulnerablity and disaster risk? We conduct regular assessments of land use patterns and hazards.												x
We collaborate with urban planning experts to analyze potential impacts. Land use changes are not currently a focus in our hazard assessments.		×			X		×	x		×		
We are exploring methods to integrate land use considerations. How does your jurisdiction engage with urban planners and land use experts to inform.		1	l		l	l			1	1		-
hazard mitigation strategies? We regularly collaborate with planners to integrate land use considerations.			1	1	1					ı		1
We include urban planners in discussions, but improvements are needed. Urban planning perspectives are not currently integrated into our strategies.		¥			x		x	¥				
We are considering ways to involve urban planners in our planning process. Are there specific areas within your jurisdiction that are identified as vulnerable due to												х
recent or anticipated land use changes?			1	1						Т		
Yes, we have identified subnerable areas due to land use changes. We consider general vulnerability, but specific areas are not defined.					x		×					х
Widnerability due to land use changes is not a current focus. We are in the process of assessing vulnerability related to land use.		×						x				
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to coordinate land use changes for hazard mitigation?												
Yes, we have established regional collaborations for this purpose. We consider regional coordination, but it is not fully integrated.					x		¥					
Land use coordination is not a significant part of our plans.		x						х				х
We are considering the potential for neglonal coordination. How does your jurisdiction plan to communicate land use changes and their potential impact on hazard valencability to the public?		1							1	1		1
We have comprehensive communication plans for land use changes.					x							
We include land use information in our general communication efforts. Land use communication is not a significant part of our plans.		x					х	x				х
unto use communication in non a service and use communication. We are developing standard for effective bury use communication. Is your jurisdiction actively involved in advocating for sustainable land use practices.		l	L	L	L	l			l			1
and policies at higher levels of government? Yes, we actively advocate for sustainable land use practices.		1			×	1			1	1	1	_
We participate in advocacy efforts, but it is not a primary focus. Sustainable land use advocacy is not a current priority for us.							×	v				
We are considering engagement in land use advocacy.		_ ^										
					Follow Hazard Mitigation							
					guidetines plan review. Regulate what is built in		Future Land Use Maps overlay flood hazard					The city does not have any natural hazard areas
Describe any land use measures incorporated into hazard mitigation plan. Transportation					the flood plan.		areas.		L			within the city limits.
Transportation Does the transportation plan limit access to hazard areas? Is transportation policy used to guide growth to safe locations?	No No	No No	No Ma	No Mo	No No	Yes Yes	Yes Yes	No No	No.	No No		No No
Are movement systems designed to function under disaster conditions (e.g.,	No.	No.	No No	No No	No No	Yes No	Yes	No No	No.	No No		No No
evacuation)?	160	NO	NO	AD	NO	-40	Roadway planning looks at land use plans. All	40	NO	NO		-10
							roadways and					There are no natural
Describe any transportation measures incorporated into hazard mitigation plan.							stormwater plans meet APWA standards					hazards within the city limits.
Environmental Management Are environmental systems that protect development from hazards identified and												
Pagentin	No No	No No	No No	No No	No No	No No	No No	No No	No No	No No		No No
De environmental policies maintain and restore protective ecosystems? De environmental policies provide incentives to development located outside protective arrowstems?	p.,	Ma	pia.	No No	p	Yes	No.	No.	BA.	No.		N-
protective ecosystems? On a scale of 1 - 5 how concerned is your lurisdiction about climate change?	160	2	NO	AD	No 4	1	3	1	PRO	2		3
					Frequency of severe weather events, need to							The cityleaders have
					Energy Conservation		flooding, farming,	Impact of sewere storms.		Impact of more severe		explored and discussed issues pertaining to this
What are some of your jurisdiction's biggest concerns about climate change? How does your jurisdiction currently assess the potential impacts of climate change on		evaporation of city take			Code		drought, heatwaves.	flooding, drought	L	storm systems		subject
now does your just section currently assess the potential impacts of comate change on heards and disaster risks We regularly conduct climate valuerability assessments.												
We consider historical data to estimate future changes.							×					x
We collaborate with climate experts and research institutions. Climate change impacts are not yet integrated into our assessments.		x			X			×				
To what extent does your jurisdiction account for the increased frequency and intensity of climate-related hazards?												
Climate-related hazards are not explicitly addressed in our plan. We consider climate charge, but it is not a primary focus.		×			x		×	х				x
We are in the process of developing strategies for climate-related hazards. We have specific strategies to address climate-related hazards.												
THE SHAPE APPLIES ASSESSED TO ADDRESS CAST AND ADDRESS.							We follow APWA					
							standards which incorporate changes in					
What are those strategies? How does your jurisdiction engage with climate science and data to inform hazard mitigation strategies?		1					runoff.		1			N/A
mitigation strategies? We regularly update our strategies based on the latest climate data.		1	1	1	1				1	1		
We regularly update our strategies based on the latest climate data. We incorporate climate projections into long-term planning.												
Climate science has a minimal impact on our mitigation plans.		х										х
We are still exploring how to incorporate climate data effectively. How does your jurisdiction plan to integrate climate adaptation measures into its												1
hazard mitigation strategies? We have clear adaptation measures outlined in our plan.												
We are considering adaptation, but it is not fully integrated yet. Climate adaptation is not yet addressed in our strategies.		x										×
We are currently exploring options for climate adaptation. Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to					x		×	х				1
address shared climate-related hazards? Yes, we have established regional collaborations for this purpose.										1	1	
We consider regional collaboration but have limited initiatives.					x		×					
Climate-related collaboration is not a current focus. We are considering the potential for regional collaboration.		×						х.				x
How does your jurisdiction plan to communicate climate-related risks and adaptation strategies to the public and stakeholders?												
We have comprehensive communication plans for climate risks. We include climate information in our general communication efforts.					×							×
Climate communication is not a significant part of our plans		x					v	¥				
We are developing strategies for effective climate communication. Is your jurisdiction actively involved in advocacy for climate change mitigation policies.								-				
at higher levels of government? Yes, we actively advocate for climate mitigation policies.											T T	
We participate in advocacy efforts, but it is not a primary focus. Climate advocacy is not a current priority for us.		х					X	x				x
We participate in advocacy efforts, but it is not a primary focus. Climate advocacy is not a current priority for us. We are considering engagement in climate advocacy.		×			×		×	х				х
Climate advocacy's not a current prorify for us. We are considering engagement in climate advocacy.		x			x		X We focus on ordinance changes, for example,	х				×
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Climate advocacy's not a current prorify for us. We are considering engagement in climate advocacy.		x			x		X We focus on ordinance changes, for example, the energy code and stream settacks.	х				X N/A
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Chand addressing and consequently first in. But a transport measurement in the data affection. Describe any environmental measurement include affection. Describe any environmental measurement measurement becape affect into hashed measurements and address and the second of the compared of the hashed data and the second of the compared of the comp	No No No	No. No.	No No No	Mo Yes Yes	Yes No No	No No	changes, for example, the energy code and stream sethacks. Yes Yes Yes We are Life, Safety, and Properly Preservation and assist in	Mo Mo Mo	No. No. No.	Yes Yes Yes		Yes Yes Yes Through education and
Chand address or and a second party from a line in a similar adjustment in facilities desired. Describe any persistant financyment measures through under the hazard Chandides any persistant financyment measures through under the hazard Chandides any persistant financyment measures through under the hazard Facilities and persistant of the comprehensive plant related to through other hazard property problems of the specific party of the plant of the reference of the hazard property persistant or the plant of persistant persistant Describes any public subfig measures through other limits benefit of the plant cover and growth Describes any public subfig measures through other limits benefit of the plant of the plant of Describes any public subfig measures through other limits benefit of the plant of the plant of Describes any public subfig measures through other limits benefit of the plant of Describes any public subfig measures through other limits benefit of Describes any public subfig measures through other limits benefit of Describes any public subfig measures through other limits benefit on the plant of the plant of Describes any public subfig measures through other limits and of migration plant.	No No No	100 100 100	No No No	Mo Yes Yes	Yes No No	Mo Mo Mo	changes, for example, the energy code and stream setbacks. Yes Yes Yes We are Life, Safety, and Properly Preservation	No No	No No No	Yes Yes Yes		Yes Yes Yes
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Chesta descript and screen level sector from the Chesta descript and the Chesta descript and Chesta descript. But an information programme the state descript and the Chesta descript and the based of the Chesta description and Chesta d	100 100 100 100 100 100 100	100 No. 100 No	100 100 100 100 100 100	Yes Yes	Yes	No N	changes, for example, the except of the exce	X NO NO NO Yes	100 100 100 100 100 100 100	Yes Yes As		Yes Yes Yes Yes Through education and updates to the general public. Yes Yes Yes Yes Yes Des Chywans studding coles and revoks with a contraction to the general coles and revoks with a contraction to the same revoks with a contraction of the same revoks with a
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List community organization(s):							Senior Services, CDRN, Senior Fund				City Aldermen City Emergency Managemen
Mow does your jurisdiction plan to ensure equitable access to hazard information,							Janes Fulls				LINE BELLEVI PRINCE
evacuation plans, and emergency resources for all community members, including											
underserved coostations? We use a variety of communication channels and languages.										Y	
We work with community leaders to disseminate information.					×					-	
We have plans for accessible formats and resources.		X									х
We are still developing strategies for inclusive communication. How does your jurisdiction intend to involve representatives from underserved							×	X			
populations in the hazard mitigation planning process?											
We have established advisory groups with diverse community members.											
We requirely hold outlife meetings to pather input.								Y			¥
We collaborate with community-based organizations. We are exploring ways to improve community angagement.		X			x		•			X	
Are there plans to collaborate with local community organizations, NGOs, or advocacy groups that have expertise in working with underserved populations during hazards											
groups that have expertise in working with underserved populations during nazaros and disasters?											
Yes, we have established partnerships and collaborations.							×				
We are considering such collaborations for future efforts. We have not actively explored these partnerships yet.					×			v			v
No, we do not plan to collaborate with external organizations.		_ ^						_ ^			_ ^
How does your jurisdiction plan to address financial barriers that might prevent underserved populations from accessing essential resources during emergencies?											
We have plans to provide subsidies or financial support.											
We are working on ways to ensure resource equity.					×		×				_
Financial barriers are not a focus of our plans. We have not yet considered financial barriers.		x						x		x	× .
Does your jurisdiction plan to review and update its plan to reflect changes in the											
vulnerabilities and needs of underserved populations over time? Yes, we have a scheduled review process that includes this aspect.	-	-				-	×				-
Yes, we have a scheduled review process that includes this aspect. We plan to incorporate changes if they are significant.							^				×
We have not yet considered regular updates for this purpose.					x					X	
No, we do not plan to review or update the plan.	-	×				-					-
							Offer Email invites and				
							will work on one-to-one				
							contact to engage these groups to help us review				
Do you have suggestions on how the community can actively engage underserved					All of community is		this plan and future plan				
populations in the planning and decision-making process?					included.		updates.				NA
											This is a small jurisdiction with a
											minimal underserved
Are there local organizations or community members who can act as advocates or							Senior senvices fund.				population. The city sovernment officials are
Are there local organizations or community members who can act as advocates or liaisons to help communicate emergency information and resources to underserved							Senior Services and KC				government officials are always open to public
populations?					Yes		Regional COAD				discussion.
Access and Functional Needs Does your jurisdiction's Local Emergency Operations Plan address provisions for				1							1
Does your jurisdiction's Local Emergency Operations Plan address provisions for individuals with access and functional needs?	No	Yes	No	No	Yes	No	Yes	No	Yes	No	No
		COLW has adopted								this is a work in progress	This will be an ongoing
If no, when will the plan be updated to include these community members? How does your jurisdiction currently identify individuals with access and functional.		Platte County plan				UNK		unknown		at this time.	issue.
needs within the community?											
Access and functional needs are not vet a focus in identification.		x									X
We are exploring methods to identify these individuals. We maintain a resistiv of individuals with specific needs.								X		X	
We collaborate with community organizations to identify such individuals.					x	x	×				
We collaborate with community organizations to identify such individuals.					x	×	Senior Senices, Senior				
We collaborate with community organizations to identify such individuals.					X Health Department, Senior thirst center	X Local Churches	Senior Senices, Senior Senices Fund, Outes.				
We collaborate with community organizations to identify such individuals. List organization(s) To what state are access and functional needs considered in your jurisdiction's					X Health Department, Senior living center	X Local Churches	Senior Senices, Senior				
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Ray County	Richmond	Ray County
Land Use		
Do the land use policies define an urban services area?	Yes	Yes
Do the land use policies contain provisions for hazard zone identification?	No	Yes
Do the land use policies discourage development or redevelopment within natural hazard		
areas?	No	No
Does the future land use map clearly identify natural hazard areas?	Yes	Yes
Does the plan provide adequate space for expected future growth in areas located outside		
natural hazard areas?	Yes	Yes
Do the land use policies require storm water engineering studies prior to development?	Yes	
How does your jurisdiction assess the potential impacts of land use changes on hazard		
vulnerability and disaster risk?		
We conduct regular assessments of land use patterns and hazards.		
We collaborate with urban planning experts to analyze potential impacts.		
Land use changes are not currently a focus in our hazard assessments.		
We are exploring methods to integrate land use considerations.		
How does your jurisdiction engage with urban planners and land use experts to inform	_	
hazard mitigation strategies?		
We regularly collaborate with planners to integrate land use considerations.		
We include urban planners in discussions, but improvements are needed.		
Urban planning perspectives are not currently integrated into our strategies.		
We are considering ways to involve urban planners in our planning process.		
Are there specific areas within your jurisdiction that are identified as vulnerable due to		
recent or anticipated land use changes?		
Yes, we have identified vulnerable areas due to land use changes.		
We consider general vulnerability, but specific areas are not defined.		
Vulnerability due to land use changes is not a current focus.		
We are in the process of assessing vulnerability related to land use.		
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to		
coordinate land use changes for hazard mitigation?		
Yes, we have established regional collaborations for this purpose.		
We consider regional coordination, but it is not fully integrated.		
Land use coordination is not a significant part of our plans.		
We are considering the potential for regional coordination.		
How does your jurisdiction plan to communicate land use changes and their potential		
impact on hazard vulnerability to the public?		
We have comprehensive communication plans for land use changes.		
We include land use information in our general communication efforts.		
Land use communication is not a significant part of our plans.		
We are developing strategies for effective land use communication.		
Is your jurisdiction actively involved in advocating for sustainable land use practices and		
policies at higher levels of government?		
Yes, we actively advocate for sustainable land use practices.		
We participate in advocacy efforts, but it is not a primary focus.		
Sustainable land use advocacy is not a current priority for us.		
We are considering engagement in land use advocacy.		
Describe any land use measures incorporated into hazard mitigation plan.		
Fransportation		
Does the transportation plan limit access to hazard areas?	No	
Is transportation policy used to guide growth to safe locations?	No	
Are movement systems designed to function under disaster conditions (e.g., evacuation)?	No	
Describe any transportation measures incorporated into hazard mitigation plan.		
Environmental Management		

Are anytire montal austome that protect development from because it and the development		
Are environmental systems that protect development from hazards identified and	No	No
mapped? De environmental policies maintain and restore protective essevetems?	No No	No No
Do environmental policies maintain and restore protective ecosystems?	No	INO
Do environmental policies provide incentives to development located outside protective	No	No
ecosystems? On a scale of 1. E how concorned is your jurisdiction about climate change?	1	INU
On a scale of 1 - 5 how concerned is your jurisdiction about climate change? What are some of your jurisdiction's biggest concerns about climate change?	1	
How does your jurisdiction currently assess the potential impacts of climate change on		
hazards and disaster risks		
We regularly conduct climate vulnerability assessments.		
We consider historical data to estimate future changes.		
We collaborate with climate experts and research institutions.		
Climate change impacts are not yet integrated into our assessments.	X	
To what extent does your jurisdiction account for the increased frequency and intensity of	Λ	
climate-related hazards?		
Climate-related hazards are not explicitly addressed in our plan.		
We consider climate change, but it is not a primary focus.		
We are in the process of developing strategies for climate-related hazards.	Х	
We have specific strategies to address climate-related hazards.		
What are those strategies?		
How does your jurisdiction engage with climate science and data to inform hazard		
mitigation strategies?		
We regularly update our strategies based on the latest climate data.		
We incorporate climate projections into long-term planning.		
Climate science has a minimal impact on our mitigation plans.		
We are still exploring how to incorporate climate data effectively.		
How does your jurisdiction plan to integrate climate adaptation measures into its hazard		
mitigation strategies?		
We have clear adaptation measures outlined in our plan.		
We are considering adaptation, but it is not fully integrated yet.		
Climate adaptation is not yet addressed in our strategies.		
We are currently exploring options for climate adaptation.		
Does your jurisdiction collaborate with neighboring jurisdictions or regional entities to		
address shared climate-related hazards?		
Yes, we have established regional collaborations for this purpose.		
We consider regional collaboration but have limited initiatives.		
Climate-related collaboration is not a current focus.		
We are considering the potential for regional collaboration.		
How does your jurisdiction plan to communicate climate-related risks and adaptation		
strategies to the public and stakeholders?		
We have comprehensive communication plans for climate risks.		
We include climate information in our general communication efforts.		
Climate communication is not a significant part of our plans.		
We are developing strategies for effective climate communication.		
Is your jurisdiction actively involved in advocacy for climate change mitigation policies at		
higher levels of government?		
Yes, we actively advocate for climate mitigation policies.		
We participate in advocacy efforts, but it is not a primary focus.		
Climate advocacy is not a current priority for us.		
We are considering engagement in climate advocacy.		
Describe any environmental management measures incorporated into hazard mitigation		
plan.		
Public Safety		
Are the goals and policies of the comprehensive plan related to those of the HMP?	No	
Is safety explicitly included in the plan's growth and development policies?	Yes	

Does the monitoring and implementation section of the plan cover safe growth objectives?	No	
Describe any public safety measures incorporated into hazard mitigation plan.		
Building Codes		
Does the building code contain provisions to elevate construction to withstand hazard forces?	Voc	
	Yes	
Does the building code contain wind resistance provisions to strengthen construction to withstand hazard forces?	Voc	
	Yes Yes	
Does the building code contain safe room or storm shelter requirements? Describe any building code measures incorporated into hazard mitigation plan.	162	
Zoning Ordinances		
Does the zoning ordinance conform to the comprehensive plan in terms of discouraging	Yes	
development or redevelopment within natural hazard areas? Does the ordinance contain natural hazard overlay zones or districts that set conditions for	162	
land use within such zones?	No	
Does the coding ordinance contain mitigation performance standards?	No	
Does the ordinance prohibit development within, or filling of, wetlands, floodways, and	Voc	
floodplains?	Yes	
Do rezoning procedures recognize natural hazard areas as limits on zoning changes that	Voc	
allow greater intensity or density of use?	Yes	
Describe and ordered and in the control of the cont		
Describe any zoning ordinance measures incorporated into hazard mitigation plan.		
Subdivision Regulations	V	
Do the subdivision regulations contain an adopted hazard disclosure?	Yes	
Do subdivision regulations contain a provision for soil report evaluations?	Yes	
Do the subdivision regulations restrict the subdivision of land within or adjacent to natural		
hazard areas?	Yes	
Do the regulations provide for conservation subdivisions or cluster subdivisions in order to		
conserve environmental resources?	Yes	
Do the regulations allow density transfers where hazards exist?	No	
Describe any subdivision regulation measures incorporated into hazard mitigation plan.		
Capital Improvement Program and Infrastructure Policies		
Does the capital improvement program limit expenditures on projects that would		
encourage development in areas vulnerable to natural hazards?	No	
Do infrastructure policies limit extension of existing facilities and services that would		
encourage development in areas vulnerable to natural hazards?	No	
Does the capital improvement program provide funding for hazard mitigation projects?	No	
Describe any capital improvement program and infrastructure policy measures		
incorporated into hazard mitigation plan.		
Underserved Populations		
How does your jurisdiction identify and define underserved populations for the purpose of		
hazard mitigation planning?		
We rely on census data and demographics.	Х	
We conduct community assessments and consultations.		
We use a combination of data sources and community input.		
We have not explicitly defined underserved populations.		
What steps has your jurisdiction taken to assess the specific vulnerabilities and challenges		
faced by underserved populations during hazards and disasters?		
We have not yet focused on this aspect of vulnerability assessment.	Х	
We have conducted vulnerability assessments targeting these populations.		
We have analyzed historical disaster impacts on different groups.		
We have engaged with community organizations to gather insights.		
List community organization(s):		

		1
How does your jurisdiction plan to ensure equitable access to hazard information,		
evacuation plans, and emergency resources for all community members, including		
underserved populations?		
We use a variety of communication channels and languages.		
We work with community leaders to disseminate information.		
We have plans for accessible formats and resources.		
We are still developing strategies for inclusive communication.	Х	
How does your jurisdiction intend to involve representatives from underserved populations		
in the hazard mitigation planning process?		
We have established advisory groups with diverse community members.		
We regularly hold public meetings to gather input.		
We collaborate with community-based organizations.	V	
We are exploring ways to improve community engagement.	X	
Are there plans to collaborate with local community organizations, NGOs, or advocacy		
groups that have expertise in working with underserved populations during hazards and		
disasters?		
Yes, we have established partnerships and collaborations.		
We are considering such collaborations for future efforts.		
We have not actively explored these partnerships yet.		
No, we do not plan to collaborate with external organizations.	Х	
How does your jurisdiction plan to address financial barriers that might prevent		
underserved populations from accessing essential resources during emergencies?		
We have plans to provide subsidies or financial support.		
We are working on ways to ensure resource equity.		
Financial barriers are not a focus of our plans.	Х	
We have not yet considered financial barriers.	Λ	
,		
Does your jurisdiction plan to review and update its plan to reflect changes in the		
vulnerabilities and needs of underserved populations over time?		
Yes, we have a scheduled review process that includes this aspect.	.,	
We plan to incorporate changes if they are significant.	Х	
We have not yet considered regular updates for this purpose.		
No, we do not plan to review or update the plan.		
Do you have suggestions on how the community can actively engage underserved		
populations in the planning and decision-making process?		
Are there local organizations or community members who can act as advocates or liaisons		
to help communicate emergency information and resources to underserved populations?	Yes	
Access and Functional Needs		
Does your jurisdiction's Local Emergency Operations Plan address provisions for		
individuals with access and functional needs?	Yes	
If no, when will the plan be updated to include these community members?		
How does your jurisdiction currently identify individuals with access and functional needs		
within the community?		
Access and functional needs are not yet a focus in identification.		
	Х	
vve are exploring methods to identify these individuals.	^	
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We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan.	X	
We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are in the process of developing strategies for these needs.	X	
We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are in the process of developing strategies for these needs. We consider these needs, but they are not fully integrated.	X	
We maintain a registry of individuals with specific needs. We collaborate with community organizations to identify such individuals. List organization(s) To what extent are access and functional needs considered in your jurisdiction's plans? Access and functional needs are not explicitly addressed in our plan. We are in the process of developing strategies for these needs.	X	

		1
How does your jurisdiction engage with organizations that support individuals with access		
and functional needs in the planning process?		
We have active partnerships with such organizations.	X	
We collaborate occasionally, but it is not a consistent practice.		
We have not yet engaged with these organizations.		
We are considering ways to involve them in the planning process.		
Are there specific shelters or facilities designated to accommodate individuals with access		
and functional needs during emergencies?		
Yes, we have designated accessible shelters and facilities.	Х	
We consider accessibility but do not have specific facilities.		
Accessibility is not a priority in our shelter planning.		
We are exploring options for accessible shelters.		
How does your jurisdiction ensure that emergency communication methods are accessible		
to individuals with various communication needs?		
We have accessible communication methods established.		
We consider diverse communication needs but need improvement.		
Accessibility in communication is not yet well addressed.	Х	
We are developing plans for accessible communication.		
List methods		
How does your jurisdiction plan to provide transportation assistance to individuals with		
mobility challenges during evacuations?		
We have established transportation assistance plans.	Х	
We consider transportation but need clearer strategies.		
Transportation assistance is not yet part of our plans.		
We are discussing options for transportation assistance.		
Does your jurisdiction actively engage individuals with access and functional needs in your		
planning processes?		
Yes, we involve them as key stakeholders.		
We involve them to some extent, but improvements are needed.		
We have not yet engaged them in planning discussions.	Х	
We are considering ways to involve them in the process.		
How does your jurisdiction plan to ensure that recovery efforts after a disaster prioritize the		
unique needs of individuals with access and functional needs?		
We have established strategies for inclusive recovery.		
We consider recovery needs, but more specific plans are needed.		
Recovery efforts are not yet focused on these needs.	Х	
We are discussing potential recovery strategies.		
Other		
Do small area or corridor plans recognize the need to avoid or to mitigate natural hazards?	No	
Is there an adopted evacuation and shelter plan to deal with emergencies from natural		
hazards?	No	
Do economic development or redevelopment strategies include provisions for mitigation		
of natural resources?	No	
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Chapter 4: Hazard Identification and Risk Assessment

List of Tables

Table 4.2: Cass County Hazard Summary
Table 4.3: Cass County Hazard Summary
Table 4.4: Clay County Hazard Summary
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Table 4.7: Ray County Hazard Summary17

Requirement §201.6(c)(2):

The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

4.1 Overview and Changes from 2020 Plan

For the 2025 Plan Update, the Planning Team continued to focus on five natural hazards in the region. The selected hazards are consolidated into five main categories: tornadoes, severe thunderstorms, severe winter weather, heat, and flooding. The heat category includes a profile on drought and heat waves. The flooding category includes a profile on flooding, levee failures, and dam failures. Focusing the Plan on natural disasters was done to narrow each jurisdiction's focus and simplify the selection of, and implementation for, mitigation efforts. The identification of these priority natural hazards was made by the project steering committee and was informed by a survey of jurisdiction representatives and the public.

Each hazard profile includes:

- Description
- Historical Occurrences
- Probable Location
 - Magnitude
- Impact
- Probability of Future Occurrence
- Extent
 - Probable Duration
- Vulnerability Analysis
- Problem Statements

Each profile may differ slightly due to the characteristics of the hazard.

The areas that may be affected by weather-related natural hazards are very difficult to identify. Where possible, the locations or geographic areas that may be affected are mapped. Tornadoes, for example, may affect any part of the Kansas City metropolitan area. Severe thunderstorms, severe winter weather, drought, and heat waves are usually widespread weather events that affect parts of the region or the entire region. In the *Probable Locations* section of each hazard profile, a magnitude rating was given to the five-county area estimating the percent of a county that could be affected during a hazard event. The methodology is explained in *Section 4.2*.

Certain locations — because of specific characteristics of the built environment, socio-economic conditions or a combination of these elements — may be more susceptible to these natural hazards. The Vulnerability Analysis in **Section 4.5** highlights these areas and populations.

Many sources were researched for data and information relating to hazards in the Kansas City metropolitan area. Principal sources of all-hazard information include FEMA and SEMA. The National Climate Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA) and the National Weather Service (NWS) were primary sources of information and statistics on weather and/or climate-related hazards.

Hazard-specific databases were also researched for this Plan. For instance, the National Drought Mitigation Center at University Nebraska Lincoln was used for the drought profile. The primary sources of information on dams and dam safety were the Missouri Department of Natural Resources (MDNR) Dam Safety Division and the U.S. Army Corps of Engineers' (USACE) National Inventory of Dams (NID). The primary source for information on levees was the National Levee Database.

Other sources of information include MARC Research Services Department; city and county Web sites and officials; existing county, regional and state plans, reports and documents; newspaper and news organization Web sites, articles and accounts of natural disasters; other state and federal agencies, such as the U.S. Census Bureau and Missouri Census Data Center (MCDC); and colleges and universities, especially the University of Missouri and University of Missouri Extension. References are noted at the end of each hazard profile with a bibliography of research sources.

Several data deficiencies noted in the 2020 Plan have been corrected or new sources of information identified. These are noted where applicable.

4.1.1 Hazards Not Included and Reasons for Elimination

While the Plan was consolidated to only include natural hazards, there are two natural hazards that were removed from the Plan. Wildland fires and earthquakes are not included in this Plan due to low probabilities. In the 2015 Plan, earthquakes rated 'low' in all modified Mercalli levels for future probable severity. The maximum percentage of any portion of any county affected by wildfires, was 7.5 percent. The majority of every county in the planning area was 0%-1% affected by wildland fires.

All man-made hazards were removed from this Plan to help jurisdictions narrow their mitigation efforts. The following hazards may be of concern to one or more local jurisdictions but were not included in the 2020 plan: emerging infectious disease, transboundary animal disease, hazardous materials incidents, mass transportation accidents, cyber disruption, public mass shooter incidents, civil disorder, and terrorism.

4.2 Community-Driven Risk Assessment

As part of the 2025 Plan Community Profile Survey, each jurisdiction was asked to reassess its risks for the natural hazards identified in the Plan. "Cascading hazards," those hazards resulting from a natural disaster, were listed to be considered when reassessing risk. **Table 4.1** shows the relationship between the region's identified disasters and categories of possible cascading hazards. Any of these cascading hazards alone or in combination with the direct adverse effects of a disaster can potentially impact emergency response operations in affected communities.

Table 4.1: Cascading Hazards Resulting from Disasters								
Natural Disaster	Power and Communications Interruption	Water Supply Interruption	Business Interruption	Computer Failure and/or Loss of Records	Transportation Interruption	Health and/or Environmental Hazards		
Tornado	Х	Х	Х	Х	Х	Х		
Severe Thunderstorms	Х		Х	Х				
Severe Winter Weather	Х	Х	Х	Х	Х	Х		
Drought		Х	Х			Х		
Heat Wave		Х	Х			Х		
Flood	Х	Х	Х	Х	Х	Х		
Levee Failure	Х	Х	Х	Х	Х	X		
Dam Failure	Х	Χ	X	Х	Х	X		

X = 50 percent or greater chance of cascading effect resulting from disaster

As each county noted the risk each hazard poses to their governance, hazards were re-prioritized or deleted. If a hazard was not of concern, the jurisdiction was asked to describe why it was eliminated. Risk is "the potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets."

4.3 Hazard Identification

Requirement [The risk assessment shall include a] description of the type, location, and extent of all §201.6(c)(2)(i): natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events. Description of the eight sections describing each hazard:

- **Description** section explains the hazard.
- Historical Occurrences section offers a description of all hazard events occurring in the region.
- **Probable Location** section describes the geographic areas that may be affected. Along with the magnitude, or percent, of the county that can be affected during a hazard event.
- Impact section describes the effects a hazard can have on property and people.

- **Probability of Future Occurrence** section describes the likelihood of a hazard occurring in the future.
- **Extent** section describes classification methods and advisories commonly used to describe the severity of a hazard.
 - Probable Duration subsection describes the hazard duration and the potential speed of onset.
- **Vulnerability Analysis** section describes areas and populations in the region that are most susceptible to the hazard.
- **Problem Statements** section outlines concerns and vulnerabilities identified by jurisdictions in relation to the hazard.

Tables 4.3 through 4.8 contain a summary analysis of the identified priority hazards that could potentially affect Cass, Clay, Jackson, Platte, and Ray counties. The summaries include values for magnitude, impact, and probability of future occurrence. The metrics in the summary tables differ from the previous plan due to the omission of the statistical risk assessment. Now, the values are shown as unique, county percentages instead of 'high, medium, or low' rankings. Each hazard is profiled in detail starting in Section 4.6.

4.4 Hazard Analysis Summary and Calculations

<u>Magnitude</u> is the potential percentage range of the land area of the county that can be affected by a hazard. The ranking was given to the counties based on the characteristics of the hazard. Magnitude is ranked on a scale of four levels:

- 1. Less than 10 percent
- 2. 10 to 25 percent
- 3. 25 to 50 percent
- 4. More than 50 percent

<u>Impact</u> includes the damage totals (crop and property), injuries, and deaths of historical occurrences, where applicable.

<u>Probability of Future Occurrence</u> is the percent chance that the hazard will occur in a given year. Variables used to calculate the probability are listed in the summary charts. Many hazards have events occurring more than once a year. The total events are noted in the chart, however only the number of years with one or more events were used to find the probability. For example, 40 tornadoes have struck Cass County over the past 73 years. However, in the 73 years there were only 29 years experiencing one or more tornado events. Thus, Cass County has a 40 percent chance of having a tornado event in any given year (29 divided by 73 times 100). **Table 4.2** shows the layout of the hazard summary tables.

Table 4.2: Cass County Hazard Summary							
Hazard			-	Probability of I	Future Occurre	ence	
(period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability	
Tornadoes (1950-2024)	>50%	Damages: \$31.45M Deaths: 3 Injuries: 26	40	29	73	40%	

The data contained in **Tables 4.3-4.7** is aggregated for Cass, Clay, Jackson, Platte and Ray counties because every jurisdiction and unincorporated part of each county did not fully participate in this plan. To compensate for data lost due to lack of response, the information below is summarized at the county level to provide a more concise regional assessment. All information was collected from the National Weather Service's NCDC online database. Each hazard is profiled in detail starting in Section 4.6.

Table 4.3: Cass County Hazard Summary						
			Probability of Future Occurrence			
Hazard (period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability
Tornadoes	>50%¹	Damages: \$31.45M Deaths: 3	40	29	73	40%
(1950-2024)		Injuries: 26				
Severe Thunderstorms (including lightning and hail events)	10%-25%	Damages: \$4.48M Deaths: 1 Injuries: 7	498	62	65	95%
(1955-2024) Severe Winter Weather	>50%	Damages: \$7.3M ² Deaths: 0	61	22	28	79%
(1996-2024)		Injuries: 0				
Heat Wave* (1998-2024)	>50%	Deaths: 2 Injuries: 0	15	7	26	27%
Drought (2000-2024)	>50%	Total Reports: 118 ³ Total Impacts: 36 ³	21	6	24	25%
Flooding (1996-2024)	25%-50%	Damages: \$728K Deaths: 0 Injuries: 0	68	24	28	86%
Levee Failures	0	Not in the Hazard Area	Not in the Hazard Area	Not in the Hazard Area	Not in the Hazard Area	0%
Dam Failures (No known events on record)	<10%	Damage Likely	0	0	0	Unknown

¹ Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, a magnitude of 4 is assigned here to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

^{*}Heat wave data is aggregated for multiple Missouri NWS Forecast Zones affected by heat wave events, which included Cass, Clay, Jackson, Platte and Cass counties. County-specific data is unavailable.

Table 4.4: Clay County Hazard Summary							
			Pro	bability of Fut	ure Occurre	nce	
Hazard (period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability	
Tornadoes (1950-2024)	>50% ¹	Damages: \$114.21M Deaths: 0 Injuries: 30	34	30	73	41%	
Severe Thunderstorms (including lightning and hail events) (1955-2024)	10%-25%	Damages: \$7.31M Deaths: 0 Injuries: 4	620	65	69	94%	
Severe Winter Weather (1996-2024)	>50%	Damages: \$272K ² Deaths: 0 Injuries: 0	49	24	28	86%	
Heat Wave* (1998-2024)	>50%	Deaths: 2 Injuries: 0	18	7	26	27%	
Drought (2000-2024)	>50%	Total Reports: 108 ³ Total Impacts: 32 ³	18	5	24	21%	
Flooding (1996-2024)	25%-50%	Damages: \$4.82M Deaths: 0 Injuries: 0	125	22	28	79%	
Levee Failures	10%-15%	N/A	N/A	N/A	N/A	N/A	
Dam Failures (No known events on record)	<10%	Damage Likely	0	0	0	Unknown	

Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, a magnitude of 4 is assigned here to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

² Damage estimates aggregated for all counties affected by winter storms.

³ Report and Impact data covers 2009-2024 only

² Damage estimates aggregated for all counties affected by winter storms.

³ Report and Impact data covers 2009-2024 only

^{*}Heat wave data is aggregated for multiple Missouri NWS Forecast Zones affected by heat wave events, which included Cass, Clay, Jackson, Platte and Cass counties. County-specific data is unavailable.

Table 4.5: Jackson County Hazard Summary							
			Pro	bability of Fut	ure Occurre	nce	
Hazard (period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability	
Tornadoes (1950-2024)	>50% ¹	Damages: \$11.58M Deaths: 37 Injuries: 193	48	36	73	49%	
Severe Thunderstorms (including lightning and hail events) (1955- 2024)	10%-25%	Damages: \$28.86M Deaths: 1 Injuries: 13	548	67	69	97%	
Severe Winter Weather (1996-2024)	>50%	Damages: \$17.02M ² Deaths: 3 Injuries: 0	77	24	28	86%	
Heat Wave* (1998-2024)	>50%	Deaths: 48 Injuries: 0	28	12	26	46%	
Drought (2000-2024)	>50%	Total Reports: 113 ³ Total Impacts: 70 ³	24	6	24	25%	
Flooding (1996-2024)	25%-50%	Damages: \$22.68M Deaths: 1 Injuries: 0	206	27	28	96%	
Levee Failures	10%-15%	N/A	N/A	N/A	N/A	N/A	
Dam Failures (No known events on record)	<10%	Damage Likely	0	0	0	Unknown	

¹ Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, a magnitude of 4 is assigned here to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

² Damage estimates aggregated for all counties affected by winter storms.

³ Report and Impact data covers 2009-2024 only

^{*}Heat wave data is aggregated for multiple Missouri NWS Forecast Zones affected by heat wave events, which included Cass, Clay, Jackson, Platte and Cass counties. County-specific data is unavailable.

Table 4.6: Platte County Hazard Summary						
Hazard			Probability of Future Occurrence			
(period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability
Tornadoes (1950-2024)	>50% ¹	Damages: \$35.61M Deaths: 0 Injuries: 17	19	16	73	22%
Severe Thunderstorms (including lightning and hail events) (1955-2024)	10%-25%	Damages: \$2.05M Deaths: 0 Injuries: 1	425	58	69	84%
Severe Winter Weather (1996-2024)	>50%	Damages: \$5.272M ² Deaths: 0 Injuries: 0	64	26	28	93%
Heat Wave (1998-2024)	>50%	Deaths: 1 Injuries: 0	19	7	26	27%
Drought (2000-2024)	>50%	Total Reports: 143 ³ Total Impacts: 40 ³	18	5	24	21%
Flooding (1996-2024)	25%-50%	Damages: \$45.4M Deaths: 0 Injuries: 0	107	19	28	68%
Levee Failures	10%-15%	N/A	N/A	N/A	N/A	N/A
Dam Failures (No known events on record)	<10%	Damage Likely	0	0	0	Unknown

¹ Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, a magnitude of 4 is assigned here to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

² Damage estimates aggregated for all counties affected by winter storms.

³ Report and Impact data covers 2009-2024 only

^{*}Heat wave data is aggregated for multiple Missouri NWS Forecast Zones affected by heat wave events, which included Cass, Clay, Jackson, Platte and Cass counties. County-specific data is unavailable.

Table 4.7: Ray County Hazard Summary							
			Pro	bability of Fut	ure Occurren	ce	
Hazard (period with data on record)	Magnitude	Impact	Total Events	Years with 1+ Events	Years with data on record	Probability	
Tornadoes		Damages: \$6.45M					
(1950-2024)	>50%¹	Deaths: 2	33	28	73	38%	
(1550-2024)		Injuries: 21					
Severe		Damages: \$1M					
Thunderstorms		Deaths: 0					
(including lightning and hail events) (1955-2024)	events)	Injuries: 0	172	49	69	71%	
Severe Winter		Damages: \$300K ²	47	20	28	71%	
Weather		Deaths: 0					
(1996-2024)		Injuries: 0					
Heat Wave*	>50%	Deaths: 0	12	6	26	220/	
(1998-2024)	>50%	Injuries: 0	12	Б	26	23%	
Drought	/	**Total Reports: 100 ³	19	6	24	250/	
(2000-2024)	>50%	Total Impacts: 27 ³	19			25%	
		Damages: \$101K					
Flooding	25%-50%	Deaths: 1	54	16	28	57%	
(1996-2024)		Injuries: 0					
Levee Failures	10%-15%	N/A	N/A	N/A	N/A	N/A	
Dam Failures (No known events on record)	<10%	Damage Likely	0	0	0	Unknown	

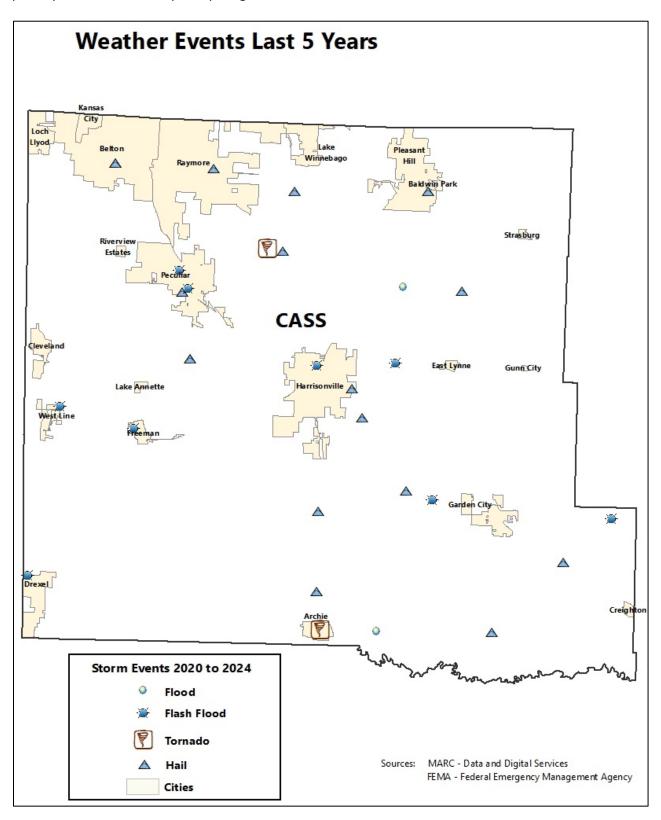
¹ Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, a magnitude of 4 is assigned here to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

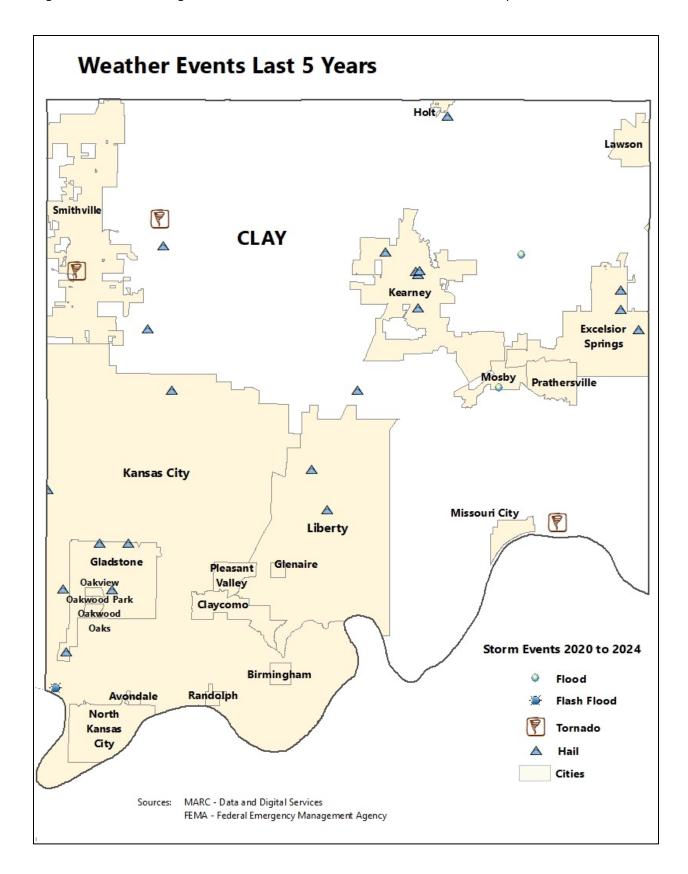
² Damage estimates aggregated for all counties affected by winter storms.

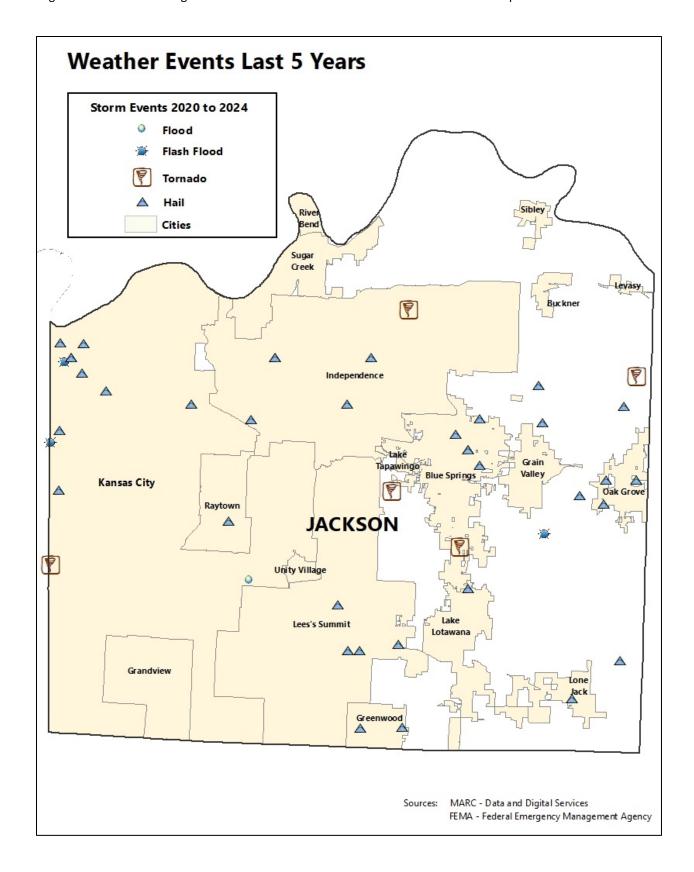
³ Report and Impact data covers 2009-2024 only

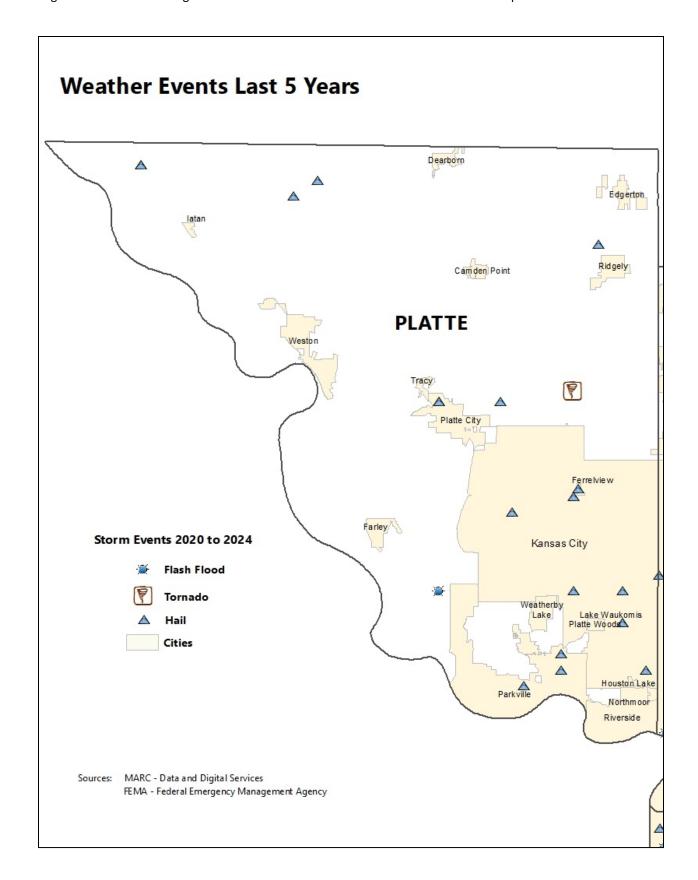
^{*}Heat wave data is aggregated for multiple Missouri NWS Forecast Zones affected by heat wave events, which included Cass, Clay, Jackson, Platte and Cass counties. County-specific data is unavailable.

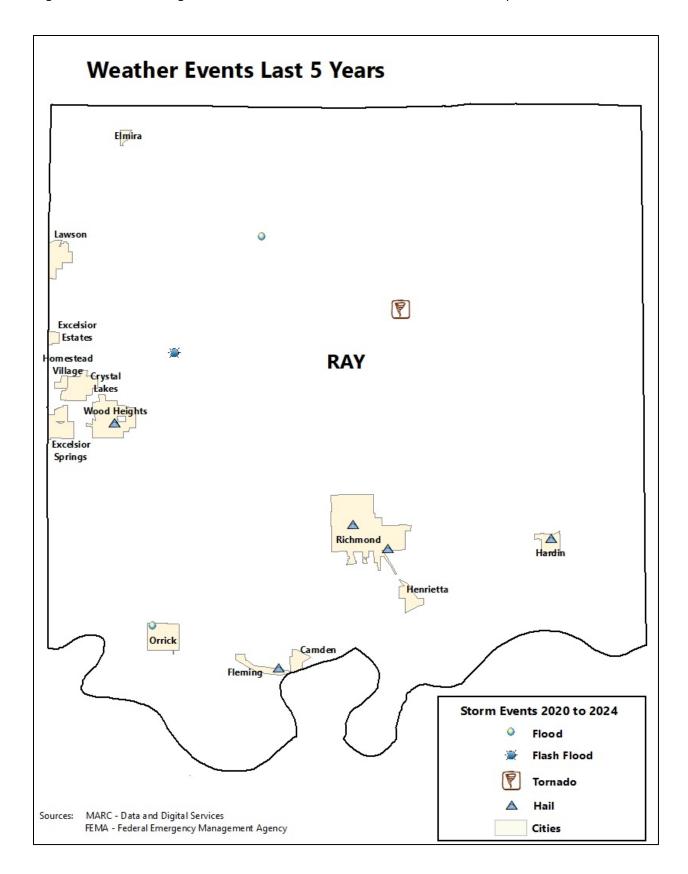
The following maps below illustrate the significant natural hazard events that have occurred over the past 5 years in each of the participating counties.











Data limitations:

The NCDC database does not contain information on events prior to 1950, and for some hazards there is no information prior to 1996 or 1998; this relatively short data set lends itself to the possibility of skewed probability of occurrence outcomes. To compensate for this, only the years in which events occurred, and not the total number of events, were factored when determining probability—as demonstrated in the preceding Cass County tornado example. If the total number of events is divided by the years in question, then the possibility exists for achieving a greater than a 100 percent probability of an event occurring. For instance, taking Cass County again, but this time using floods, there have been 54 floods in Cass County since 1996 (the earliest data is available). If these numbers were used to determine probability, then 54 events divided by 28 years equals an over 200 percent probability of a flood event occurring. But, if only the years in which at least one flood occurred are used rather than the total number of floods, then the probability becomes more realistic. In this case, 21 of the 28 years on record had flood events, thus there is a 75 percent probability of at least one flood occurring a year.

Severe winter weather damage estimates are calculated for the total area affected by the storm, which generally includes a group of counties. Therefore, each county's exact loss estimate is unknown. It is likely that damage estimates from each winter storm overlap from county to county. To compensate for this, the total damage costs for all storms that included the selected county are described here to provide a comprehensive understanding of damages from winter storms.

The future probability of occurrence for drought is calculated using historic events but due to the complexity of determining drought conditions the percentage lacks credibility. An additional measure of drought future probability is discussed in *Section 4.12*.

Where other data limitations exist, they are explained separately in each hazard.

4.5 Vulnerability Assessment

"Vulnerability" describes an asset's level of exposure or susceptibility to damage from natural hazards. The vulnerability of an asset—such as residential and commercial property, critical facilities or infrastructure—depends on a variety of factors, including its construction, contents and/or economic value of its functions. A vulnerability assessment provides policymakers, emergency managers and planners with information on the extent or severity of loss of life, injuries and/or property damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment attempts to combine information related to hazard identification with an inventory of commercial property, residential property, public facilities (including critical facilities) and infrastructure. Information detailed in **Section 2: Regional Profile** was used to approximate value of buildings and infrastructure and identify likely affected populations. Because hazards have different impact areas and characteristics, varying methodologies were used to estimate vulnerability and are described below.

Additionally, the last section of each hazard profile includes a series of *problem statements*, which are statements identified by each county to describe its greatest vulnerabilities to specific hazards and to be addressed in the mitigation strategy. When appropriate, specific jurisdictions are highlighted.

4.5.1 Vulnerability Assessment for "Non-Area Specific" Hazards

Tornadoes, severe thunderstorms, severe winter weather, drought, and heat waves are identified in this Plan and are best characterized as "non-area specific" hazards, meaning the hazard is not confined to a defined geographic area and has an equal chance of occurring (and impacting) any given portion of the planning area versus another. This presents serious challenges when attempting to describe a jurisdiction's vulnerability in realistic terms, as the totality of its assets could be considered vulnerable and offers little definitive guidance as to where jurisdictions should direct limited resources for mitigation efforts.

The vulnerability analysis for non-area specific hazards remain broad estimates when outlining areas and population that could be most affected in a hazard event. Each profile includes different information based on the specific hazard. The Vulnerability Analysis section will include one or more of the following topics:

- Critical Facility information in the form of maps or tables.
- Vulnerable Population information in the form of maps or graphs.
- **Vulnerable Asset** descriptions including population, structures, and other community assets determined to have value and susceptible to damage and loss from hazard events.

4.5.2 Vulnerability Assessment for "Area Specific" Hazards

The three remaining hazards – flooding, levee failure, and dam failure are considered "area specific" hazards, in that they have generally known geographic boundaries and can impact specific portions of the planning area. Because more is known about these hazards, detailed loss estimates can be conducted for each. For flooding, HAZUS-MH was used to calculate potential losses by jurisdiction (see flooding hazard profile for more information). For levee failures, building parcel data was overlaid on a GIS layer for areas protected by levees to estimate the potential loss of buildings within the protected area by impacted jurisdiction (see levee failure hazard profile). For dam failure, jurisdictions and buildings in wildland/urban interface areas susceptible to fire were identified and mapped. These vulnerability assessments estimate losses to people, buildings and infrastructure potentially at risk from hazards in each county.

Building and income loss:

- Potential Impacts identified as consequences or effects on a community and its vulnerable assets
- Loss Estimates based on a jurisdiction's building stock or other hazard-specific disaster impacts

Attachments

Attachment 4-1: Summary Assessment of Risks (Cass, Clay, Jackson, Platte & Ray Counties and Kansas City)

ⁱ FEMA *Local Mitigation Planning Handbook,* May 2023



Tornadoes are violently rotating columns of air extending from a thunderstorm to the ground (NOAA Web site, online data). Though most often associated with the central United States, tornadoes have been documented in all 50 **States** (SEMA State Hazard Analysis, A-1; NOAA SPC Web site, online data). Tornadoes can also occur at any time of the year, although the peak season for tornadoes in the Kansas City area is the spring and summer (NOAA Web site, online data). In addition, tornadoes can occur at any time of the day, though they are most likely to occur between 3 and 9 p.m. The weather conditions conducive to the formation of tornadoes often produce a variety of other dangerous storm-related weather conditions, such as severe thunderstorms, downbursts, straight-line winds, lightning, hail and heavy rains (SEMA State Hazard Analysis, A-1). Refer to the Severe Thunderstorms Hazard Profile in Section 4.7 for these types of weather conditions.

4.6 Tornadoes



Tornadoes are formed from the largest thunderstorms, and the most destructive tornadoes are formed by "supercells," which are, according to NOAA's Storm Prediction Center (SPC), "rotating thunderstorms with a well-defined radar circulation called a mesocyclone." SEMA Hazard Analysis provides a vivid description of the formation of a tornado:

[The] cumulonimbus clouds [in a thunderstorm] can reach heights of up to 55,000 feet above ground level, and are commonly formed when warm, gulf air is warmed by solar heating. The moist warm air is overridden by the dry cool air provided by the jet stream. This cold air presses down on the warm air preventing it from rising, but only temporarily. Soon, the warm air forces its way through the cool air and the cool air moves downward past the rising warm air. Adding to all this is the deflection of the earth's surface, and the air masses will start rotating. This rotational movement around the location of the breakthrough forms a vortex, or funnel. If the newly created funnel stays in the sky, it is referred to as a funnel cloud. However, if it touches the ground, the funnel officially becomes a tornado."

The average period of a tornado's ground contact is 30 minutes, covering an average distance of 15 miles a review of Missouri tornadoes occurring between 1950 and 1996, the National Weather Service calculated a mean path length of 2.27 miles and a mean path area of 0.14 square miles.ⁱⁱⁱ

The damage associated with tornadoes is primarily caused by wind speed; in general, the greater the wind speed, the greater the potential for damage. The violently rotating winds of a tornado can break branches and uproot trees, tear roofs off houses, lift vehicles off the ground, remove walls from houses and topple well-constructed homes and other structures. In addition, a large amount of debris can be generated by a tornado's destructive winds and objects can become "missiles," indirectly damaging structures and injuring or killing people through the force of their impact.

Tornadoes are classified according to the Enhanced Fujita Tornado Damage Scale, commonly referred to as the EF-Scale. The Enhanced Fujita scale, which became standard in 2007, replaced the replaced Fujita scale. The NWS is the only federal agency with authority to provide 'official' tornado EF Scale ratings. The National Weather Service explains, "the goal is to assign an EF Scale category based on the highest wind speed that occurred within the damage path. First, trained NWS personnel will identify the appropriate damage indicator (DI) [see list below] from more than one of the 28 used in rating the damage. The construction or description of a building should match the DI being considered, and the observed damage should match one of the 8 degrees of damage (DOD) used by the scale. The tornado evaluator will then make a judgment within the range of upper and lower bound wind speeds, as to whether the wind speed to cause the damage is higher or lower than the expected value for the particular DOD. This is done for several structures not just one, before a final EF rating is determined." (See Table 4.6.1)

Source: NOAA Web site, online data

4.6.1

Table 4.6.1 below compares the F-scale to the EF-scale:

Table 4.6.1 Enhanced Fujita Scale								
Derive	d EF Scale	Opera	tion EF Scale					
EF Number	Three-Second Gust (mph)	EF Number	Three-Second Gust (mph)					
0	65-85	0	65-85					
1	86-109	1	86-110					
2	110-137	2	111-135					
3	138-167	3	136-165					
4	168-199	4	166-200					
5	200-234	5	Over 200					

Historical Occurrences

According to the National Climatic Data Center (NCDC), the Kansas City area has been struck by 160 tornadoes of varying degrees of intensity since January 1, 1950. These tornadoes in Cass, Clay, Jackson, Platte and Ray counties have caused 42 deaths and 289 injuries. Most notably, the Ruskin Heights Tornado of May 20, 1957, was the deadliest and most destructive tornado to ever strike the Kansas City metro area. The track of this F5 tornado was 71 miles long and averaged 400 yards wide. This massive tornado was responsible for 44 deaths in the bistate Kansas City area, including 37 people killed in Jackson County alone and 531 injuries. The bistate Kansas City area, including 37 people killed in Inflation (in 1997 dollars), the damage from this tornado was \$228 million, making it the 14th most damaging tornado in US history. The current costliest tornado on record, according to NOAA, is the EF5 tornado devastating Joplin, Mo. on May 22, 2011, with estimated \$2.8 billion in damage (2011 dollars).

Data Limitation: One limitation to this data is that many tornadoes that might have occurred in uninhabited areas, as well as some inhabited areas, have not been reported. NOAA Storm Data and the Storm Events Database report tornadoes in segments. Event data may show that a tornado contains multiple segments if it crosses a county or state line. Also, tornadoes that lift off the ground in less than five minutes or 2.5 miles are considered separate tornadoes. The NOAA data for tornadoes is adjusted for inflation and other economic effects.

Table 4.6.2 below lists the number of tornadoes by EF-Scale rating in Cass, Clay, Jackson, Platte and Ray counties. No additional deaths caused by tornadoes have occurred since the last plan update; however, 12 injuries occurred in Tarsney Lakes in Jackson County on March 6, 2017, due to an EF3 tornado.

Table 4.	Table 4.6.2: Kansas City Area Tornadoes by EF-Scale (1950-2018)							
EF-Scale	Cass	Clay	Jackson	Platte	Ray	Total		
F0	20	9	17	4	9	59		
F1	11	12	10	4	11	48		
F2	2	6	7	2	8	25		
F3	5	2	4	4	2	17		
F4	0	3	1	4	2	10		
F5	0	0	1	0	0	1		
Total	38	32	40	18	32	160		

Source: NOAA Web site, online data

Table 4.6.3 provides the locations, dates, magnitude, number of deaths, number of injuries, property damage and crop damage for tornadoes occurring in Cass, Clay, Jackson, Platte and Ray counties between January 1, 2015, and December 31, 2018. The data for these tables is from the storm event database on the NCDC Web site. XIII A total of 18 tornado events since the last plan update occurred on eight specific dates in March, May, June, July, September, and October: May 16, 2015; July 1, 2015; September 18, 2015; March 6, 2017; June 26, 2018; July 6, 2017; May 2, 2018; and October 9, 2018.

	Table 4.6.3: Kansas City Area Tornadoes (2015-2018)									
County	Location	Date	Magnitude	Deaths	Injuries	Property Damage*	Crop Damage*			
CASS	GOWDY	7/1/2015	EF0	0	0	\$0	\$0			
CASS	WEST LINE	9/18/2015	EF1	0	0	\$0	\$0			
CASS	HARRISONVILLE ARPT	9/18/2015	EF0	0	0	\$0	\$0			
CASS	BELTON	5/2/2018	EF0	0	0	\$0	\$0			
CLAY	GLENAIRE	7/6/2015	EF0	0	0	\$0	\$0			
CLAY	SMITHVILLE	3/6/2017	EF2	0	0	\$0	\$0			
JACKSON	BUCKNER	5/16/2015	EF1	0	0	\$0	\$0			
JACKSON	UNITY VLG	7/1/2015	EF1	0	0	\$0	\$0			
JACKSON	LAKE LOTAWANA	7/1/2015	EF0	0	0	\$0	\$0			
JACKSON	VALE	3/6/2017	EF0	0	0	\$0	\$0			
JACKSON	TARSNEY LAKES	3/6/2017	EF3	0	12	\$0	\$0			
JACKSON	DODSON	5/2/2018	EF0	0	0	\$0	\$0			
JACKSON	RAYTOWN	5/2/2018	EF0	0	0	\$0	\$0			
JACKSON	LAKE LOTAWANA	6/26/2018	EF0	0	0	\$150,000	\$0			
RAY	LAWSON	5/16/2015	EF0	0	0	\$0	\$0			
RAY	ORRICK	5/16/2015	EF2	0	0	\$0	\$0			
RAY	TAITSVILLE	5/16/2015	EF1	0	0	\$0	\$0			
RAY	KNOXVILLE	10/9/2018	EF0	0	0	\$0	\$0			

Source: NOAA NCDC Web site

^{*}the dollar values assigned in storm data are a basic estimate

Table 4.6.4 provides the locations, dates, magnitude, number of deaths, number of injuries, property damage and crop damage for tornadoes occurring in Cass, Clay, Jackson, Platte and Ray counties between May 2019 and November 2024. The data for this table is from the storm event database on the NCDC Web site.

	Table 4.6.4: Kansas City Area Tornadoes (2019- November 2024)								
County	Location	Date	Magnitude	Deaths	Injuries	Property Damage*	Crop Damage*		
Cass	ARCHIE	06/04/2020	EF0	0	0	\$0	\$0		
Cass	PECULIAR ARPT	03/15/2021	EF0	0	0	\$0	\$0		
Clay	MOSBY	05/28/2019	EF2	0	0	\$0	\$0		
Clay	<u>SMITHVILLE</u>	07/29/2020	EF0	0	0	\$0	\$0		
Clay	MISSOURI CITY	06/11/2021	EF0	0	0	\$0	\$0		
Clay	PARADISE	04/16/2024	EF1	0	0	\$0	\$0		
Jackson	VALE	05/24/2019	EF0	0	0	\$0	\$0		
Jackson	COCKRELL	05/24/2019	EF0	0	0	\$0	\$0		
Jackson	COCKRELL	09/22/2019	EF0	0	0	\$0	\$0		
Jackson	<u>LAKE</u> <u>TAPAWINGO</u>	06/04/2020	EF0	0	0	\$0	\$0		
Jackson	RED BRIDGE	06/08/2022	EF1	0	0	\$0	\$0		
Jackson	RIPLEY	06/08/2022	EF2	0	0	\$0	\$0		
Jackson	BLUE SPGS	05/06/2024	EF1	0	0	\$0	\$0		
Jackson	<u>LEVASY</u>	05/06/2024	EF0	0	0	\$0	\$0		
Platte	HOOVER	05/06/2024	EF0	0	0	\$0	\$0		
Ray	MILLVILLE	08/04/2023	EF0	0	0	\$0	\$0		

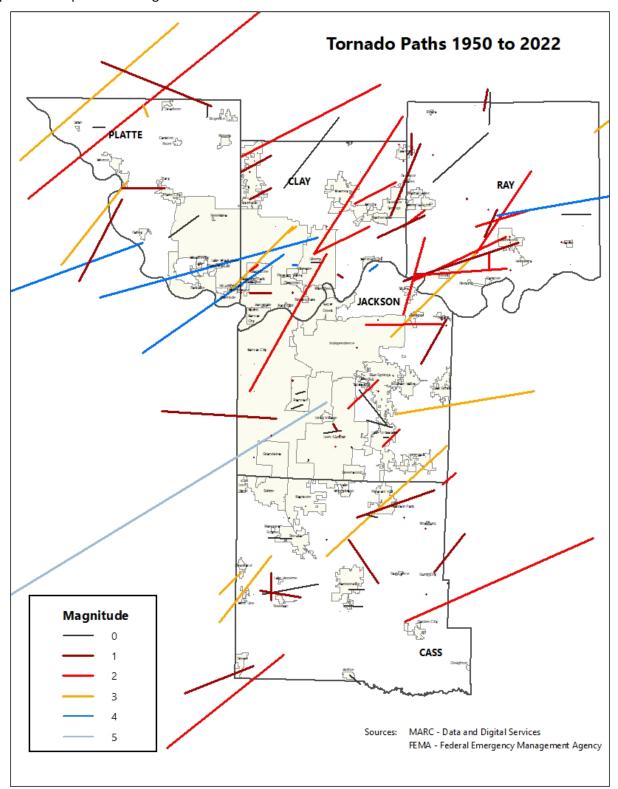
Source: NOAA NCDC Web site

*the dollar values assigned in storm data are a basic estimate

Map 4.6.1 illustrates the history of tornadoes hitting in and around the Kansas City region since 1996. The figure presents paths of destruction.

Historical narratives of the region's prior deadly tornadoes prior to 2010 are available in the 2010 Plan update. Narratives were removed from the 2015 Plan update as well as the 2020 Plan update to

streamline information. The 2020 Plan update and 2025 Plan update focus on events occurring in the last five years or those in the recent past that give context to the region's vulnerability and demonstrate potential impact to the region.



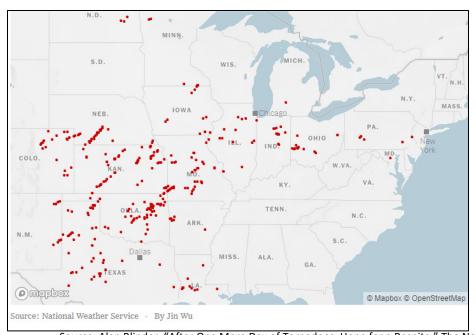
Map 4.6.1 Kansas City Metropolitan Area Tornadoes 1996-2019)

4.6.1a Tornado Outbreak of May 2019

A major tornado outbreak occurred across the central region of the United States during the month of May 2019. Damage was reported in multiple Midwest states as well as states outside the Midwest. As of June 2019, tornado events from 2019 are not logged in the NOAA Storm Events Database. Information from a New York Times article called, "After One More Day of Tornadoes, Hope for a Respite," cited The National Weather Service saying:

"Powered by a high-pressure system in the South and a trough that hung atop the West, the burst of storms pushed the United States to a total of 38 tornado-linked deaths so far this year, the highest count since 2014. Wednesday was the 13th consecutive day when the National Oceanic and Atmospheric Administration received at least eight preliminary reports of tornadoes.

And of the roughly 300 tornado or severe thunderstorm watches that forecasters have issued this year [2019], more than 40 percent have come since May 17, when this pernicious round of bad weather began."



Source: Alan Blinder, "After One More Day of Tornadoes, Hope for a Respite," The New York Times Map 4.6.2: Locations of Tornadoes Reported from May 17-29, 2019

While damage to the planning area was not as severe as the last tornado outbreak of May 4, 2003, Cass, Clay, Jackson, Platte, and Ray counties were in or close to many catastrophic tornado events. This was the second major tornado outbreak in the Kansas City area in the past 10 years. The only other recorded outbreak happened in 1977.

Jackson County, MO – June 8, 2022

Strong to Severe thunderstorms across Kansas and Missouri the evening of June 7th, 2022, continued to evolve into a complex of strong to severe thunderstorms as they moved into the Kansas City Metro area between 12:30 and 1 AM CDT. These storms resulted in numerous reports of wind damage across the region as well as four confirmed tornadoes, one through the southern side of the Kansas City Metro, one

in northeastern Jackson County Missouri and two near Louisburg, KS. The tornado developed within a larger bowing line segment of thunderstorms moving across the region. In addition to the tornado, a large swath of wind damage was noted south of the tornado track. In this area, downed tree limbs and other indicators were noted to be blown in the same west to east direction.

Clay County, MO - May 28, 2019 xiv

Kearney, Missouri experienced an EF- 2 tornado that had a maximum width of 400 yards and traveled a length of 5.84 miles. The estimated peak winds were 115 miles per hour. The tornado began about 2 or 3 miles south and southeast of Kearney, MO, traveling east and northeast, ending about 2 miles north of Excelsior Springs, Damage to several homes and trees occurred.

Douglas and Leavenworth County, KS – May 28, 2019^{xv}

Douglas and Leavenworth County are not in the Hazard Planning area; however, Leavenworth County is included in the Mid-America Regional Council's planning profile. These counties are part of the Kansas City area or very close. The tornado these counties experienced had a maximum width of one mile and traveled 31.82 miles. This tornado is the same one that reached Kearney, MO in the prior narrative. The tornado was rated EF-4. It developed in southwestern Douglas County Kansas and tracked to the east-northeast while strengthening. EF-3 damage occurred in northeastern Douglas County, then the storm gained strength and produced EF-4 damage in southern Leavenworth County Kansas.

4.6.2 Probable Locations

Magnitude: >50%

Tornadoes can occur anywhere in the Kansas City area. A common myth about tornadoes is that they do not cross over rivers or hit big cities. XVI The Orrick tornado of May 10, 2014, started in Jackson County south of Sibley and crossed the Missouri River into Ray County. The Orrick tornado of January 24, 1967 took a similar path. Additionally, one of the tornadoes spawned during the May 4, 2003, tornado outbreak in the northern Kansas City area swept across the Missouri River from Leavenworth County, Kansas, into Platte County, Missouri. The Ruskin Heights area of south Kansas City, a densely populated area, was struck by an F5 tornado on May 20, 1957, resulting in 37 deaths, hundreds of injuries and catastrophic damage to the area. More recently, the Joplin EF5 tornado of May 22, 2011, devastated a large portion of the city, resulting in 161 fatalities, over 1,000 injured and damage to 7,500 residential dwellings. Over 500 businesses were affected, affecting 4,500 to 5,000 employees.

The threat of tornadoes is not limited to any specific part of the Kansas City area; both rural and urban areas can be affected. Although greater in the spring and early summer, the possibility exists for destructive tornadoes to occur at any time of the year. Likewise, tornadoes may occur at any time of the day or night. Finally, tornadoes of all magnitudes can and have occurred in the Kansas City area, from F0 tornadoes that causing little or no damage to F5 tornadoes causing enormous death and destruction.

Each county was given a >50% magnitude rating. Although it is highly unlikely that a single tornado event will cause damage to more than 50 percent of the county, the highest magnitude rating was assigned to account for the random nature of tornadoes, in that the entire region is vulnerable to a tornado strike.

4.6.3 Impact and 4.64 Probability

Tornadoes can cause tremendous damage in the places it touches down, as well as the surrounding areas. **Table 4.6.4 – Table 4.6.8***vii summarizes all tornado events by EF Scale and their impact for each

of the five counties. Information was retrieved from the NOAA NCDC Storm Event Database as of December 13, 2024. The property and crop damage values are the sum of reported values only. The NCDC labels these values as a 'basic estimate'. Damage values are most likely higher than the values due to unreported impacts. This information is used to determine severity, magnitude and probability of occurrence.

	Table 4.6.4: Cass County Tornadoes (1950-2024)							
Magnitude	Years with +1 Events	No.	Deaths	Injuries	Property Damage	Crop Damage		
F0	16	22	0	0	\$11,340	\$0		
F1	7	11	0	1	\$1,135,250	\$0		
F2	2	2	0	0	\$275,000	\$0		
F3	4	5	3	25	\$30,025,250	\$0		
F4	0	0	0	0	\$0	\$0		
F5	0	0	0	0	\$0	\$0		
Overall	29	40	3	26	\$31,446,840	\$0		

	Table 4.6.5: Clay County Tornadoes (1950-2024)							
Magnitude	Years with +1 Events	No.	Deaths	Injuries	Property Damage	Crop Damage		
F0	8	9	0	0	\$7,780	\$0		
F1	11	13	0	0	\$6,325,780	\$0		
F2	7	7	0	9	\$70,300,000	\$0		
F3	2	2	0	3	\$4,025,000	\$0		
F4	2	3	0	18	\$33,550,000	\$0		
F5	0	0	0	0	\$0	\$0		
Overall	30	34	0	30	\$114,208,560	\$0		

	Table 4.6.6: Jackson County Tornadoes (1950-2024)								
Magnitude	Years with +1 Events	No.	Deaths	Injuries	Property Damage	Crop Damage			
F0	15	22	0	0	\$192,280	\$0			
F1	10	12	0	0	\$580,000	\$0			
F2	6	8	0	5	\$800,250	\$0			
F3	3	4	0	12	\$7,500,000	\$0			
F4	1	1	0	0	\$2,500	\$0			
F5	1	1	37	176	\$2,500,000	\$0			
Overall	36	48	37	193	\$11,575,030	\$0			

	Table 4.6.7: Platte County Tornadoes (1950-2024)							
Magnitude	Years with +1 Events	No.	Deaths	Injuries	Property Damage	Crop Damage		
F0	4	5	0	0	\$60	\$0		
F1	4	4	0	2	\$2,250,000	\$0		
F2	2	2	0	4	\$275,000	\$0		
F3	4	4	0	11	\$330,000	\$0		
F4	2	4	0	0	\$32,750,000	\$0		
F5	0	0	0	0	\$0	\$0		
Overall	16	19	0	17	\$35,605,060	\$0		

	Table 4.6.8: Ray County Tornadoes (1950-2024)							
Magnitude	Years with +1 Events	No.	Deaths	Injuries	Property Damage	Crop Damage		
F0	9	10	0	0	\$295,000	\$0		
F1	11	11	0	0	\$507,750	\$0		
F2	6	8	0	2	\$375,000	\$0		
F3	1	2	2	18	\$2,750,000	\$0		
F4	1	2	0	1	\$2,525,000	\$0		
F5	0	0	0	0	\$0	\$0		
Overall	28	33	2	21	\$6,452,750	\$0		

4.6.4 Probability of Future Occurrence: 61%

Based on historical occurrences from 1950, there is a 61 percent chance of a tornado occurring in a given year in the five-county planning area. Table 4.6.9 shows the probability of a tornado in a given year specific to each county. The probability was calculated by dividing the number of years with one or more tornado events in that county, by the total number of years the data was available. The data from the NOAA Storm Events database begins in 1951 and is current through 2024, a total of 73 years.

Table 4.6.9: Probability of Future Tornado Occurrence by County							
County	Years with 1+ Events	Probability (%)					
Cass	29	40%					
Clay	30	41%					
Jackson	36	49%					
Platte	16	22%					
Ray	28	38%					

The central United States has a repeatable annual tornado cycle, with the highest probability of tornadoes occurring in the spring. XVIII With its location in the central plains, the Kansas City area experiences a tornado season each year. Figure 4.6.1 depicts the annual cycle of probability of tornadoes in the Kansas City area (NOAA NSSL, online data). The lines on the graph correspond to the states of Kansas and Missouri, indicated in the legend. As the graph shows, the period with the greatest probability of tornado activity is approximately late March through July. Although an update to this chart is not available past 2010, all of the tornadoes occurring in the last five years in the five county area happened in May and June.

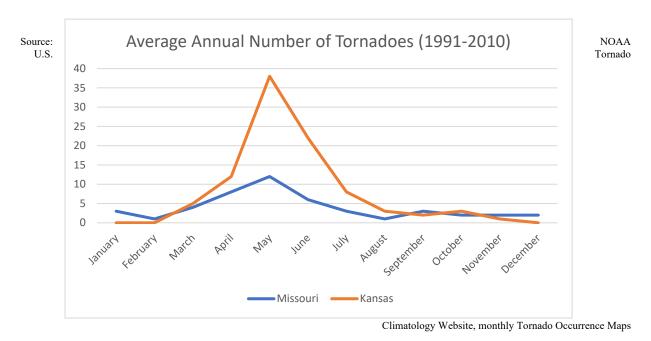


Figure 4.6.1: Tornado Annual Cycle in Missouri and Kansas (1991-2010)

Although, the likelihood of tornadoes is greatest during the spring and early summer — the "tornado season" — tornadoes can occur anywhere in the region, at any time of the year and at any hour of the day or night. For example, the deadly Blue Valley (Jackson County) tornado of 1941 occurred on Oct. 6, while an F3 tornado struck Orrick (Ray County) on Jan. 24, 1967. The entire region is at risk from tornadoes year-round.

4.6.5 Extent

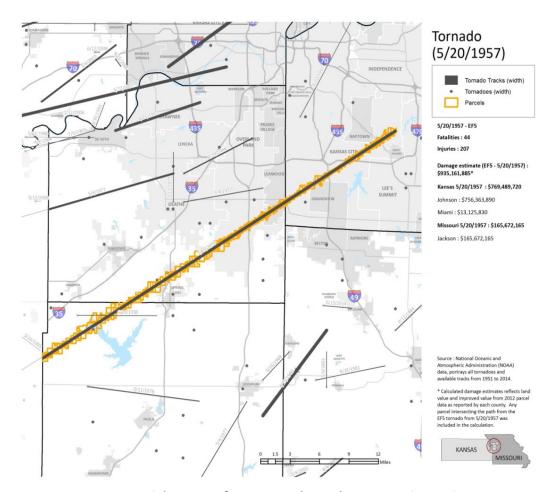
Historical statistics associated with the occurrence of tornadoes in the region, presented in Table 4.6.10. indicates the likelihood, or risk, by magnitude (EF-Scale) of a tornado occurring anywhere in the Kansas City region. The probable risk percentages are the likelihood of a tornado with a given EF occurring in a given year. For example, based on the 69-year history of tornadoes, there is a 60 percent chance of an EFO tornado occurring in the Kansas City area.

1	Table 4.6.10: Risk of Future Tornado Occurrence							
EF-Scale	Speed (mph)	Probable Risk (Highly Likely, Likely, Possible or Unlikely)						
0	65-85	60% — Highly Likely						
1	86-109	64% — Highly Likely						
2	110-137	43% — Likely						
3	138-167	24% — Possible						
4	168-199	7% — Unlikely						
5	200-234	2% — Unlikely						

Using the same probability calculation, Table 4.6.11, indicates the risk of a specific EF-Scale tornado occurring anywhere in the Kansas City region. For example, over the last 73 years, 2% of tornadoes were rated EF5. Although this percentage is low, an EF5 tornado poses catastrophic risk to people and property.

Table	Table 4.6.11: Probable Future Tornado Severity by EF-Scale							
EF-Scale	Speed (mph)	Probable Risk (Limited, Critical, or Catastrophic)						
0	65-85	60% — Limited						
1	86-109	64% — Limited						
2	110-137	43% — Critical						
3	138-167	24% — Critical						
4	168-199	7% — Catastrophic						
5	200-234	2% — Catastrophic						

Map 4.6.4 demonstrates the path of destruction and potential losses of an EF5 tornado based on the Ruskin Heights Tornado of May 20, 1957, if a similar event occurred in Jackson County today.



Map 4.6.3 Potential Impact of EF-5 Tornado on the Kansas City Region

Because of larger populations and greater concentration of homes, commercial structures, public facilities, utilities and infrastructure, the urban and suburban areas of Cass, Clay, Jackson, Platte and Ray counties are more susceptible to the damaging effects of tornadoes than the rural portions of these jurisdictions. Nevertheless, rural portions of the Kansas City metropolitan area can still suffer the effects of tornadoes. People may be injured or killed, just as in urban areas, though in lesser numbers due to lower population density. Outdoor warning systems may not be present in rural areas, increasing the need for other methods of warning, such as NOAA weather radios and television and radio broadcasts. Alternatively, urban areas may have more redundancy in warning systems. In addition, livestock may be killed, and crops damaged in rural areas. The costs associated with losses in rural areas may be significant. However, they will generally be lower than damage costs in urban areas.

Based on a 69-year history of tornado events in Cass, Clay, Jackson, Platte and Ray counties, Table 4.6.12 presents the likely adverse impact of future Kansas City region tornado events.

Table 4.6.12: Estimated Categories of Impact								
Effects of Tornadoes	Property	Emotional	Financial					
Without mitigation measures	Limited	Critical	Critical	Critical				
With mitigation measures	Limited	Limited						

The potential severity of effects from tornadoes will continue to be high. xix Although the region will continue to experience deaths, injuries and property damages from tornadoes, mitigation measures can dramatically reduce adverse impacts of a tornado by helping to save lives, prevent injuries and lessen property damage. xx These measures include public education and awareness programs, public use of enhanced warning and communications systems (e.g., NOAA weather radios, mass notification systems and alerts), and the construction and use of "safe rooms" or "safe areas" in public and private structures.

4.6.5a Probable Duration

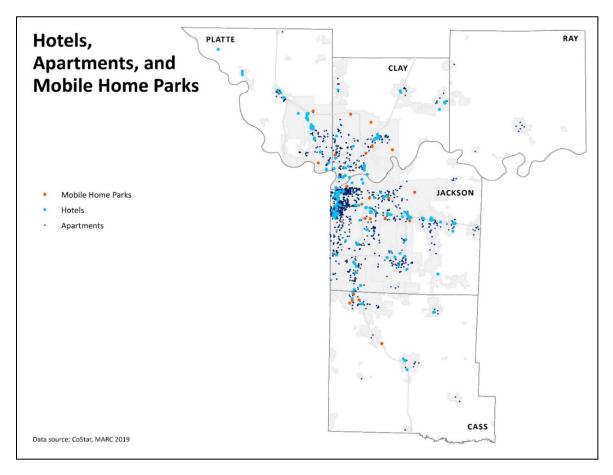
Tornadoes affecting the greater Kansas City metropolitan area have ranged from F0 to F5. The vast majority of tornadoes have been F0 to F1, although several F4 tornadoes and an F5 tornado have affected the Kansas City metropolitan area. Tornadoes of this magnitude are normally only on the ground for a few minutes.

Potential	cneed	of onset	(nrohahle	amount o	of warning	timel	•
rotentiai	speeu	oi onset	(pi obabie	ailloull (n warriirig	unne	

- Minimal (or no) warning
- ☐ 6 to 12 hours warning
- ☐ 12 to 24 hours warning
- ☐ More than 24 hours warning

4.6.6 Vulnerability Analysis

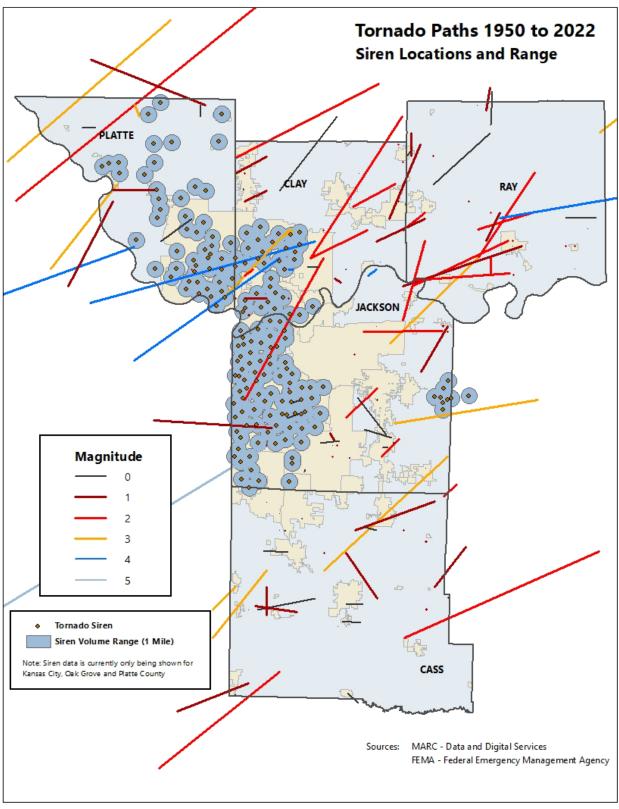
While tornados can occur anywhere in the planning area, those most exposed when a tornado does occur are individuals who may not have access to some sort of safe shelter which may include individuals living in mobile homes or apartments or people living in homes without basements or those who may have difficulty getting to a safe location. Studies have indicated 45 percent of all fatalities during tornadoes occur in mobile homes, compared to 26 percent in traditional site-built houses. XXI Additionally, individuals who do not know where to go in the event of a tornado are also at greater risk in an event. Public venues and large outdoor gatherings are of special concern. **Map 4.6.4** and **Table 4.6.13** illustrate the number and type of particularly vulnerable sites in the planning area.



Map 4.6.4 High Risk Assets to Tornado in the Planning Area

	Table 4.6.13 High Risk Locations during Tornadic Activity										
Asset (critical facility)	Cass	Clay	Jackson	Platte	Ray	Planning Area	Kansas City				
Day Care	41	91	350	29	8	511	238				
Nursing Home	10	21	85	12	2	128	52				
Public Housing	36	53	365	14	13	481	326				
School	39	80	260	36	11	415	191				
College	1	5	40	3	0	49	32				
Hospital	2	4	13	1	1	21	8				
Health Facilities	5	4	41	5	1	56	36				
Police	15	16	25	17	9	82	15				
Fire	17	27	67	17	6	128	38				
PSAP	5	6	13	2	1	27	4				
Local Government	13	15	13	12	4	53	1				
Hotels	8	40	133	39	0	220	136				
Apartments	83	248	1950	110	11	2391	1678				
Trailer Parks	5	6	10	2	0	23	8				
Professional Sports Stadiums	0	0	3	0	0	3	3				
Arena or Convention Center	0	0	3	0	0	3	2				

Tornado sirens typically have an audible range of one to two miles, but coverage can vary depending on factors like sound level and storm conditions. While sirens are the only universal warning protocol for severe weather in areas with adequate coverage, ubiquitous coverage is rare and should not be relied on from the public as the sole warning source for severe weather. As technological improvements occur, some areas have replaced sirens with more specific warnings, like the Emergency Alert System and Wireless Emergency Alerts. It should also be noted that sirens are an outdoor warning system designed only to alert those who are <u>outside</u> that something dangerous is approaching. The map below illustrates siren coverage in relation to historical tornado incidents.



Map 4.6.5 Siren Coverage in Relation to Historical Tornadoes in the Planning Area

4.6.7 Problem Statements

Tornadoes are random events and can equally impact any jurisdiction within the region. While the maximum and minimum loss estimates were removed from this Plan, jurisdictions have provided problem statements outlining their concerns related to tornadoes. Problem statements, such as those below, can help highlight struggling areas to help support development of mitigation strategies for tornadoes:

- New tornado warning technologies have created the potential for uncoordinated warnings (or conversely, oversaturation) leading to residents not taking appropriate protective actions.
- High population centers (apartment buildings, trailer parks, shopping centers, hotels, etc.) often lack storm shelters.
- Current public information efforts have likely plateaued in their effectiveness.

¹ SEMA State Hazard Analysis, A-1; NOAA SPC Web site, online data

[&]quot;SEMA State Hazard Analysis, A-1

iii SEMA State Hazard Analysis, A-1

ⁱ NOAA Web site, online data

V NOAA, NWS, The Enhanced Fujita Scale (EF Scale), https://www.weather.gov/oun/efscale

vi NOAA

vii WDAF TV 4 Web site, online data

viii WDAF TV 4 Web site, online data

ix Brooks and Doswell, NOAANSSL Web site, online document

x Brooks and Doswell, NOAA NSSL Web site, online document

xi NOAA Storm Protection Center Web site, http://www.spc.noaa.gov/fqu/tornado/

xii NOAA NCDC Web site

xiii Alan Blinder, "After One More Day of Tornadoes, Hope for a Respite," The New York Times https://www.nytimes.com/2019/05/29/us/tornadoes-weather.html

xiv NOAA NWS 28 May 2019 Tornadoes https://www.weather.gov/eax/28May2019_Tornadoes

xv NOAA NWS 28 May 2019 Tornadoes https://www.weather.gov/eax/28May2019 Tornadoes

xvi Weather Underground, *Tornadoes*: Fact Vs. Myth, online data

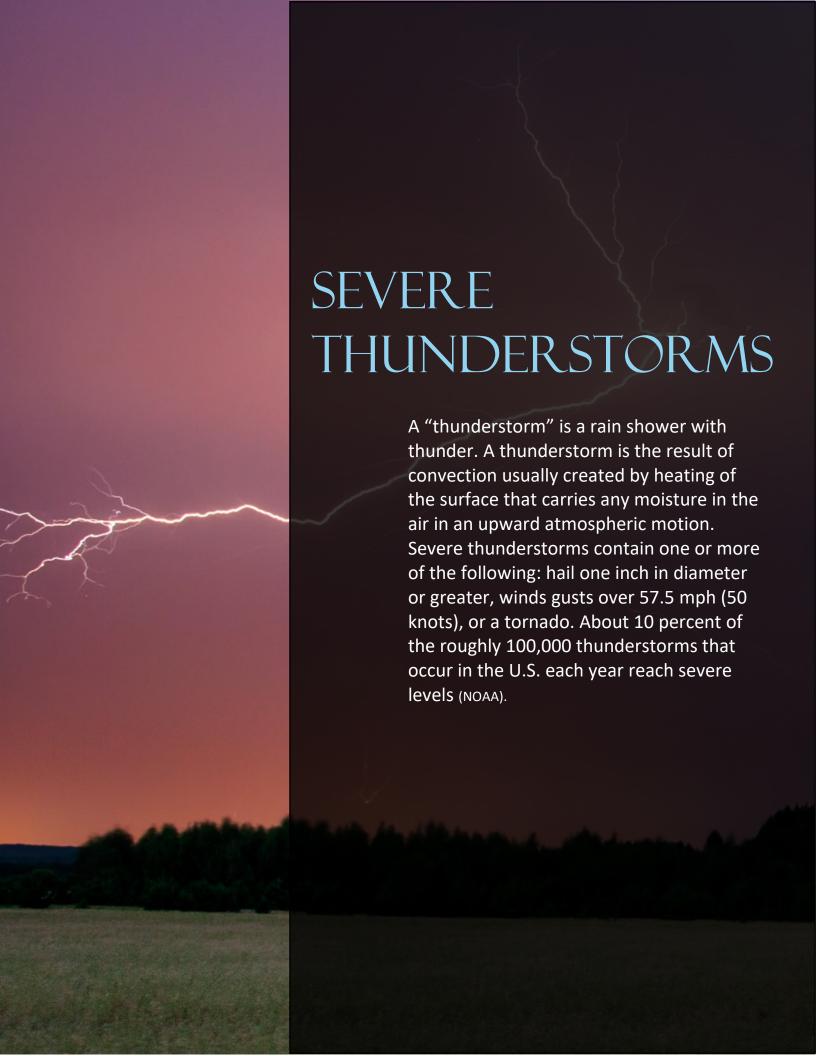
xvii NOAA NCDC Web Site, https://www.ncdc.noaa.gov/stormevents

xviii Tarp, NOAA OAR Web site, online document

xix SEMA State Hazard Analysis, Annex 2, Online

xx SEMA State Hazard Analysis, Annex 2, Online

xxi Northern Illinois University, "NIU Researchers Say Nighttime Tornadoes are Worst Nightmare," Press Release, November 5, 2008, available at www.Niu.edu/news



4.7 Severe Thunderstorms (Wind, Hail, Lightning)



Many hazardous weather events are associated with thunderstorms. Under the right conditions, rainfall from thunderstorms can cause flash flooding, which kills more people each year than hurricanes, tornadoes or lightning. Lightning is responsible for many fires around the world each year and is also capable of causing fatalities. Hail up to the size of softballs damages cars and windows and can kill livestock caught out in the open. Strong straight-line winds associated with thunderstorms may knock down trees, power lines and mobile homes. Tornadoes (with winds up to about 300 mph) can destroy all but the strongest man-made structures.¹

All thunderstorms produce lightning, so all thunderstorms can be dangerous. While lightning fatalities have decreased over the past 30 years, lightning continues to be one of the top three storm-related killers in the United States. In 2018, there were 20 fatalities and 82 injuries from lightning. Although most lightning victims survive, people struck by lightning often report a variety of long-term, debilitating symptoms.

Other dangers associated with thunderstorms include tornadoes, strong winds, hail and flash flooding. The damaging straight-line winds of thunderstorms can exceed 100 mph. Some thunderstorms produce downbursts — a sudden outrush of damaging wind. Microbursts are smaller scale events that have a damage area less than 2.5 miles wide. Microbursts are larger events where the damage area is wider than 2.5 miles. Downbursts can produce strong wind shears (rapid changes in the speed and/or direction of wind over a short distance) near the surface. These types of winds are especially dangerous to aviation. Iv

Thunderstorms associated with tornado development also contribute to the number one killer — flash floods. According to the National Weather Service, Preliminary US Flood Fatality Statistics, floods and flash flooding are responsible for more fatalities — 182 fatalities in 2017 and 84 in 2018 — than any other thunderstorm-associated hazard. As of June 2019, there have been 67 flood fatalities in the United States. Tory thunderstorms, which produce rain that does not reach the ground, are most prevalent in the western United States. Falling raindrops evaporate, but lightning can still reach the ground and can start wildfires. Targe hail can reach the size of grapefruit. Hail causes several hundred millions of dollars in damage annually to property and crops across the nation.

Thunderstorms are most likely to occur in the spring and summer months and during the afternoon and evening hours, but they can occur year-round and at all hours. Thunderstorms frequently form in the late afternoon and at night in the Plains states. The greatest severe weather threat extends from Texas to southern Minnesota, but no place in the U.S. is completely safe from the threat of severe weather.

4.7.1 Historical Occurrences

Historical occurrences described in this hazard profile are based on severe thunderstorm characteristics of winds more than 57 miles per hour and hail at least one inch in diameter. Other associated events were considered, including high winds, heavy rain and lightning; however, those events are fairly limited compared events with hail and damaging winds. Narratives of select storms are included in this discussion.

Table 4.7.1, Table 4.7.2, and Table 4.7.3 provide historical summaries of severe thunderstorms for wind, hail and lightning events between 1950-2018.

Table 4.7.1 Kansas City Area Thunderstorm Wind Events (1950- 2018) (>57mph)								
County	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$			
Cass	171	1	7	464,500	0			
Clay	237	0	2	2,175,000	0			
Jackson	392	0	12	13,069,750	7,000			
Platte	173	0	1	497,500	0			
Ray	65	0	0	486,000	0			
Total	1,038	1	22	\$16,692,750	\$7,000			

	Table 4.7.2 Kansas City Area Hail Events (1950- 2018) (>1")									
County	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$					
Cass	225	0	0	3,554,000	250,000					
Clay	259	0	0	5,035,500	55,000					
Jackson	339	0	0	15,333,000	0					
Platte	159	0	0	1,385,000	0					
Ray	67	0	0	5,000	0					
Total	1,049	0	0	\$25,312,500	\$305,000					

Table 4.7.3 Kansas City Area Lightning Events (1950- 2018)									
County	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
Cass	1	0	0	25,000	0				
Clay	1	0	0	0 1,000					
Jackson	8	1	1	327,000	0				
Platte	1	0	0	100,000	0				
Ray	2	0	0	10,000	0				
Total	13	1	1	\$463,000	\$0				

Table 4.7.4, Table 4.7.5, Table 4.7.6 provide historical summaries of severe thunderstorms for wind, hail and lightning events between May 2019 to November 2024.

Table 4.7.4 Kansas City Area Thunderstorm Wind Events (5/19- 11/24) (>57mph)									
County	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
Cass	44	0	0	\$120,000	\$0				
Clay	47	0	0	\$30,000	\$0				
Jackson	108	0	0	\$7,000	\$0				
Platte	32	0	0	\$20,000	\$0				
Ray	12	0	0	\$0	\$0				
Total	243	0	0	\$177,000	\$0				

Table 4.7.5 Kansas City Area Hail Events (5/19- 11/24) (>1")									
County	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
Cass	17	0	0	\$0	\$0				
Clay	36	0	0	\$0	\$0				
Jackson	48	0	0	\$0	\$0				
Platte	27	0	0	\$0	\$0				
Ray	6	0	0	\$0	\$0				
Total	134	0	0	\$0	\$0				

Table 4.7.6 Kansas City Area Lightning Events (5/19- 11/24) (>57mph)									
County Events Deaths Injuries Property Damage \$									
Cass	0	0	0	\$0	\$0				
Clay	1	0	1	\$0	\$0				
Jackson	0	0	0	\$0	\$0				
Platte	0	0	0	\$0	\$0				
Ray	0	0	0	\$0	\$0				
Total	1	0	1	\$0	\$0				

Table 4.7.7 and Table 4.7.8 list thunderstorm wind and hail events (causing property damage) between 2014-2018.

Tal	Table 4.7.7: Kansas City Area Thunderstorm Events with Damaging Winds (2014-2018) (>57 mph)								
County	Date	Location	Wind Speed (mph)	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)		
Cass	6/12/2016	Harrisonville	60	0	0	1,000	0		
Clay	6/17/2017	Claycomo	70	0	0	10,000	0		
Jackson	6/2/2018	Lake Lotawana	70	0	0	30,000	0		
Jackson	6/2/2018	Cockrell	81	0	0	10,000	0		
Jackson	8/28/2018	Kansas City	70	0	0	50,000	0		
Platte	6/3/2015	Platte City	60	0	0	5,000	0		

Table 4.7.8: Kansas City Severe Thunderstorms with Damaging Hail (2014-2018) (>1")								
County Data Location Hail Size (inches) Deaths Injuries Property Damage (\$)					Crop Damage (\$)			
Cass	7/19/2018	Lake Winnebago	1.75	0	0	10,000	0	

Table 4.7.9 lists thunderstorm wind events (causing property damage) between May 2019 to November 2024. The Kansas City Area did not record any events with damaging hail (>1") between 5/2019 and 11/2024 according to NOAA

Tab	Table 4.7.9: Kansas City Area Thunderstorm Events with Damaging Winds (5/19- 11/24) (>57 mph)									
County	Date	Location	Wind Speed	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)			
Cass	05/04/2020	GARDEN CITY	65 kts. EG	0	0	\$100,000	\$0			
Cass	06/11/2021	HARRISONVILLE	70 kts. EG	0	0	\$20,000	\$0			
Clay	07/01/2020	ARLEY	52 kts. EG	0	0	\$5,000	\$0			
Clay	12/15/2021	(MKC)KS CITY DNTN AR	67 kts. MG	0	0	\$25,000	\$0			
Jackson	05/04/2020	SOUTH LEE	52 kts. EG	0	0	\$2,000	\$0			
Jackson	07/01/2020	OAK GROVE	52 kts. EG	0	0	\$5,000	\$0			
Platte	07/01/2020	EDGERTON	52 kts. EG	0	0	\$20,000	\$0			

Table 4.7.10 lists lightning, high wind, and heavy rain events between 2014-2018.

	Table 4.7.10:	Kansas City Area	Lightning, Hig	h Wind ar	nd Heavy R	ain Events	2014-2018	
County	Data	Location	Event Type	Wind Speed (mph)	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)
Ray	11/11/2015	Ray (Zone)	High Wind	52	0	0	0	0
Jackson	11/11/2015	Jackson (Zone)	High Wind	54	0	0	0	0
Platte	11/11/2015	Platte (Zone)	High Wind	52	0	0	0	0
Clay	11/11/2015	Clay (Zone)	High Wind	52	0	0	0	0
Cass	11/11/2015	Cass (Zone)	High Wind	52	0	0	0	0
Jackson	4/29/2017	Jackson (Zone)	High Wind	50	0	0	0	0
Cass	4/29/2017	Cass (Zone)	High Wind	52	0	0	0	0
Jackson	5/17/2017	Jackson (Zone)	High Wind	52	0	0	0	0
Clay	6/16/2017	Paradise	Lightning		0	0	1,000	0
Jackson	6/17/2017	Leeds	Lightning		0	0	50,000	0
Jackson	8/21/2017	Dodson	Heavy Rain		0	0	0	0
Jackson	7/5/2018	Cement City	Lightning		1	0	0	0
Platte	1/28/2019	Platte (Zone)	High Wind	56	0	0	0	0
Clay	1/28/2019	Clay (Zone)	High Wind	56	0	0	0	0

Table 4.7.11 lists lightning, high wind, and heavy rain events between 5/2019 and 11/2024.

	Table 4.7.11: Kansas City Area Lightning, High Wind and Heavy Rain Events (5/19- 11/24)										
County	Date	Location	Event Type	Wind Speed	Deaths	Injuries	Property Damage (\$)	Crop Damage (\$)			
Cass	05/21/2019	CASS (ZONE)	High Wind	52 kts. EG	0	0	\$0	\$0			
Cass	03/31/2023	CASS (ZONE)	High Wind	52 kts. EG	0	0	\$0	\$0			
Clay	05/18/2019	<u>PARADISE</u>	Lightning		0	1	\$0	\$0			
Clay	05/21/2019	CLAY (ZONE)	High Wind	52 kts. EG	0	0	\$0	\$0			
Clay	12/15/2021	CLAY (ZONE)	High Wind	56 kts. EG	0	0	\$0	\$0			
Jackson	05/21/2019	JACKSON (ZONE)	High Wind	52 kts. EG	0	0	\$0	\$0			
Jackson	12/15/2021	JACKSON (ZONE)	High Wind	56 kts. EG	0	0	\$0	\$0			
Jackson	03/31/2023	JACKSON (ZONE)	High Wind	52 kts. EG	0	0	\$0	\$0			
Platte	05/21/2019	PLATTE (ZONE)	High Wind	51 kts. EG	0	0	\$0	\$0			

Platte	12/15/2021	PLATTE (ZONE)	High Wind	56 kts. EG	0	0	\$0	\$0
Platte	03/31/2023	PLATTE (ZONE)	High Wind	51 kts. EG	0	0	\$0	\$0
Ray	12/15/2021	RAY (ZONE)	High Wind	56 kts. EG	0	0	\$0	\$0

Garden City - May 2020

The morning of May 3, 2020, brought a marginally severe storm into portions of east central Kansas and west central Missouri. This storm was somewhat isolated in the damage it caused, but the worsts of this two day event occurred the next day. The morning of May 4 started out incredibly active across eastern Kansas and western Missouri. In eastern Kansas several supercells formed and moved eastward into western Missouri. The initial round of supercells were generally decaying as they progressed eastward, but one particular supercell formed an enhanced downburst in western Bates County and produced between 70 and 90 mph winds. Upstream of this supercell in eastern Kansas 15-20 power poles were snapped near the intersection known as Jingo, KS. This storm then went on to produce heavy damage to trees and structures between Amsterdam and Butler. It was in this area just west of Passaic that a single fatality occurred when a tree fell into a house. After this storm moved out of the area a follow-up bow pushed through the same area producing pockets of strong winds that were recorded up to nearly 80 mph at more than one ASOS. Winds of around 70 to 80 mph occurred in Garden City as a strong, decaying thunderstorm moved into that area. While the storm was severe, the winds in and around Garden City were somewhat unique to the event and the damage across the city indicated some enhanced winds, probably associated with a significant downburst. While the official estimate is around 70 to 80 mph winds, it's plausible that faster winds were experienced in that area with this event solely based on the damage.

Kansas City Downtown Airport December 15, 2021

On December 15, 2021, a large-scale weather event rolled through the Central Plains and Upper Midwest bringing tornadoes, dust storms, wildfires, and snow across several central and northern states. Record high temperatures were set across the region including Kansas City, with the Kansas City International Airport tying its all-time December high temperature. Non-convective winds both ahead and behind the thunderstorms were quite strong. Several locations around the area reported wind gusts above 50 MPH with Lees Summit peaking at 53 MPH, St. Joseph reached 52 MPH, and Johnson County Executive Airport in Olathe, KS reached 60 MPH. Once the line of storms arrived, several areas reported winds in excess of 75 MPH. The Kansas City Downtown Airport reached a peak gust of 77MPH. This resulted in the roof damage to a few airport buildings. Numerous trees and power poles fell across much of eastern Kansas and western Missouri. Areas in far northwest Missouri observed winds of 80-90 MPH as the thunderstorms moved through. Several homes and buildings were damaged across northern Missouri including missing shingles, peeled siding, and blown out windows. While a local reporter was on the air covering the strong winds a roof was ripped off of a hangar at Kansas City Downtown Airport. While this happened, the ASOS measured 77 mph wind at the location

Oak Grove - July 2020

During the early morning hours of July 1, a strong thunderstorm complex came out of southeast Nebraska, into far northwest Missouri. This complex brought 70-80 mph winds and caused a swatch of damage from northwest Missouri, into north central Missouri. Most of the damage was to tree limbs and non-permanent structures. A large fireworks tent was destroyed.

Edgerton – July 2020

During the early morning hours of July 1, a strong thunderstorm complex came out of southeast Nebraska, into far northwest Missouri. This complex brought 70-80 mph winds and caused a swatch of damage from northwest Missouri, into north central Missouri. Most of the damage was to tree limbs and non-permanent structures. There were several tree limbs and at least one tree down in the Edgerton area. One of these tree limbs fell on the roof of a home and punctured through the roof and ceiling. There were no reported injuries.

Clay - May 18, 2019

A storm brought some strong winds to Platte County. A person was injured by lightning. The exact situation and extent of the injury is unknown.

Smithville - August 19, 2000

Thunderstorm winds estimated at 80 mph tore through the Smithville Lake area. Extensive damage was done to a marina, where 40 to 45 boats were damaged, and two of four docks were damaged. A nearby campground was also hit hard, as approximately 20 camping trailers were damaged. Two campers were hospitalized, including one who was inside an RV that rolled over. The severe thunderstorms developed ahead of a warm front in northeastern Kansas and moved east into northwest Missouri. The strongest storm crossed the Missouri River near Atchison, Kansas and caused extensive wind damage as it moved eastward to Richmond. The hardest hit area was in northern Clay County from Smithville Lake to Excelsior Springs. Property damages were estimated at \$800,000.

Garden City – August 21, 2003

Severe thunderstorm winds estimated at 70 mph destroyed two mobile homes and caused two injuries. One of the victims later died from injuries sustained in the storm. One house had major damage with one injury. Numerous trees were downed or damaged along with outbuildings. Property damage was estimated at \$150,000.

Leeds - June 15, 2017

On the afternoons of June 15 through June 17 multiple rounds of severe storms raked through western and central Missouri causing widespread wind damage and large hail. A tornado occurred in Lafayette County after dark, causing minor damage to rural areas north of Bates City. Lightning strike caused a tree to catch fire which then fell on to a house and resulted in a house fire.

Lake Winnebago and Garden City - July 19, 2018

On July 19, significant severe weather occurred in two distinct but consecutive rounds. The first round was a line of supercells that formed over the eastern Kansas City metro, produced significant hail up to baseball size, and drifted south southeast with time; the second was a Mesoscale Convective System (a complex of thunderstorms that organize as one) dropping southeast and producing straight-line winds across southwestern portions of the area. Caused \$10,000 in damage.

Kansas City - August 28, 2018

On August 28, several thunderstorms affected the area with hail and wind. The winds ranged from 60 to 70 mph and did damage to trees, power lines, and some structures. Hail sizes ranged from penny to half-dollar sized. \$50,000 in damage was reported. Broadcast media reported a couple were trapped in their home when a large tree fell onto it. The extent of the damage to the home is otherwise unknown.

4.7.2 Probable Locations

Magnitude 10%-25%

Severe thunderstorms can occur anywhere in the Kansas City metro area. According to NOAA, the greatest severe weather threat in the U.S. extends from Texas to southern Minnesota. Severe Thunderstorm events often affect smaller portions of a county area. Therefore, all counites were given a 10%-25% magnitude rating.

4.7.3 Impact

Like tornadoes, the urban and suburban areas of Cass, Clay, Jackson, Platte and Ray counties are more susceptible to the damaging effects of thunderstorms than the rural portions of these jurisdictions due to larger populations and greater concentration of homes, commercial structures, public facilities, utilities and infrastructure. Nevertheless, thunderstorms can still impact rural portions of the Kansas City region. People may be injured or killed in rural as well as urban areas, though in lesser numbers due to lower population density; livestock may be killed, and crops damaged in rural areas. The costs associated with losses in rural areas may be significant, although generally lower than damage costs in urban areas. Rural residents may also tend to rely more on NOAA weather radios in addition to media broadcasts. More use of mass communication and notification systems in urban areas provide timely alerts and updates to residents in harms' way.

Table 4.7.10 – Table 4.7.12 viii summarize all thunderstorm wind events more than 57 mph and the impact on each of the five counties in the planning area.

Table 4.	Table 4.7.10: Cass County Thunderstorm Wind Events (1950-2018) (>57 mph)									
Wind Speed (mph) Events Deaths Injuries Property Damage \$ Crop Damage										
57-67	108	0	0	47,500	0					
68-81	52	1	4	357,000	0					
82-100	6	0	0	0	0					
Total	166	1	4	404,500	0					

Table 4.7.12: Jackson County Thunderstorm Wind Events (1950-2018) (>57 mph)									
Wind Speed (mph)	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
57-67	251	0	3	1,310,750	0				
68-81	115	0	0	1,604,000	2,000				
82-100	18	0	0	10,005,000	0				
Total	384	0	3	12,919,750	2,000				

Table 4.7.13: Platte County Thunderstorm Wind Events (1950-2018) (>57 mph)									
Wind Speed (mph)	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
57-67	112	0	0	59,500	0				
68-81	53	0	1	431,500	0				
82-100	5	0	0	0	0				
Total	170	0	1	491,000	0				

Table 4.7.14: Ray County Thunderstorm Wind Events (1950-2018) (>57 mph)									
Wind Speed (mph)	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$				
57-67	40	0	0	30,000	0				
68-81	22	0	0	249,000	0				
82-100	2	0	0	200,000	0				
Total	64	0	0	479000	0				

Table 4.7.15 – Table 4.7.19 ix summarize all thunderstorm wind events more than 57 mph and the impact on each of the five counties in the planning area between May 2019 and November 2024.

Table 4.7.15: Cass County Thunderstorm Wind Events (5/19- 11/24) (>57 mph)								
Wind Speed (kts. EG) Events Deaths Injuries Property Damage \$ Crop Damage \$								
57-67	7	0	0	\$100,000	\$0			
68-81	1	0	0	\$20,000	\$0			
82-100	82-100 0 0 \$0 \$0							
Total	Total 8 0 0 \$120,000 \$0							

Table 4.7.16: Clay County Thunderstorm Wind Events (5/19- 11/24) (>57 mph)								
Wind Speed (kts. EG) Events Deaths Injuries Property Damage \$ Crop Damage \$								
57-67	10	0	0	\$25,000	\$0			
68-81	5	0	0	\$0	\$0			
82-100	0	0	0	\$0	\$0			
Total	15	0	0	\$25,000	\$0			

Table 4.7.17: Jackson County Thunderstorm Wind Events (5/19- 11/24) (>57 mph)								
Wind Speed (kts. EG) Events Deaths Injuries Property Damage \$ Crop Damage \$								
57-67	21	0	0	\$7,000	\$0			
68-81	4	0	0	\$0	\$0			
82-100	82-100 0 0 \$0 \$0							
Total	25	0	0	\$7,000	\$0			

Table 4.7.18: Platte County Thunderstorm Wind Events (5/19- 11/24) (>57 mph)								
Wind Speed (kts. EG) Events Deaths Injuries Property Damage \$ Crop Damage \$								
57-67	5	0	0	\$0	\$0			
68-81	0	0	0	\$0	\$0			
82-100	0	0	0	\$0	\$0			
Total	5	0	0	\$0	\$0			

Table 4.7.19: Ray County Thunderstorm Wind Events (5/19- 11/24) (>57 mph)								
Wind Speed (kts. EG) Events Deaths Injuries Property Damage \$ Crop Damage \$								
57-67	1	0	0	\$0	\$0			
68-81	0	0	0	\$0	\$0			
82-100	0	0	0	\$0	\$0			
Total	1	0	0	\$0	\$0			

Table 4.7.20 – Table 4.7.16 summarize hail events at least one inch in diameter and the impact on each of the five counties in the planning area.

Table 4.7.20: Cass County Hail Events (1950-2018) (>1")						
Hail Size	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$	
1-1.5	140	0	0	0	0	
1.75-2.5	80	0	0	3,550,000	250,000	
>2.75	5	0	0	4,000	0	
Total	225	0	0	3,554,000	250,000	

Table 4.7.21: Clay County Hail Events (1950-2018) (>1")						
Hail Size	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$	
1-1.5	146	0	0	0	0	
1.75-2.5	98	0	0	2,535,500	55,000	
>2.75	15	0	0	2,500,000	0	
Total	259	0	0	5,035,500	55,000	

Table 4.7.22: Jackson County Hail Events (1950-2018) (>1")						
Hail Size	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$	
1-1.5	215	0	0	3,000	0	
1.75-2.5	111	0	0	14,330,000	0	
>2.75	13	0	0	1,000,000	0	
Total	339	0	0	15,333,000	0	

Table 4.7.23: Platte County Hail Events (1950-2018) (>1")						
Hail Size	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$	
1-1.5	100	0	0	20,000	0	
1.75-2.5	53	0	0	1,325,000	0	
>2.75	6	0	0	40,000	0	
Total	159	0	0	1385000	0	

Table 4.7.24: Ray County Hail Events (1950-2018) (>1")						
Hail Size	Events	Deaths	Injuries	Property Damage \$	Crop Damage \$	
1-1.5	35	0	0	0	0	
1.75-2.5	30	0	0	5,000	0	
>2.75	2	0	0	0	0	
Total	67	0	0	5,000	0	

Table 4.7.25 – **Table 4.7.29** summarize hail events at least one inch in diameter and the impact on each of the five counties in the planning area between May 2019 and November 2024.

Table 4.7.25: Cass County Hail Events (5/19- 11/24) (>1")									
Hail Size	Size Events Deaths Injuries Property Damage \$ Crop Damage								
1-1.5	9	0	0	\$0	\$0				
1.75-2.5	3	0	0	\$0	\$0				
>2.75	1	0	0	\$0	\$0				
Total	4	0	0	\$0	\$0				

	Table 4.7.26: Clay County Hail Events (5/19- 11/24) (>1")									
Hail Size	ail Size Events Deaths Injuries Property Damage \$ Crop Dam									
1-1.5	24	0	0	\$0	\$0					
1.75-2.5	4	0	0	\$0	\$0					
>2.75	0	0	0	\$0	\$0					
Total	28	0	0	\$0	\$0					

Table 4.7.27: Jackson County Hail Events (5/19- 11/24) (>1")									
Hail Size	Size Events Deaths Injuries Property Damage \$ Crop Dam								
1-1.5	37	0	0	\$0	\$0				
1.75-2.5	9	0	0	\$0	\$0				
>2.75	0	0	0	\$0	\$0				
Total	46	0	0	\$0	\$0				

	Table 4.7.28: Platte County Hail Events (5/19- 11/24) (>1")								
Hail Size	Events Deaths Injuries Property Damage \$ Crop Dam				Crop Damage \$				
1-1.5	22	0	0	\$0	\$0				
1.75-2.5	1	0	0	\$0	\$0				
>2.75	0	0	0	\$0	\$0				
Total	23	0	0	\$0	\$0				

Table 4.7.29: Ray County Hail Events (5/19- 11/24) (>1")									
Hail Size	e Events Deaths Injuries Property Damage \$ Crop Damag								
1-1.5	5	0	0	\$0	\$0				
1.75-2.5	1	0	0	\$0	\$0				
>2.75	0	0	0	\$0	\$0				
Total	6	0	0	\$0	\$0				

Historical statistics associated with the occurrence of severe thunderstorms in the region are presented in **Table 4.7.30** and based on wind gusts and hail size. The table provides an indication of the probable severity of a thunderstorm in the Kansas City region. The severity impact was calculated by taking the average of two percentages. The percentage of storms that have a respective hail size and the percentage of storms that have a respective wind gust speed. For example, a future severe thunderstorm has a 57% chance of having 1-1.5 inch. hail and 57-67 mph wind gusts, most likely causing a limited impact.

Table 4.7.30: Probable Future Severe Thunderstorm Severity							
Hail Size (inches)	Wind Gusts (mph)	Probable Future Severity (Catastrophic, Critical, Limited or Negligible)					
1-1.5	57-67	57% — Limited					
1.75-2.5	68-80	29% — Critical					
>2.75	81-118	5% — Catastrophic					

Based on the 69-year history of severe thunderstorm events across the region, **Table 4.7.31** presents the likely adverse impact of future Kansas City metropolitan area severe thunderstorm and related events.

Table 4.7.31: Estimated Categories of Impact								
Effects of Thunderstorms	Life	Property	Emotional	Financial				
Without mitigation measures	Limited	Critical	Limited	Critical				
With mitigation measures	Negligible	Limited	Negligible	Limited				

Hail and wind events commonly occur in the Kansas City planning area. Mitigation measures can reduce the adverse impact of damaging winds, hail and heavy rains associated with severe thunderstorms, helping to save lives, prevent injuries and lessen property damage. Measures include public education and awareness programs and public use of enhanced warning and mass communication systems.

4.7.4 Probability of Future Occurrence: 93%

Although the likelihood of severe thunderstorms is greatest during the spring and early summer, they can occur anywhere in the region, at any time of the year and at any hour of the day or night. A review of historical statistics, summarized in **Table 4.7.32**, indicates the likelihood of a severe thunderstorm occurring anywhere in the Kansas City area based on hail size and wind gusts. For example, a future severe thunderstorm that has 1-1.5 inch. hail and 57-67 mph wind gusts are likely to happen in a given year.

Table 4.7.32: Probability of Future Severe Thunderstorm Events							
Hail Size (inches)	Wind Gusts (mph)	Probability (Highly Likely, Likely, Possible, or Unlikely)					
1-1.5	57-67	57% — Likely					
1.75-2.5 68-80		29% — Possible					
>2.75	81-118	5% — Unlikely					

4.7.5 Extent

Watches and Warnings

NOAA meteorologists constantly monitor weather patterns, both nationally and locally, and issue watches and warnings as needed.

<u>Severe Thunderstorm Watches</u> are issued by NOAA Storm Prediction Center meteorologists who monitor the entire U.S. for weather conditions that are favorable for severe thunderstorms. A watch can cover parts of one or more states. The purpose of the watch is to encourage people to prepare for severe weather and stay alert to when warnings are issued.

<u>Severe Thunderstorm Warnings</u> are issued by local NOAA National Weather Service Forecast Office meteorologists who monitor a designated area for severe weather that has been reported by spotters or indicated by radar. Warnings mean there is a serious threat to life and property to those in the path of the storm. The purpose of the warning is to encourage people to act immediately to find safe shelter. A warning can cover parts of counties or several counties in the path of danger.

The Thunderstorm Life Cycle

Thunderstorms can look like tall heads of cauliflower or they can have "anvils." An anvil is the flat cloud formation at the top of the storm. An anvil forms when the updraft (warm air rising) has reached a point where the surrounding air is about the same temperature or even warmer. The cloud growth abruptly stops and flattens out to take the shape of an anvil. (See Figure 4.7.1)

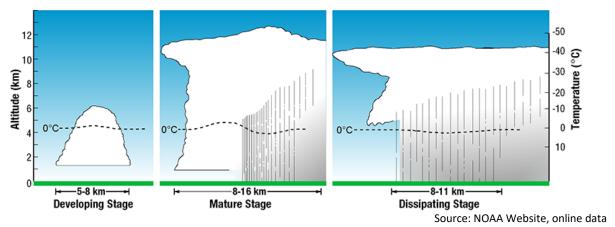


Figure 4.7.1: The Thunderstorm Life Cycle

Thunderstorm Types

Single-cell thunderstorms are small, brief, weak storms that grow and die within an hour or so, typically driven by heating on a summer afternoon. Single-cell storms may produce brief heavy rain and lightning.

Multi-cell storms are common thunderstorms in which new updrafts form along the leading edge of rain-cooled air (the gust front). Individual cells usually last 30 to 60 minutes, while the system may last for many hours. Multi-cell storms may produce hail, strong winds, brief tornadoes, and/or flooding.

Squall line refers to a group of storms arranged in a line, often accompanied by "squalls" of high wind and heavy rain. Squall lines tend to pass quickly and are less prone to produce tornadoes than supercells. They can be hundreds of miles long but are typically only 10 or 20 miles wide.

Supercell thunderstorms are long-lived (lasting more than one hour) and highly organized storms that feed off an updraft (a rising current of air) that is tilted and rotating. This rotating updraft — which can be as large as 10 miles in diameter and up to 50,000 feet tall — can be present as much as 20 to 60 minutes before a tornado forms. Scientists call this rotation a mesocyclone when it is detected by Doppler radar. The tornado is a very small extension of this larger rotation. Most large and violent tornadoes come from supercells.

Bow echo refers to the radar signature of a squall line that "bows out" as winds fall behind the line and circulations develop on either end. A strongly bowed echo may indicate high winds in the middle of the line, where the storms are moving forward most quickly. Brief tornadoes may occur on the leading edge of a bow echo. Often the north side of a bow echo becomes dominant over time, gradually evolving into a comma-shaped storm complex.

Mesoscale Convective System (MCS) is a collection of thunderstorms that act as a system. An MCS can spread across an entire state and last more than 12 hours. On radar, one of these monsters might appear as a solid line, a broken line, or a cluster of cells. This all-encompassing term can include any of the following storm types:

- Mesoscale convective complex (MCC)—A particular type of MCS, an MCC is a large, circular, long-lived cluster of showers and thunderstorms identified by satellite. It often emerges out of other storm types during the late-night and early-morning hours. MCCs can cover an entire state.
- Mesoscale convective vortex (MCV)—A low-pressure center within an MCS that pulls winds into
 a circling pattern, or vortex. With a core only 30 to 60 miles wide and 1 to 3 miles deep, an MCV
 is often overlooked in standard weather analyses. But an MCV can take on a life of its own,
 persisting for up to 12 hours after its parent MCS has dissipated. This orphaned MCV will
 sometimes then become the seed of the next thunderstorm outbreak. An MCV that moves into
 tropical waters, such as the Gulf of Mexico, can serve as the nucleus for a tropical storm or
 hurricane.

Derecho refers to a widespread, long-lived wind storm that is associated with a band of rapidly moving showers or thunderstorms. Although a derecho can produce destruction like that of tornadoes, the damage typically is directed in one direction along a relatively straight swath. As a result, the term "straight-line wind damage" is sometimes used to describe derecho damage. By definition, if the wind damage swath extends more than 240 miles (about 400 kilometers) and includes wind gusts of at least 58 mph (93 km/h) or greater along most of its length, the event may be classified as a derecho.

Seasonal Pattern: In general, severe thunderstorms may affect Greater Kansas City anytime; however, weather is most likely during the spring and summer months. But as historical records indicate, it is possible for severe thunderstorms to affect the region early or late in the season.

4.7.5a Probable Duration: Thunderstorms can strike so quickly and with little if any warning. The entire thunderstorm life cycle from the growing cumulus cloud to the dissipated storm can take only 30 minutes. Thunderstorms range between 5 and 25 miles in diameter making them much localized storms.^x

Potential speed of onset (probable amount of warning time):

- Minimal (or no) warning
- 6 to 12 hours warning
- ☐ 12 to 24 hours warning
- ☐ More than 24 hours warning

4.7.6 Vulnerability Analysis

Vulnerable Assets

People: Death and injury can be sustained by fallen trees onto houses or cars, downed power lines, etc., due to damaging winds, or traffic accidents on rain-slick roads caused by heavy rains. People who remain in mobile homes are at tremendous risk. Roads may become blocked by tree limbs or downed power lines and inhibit the ability of emergency services and medical personnel to travel and assist people who are injured or in harm's way, posing a secondary hazard to life. Loss of electricity for

extended periods of time in the heat of summer could cause heat exhaustion. Large crowds at outdoor venues are also at a higher risk for injury and death unless nearby shelter is accessible.

Property: Damaging winds and hail can break branches or topple an entire tree, knocking down power and telephone lines, disrupting power and telephone service, causing property damage to vehicles, homes, commercial buildings and other structures. Flooded basements and backed up sewers can also damage property.

Transportation Infrastructure and Services: Rain-slick roads may result in traffic accidents. Roads may also be blocked, and traffic disrupted by downed trees, tree limbs and power lines. Heavy rain may reduce visibility and can temporarily disrupt or slow traffic.

Utilities: Fallen trees and branches can break and fall onto above-ground power and telecommunications lines, damaging the lines and disrupting power and service to customers. Utility poles and telecommunications towers may also be toppled by damaging winds.

Commerce and Essential Services: The costs associated with property damage, power restoration and debris removal can be low or high depending on the storm. Storms can delay surface, air and rail transportation by disrupting the temporary flow of goods and services. Commuters can be delayed or stranded causing a loss of business productivity. Downed power and telecommunications lines can interfere with businesses' ability to power equipment, communicate or execute financial transactions. Essential services such as law enforcement, fire protection and EMS may be hampered by road conditions.

Natural Environment: Damaging wind and hail events can cause considerable damage to trees and other vegetation, like severe winter storms. Trimming and removal efforts, though necessary in most cases, can exacerbate this problem.

All critical facilities are susceptible to the hazard. Refer to the supplemental hazard-specific information in Appendix C: Maps and References.

4.7.7 Problem Statements

Vulnerability statements, such as those below, can support development of mitigation strategies for severe thunderstorms:

- Severe thunderstorms with damaging winds and hail are frequent events within the Kansas City region and will likely continue to impact large areas.
- Cascading impacts of severe thunderstorms can have lasting, cross-jurisdictional impacts.
 Normal mutual-aid partners or regional resources may be unavailable or unable to support response.
- Mitigation measures to protect property tend to be expensive with cost-benefit ratio being challenging.
- As with tornadoes, current public information efforts have likely plateaued in their effectiveness.
- New warning technologies have created the potential for uncoordinated warnings (or conversely, oversaturation) leading to residents not taking appropriate protective actions.

ⁱ NOAA Web Site, http://www.nssl.noaa.gov/education/svrwz101/thunderstorms/

[&]quot; NOAA Storm Events Database

iii FEMA Web Site, https://www.ready.gov/thunderstorms-lightning

^{iv} Missouri State Hazard Analysis, Annex A

^v Missouri State Hazard Analysis, Annex A

vi NWS Preliminary US Flood Fatality Statistics, NOAA, https://www.weather.gov/arx/usflood

vii NOAA Web Site

viii NOAA NCDC Web Site, https://www.ncdc.noaa.gove/stormevents

ix NOAA NCDC Web Site, https://www.ncdc.noaa.gove/stormevents

^x NOAA Web Site, http://www.erh.noaa.gov/lwx/swep/Spotting.html



4.8 Severe Winter Weather



Severe winter weather, including snow storms, ice storms and extreme cold, may affect any part of Cass, Clay, Jackson, Platte and Ray counties any given winter season. Although the annual snowfall amount in the Kansas City area is moderate — generally around 20 inches — the area may be affected by a full range of snowy conditions, including blizzards, blowing snow, snow squalls, snow showers and snow flurries. These snowy conditions are defined as follows:

Blizzard – Winds of 35 mph or more with snow and blowing snow reducing visibility to less than one-quarter mile for at least three hours.

Snow Squalls – Brief intense snow showers accompanied by strong, gusting winds; accumulation may be significant.

Blowing Snow – Wind-driven snow that reduces visibility; blowing snow may be falling snow and/or snow on the ground picked up by the wind.

Snow Showers – Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

Drifting Snow – Uneven distribution of snowfall caused by strong surface winds. Drifting snow does not reduce visibility.

Snow Flurries – Light snow falling for short durations with little or no accumulation.

Source: Winter Storms, The Deceptive Killers, 2001, NWS Web site Winter Weather Glossary, USA Today Web site

Ice storms may also affect the Kansas City area during the winter months. In ice storms, damaging accumulations of ice occur during a period of freezing rain. According to the NWS, significant accumulations of ice are defined as one-quarter inch or more of ice. Other icy conditions that may affect the Kansas City area include freezing rain and sleet. Freezing rain or freezing drizzle occurs when rain or drizzle freezes on surfaces, such as roads, bridges, cars and trees, forming a coating or glaze of ice. In freezing rain or freezing drizzle situations, air temperatures are warm enough for rain to form, but surface temperatures are below 32 degrees (i.e., below freezing), causing rain or drizzle to freeze on contact with surfaces. Sleet is raindrops that freeze and form ice pellets before reaching the ground. It is the ground or other surface instead of sticking and forming a coating. Sleet, however, may accumulate like snow. Sleet is the accumulation of half an inch or more of sleet.

4.8.1 Historical Occurrences

Severe winter weather is virtually an annual occurrence in the Kansas City area. Whether it is a snow storm, ice storm, freezing rain, sleet, period of extreme cold or combination of these conditions, citizens of the Kansas City area will normally experience some type of severe weather event each winter. Occurrences of severe winter weather spanning from 2014 to 2018 are depicted in Table 4.8.1. Historical occurrences occurring between May 2019 and November 2024 are depicted in **Table 4.8.2** Each

historical occurrence contains the beginning date of the severe winter weather event, the affected counties in the Kansas City area and a description of the damaging events.

Table 4.8.1 Historical Occurrences, Severe Winter Weather (2014- February 2019)								
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
Cass, Clay, Jackson, Platte, Ray	1/6/2014	Cold/Wind Chill	0	0	0	0		
Cass, Clay, Jackson, Platte, Ray	2/4/2014	Heavy Snow	0	0	0	0		
Cass, Clay, Jackson, Platte, Ray	3/1/2014	Winter Storm	0	0	0	0		
Jackson	1/3/2015	Winter Weather	0	0	10,000	0		
Clay	11/27/2015	Winter Weather	0	0	0	0		
Platte	12/27/2015	Winter Storm	0	0	0	0		
Platte	1/13/2017	Winter Weather	0	0	0	0		
Jackson	1/12/2018	Cold/Wind Chill	1	0	0	0		
Cass, Clay, Jackson, Platte, Ray	2/20/2018	Ice Storm	0	0	0	0		
Cass	11/12/2018	Winter Weather	0	0	100,000	0		
Cass, Clay, Jackson, Platte, Ray	11/25/2018	Blizzard	0	0	0	0		
Cass, Clay, Jackson, Platte, Ray	1/11/2019	Winter Storm	0	0	0	0		
Cass, Clay, Jackson, Platte, Ray	2/6/2019	Ice Storm	0	0	0	0		
Jackson, Cass	2/15/2019	Winter Weather	0	0	1,500,000*	0		

Source: NOAA NCDC Web site

^{*}Jackson county reported \$1,000,000 in property damage and Cass county reported \$500,000 in property damage

Table 4.8.2 Historical Occurrences, Severe Winter Weather (2019- November 2024)								
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
CASS (ZONE)	2/14/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CASS (ZONE)	2/15/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CASS (ZONE)	2/16/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CASS (ZONE)	12/22/22	Extreme Cold/wind Chill	0	0	\$0	\$0		
CASS (ZONE)	1/12/24	Extreme Cold/wind Chill	0	0	\$0	\$0		
CASS (ZONE)	03/10/2022	Heavy Snow	0	0	\$0	\$0		
CASS (ZONE)	01/17/2020	Ice Storm	0	0	\$0	\$0		
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
CLAY (ZONE)	2/14/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CLAY (ZONE)	2/15/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CLAY (ZONE)	2/16/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
CLAY (ZONE)	12/22/22	Extreme Cold/wind Chill	0	0	\$0	\$0		
CLAY (ZONE)	1/12/24	Extreme Cold/wind Chill	0	0	\$0	\$0		
CLAY (ZONE)	03/07/2022	Winter Weather	0	0	\$0	\$0		
CLAY (ZONE)	01/17/2020	Ice Storm	0	0	\$0	\$0		
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
JACKSON (ZONE)	2/14/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
JACKSON (ZONE)	2/15/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
JACKSON (ZONE)	2/16/21	Extreme Cold/wind Chill	0	0	\$0	\$0		
JACKSON (ZONE)	12/22/22	Extreme Cold/wind Chill	0	0	\$0	\$0		
JACKSON (ZONE)	1/12/24	Extreme Cold/wind Chill	0	0	\$0	\$0		
JACKSON (ZONE)	03/10/2022	Heavy Snow	0	0	\$0	\$0		
JACKSON (ZONE)	3/6/22	Winter Weather	0	0	\$0	\$0		
JACKSON (ZONE)	11/15/22	Winter Weather	1	0	\$10,000	\$0		

JACKSON (ZONE)	01/17/2020	Ice Storm	0	0	\$0	\$0
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$
PLATTE (ZONE)	2/14/21	Extreme Cold/wind Chill	0	0	\$0	\$0
PLATTE (ZONE)	2/15/21	Extreme Cold/wind Chill	0	0	\$0	\$0
PLATTE (ZONE)	2/16/21	Extreme Cold/wind Chill	0	0	\$0	\$0
PLATTE (ZONE)	12/22/22	Extreme Cold/wind Chill	0	0	\$0	\$0
PLATTE (ZONE)	1/12/24	Extreme Cold/wind Chill	0	0	\$0	\$0
PLATTE (ZONE)	04/20/2021	Winter Weather	1 (indirect)	0	\$200,000	\$0
PLATTE (ZONE)	01/17/2020	Ice Storm	0	0	\$0	\$0
County	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$
RAY (ZONE)	2/14/21	Extreme Cold/wind Chill	0	0	\$0	\$0
RAY (ZONE)	2/15/21	Extreme Cold/wind Chill	0	0	\$0	\$0
RAY (ZONE)	2/16/21	Extreme Cold/wind Chill	0	0	\$0	\$0
RAY (ZONE)	12/22/22	Extreme Cold/wind Chill	0	0	\$0	\$0
RAY (ZONE)	1/12/24	Extreme Cold/wind Chill	0	0	\$0	\$0

Narratives from events with property damage are stated below.

January 3, 2015 - Jackson County

The Kansas City area had a period of mixed precipitation. Rain preceded snow and the warm pavement melted the snowfall instantly. When a cold front came through the moisture froze to the pavement, causing slick conditions. An NWS employee was on their way to the office when they lost control of their vehicle on Highway 150, just west of the intersection with Highway 7. The car slid off the road and flipped in the ditch. The person was hospitalized for a short time before being released later that day.

November 15, 2022 – Jackson County

Overnight through the morning of November 15th some light snow fell, which accumulated on roadways causing a few automobile accidents. At least one of these accidents caused a fatality. Per MHP crash report, a eastbound pickup truck on Highway 150 just east of Highway 7 started sliding on the roadway, crossed the center, and collided head on with a small car traveling westbound. The driver of the of the car passed at the scene.

MHP Crash Report:

https://www.mshp.dps.missouri.gov/HP68/AccidentDetailsAction?ACC_RPT_NUM=220602365

November 12, 2018 - Cass County

Light snow began falling early in the morning on November 12. While the snow was generally light - moderate at times - 1 to 3 inches of snow fell across the area which caused area roads to become icy, and numerous vehicle accidents ensued. Up to 10 injuries had been reported, and 2 fatalities occurred as a result of the icy roads. One such accident that resulted in a fatality occurred along I-49 (Mile Marker 160.2) in Cass County near the town of Archie around 10:00 am, when a vehicle slid off the road, struck a guardrail, and came back onto the road, where it was subsequently hit by a 18 wheeler. The driver of the vehicle died on the scene and the passenger was transported to a local hospital with minor injuries. On the road is a local hospital with minor injuries.

February 15, 2019 – Cass and Jackson Counties

Light to moderate snow began falling across the region in the mid to late morning hours on Friday February 15, 2019. By the early afternoon heavy snow had been falling for a couple hours and area roads became impassible. Around 3 to 4 inches accumulated on local roads, including I-70 just east of Kansas City. Reduced visibility due to the heavy snow prevented vehicles already on local roads from seeing hazards in their path, which resulted in several injury accidents. The reduced visibility caused a massive pile up at the Oak Grove exit on WB I-70. Several injuries occurred in this accident and one fatality occurred in the carnage that ensued. The pile up received high profile coverage on national media as a trucker caught up in the wreck took video from inside his cab. That video can be found at the following link. | https://twitter.com/Dantej21/status/1096550488714170368 Another pile up occurred on I-49 between Belton and Peculiar. Most injuries in this accident were considered moderate and non-life threatening.

April 20, 2021 - Platte County

With slick roads causing accidents across the Kansas City Metro one such accident proved fatal, just on the Missouri side of the Missouri River along I-635 near where it intersects with Horizons Parkway. Icy roads have not been determined officially as the cause, but with icy roads that day it's strongly plausible as a contributor to the accident. An accident along I-635 just north of the Missouri River was fatal for one motorist. Icy roads have not been determined officially as the cause, but with 2 to 4 inches of snow on the roads causing slick conditions that morning it's strongly plausible as a contributor to the accident. A vehicle was travelling south along I-635 and crashed head on into a semi. This took place south of Horizons Parkway along I-635, but north of the Missouri River.

4.8.2 Probable Locations

Magnitude >50%

Severe winter weather events tend to be regional in scope. Therefore, the entire Kansas City metro area including Cass, Clay, Jackson, Platte and Ray counties may be affected. Therefore, all counites were given a >50% magnitude rating.

4.8.3 Impact

Historical occurrences have shown the impact severe winter weather can have on the Kansas City area. Winter storms have caused injuries and loss of life, traffic accidents, property damage, power outages, transportation and telecommunications disruptions, and economic losses. One of the most glaring examples of the impact severe winter weather can have on the Kansas City area is the ice storm of January 29-31, 2002, in which each of the five counties experienced many adversities. The damage costs associated with this severe winter storm were enormous — \$61.9 million in federal public assistance alone — making it the second-costliest disaster in Missouri's history.

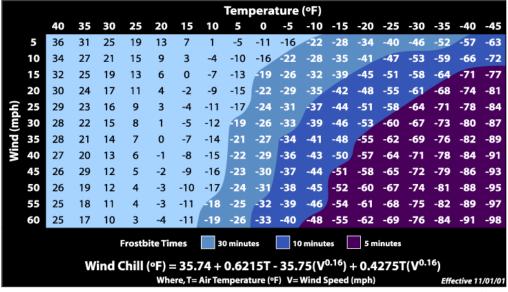
On average, Missouri counties north of the Missouri River receive annual snowfall of 18 to 22 inches; counties south of the Missouri River receive 8 to 12 inches. The events often involve borderline conditions of freezing rain, ice and high winds, causing high unpredictability. Besides snow and ice, extremely cold temperatures can produce problems. The wind chill is determined by factoring cold temperatures and wind speed. See **Figure 4.8.3**. The situation can be dangerous to people outdoors because their bodies can experience rapid heat loss, resulting in hypothermia (abnormally low body temperature).

Accidental poisonings and deaths are also more likely to occur in colder months. Carbon monoxide poisoning is one indirect winter hazard that can occur. Improperly vented gas and kerosene heaters or the indoor use of charcoal briquettes create dangerous levels of carbon monoxide. In Missouri, due to weather-related power outages there were 16 fatal cases and 52 non-fatal cases of non-fire carbon monoxide poisoning from 2006-2015. There is no current data for the 2015 – 2019 Plan period. xii

People: Winter storms are deceptive killers because many of the deaths and injuries that occur are indirectly related to the storm. Indirect causes of death and injury include traffic accidents on snow-covered or icy roads and heart attacks due to overexertion from shoveling snow and related activities. According to the NWS, about 70 percent of injuries related to ice and snow are the result of vehicle accidents, about 25 percent occur to people outdoors in a storm, and most happen to males more than 40 years old. Ice- or snow-covered roads, or roads blocked by tree limbs or power lines, may also inhibit the ability of emergency services and medical personnel to travel and assist people who are injured or in harm's way, posing a secondary hazard to life. Other, though less common, causes of injury and death indirectly related to severe winter weather include pedestrians slipping and falling on icy walkways, carbon monoxide poisoning from improperly vented heaters, and electrocutions and fires from downed power lines.

The most direct causes of injuries and death from severe winter weather are frostbite and hypothermia. Frostbite occurs when body tissue is damaged by extreme cold. (See **Figure 4.8.1**) Frostbite usually affects the body's extremities, such as fingers, toes, ear lobes and the tip of the nose, and causes a loss of feeling and a white or pale appearance. Hypothermia is a potentially deadly condition that occurs when body temperature drops to less than 95 degrees. Hypothermia can cause lasting kidney, liver and pancreas problems for those who survive the condition. Early symptoms of hypothermia include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and exhaustion. According to the NWS, approximately 50 percent of injuries related to cold temperatures occur in people more than 60 years old, more than 70 percent happen to men, and about 20 percent occur at home. The elderly, infants, the poor and the homeless may be particularly susceptible to extremely cold conditions.





Source: National Weather Service

Figure 4.8.3: 2001 NWS Wind Chill Index

Property: Residential and commercial property in the Kansas City area is susceptible to severe winter weather. Snow and ice may accumulate on trees, breaking branches or toppling the entire tree. Falling trees and branches can knock down power and telephone lines, disrupting power and telephone service. Falling trees and branches can also damage homes, commercial buildings and other structures. Ice can accumulate on power and telephone lines, causing them to break. Heavy accumulations of snow can cause roofs to collapse. Extremely cold temperatures may injure or kill unprotected pets and livestock, and damage or destroy crops. Extreme cold can also cause water lines in houses and commercial property to freeze and break.

Transportation Infrastructure and Services: Transportation infrastructure and services in the Kansas City area are highly susceptible to severe winter weather. Snow-covered and/or icy roads may result in traffic accidents. Bridges and overpasses are particularly susceptible to icy conditions because they tend to freeze sooner than other roadways. Roads may also be blocked, and traffic disrupted by downed trees, tree limbs and power lines. Heavy snow, ice, freezing rain, high winds and reduced visibility can close airports, disrupt barge traffic on the Missouri River and disrupt or slow rail traffic.

Utilities: Above-ground power and telecommunications lines in the Kansas City area are highly susceptible to severe winter weather. Heavy accumulations of snow and ice on trees can cause trunks and branches to break and fall on power and telecommunications lines, damaging the lines and disrupting power and service to customers. Utility poles and telecommunications towers may also be toppled by heavy accumulations of ice. The October 22-23, 1996, snow storm and the January 29-31, 2002, ice storm caused widespread power and telecommunications outages across the region. Older and more rural parts of the Kansas City area are generally more likely to experience service disruptions due to severe winter weather because they tend to have more above-ground power and

telecommunications lines than newer areas where those utilities are often underground. Extremely cold temperatures may cause main water lines to break, disrupting the supply of water to communities.

Commerce and Essential Services: By damaging property, hampering transportation and disrupting utility services, severe winter weather can have an adverse impact on the economy of a community. As an example, the costs associated with property damage, power restoration and debris removal following the January 29-31, 2002, ice storm were so high for local governments in the Kansas City area that Missouri received a Presidential Disaster Declaration. Cass, Clay, Jackson, Platte and Ray counties were among the 26 Missouri counties eligible for both federal Individual and public assistance programs because of this winter storm event. Severe winter weather can impact surface, air and rail transportation systems by disrupting the flow of goods and services into and out of the metro area. Similarly, commuters can be delayed or stranded, causing a loss of business productivity. Downed power and telecommunications lines can interfere with business' ability to power equipment, communicate or execute financial transactions. Essential services such as law enforcement, fire protection and EMS may be hampered by icy and hazardous road conditions. Area schools are routinely closed due to snow-covered or icy roads and extremely cold temperatures. In addition, beneficial programs for the elderly and/or persons with disabilities, such as home-delivered meals for home-bound senior citizens, may be temporarily curtailed due to the hazardous driving conditions snow-covered or icy roads.

Natural Environment: The early snow storm of October 22–23, 1996, and the ice storms of December 6, 1994, and January 29–31, 2002, caused considerable damage to the environment in the Kansas City area. Thousands of trees and other vegetation in both natural and developed areas were seriously damaged or destroyed by the storm. Trimming and removal efforts, though necessary in most cases, exacerbated this problem. In addition, air quality may have been affected due to the permitted burning of storm debris in some communities. All critical facilities are susceptible to the hazard. Refer to the supplemental hazard-specific information in Appendix C: Maps and References.

4.8.4 Probability of Future Occurrence: 92%

It is likely that some or all of the Kansas City metro area will experience some form of severe winter weather each year. At any hour of the day or night, snow, ice, freezing rain, sleet and/or extreme cold may affect the region in the wintertime (generally between November and April). As a result, the entire region is at risk from severe winter weather, with at 92 percent change of a winter storm including an ice storm, blizzard, extreme cold, heavy snow, freezing fog, or frost/freeze.

Some of the adverse effects of severe winter weather may be reduced, however, through certain mitigation measures, such as public education campaigns that stress winter safety; proper tree-trimming (to keep branches away from power lines); and programs to reduce, eliminate or defer home heating costs for low-income and at-risk residents.

Seasonal Pattern: In general, severe winter weather may affect Greater Kansas City between November and April; severe winter weather is most likely during the months of December, January and February. But, as historical records indicate, it is possible for severe winter weather to affect the region early in the season, such as October snow storms. Similarly, it is not uncommon for the Kansas City area to receive severe winter weather late in the season, such as snow or freezing rain in March.

4.8.5 Extent

In the winter, the Kansas City area's normal low temperatures are 22.5 degrees in December, 17.8 degrees in January and 23.2 degrees in February. XIII However, the area may also experience periods of extreme cold in the wintertime. For example, the lowest temperature on record for the Kansas City area was minus 23 degrees on Dec. 22–23, 1989. XIV The winter of 1978–79 had the lowest average seasonal temperature for the Kansas City metropolitan area: 21.5 degrees. XIV

Exacerbating wintertime cold air temperatures is wind chill. Wind chill is not the actual air temperature, but rather how cold and wind feel on exposed skin. **vi* As the wind velocity increases, heat is carried away from the body at an accelerated rate, lowering the body temperature. **vii* People and animals' outdoors are affected by wind chill, a situation that can be dangerous, because hypothermia can result from loss of body heat.

The extent of severe weather storms can be characterized by advisories, watches, and warnings provided by NWS in advance of severe winter weather. These include:

Winter Weather Advisory – Winter weather conditions are expected to cause significant inconveniences and may be hazardous. However, if caution is exercised, these situations should not become lifethreatening. In conditions warranting a winter-weather advisory, the greatest hazard is often to motorists.

Winter Storm Watch – A significant winter storm may affect the area, but its occurrence, location and timing are uncertain. A winter storm watch is issued to provide 12 to 36 hours' notice of the possibility of severe winter weather. A watch will often be issued when neither the path of a developing winter storm nor the consequences of the event are well-defined. A winter storm watch may be upgraded to a warning when the nature and location of the developing weather event becomes more apparent.

Winter Storm Warning – A winter storm warning is issued when hazardous winter weather is occurring, imminent or likely. A warning is used for winter weather conditions that may be a threat to life and property. Winter storm warnings are usually issued for heavy snow approaching or exceeding 6 inches, ice accumulations, dangerous wind chills or a combination of these conditions. Warnings can be issued for lesser amounts of snow, 3 to 6 inches, for example, if the snow occurs with strong winds more than 20 miles per hour and/or significant sleet or heavy ice accumulations from freezing rain. In the Central Plains, expected snow accumulation during a winter storm warning is 4 inches or more in 12 hours or 6 inches or more in 24 hours.

Wind Chill Warning – A wind chill warning is issued when life-threatening wind chills reach minus 50 degrees or below.

Ice Storm Warning – An ice storm warning is issued when a significant coating of ice, a quarter of an inch or more, is expected.

Heavy Snow Warning – A heavy snow warning is issued when snow accumulations are expected to approach or exceed 6 inches in 12 hours but will not be accompanied by significant wind. A heavy snow warning could also be issued if 8 inches or more of snow accumulation is expected in a 24-hour period. Sleet and freezing rain are not expected during a heavy snow warning.

Blizzard Warning – A blizzard warning is issued when sustained winds or frequent gusts of 35 mph may occur in combination with considerable falling and/or blowing snow for a period of at least three hours. In a blizzard warning, visibilities will frequently be reduced to less than one-quarter mile, and temperatures will often be extremely cold.

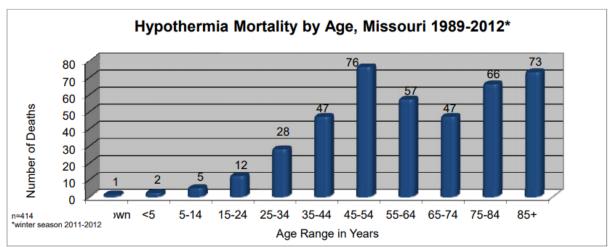
4.8.5a Probable Duration: The dangerous conditions associated with severe winter weather, such as accumulation of snow and ice or extremely low temperatures, can occur within a few hours. Snow and ice may be present for several days; extreme cold may also persist for several days. The cascading effects of severe winter weather, such as utility outages, can also last for several days. In the aftermath of the January 29–31, 2002, ice storm, some parts of the Kansas City area were without electrical power for more than a week.

Potential Speed of Onset (probable amount of warning time):

- ☐ Minimal (or no) warning
- 6 to 12 hours warning
- ☐ 12 to 24 hours warning
- ☐ More than 24 hours warning

4.8.6 Vulnerability Analysis

Winter weather often affects the whole planning area at once. Only a few degrees may be the difference between rain, ice, or snow. Vulnerable populations are more susceptible to extreme and winter weather. For instance, senior citizens without proper heating, can find it hard to keep body temperatures up. Figure 4.8.2 is graph created by the Missouri Department of Health and Senior Services showing larger quantities of death by hypothermia in the older age ranges. Additionally, icy road conditions could cause detrimental slipping and falling. Other vulnerable communities include low-income, children, and the homeless populations. See Planning Profile Appendix for maps of these vulnerable populations.



Source: Missouri Department of Health and Senior Services, Data and Statistical Reports | Note: This data represents the most current data available by the state.

Figure 4.8.2: Hypothermia Mortality by Age, 1989-2012

4.8.7 Problem Statements

Listing vulnerabilities, such as below, can support development of mitigation strategies for severe winter weather:

- Cascading impacts of severe winter weather can have lasting, cross-jurisdictional impacts.
 Normal mutual-aid partners or regional resources may be unavailable or unable to support response.
- Many critical facilities don't have emergency backup power or rely on generators that will need to be refueled in 24–72 hours.
- Economic impacts from extreme, long-duration winter storms will stress local government resources.
- Debris management/snow removal will likely be a tremendous challenge; many jurisdictions don't have approved debris management plans.
- Vulnerable populations may need assistance with transportation for essential trips or to move to shelter with heat.

https://www.mshp.dps.missouri.gov/HP68/AccidentDetailsAction?ACC_RPT_NUM=180680656

https://health.mo.gov/living/healthcondiseases/hypothermia/surveillance.php

¹ NCDC, online data; NWS Winter Storms Preparedness Guide, online document

[&]quot; USA Today Winter Weather Glossary, online data

iii USA Today Winter Weather Glossary, online data

iv USA Today Winter Weather Glossary, online data

^v USA Today Winter Weather Glossary, online data

vi USA Today Winter Weather Glossary, online data

vii USA Today Winter Weather Glossary, online data

viii USA Today Winter Weather Glossary, online data

ix USA Today Winter Weather Glossary, online data

^{*} News story: https://www.kshb.com/news/local-news/one-killed-in-henry-county-crash-caused-by-slick-roads

xi Missouri Highway Patrol Accident Report,

xii Missouri Carbon Monoxide Poisoning Surveillance pg. 11,

https://health.mo.gov/living/environment/carbonmonoxide/pdf/co-statistical-report.pdf

xiii NOAA NCDC, online data

xiv NWS Kansas City/Pleasant Hill Web site, online data

xv NWS Kansas City/Pleasant Hill Web site, online data

xvi NWS Winter Storms Preparedness Guide, online document; SEMA State Hazard Analysis, C-1

xvii NWS Winter Storms Preparedness Guide, online document

xviii SEMA Hazard Mitigation Plan, pg. 354

xix Missouri Department of Health and Senior Services, Data and Statistical Reports,



4.9 Flooding



Note: Floodplain maps for individual jurisdictions can be found in Appendix C: Maps and References.

With the exception of fires, floods are the most common and widespread of all-natural disasters. Most communities have experienced some type of flooding. Flooding occurs when normally dry areas of land are partially or completely inundated by water. Floods are caused by a number of conditions, including widespread and/or intense rainfall; runoff from deep snow cover (usually a combination of heavy rain, rapid warming and rapidly melting snow); over-saturated soil (the ground cannot absorb any more water); frozen soil that cannot absorb as much water as soil that is not frozen; high river, stream or reservoir levels preceding heavy or extended rains; ice jams in rivers and streams (these can flood upstream locations and, when they break, downstream locations); and urbanization (large amounts of pavement and buildings inhibit water absorption by the soil and cause rainwater to flow into sewers and drainage ditches and overflow them). These same conditions that cause flooding have the potential to lead to levee failures and dam failures, resulting in even more extensive flooding. *Levee Failures* and *Damn Failures* are now included in the hazard category of "Flooding" in the 2020 Plan Update.

Several types of flooding have adversely affected the Kansas City area in the past and are expected to put the region at risk in the future: riverine floods, flash floods and sheet floods. Riverine flooding occurs when rivers, streams, lakes, reservoirs or drainage systems overflow due to excessive rainfall, rapid snowmelt or ice jams. According to FEMA, riverine floods can be either slow- or fast-rising, but generally occur over a period of days, inundating adjacent areas of land. The low, relatively flat land adjoining rivers and streams is known as a floodplain. Floodplains are natural reservoirs for floodwaters, created over thousands of years by floods and the flow of a river or stream's waters. Floodplains are important components of basins, the land drained by a river and its tributaries. The Kansas City area, along with most of the northern and central parts of the state, lies within the Missouri River Basin. As a result, a significant portion of the region lies within floodplains.

Common nomenclature associated with riverine floods and floodplains include the terms "10-year flood," "50-year flood," "100-year flood," and "500-year flood." These terms describe the probability of flooding in any given year and are primarily used to determine flood insurance rates in flood hazard areas. viii A 10-year flood, for example, has a 10 percent chance of occurring in any given year; a 50-year flood has a 2 percent chance of occurring; a 100-year flood has a 1 percent chance of occurring; and a 500-year flood has a 0.2 percent chance of occurring. Because these terms are measures of probability, an event such as a 100- or 500-year flood has the same chance of occurring each year, regardless of when floods of similar magnitude have occurred, even if the occurrence was the previous year. ix

Although riverine floods are more damaging to property, flash floods are the most dangerous type of flooding that may affect the Kansas City area. Flash floods are generally caused by heavy rainfall over a short period of time, though they can also be caused by the breaching or overtopping of dams. According to SEMA, flash flooding frequently impacts small rivers, creeks, streams, canals and drainage ditches and is characterized by a rapid accumulation or runoff of surface water from any source. Most flood-related deaths are the result of flash floods, which are likely to occur with little or no warning and can reach full peak in minutes. Xi

Sheet floods may also affect portions of the Kansas City area. Sheet flooding is caused by a combination of excessive rainfall or snowmelt, over-saturated ground and inadequate drainage. Sheet flooding is a byproduct of urbanization and development and may occur in areas that are not within a floodplain. In

sheet flooding, water spreads out across the surface of the ground toward areas of lowest elevation, rather than flowing into a defined stream channel.xii Large amounts of pavement (e.g., roads and parking lots) and buildings facilitate the flow of rainwater into areas of low elevation and into drainage systems that cannot properly carry and disburse the tremendous amount of water produced by intense storm events. In this type of flooding, water may back up into residential and commercial property, particularly the basements of these structures, damaging mechanical systems, floors, walls, furniture and fixtures, and creating public health and safety problems.xiii

The average number of flood deaths in the United States has increased in recent years. From 1998-2018, an average of 86 people died in floods each year. From 2008-2018, the average rose to 95 fatalities each year. From 2015-2018, the average rose to over 100 fatalities each year due to flooding. The Weather Chanel states that as climate change increases, the risk of heavy rainfall will increase. Causing the average number of flood deaths to increase.

The plan narrative and GIS maps provide information on specific locations within the region's cities and counties where past riverine and flash floods have resulted in human casualties or property damage. The information also provides location-specific information on areas subject to future flooding, including identification of 100-year and 500-year flood-prone areas.

The NWS provides advisories, watches, warnings and related products in advance of flooding. These include^{xvi}:

Flash Flood Warning – Urban and small-stream flash flooding is imminent or is in progress and is life threatening.

Flood Warning – Major river flooding is imminent or in progress.

Flash Flood/Flood Watch — A threat of flash flooding or flooding exists, but an occurrence is not yet certain or imminent. A watch is usually issued with six or more hours of lead time.

Small-Stream Flood Warning – Small-stream flooding is imminent or in progress. Flooding is not life threatening but is causing property damage.

Urban Flood Warning – Urban flooding is imminent or in progress. Flooding is not life threatening but is causing property damage.

Urban and Small-Stream Flood Warning — Urban and small-stream flooding is imminent or in progress. Flooding is not life threatening but is causing property damage.

Urban and Small-Stream Flood Advisory – Urban and/or small-stream flooding is a significant inconvenience. Flooding is not life threatening or causing property damage.

Flash Flood Statement – Issued to provide more information on a Flash Flood Watch or Warning, or to cancel all or part of those products.

Flood Statement – Issued to provide more information on a Flood Watch, Warning or Advisory, or to cancel all or part of those products.

Local Storm/Spotter Report – Issued to report flash flooding or other types of flooding by time, location and effect, e.g., damage, deaths or injuries; also, includes the information source.

4.9.1 Historical Occurrences

Unfortunately, the Kansas City area has a long history of flooding. Several of the region's largest and most destructive riverine floods include the Flood of 1844, Flood of 1903, Flood of 1951 and the Great Midwest Flood of 1993. Examples of some of the most significant flash floods to affect the Kansas City area include the Sept. 12, 1977 Flash Flood and the Oct. 4, 1998 Flash Flood. Table 4.9.1 depicts flooding events between 2014-2019. Table 4.9.2 depict flooding events by county occurring during 2019-2024.

	Table 4.9.1: Kansas City Area Flood Events by County (2015- April 2019)								
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause	
Cass	FREEMAN	5/30/2016	Flash Flood	0	0	0	0	Heavy Rain	
Cass	AVON	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain	
Cass	FREEMAN	7/27/2017	Flood	0	0	0	0	Heavy Rain	
Cass	PLEASANT HILL	7/27/2017	Flood	0	0	0	0	Heavy Rain	
Cass	HARRISONVILLE	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain	
Cass	STRASBURG	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain	
Cass	BELTON VILLNAVE ARPT	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain	
Cass	PLEASANT HILL ARPT	3/26/2018	Flash Flood	0	0	0	0	Heavy Rain	
Cass	PLEASANT HILL	3/26/2018	Flash Flood	0	0	0	0	Heavy Rain	
Cass	AVON	4/30/2019	Flash Flood	0	0	0	0	Heavy Rain	
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause	
Clay	GLENAIRE	5/16/2015	Flash Flood	0	0	0	0	Heavy Rain	
Clay	LIBERTY	5/16/2015	Flash Flood	0	0	0	0	Heavy Rain	
Clay	PRATHERSVILLE	5/17/2015	Flash Flood	0	0	0	0	Heavy Rain	
Clay	KEARNEY	5/17/2015	Flash Flood	0	0	0	0	Heavy Rain	
Clay	EXCELSIOR SPGS	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain	
Clay	EXCELSIOR SPGS ARPT	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain	

Class	ADLEV	6/4/2045	Flash					Haara Bain
Clay	ARLEY	6/4/2015	Flood	0	0	0	0	Heavy Rain
Clay	MOSBY	6/4/2015	Flash Flood	0	0	0	0	Heavy Rain
Clay	KEARNEY	6/21/2015	Flash Flood	0	0	0	0	Heavy Rain
Clay	EXCELSIOR SPGS	6/21/2015	Flash Flood	0	0	0	0	Heavy Rain
Clay	MOSBY	6/26/2015	Flash Flood	0	0	0	0	Heavy Rain
Clay	STOCKDALE	4/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	NORTH KANSAS CITY	5/23/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	GASHLAND	5/23/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	PRATHERSVILLE	7/3/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	KEARNEY	8/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	BIGHAM HGT	8/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Clay	MOSBY	8/27/2016	Flood	0	0	0	0	Heavy Rain
Clay	OAKWOOD	7/26/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	GASHLAND	7/26/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	GLADSTONE	7/26/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	NORTH KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	GASHLAND	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	NASHUA	8/21/2017	Flood	0	0	0	0	Heavy Rain
Clay	KEARNEY	8/21/2017	Flood	0	0	0	0	Heavy Rain
Clay	NASHUA	8/21/2017	Flood	0	0	0	0	Heavy Rain
Clay	MOSBY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	LIBERTY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	SMITHVILLE	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Clay	NORTH KANSAS CITY	10/8/2018	Flash Flood	0	0	0	0	Heavy Rain
Clay	NORTH KANSAS CITY	4/1/2019	Flood	0	0	0	0	Heavy Rain
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause
Jackson	KANSAS CITY	5/16/2015	Flash Flood	0	0	0	0	Heavy Rain

Jackson	RED BRIDGE	5/16/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY DWTN	5/17/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	5/17/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY DWTN	5/17/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	RED BRIDGE	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY DWTN	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	RAYTOWN	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	LEEDS	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	LEEDS	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	SOUTH LEE	7/1/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	BELVIDERE	7/1/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	SOUTH LEE	7/1/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	GREENWOOD	7/1/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	BELVIDERE	7/1/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY HEART AR	7/6/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	LEEDS	7/20/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	9/10/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	9/10/2015	Flash Flood	0	0	0	0	Heavy Rain
Jackson	BLUE SPGS	5/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Jackson	OAK GROVE	7/3/2016	Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY DWTN	3/6/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain

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Jackson	LEEDS	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	HOLMES PARK	7/27/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	LEEDS	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	SUGAR CREEK	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KNOBTOWN	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	GRAIN VLY	8/6/2017	Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	(GVW)RICHARDS- GEBAUR	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	RED BRIDGE	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	LEEDS	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain

laskson	MADTINI CITY	0/22/2017	Flash	0	0	0	0	Hoove Dain
Jackson	MARTIN CITY	8/22/2017	Flood	0	0	0	0	Heavy Rain
Jackson	RED BRIDGE	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Jackson	SNI MILLS	3/26/2018	Flash Flood	0	0	0	0	Heavy Rain
Jackson	FAIRMONT	5/25/2018	Flood	0	0	0	0	Heavy Rain
Jackson	SUGAR CREEK	10/8/2018	Flash Flood	0	0	0	0	Heavy Rain
Jackson	DODSON	10/8/2018	Flash Flood	0	0	0	0	Heavy Rain
Jackson	HOLMES PARK	4/30/2019	Flood	0	0	0	0	Heavy Rain
Jackson	UNITY VLG	4/30/2019	Flood	0	0	0	0	Heavy Rain
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause
Platte	FARLEY	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	HAMPTON	6/3/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	RIDGELY	7/6/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	WESTON	7/6/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	WESTON	7/6/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	EDGERTON	7/6/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	LINKVILLE	9/10/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	TIFFANY SPGS	9/10/2015	Flash Flood	0	0	0	0	Heavy Rain
Platte	PARKVILLE	4/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Platte	EDGERTON	4/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Platte	FERRELVIEW	5/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Platte	RIVERSIDE	5/26/2016	Flash Flood	0	0	0	0	Heavy Rain
Platte	WALDRON	7/3/2016	Flash Flood	0	0	0	0	Heavy Rain
Platte	PARKVILLE	7/3/2016	Flood	0	0	0	0	Heavy Rain
Platte	RIVERSIDE	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	WALDRON	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	PLATTE WOODS	8/5/2017	Flash Flood	0	0	0	0	Heavy Rain

Platte	BARRY	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	PARKVILLE	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	RIVERSIDE	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	RIVERSIDE	8/21/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	NORTHMOOR	8/22/2017	Flash Flood	0	0	0	0	Heavy Rain
Platte	BEAN LAKE	3/14/2019	Flood	0	0	100,000	100,000	Heavy Rain/Snow Melt
Platte	BEAN LAKE	4/1/2019	Flood	0	0	0	0	Heavy Rain
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause
County Ray	Location LAWSON	Date 6/3/2015		Deaths	Injuries		-	Cause Heavy Rain
			Type Flash			Damage \$	Damage \$	
Ray	LAWSON	6/3/2015	Type Flash Flood Flash	0	0	Damage \$	Damage \$	Heavy Rain
Ray	LAWSON	6/3/2015 6/3/2015	Type Flash Flood Flash Flood Flash	0	0	Damage \$ 0	Damage \$ 0 0	Heavy Rain Heavy Rain
Ray Ray Ray	LAWSON VIBBARD FLEMING	6/3/2015 6/3/2015 6/3/2015	Type Flash Flood Flash Flood Flash Flood Flash Flood Flash	0 0	0 0	0 0 0	0 0 0	Heavy Rain Heavy Rain Heavy Rain
Ray Ray Ray	LAWSON VIBBARD FLEMING LAWSON	6/3/2015 6/3/2015 6/3/2015 6/4/2015	Type Flash Flood Flash Flood Flash Flood Flash Flood Flash Flood Flash	0 0 0	0 0 0	0 0 0 0	0 0 0 0 0	Heavy Rain Heavy Rain Heavy Rain Heavy Rain

Source: NOAA NCDC Web site

	Table 4.9.2:	Kansas City Area	Flood Event	ts by Count	y (May 201	9- November	2024)	
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause
Cass	HARRISONVILLE	5/24/19	Flash Flood	0	0	0	0	Heavy Rain
Cass	EAST LYNNE ARPT	7/4/19	Flash Flood	0	0	0	0	Heavy Rain
Cass	PLEASANT HILL	7/4/19	Flash Flood	0	0	0	0	Heavy Rain
Cass	STRASBURG	7/5/19	Flash Flood	0	0	0	0	Heavy Rain
Cass	HARRISONVILLE	9/28/19	Flash Flood	0	0	0	0	Heavy Rain
Cass	PECULIAR	5/28/20	Flash Flood	0	0	0	0	Heavy Rain

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Jackson OAK GROVE //4/19 Flood 0 0 0 Heavy Rain	Jackson	SOUTH LEE	7/4/19	Flood	0	0	0	0	Heavy Rain
	Jackson	OAK GROVE	7/4/19	Flood	0	0	0	0	Heavy Rain
	Jackson	LAKE LOTAWANA	7/4/19		0	0	0	0	Heavy Rain

Jackson	GRANDVIEW	7/4/19	Flash Flood	0	0	0	0	Heavy Rain
Jackson	TARSNEY LAKES	9/5/20	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	5/16/21	Flash Flood	0	0	0	0	Heavy Rain
Jackson	KANSAS CITY	7/1/24	Flash Flood	0	0	\$5,000	\$1,000	Heavy Rain
Jackson	KANSAS CITY	7/1/24	Flash Flood	0	0	\$5,000	\$1,000	Heavy Rain
			Flood					
County	Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$	Cause
County Platte	Location WALDRON	Date 04/28/2021	Event	Deaths 0	Injuries 0	Damage	•	Cause Heavy Rain
			Event Type Flash			Damage \$	Damage \$	

June 28, 2021 – Cass County

Heavy rain produced some marginal flash flooding in Miami County Kansas and nearby Bates County Missouri. MODOT reported that HWY 18 was closed due to flooding.

May 28, 2020 - Clay County

On the morning of May 28 there was some minor flash flooding, causing some roads in the area to shut down briefly. There was flooding on the ramp of Briarcliff and Southbound HWY 9.

July 1, 2024 – Jackson County

During the morning and early afternoon hours of July 1st, heavy rainfall yielded flash flooding across much of the southern two-thirds of Jackson County. A swath of 3 to 6" of rain with isolated locations up to 7" fell within about a 3 hour time period from about 930 am to 1230 pm. Up to 6 inches of rain fell across portions of Jackson County within a span of a couple hours, causing widespread flash flooding across much of Jackson County. Major roadways were flooded and closed down, with several water rescues.

April 28, 2021 – Platte County

After heavy rain moved through the Kansas City Metro several local roadways were inundated with running water. After 1-2 inches of rain fell over a short period of time there was flooding along Jones-Myer Road and Hillsboro Road near Waldron.

June 25, 2021 - Ray County

Late in the afternoon, and through the evening hours on June 24 a cluster of storms over southeast Nebraska congealed into a line of thunderstorms that focused across northern Missouri. Most notably within this line of storms was a cluster of QLCS tornadoes that formed in Grundy County. There may have been other tornadoes associated with circulations that were noted on radar, but emergency management confirmed damage consistent with tornadoes near Trenton and Laredo Missouri. Most of the damage was minor, but some grain bins being blown off their foundation was the highlight of the damage in the area. Rainfall was the other big story with this event as some areas received 6 to 10

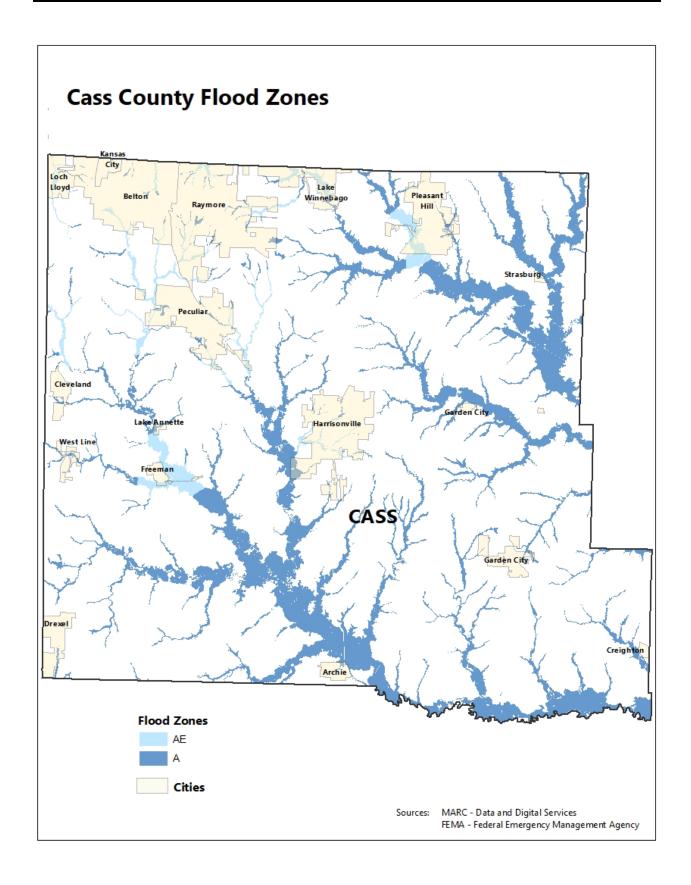
inches of rain. Despite the excessive rain, the flash flooding was rather minor, however there were still numerous roads closed, and areas near Excelsior Springs were especially hard hit as the Fishing River rose out of its banks. Another semi-dramatic event occurred along I-29 just north of St. Joseph, where a crane that was being used to do road construction became unbalanced and tipped. Numerous water rescues occurred across Ray County.

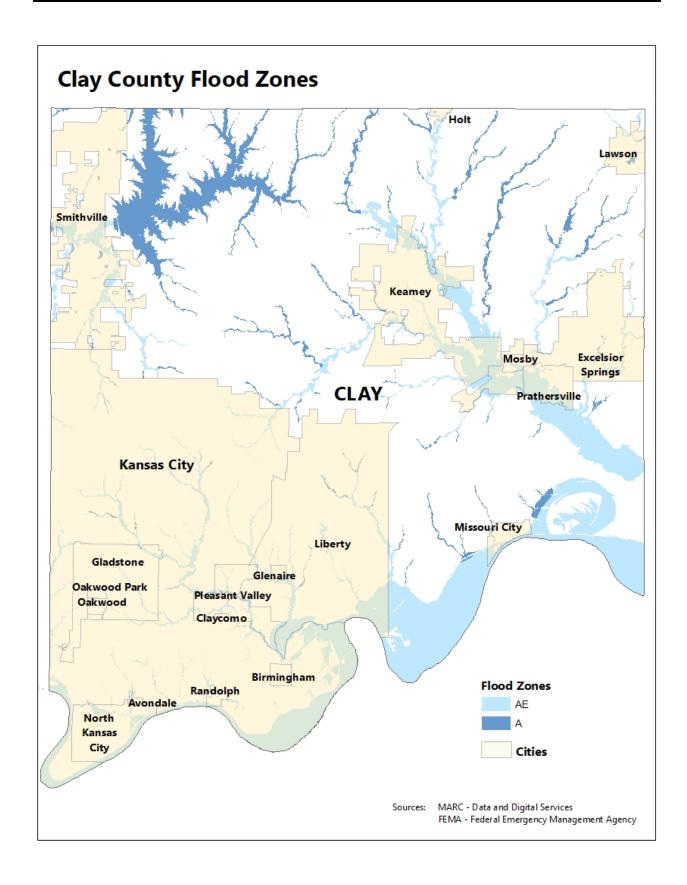
4.9.2 Probable Locations

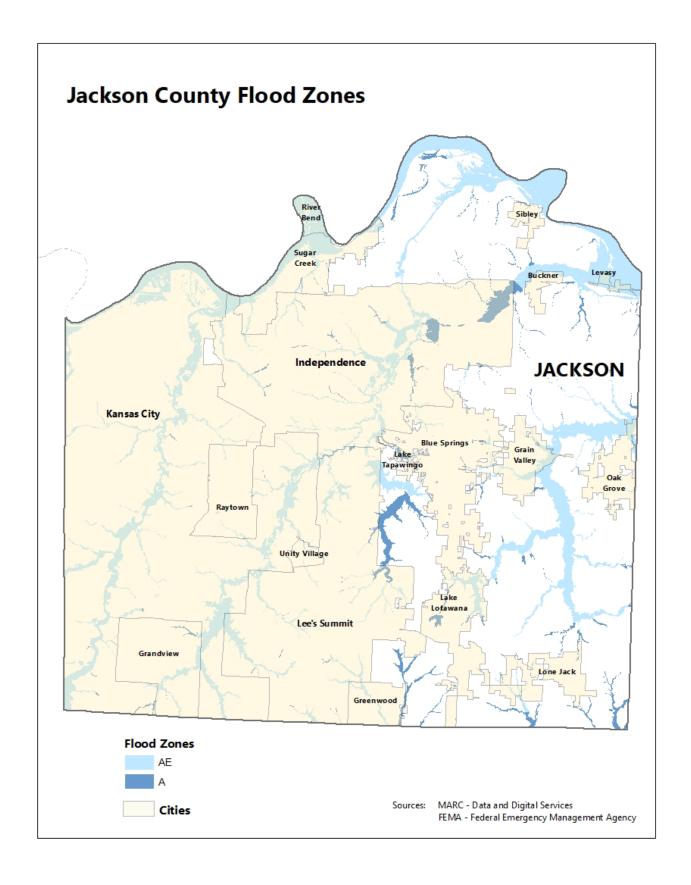
Magnitude 25%-50%

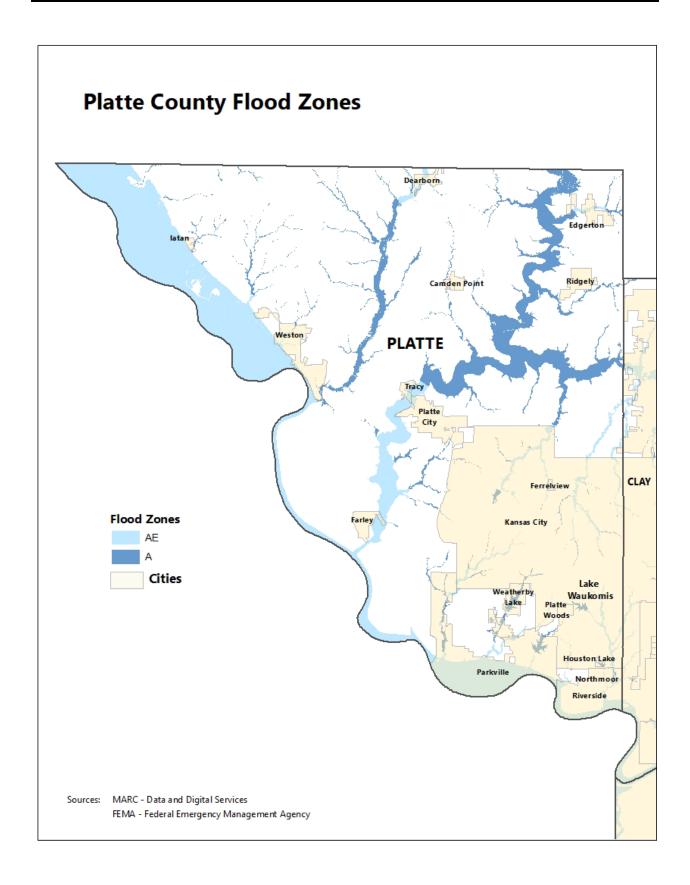
Areas in the Kansas City area most susceptible to flooding continue to include the Missouri River floodplain; areas near the Blue River in South Kansas City; Indian Creek near Red Bridge Road; portions of Martin City and South Kansas City near Red Bridge Road; the Brush Creek Basin near Highway 71; the intersection of I-35 and I-70 and adjacent surface streets; areas in the northeast, such as 9th Street, Hardesty, Gardner and Chouteau Trafficways; Southwest Boulevard and surrounding areas; State Line Road and 95th Street; Turkey Creek near 31st Street; Fairmont; and Westport. Due to flooding happening along rivers and in the floodplain, all counties were given a 35% - 50% magnitude rating.

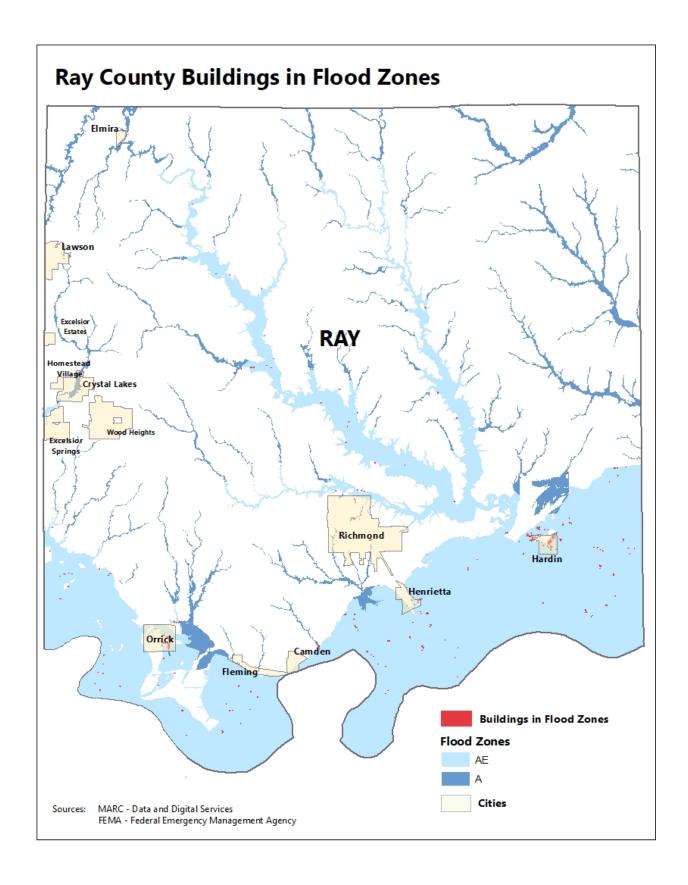
The maps below depict the flood zones in each county.











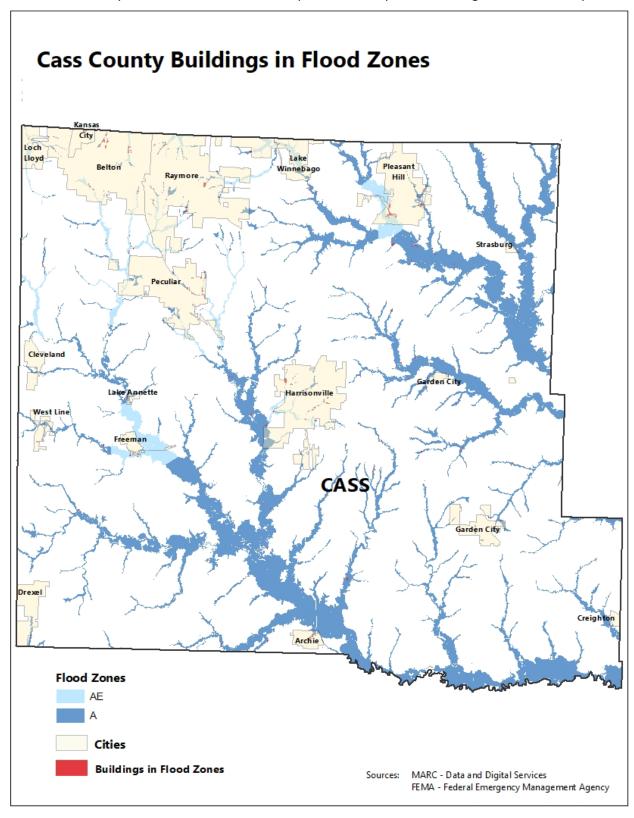
4.9.3 Impact

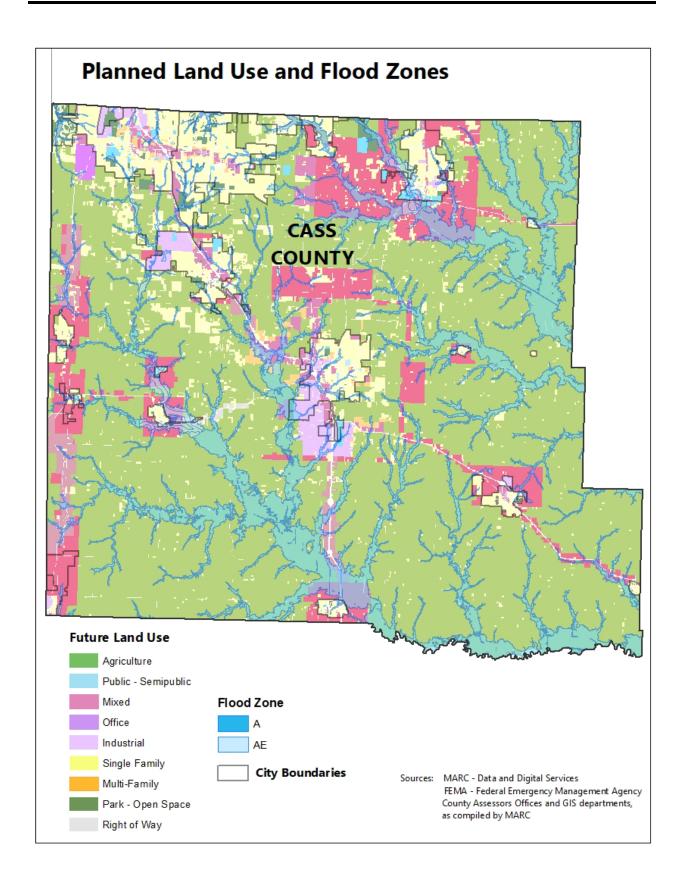
Although most flooding events cause little to no damage, there is the potential for massive loss of life and property. Since 1993, the region has suffered a cumulative total 11 deaths, \$1.6 million in crop damages, and over \$32 million in property damage as a result of floods, according to the National Center for Environmental Information. The damage values are estimates from the Storm Events Database and only show values that are reported. Property and crop damage values are most likely much higher than reported values.

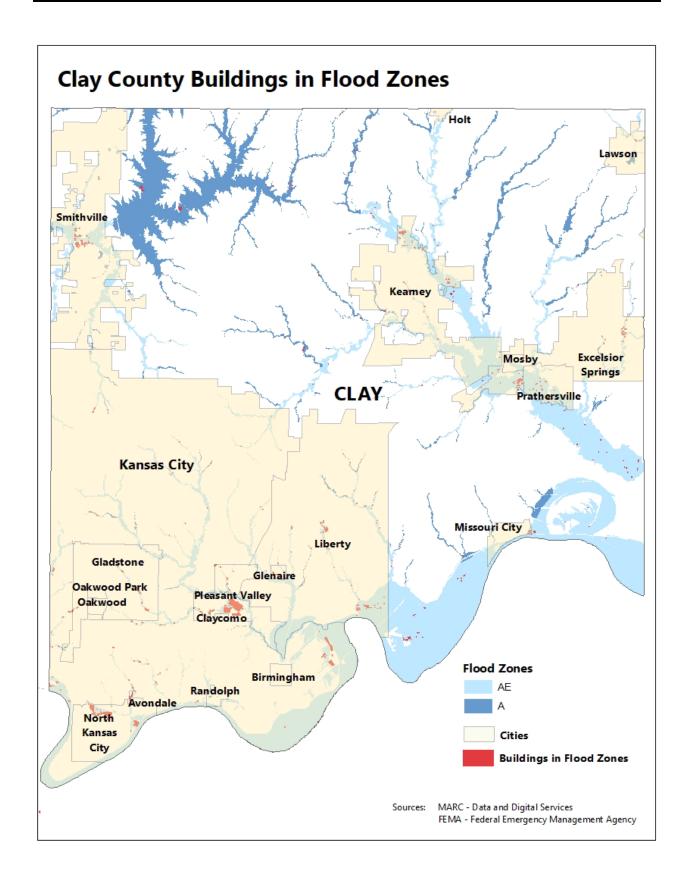
All facilities are susceptible to the hazard. Table 4.9.3 below summarizes the number and type of facilities for all counties in the floodplain.

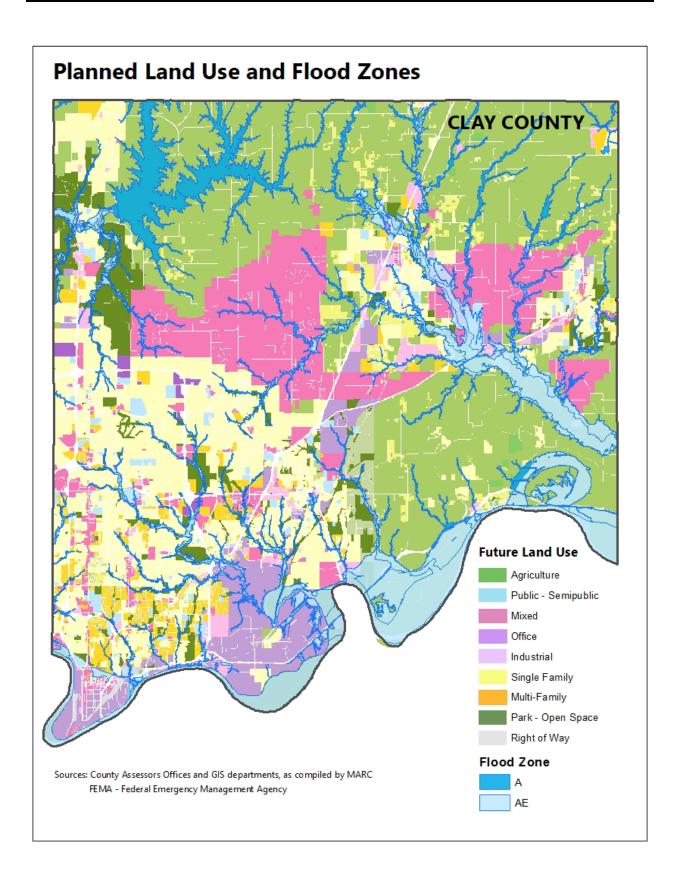
	Table 4.9.3: Number and Type of Facilities in the Floodplain										
County	Buildings in Floodplain	Commercial Buildings in Floodplain	Residential Buildings in Floodplain	Other Buildings in Floodplain	Hazardous Materials in Floodplain	Types of Critical Facilities in Floodplain					
Cass County	313	15	271	27	2	Dams, hazardous materials facilities, municipal buildings, police station					
Clay County	663	74	313	276	72	Airports, childcare centers, dams, fire/EMS facilities, hazardous materials facilities, municipal building, police station, schools, college, nursing home					
Jackson County	188	7	60	121	132	Hazardous materials facilities, fire/EMS facilities, dams, colleges, childcare centers, municipal building, police station					
Platte County	262	14	131	117	26	Airports, dams, fire/EMS facilities, hazardous materials facilities, municipal building					
Ray County	562	25	504	33	4	Airport, hazardous materials facilities, police station, schools, dams					

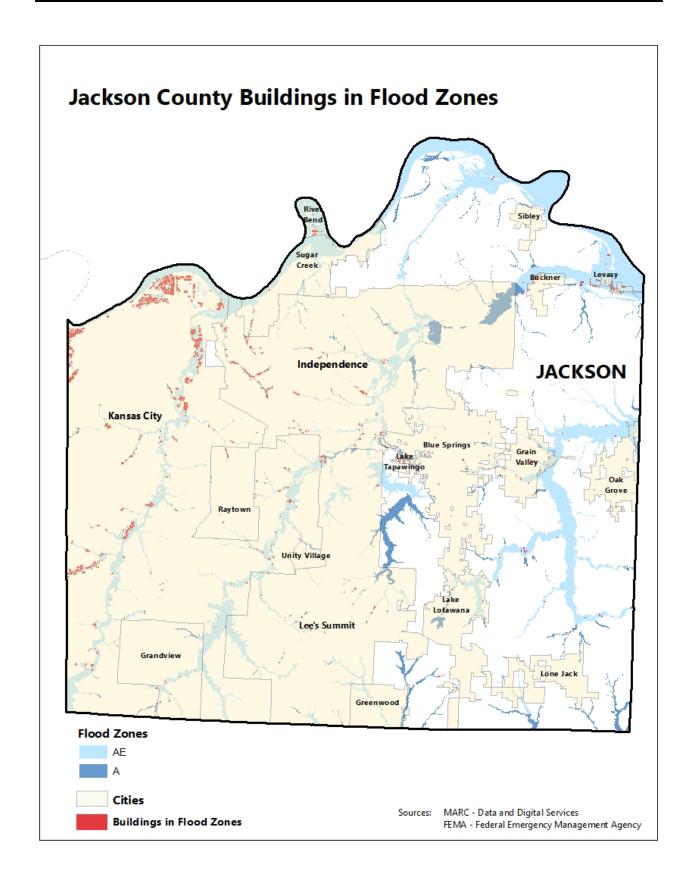
The maps below depict the buildings in the flood zone and future land use areas that are in the flood zone in each county. The future land use areas represent the impact of flooding on future development.

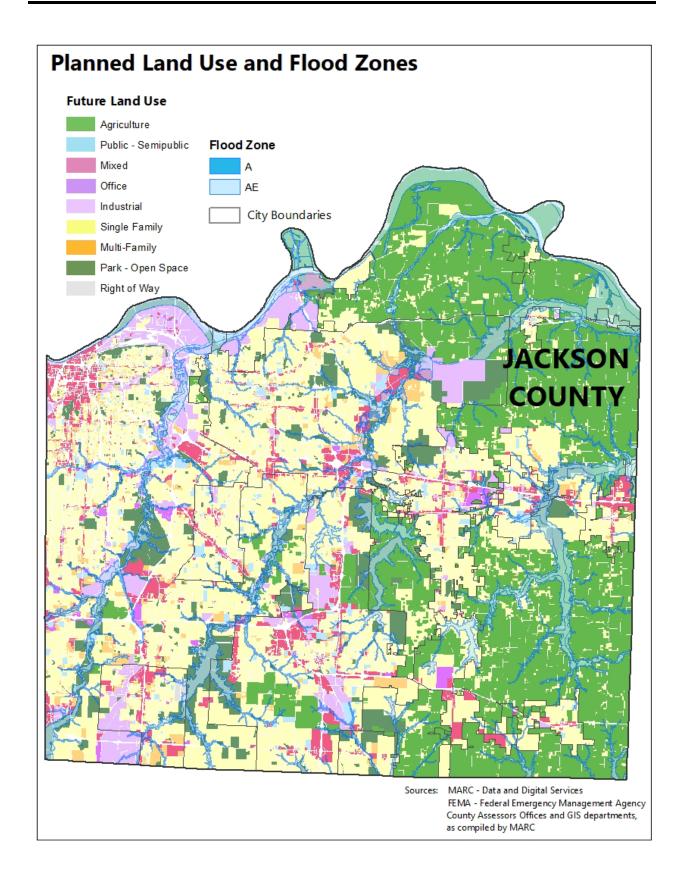




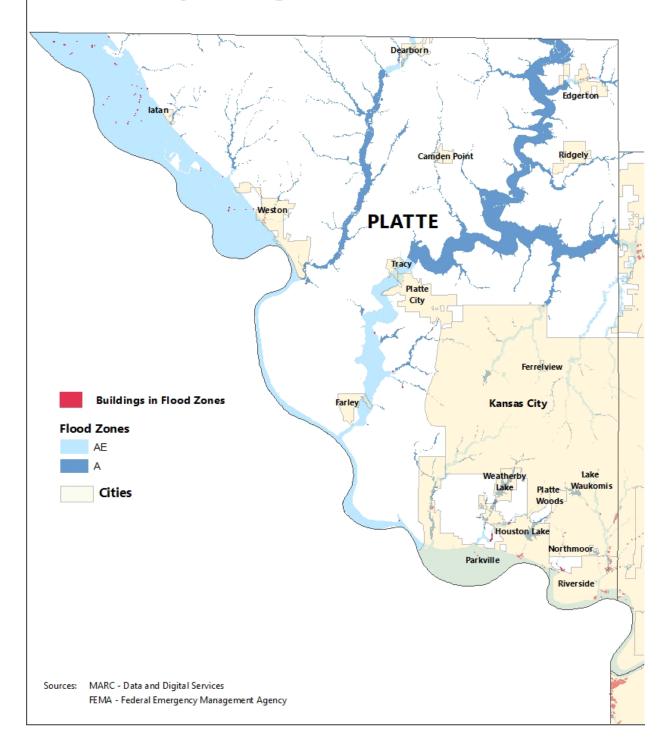


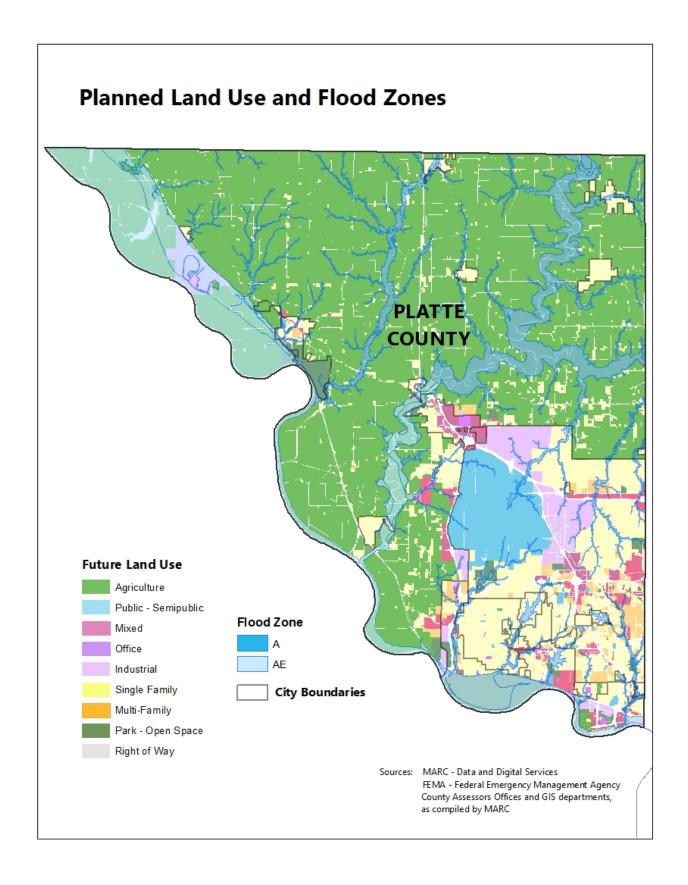


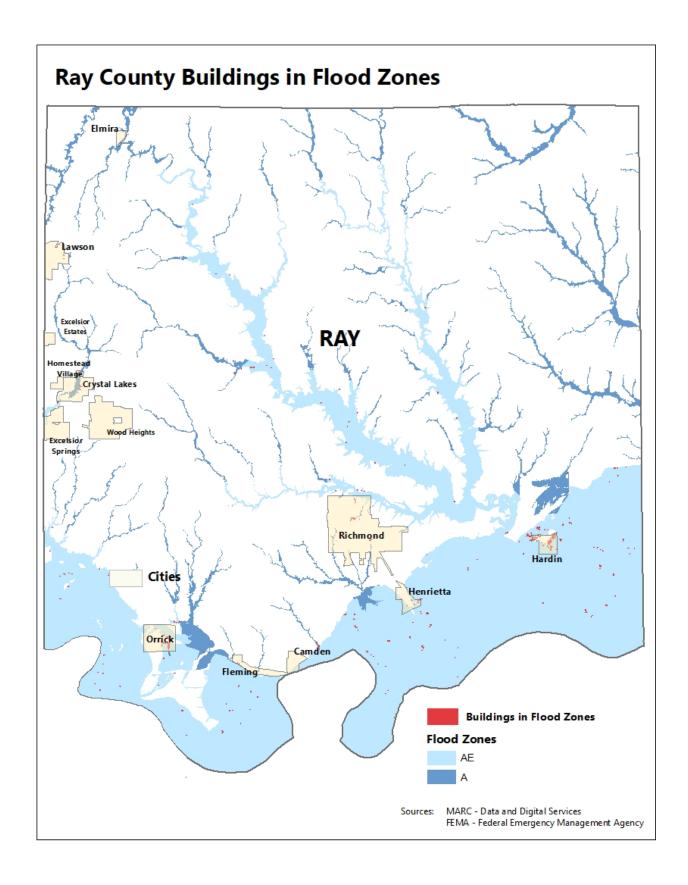


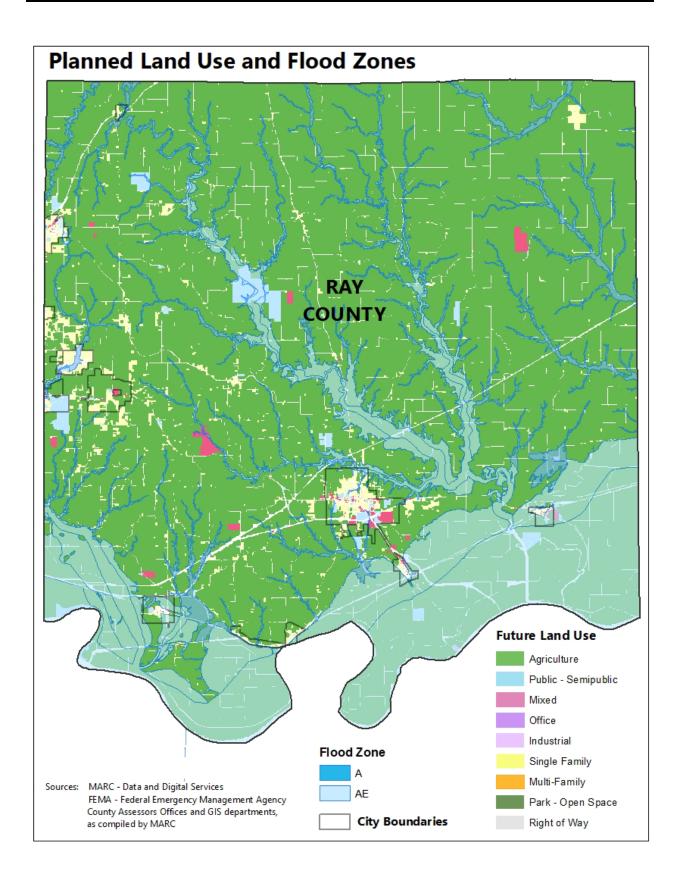


Platte County Buildings in Flood Zones









4.9.4 Probability of Future Occurrence: 100%*

*It is unrealistic to assure a 100 percent chance of any hazard happening in a given year. However, based on occurrences in the past 28 years, there has been a flood or flash flood every year.

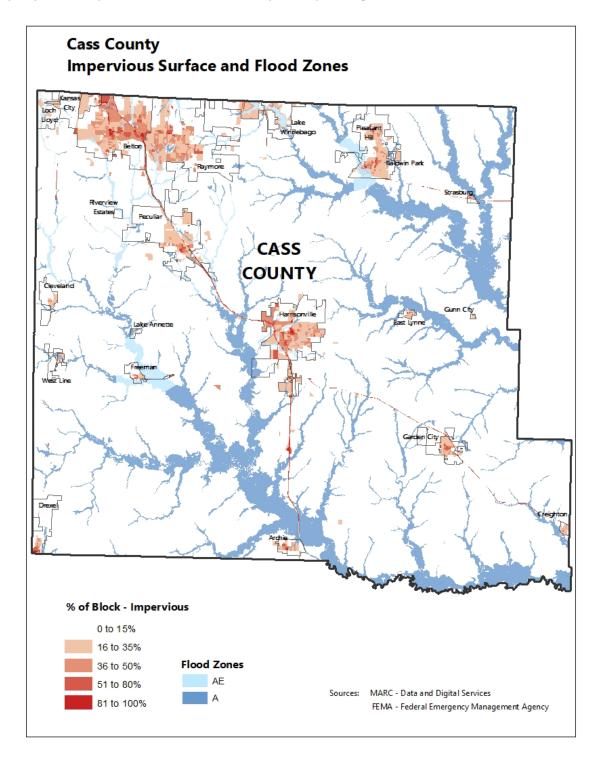
Seasonal Pattern: The most likely cause of flooding is heavy rainfall. In the Kansas City area, May, June, July and September receive the highest average monthly rainfall amounts. Consequently, the risk of flooding may be greatest in these months.

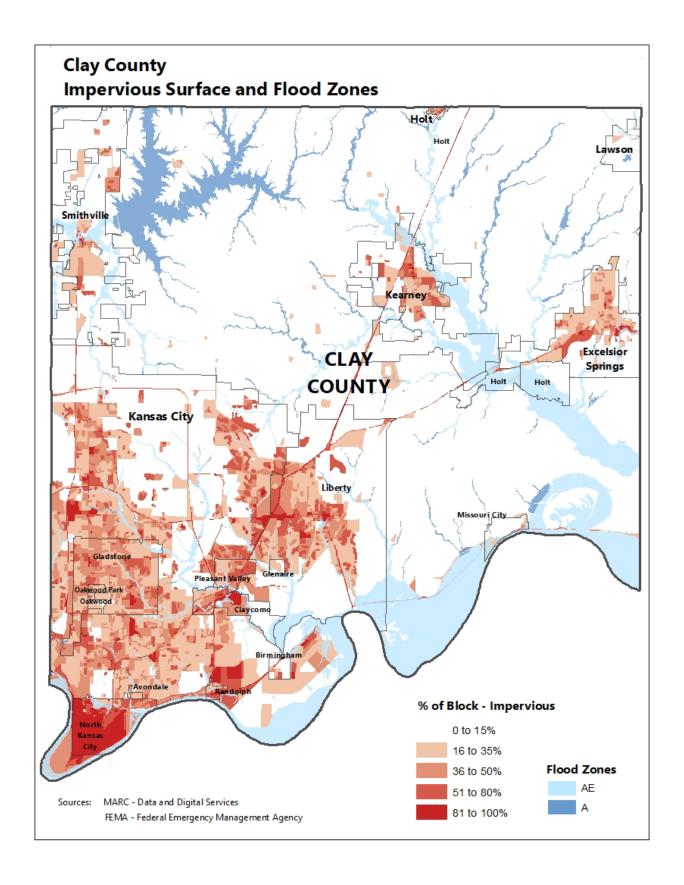
A recent study by Anderson and Walker found that recent and projected increases in annual precipitation for Kansas City are substantial, with concentrated seasonal rainfall during extreme events for both spring and fall, while the length of consecutive dry days will increase substantially in summer months.

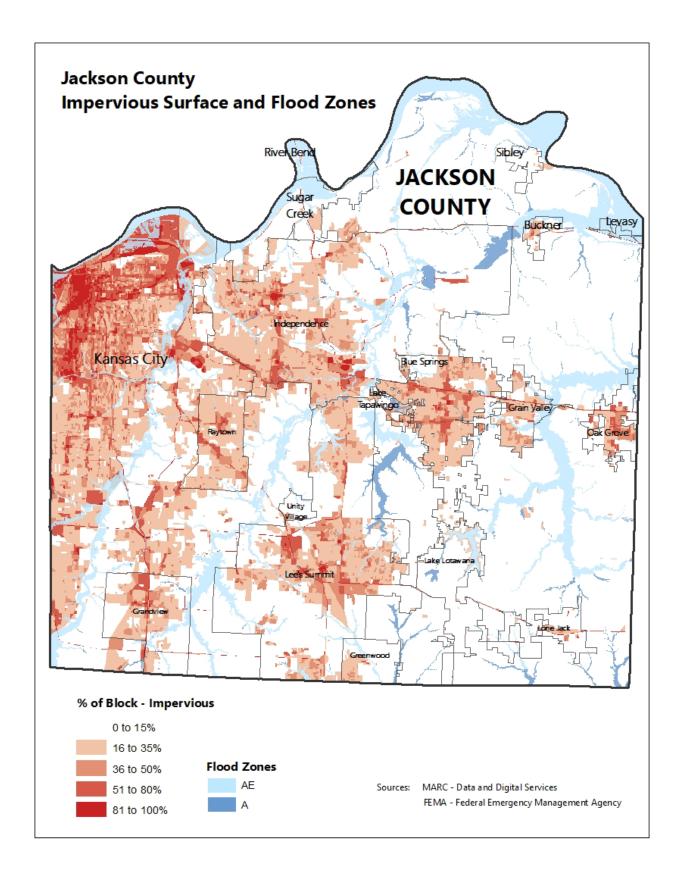
- Average annual precipitation will increase from 38.8 to 44.6 inches/year.
- Maximum precipitation occurring over one day will increase from 3.4 to 4.0 inches. Increases
 for the maximum five- and 15-day precipitation will be from 5.5 to 7.0 inches and from 7.5 to
 10.4 inches, respectively.
- The number of days with more than 1.5" of precipitation will increase from 5.0 to 9.3.
- The maximum number of consecutive dry days will increase from 30.9 days/year to 39.5 days/year.

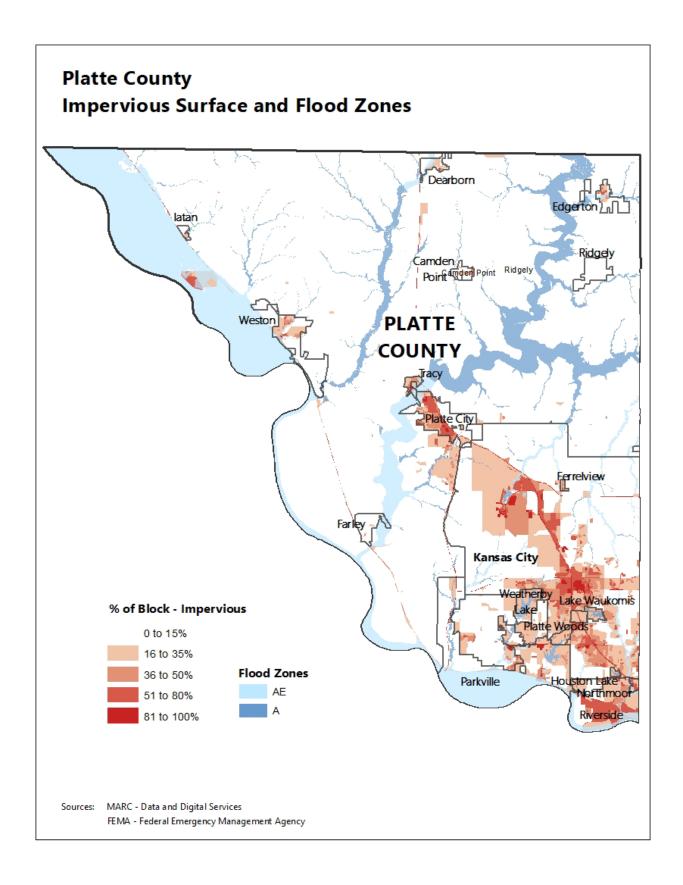
4.9.5 Vulnerability Analysis and Potential Loss Estimates by County

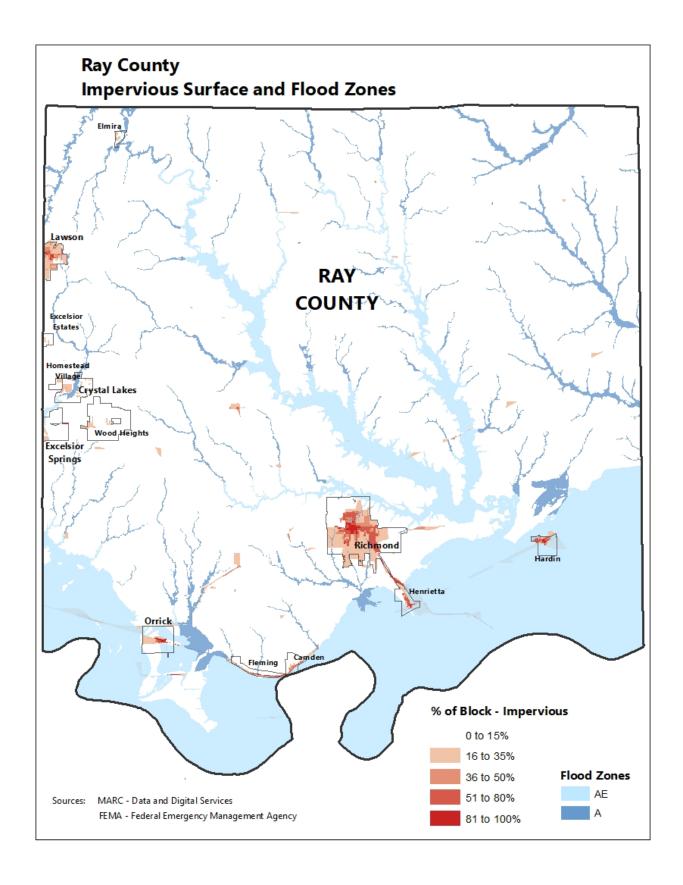
As cities grow and more development occurs, the natural landscape is replaced by roads, buildings, housing developments, and parking lots. Studies have shown that as development and the amount of impervious surfaces increases in a watershed, severe flood events happen more often. The following map depict the impervious areas in each county in the planning area.











In 2023, the state of Missouri (SEMA) updated their 2019 Hazard Mitigation Plan assessing hazards and risk for all counties in Missouri. Data for flooding was produced and provided by SEMA. SEMA's methodology estimation for the 2023 Missouri State Hazard Mitigation Plan is excerpted below. Table 4.9.4 and 4.9.5 show the total direct building loss and income loss for Cass, Clay, Jackson, Platte, and Ray. Table and figure numberings have been changed to correspond to sequencing in this Plan.

State Estimates of Potential Losses^{xvii}

The intent of this analysis was to enable the State to estimate where flood losses could occur and the degree of severity using a consistent methodology. The statewide analysis used best available data; that is, digital effective FIRM data coupled with LiDAR derived building footprints. The computer models help quantify risk along known flood-hazard corridors such as along the Mississippi and Missouri Rivers. In addition, flood losses are estimated for certain lesser streams and rivers where the flood hazard may not have been previously studied.

The Hazus analysis provides the number of buildings impacted, estimates of the building repair costs, and the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community as a whole 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.

Flood damage is directly related to the depth of flooding. For example, a two-foot-deep flood generally results in about 20 percent damage to the structure (which translates to 20 percent of the structure's replacement value). Hazus takes into account flood depth when modeling damage (based on FEMA's depth damage functions). Hazus reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes in Hazus include agriculture, commercial, education, government, industrial, religion, and residential. Damage percent classes are grouped by 10 percent increments: 1-10 percent, 11-20 percent, etc., up to 50 percent. Buildings that sustain more than 50 percent damage are considered to be substantially damaged.

The displaced population is based on the inundation area. Individuals and households will be displaced from their homes even when the home has suffered little or no damage either because they were evacuated (i.e., a warning was issued) or there was no physical access to the property because of flooded roadways. 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. Age plays a secondary role in shelter use in that there are some individuals who will go to a public shelter even if they have the financial means to go elsewhere. These will usually be younger, less established families and elderly families (Hazus User's Manual). Hazus does not model flood casualties given that flood-related deaths and injuries typically do not have the same significant impact on the medical infrastructure as those associated with earthquakes.

Direct building losses are calculated within Hazus from US Census data.

Loss ratio of the direct building losses compared to overall building inventory - The loss ratio of the direct building losses compared to overall building inventory per county gives an indication of the severity of impacts on community sustainability. While a large urban area may have the greatest dollar losses, it may be able to absorb the impact better than a more rural area where a flood could impact a significant amount of the infrastructure in the entire county.

- Count of Residential Buildings Exposed to Flooding (MSDIS) To determine the
 number of residential buildings exposed to the 1-percent annual chance flood event, the
 MSDIS dataset was intersected with the depth grids outside of the Hazus environment.
 This provides an indication of the potential magnitude of a flood event. This exposure
 count was updated for 18 counties using the draft datasets available from the SEMA CTP
 Mapping Program.
- Count of Residential Buildings Potentially Damaged by Flooding (Hazus) To
 determine the number of damaged residential structures, the analysis performed within
 Hazus utilized US Census data to estimate the number of residential structures which
 are at risk of damage and the number expected to receive substantial damage during a
 1-percent annual chance flood event. Note, there are instances where the Hazus
 analysis predicted a greater number of damaged buildings than were identified with the
 exposed MSDIS points. This is due a fundamental premise of the Hazus Level 1 flood loss
 methodology that the buildings are uniformly distributed within census blocks.
- Income losses, Population displaced by the flood, and Shelter needs all computed within Hazus from US Census data.

	Table 4.9.4: Direct Building Loss and Income Loss										
	Cass	Clay	Jackson	Platte	Ray						
Countywide Building Exposure	\$13, 279, 914, 156	\$33,542,252,386	\$108,581,199,794	\$13,811,465,341	\$3,084,500,793						
Structural Damage	\$65,030,858	\$201,154,453	\$896,418,928	\$92,964,620	\$42,510,964						
Loss Ratio	0.49%	0.60%	0.83%	0.67%	1.38%						
Contents Loss	\$46,918,167	\$161,383,856	\$1,269,692,575	\$90,962,230	\$34,319,039						
Inventory Loss	\$1,107,576	\$3,393,242	\$64,894,690	\$3,351,906	\$761,078						
Total Direct Loss	\$113,056,600	\$365,931,551	\$2,231,006,194	\$187,278,755	\$77,591,081						
Total Income Loss	\$173,857	\$842,536	\$13,666,583	\$741,626	\$218,840						
Total Direct and Income Loss	\$113,230,457	\$366,774,087	\$2,244,672,777	\$188,020,381	\$77,809,922						
#Hazus UDF damaged structures	239	695	1,264	255	289						
# Substantially Damaged	1	204	380	15	0						
# Displaced People	2,878	4,992	7,075	1,709	2,034						
# Shelter Needs	897	2,989	4,426	794	712						

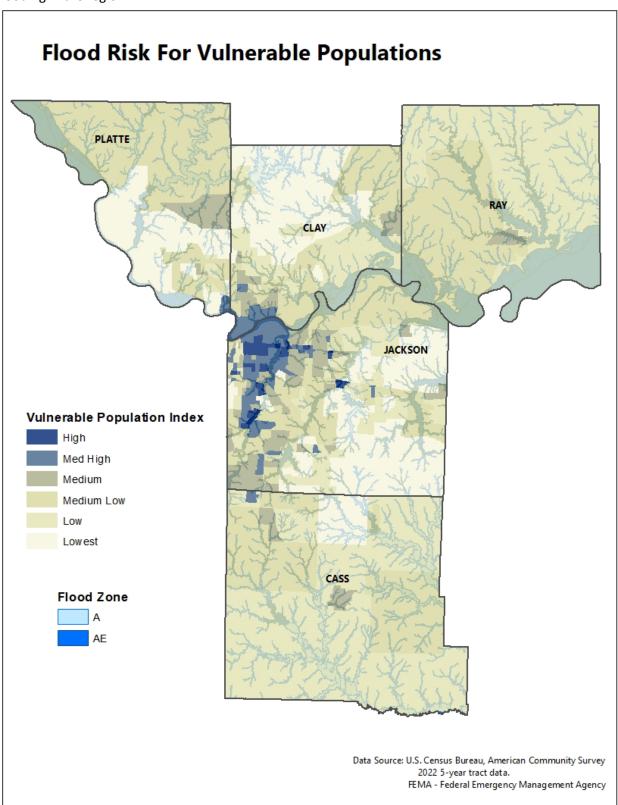
Note: Column headers in dark blue refer to computation within Hazus; column headers in light blue refer to computations performed outside of the Hazus environment.

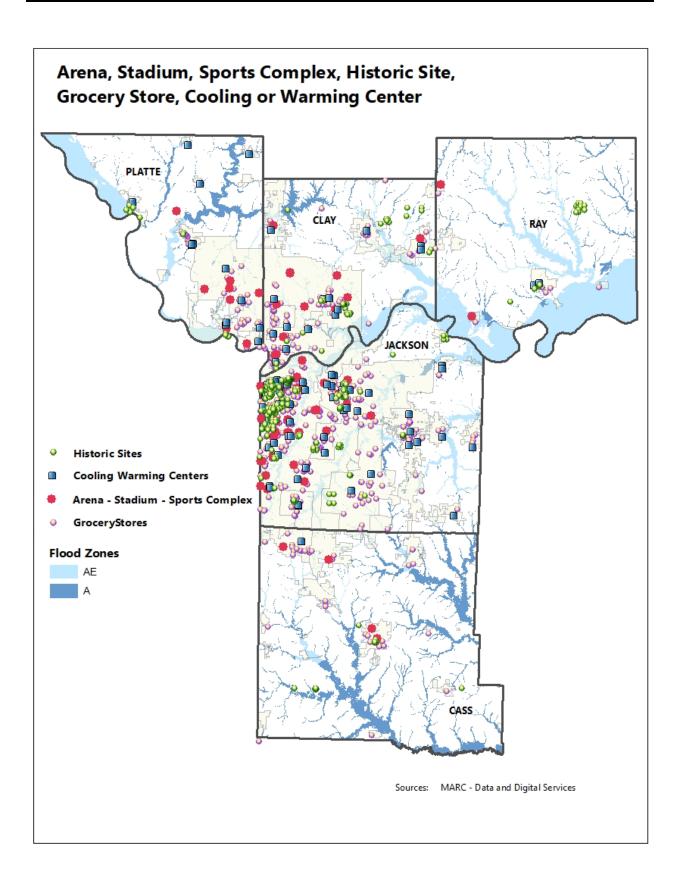
Source: MO State hazard Mitigation Plan, Flooding, page 3.69-3.71

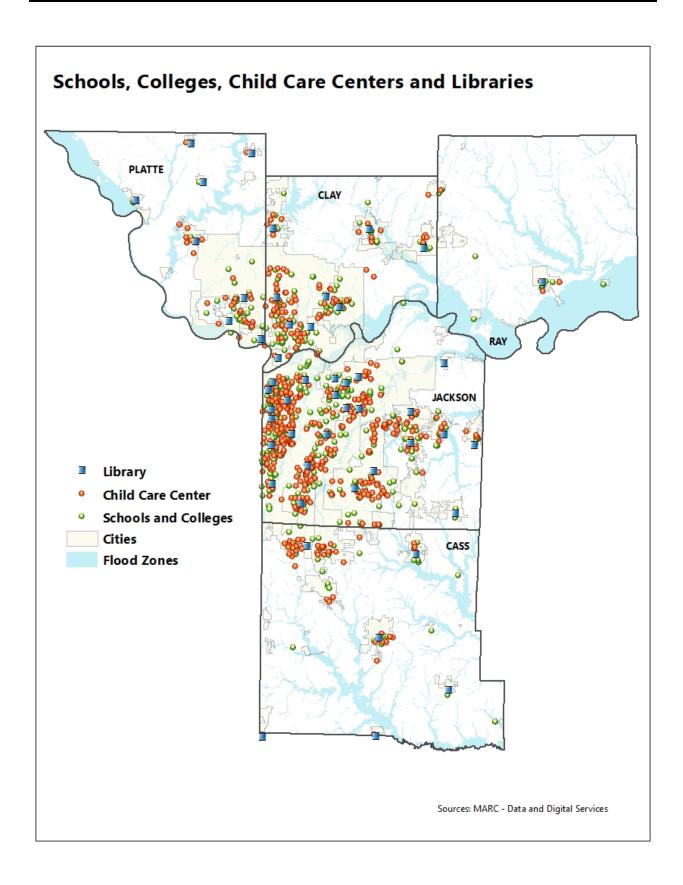
	Table 4.9.5: Direct Building Loss and Income Loss										
		Cass	Clay	Jackson	Platte	Ray					
Residential	# Residential Structures	162	551	1,123	181	318					
	Total \$\$ of Loss	\$50,718,733	\$183,637,947	\$361,402,825	\$67,728,912	\$87,699,243					
Agriculture	# Agriculture Structures	264	192	218	109	502					
	Total \$\$ of Loss	\$86,846,275	\$54,891,063	\$76,983,335	\$33,047,061	\$222,315,498					
Commercial	# Commercial Structures	67	143	1,095	82	22					
	Total \$\$ of Loss	\$44,417,950	\$183,668,088	\$1,479,301,745	\$86,757,405	\$14,868,684					
Education	# Education Structures	0	1	2	0	0					
Education	Total \$\$ of Loss	\$0	\$2,345,440	\$5,403,213	\$	\$0					
Government	# Government Structures	0	14	1	26	4					
	Total \$\$ of Loss	\$0	\$19,085,373	\$1,738,437	\$37,513,793	\$3,378,321					
\$10,671,314Industrial	# Industrial Structures	27	65	598	42	11					
	Total \$\$ of Loss	\$14,971,689	\$88,084,432	\$865,030,631	46,042,048	\$10,671,314					
Total # Population	Affected	418	1,449	2,684	460	811					
Total Loss- Hazu	s Layer	\$196,954,647	\$531,712,343	\$2,789,860,185	\$271,089,219	\$338,933,060					

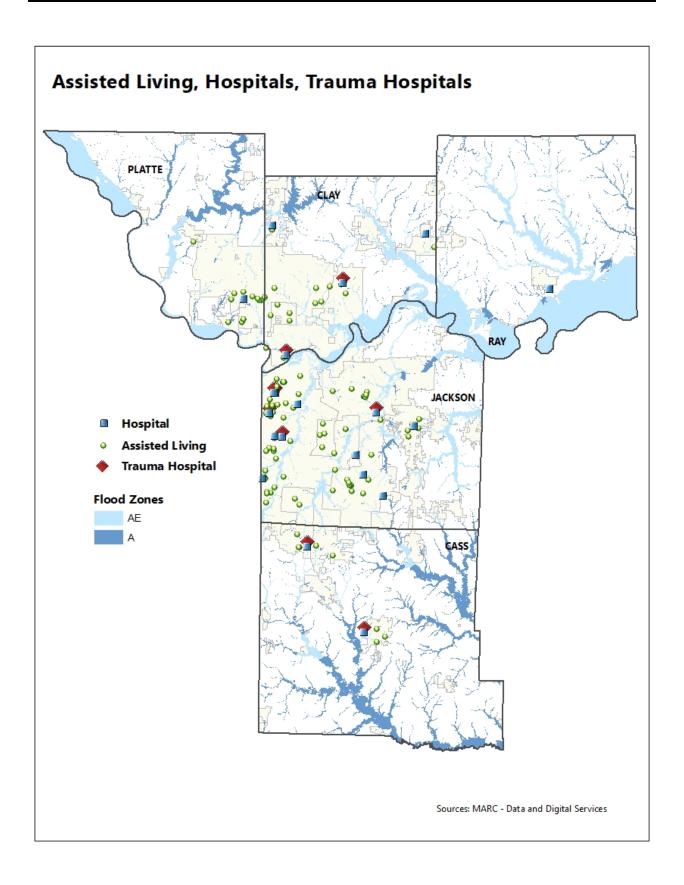
Source: Missouri State Hazard Mitigation Plan, pg. 3.72-3.75

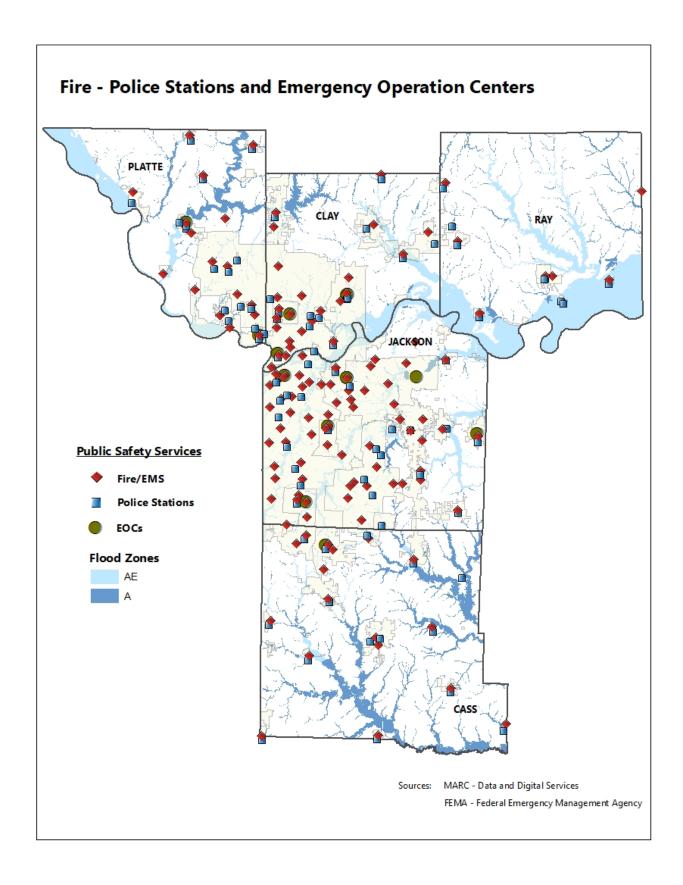
The following maps depict the key assets, including vulnerable populations, that may be vulnerable to flooding in the region.

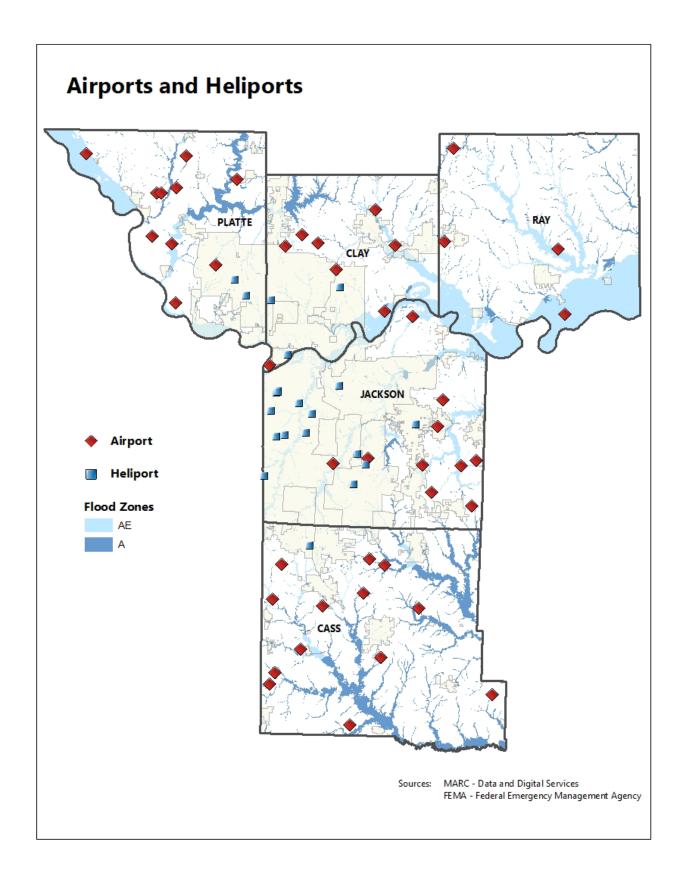


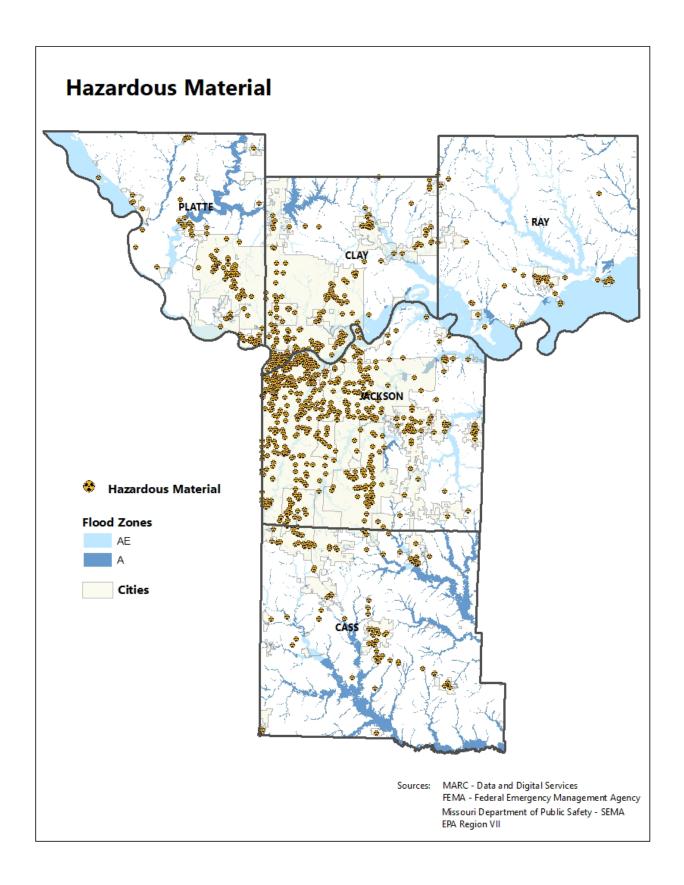


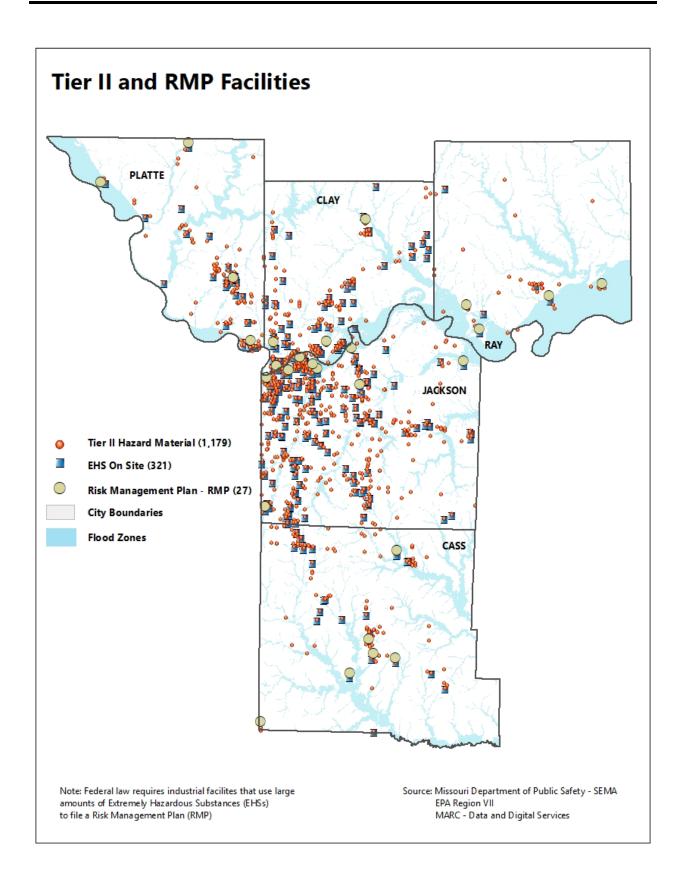












4.9.6 Problem Statements

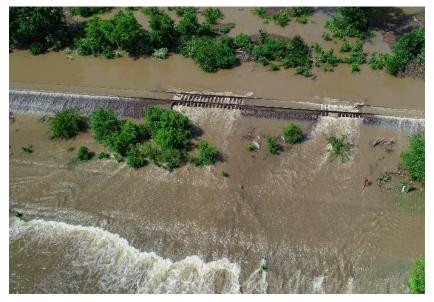
Vulnerability statements, such as those below, can support development of mitigation strategies for flooding:

- Buildings and critical infrastructure (including hazardous materials sites) within each county are vulnerable to flood damage.
- Many homeowners and business owners may not understand changes to the National Flood Insurance Program (NFIP) from the Homeowner Flood Insurance Affordability Act of 2014 and how it impacts them.
- In some cases, flood control actions taken by one jurisdiction or community can negatively impact downstream or neighboring jurisdictions.
- Fewer programs and grants exist to support flood mitigation efforts than in the past.
- Mitigation efforts that could be most effective include flood buyouts, implementation of the Federal Flood Insurance Program and the adoption of stream setback ordinances to keep development further from area streams and floodplains. Other efforts might include partnerships with agencies to provide temporary shelter/housing for those displaced.
- Changing weather patterns can increase the frequency and severity of flash floods and will be exacerbated by city design/development.

4.10 Levee Failures



Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. When levees and floodwalls and their appurtenant surfaces are stressed beyond their capabilities to withstand floods, levee failure can result in loss of life and injuries as well as damages to property, the environment, and the economy. Levees are usually engineered to withstand a flood with a computed risk of occurrence. In Missouri, there are an estimated 1,926 miles of levees, many of which were largely constructed to protect agricultural land and are not built to design standards established to protect people and property. XVIII Their presence can, in some cases, generate a false sense of security. If a larger flood occurs, that structure will likely be compromised. In the event of a levee failure, the water behind it can be released as a flash flood. Failed levees can create floods that are catastrophic to life and property, in part because of the tremendous energy of the released water. See Figure 4.10.1.



Source: Jackson County, MO Sheriff's Officexix

Figure 4.10.1: Breached Levee in Levasy, Missouri

For the purposes of this plan, the term levee failure will refer to both overtopping and breach of a levee. ** Overtopping occurs when floodwaters exceed the height of a levee and flow over its crown. As the water passes over the top, it may erode the levee, worsening the flooding and potentially causing an opening, or breach, in the levee. A levee breach occurs when part of the levee gives way, creating an opening through which floodwaters may pass. **See Figure 4.10.2 – Figure 4.10.3.**

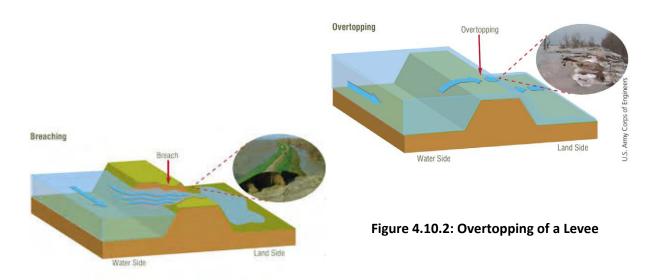


Figure 4.10.3: Breaching of a Levee

Source: Missouri State Hazard Mitigation Plan 2013

Earthen levees can be damaged in several ways. **Figure 4.10.4** presents a few inundation scenarios. For instance, strong river currents and waves can erode the surface. Debris and ice carried by floodwaters — and even large objects such as boats or barges — can collide with and gouge the levee. Trees growing on a levee can blow over, leaving a hole where the root wad and soil used to be. Burrowing animals can create holes that enable water to pass through a levee. If severe enough, any of these situations can lead to a zone of weakness that could cause a levee breach. Seismic activity can also cause levees to slide or slump, both of which can lead to failure.

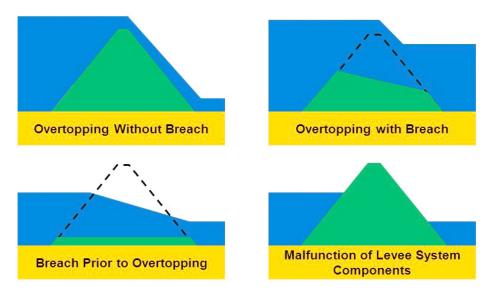


Figure 4.10.4: Inundation Scenarios

Source: Missouri State Hazard Mitigation Plan 2013

Three categories of levees are discussed in the Levee Failure profile:

- 1. Levees in the USACE Levee Safety Program
- 2. FEMA Accredited Levees
- 3. Levees that are both in the USACE Levee Safety Program and Accredited by FEMA

Levees in the USACE Levee Safety Program

The Levee Safety Program (LSP) was created by the USACE in 2006 to assess the integrity and viability of levees and to make sure levee systems that do not present unacceptable risk to the public, property and environment. Under this program, the USACE conducts levee inspections that are used to rate levee systems and determine compliance with operation and maintenance requirements, understand the overall levee condition, and determine eligibility for federal rehabilitation assistance under PL84-99.**

According to the National Levee Database managed by USACE, there are currently 36 levees in the Kansas City region included in the Levee Safety Program, of which one is rated acceptable, 18 are rated minimally acceptable, and 15 are not reported. Eleven of the 34 levees are federally constructed and turned over to the public sponsor for operations and maintenance. All other levees are locally constructed, operated and maintained.

See Table 4.10.1 for specific levees in the USACE LSP as of December 31, 2014 xxii

	Table 4.10.1: USACE Levees in Cass, Clay, Jackson, Platte, and Ray Counties								
County	NAME	Public Sponsor	Length (Miles)	Leveed Area Acreage	Levee Safety Action Classification	People at Risk	Structures at Risk	Property Value	
Clay	Birmingham Unit	Birmingham Drainage District	10.84	4,990	Low	1,113	209	\$489M	
Clay	North Kansas City Levee Unit	City of Kansas City, Missouri, North Kansas City Levee Unit	8.70	2,909	Moderate	26,703	1,658	\$4.4B	
Clay, Jackson	Northeast Birmingham Unit	Undefined	0.84	435	Not Screened	0	0	\$0	
Clay, Ray	Egypt L&D District Tri- County Ray Clay Jack	Egypt Levee & Drainage District, Tri- County of Ray, Clay, Jackson, MO	13.31	4,526	Low	0	0	\$0	

Jackson	East Bottoms Unit	City of Kansas City, Missouri	9.15	4,335	Moderate	16,539	751	\$5.6B
Jackson	FIRE PRAIRIE CREEK - LEVASY	Undefined	2.66	344	Not Screened	4	2	\$700K
Jackson	FIRE PRAIRIE CREEK LEVEE 1	City of Levasy	0.61	187	Not Screened	12	4	\$1.4M
Jackson	FIRE PRAIRIE CREEK LEVEE 2	City of Levasy	1.73	342	Not Screened	570	228	\$88.4M
Jackson	FIRE PRAIRIE CREEK LEVEE 3	City of Levasy	2.71	578	Not Screened	14	8	\$2.66M
Jackson	GSA Bannister Complex	Department of Energy	1.66	289	Not Screened	6,573	276	\$1.69B
Jackson	Lake City AAP	Lake City AAP	4.26	2,061	Not Screened	188	6	\$4.91M
Jackson	LAKE CITY AAP	Lake City AAP	3.74	1,435	Not Screened	0	0	\$0
Jackson	Liberty Bend Cutoff Levee Left Bank	Liberty Bend Non-Project , USACE	0.82	802	Not Screened	128	24	\$25.4M
Jackson	Liberty Bend Cutoff Levee Right Bank	Liberty Bend Non-Project, Liberty Bend Right Bank Non-Project Segment Upstream, USACE	1.02	635	Not Screened	4	12	\$7.88M
Jackson	MRLS 351-R	Atherton Levee District, Atherton- Blue Mills Levee District	16.00	8,154	Low	245	140	\$80.4M
Jackson, Wyandotte	CID, Central Industrial District	City of Kansas City, Missouri, Kaw Valley Drainage District	1.84	950	Moderate	7,494	287	\$967M

Jackson, Wyandotte	Turkey Creek RB Levee, Tunnel and Walled Channel	United Government of Wyandotte County	0.54	194	Not Screened	1,394	219	\$424M
Platte	MRLS 385-L Quindaro Bend	Riverside Quindaro Bend Levee District	4.04	1,446	Low	1,367	42	\$310M
Platte	MRLS 385-L Riverside	Riverside Quindaro Bend Levee District	1.22	139	Low	438	54	\$90.2M
Platte	MRLS 400-L	Waldron Levee District	7.33	3,821	Low	66	41	\$9.28M
Platte	MRLS 400-L Ring Levee	Waldron Levee District	0.14	3	Low	2	2	\$105K
Platte	MRLS 408-L	Farley- Beverly Drainage District	12.19	9,827	Low	222	127	\$41.6M
Platte	Platte County Drainage Dist 1 sec. 2, Bean Lake	Bean Lake Levee Association, Platte County Drainage District	9.40	6,674	Low	304	425	\$45M
Platte	Sugar Creek Levee 1	Undefined	0.78	232	Not Screened	4	2	\$830K
Platte, Buchanan	Platte County Drainage District No. 1 Section 1	Platte County Drainage District, Rushville- Sugar Lake	12.18	9,136	Low	304	425	\$45M
Ray	HENRIETTA- CROOKED RIVER L&D DIST, SEC 2 B	Undefined	1.21	58	Not Screened	2	2	\$760K
Ray	MO VALLEY D&L DIST OF RAY CO. MO, SECTION 1 A	Undefined	1.98	1,273	Not Screened	14	9	\$2.55M
Ray	MO VALLEY D&L DIST OF RAY CO. MO, SECTION 1 B	Undefined	1.97	525	Not Screened	210	86	\$30.3M

Ray	MO VALLEY D&L DIST OF RAY CO. MO, SECTION 2	Undefined	1.70	576	Not Screened	0	2	\$390К
Ray	MO Valley D&L Dist. of Ray Co. MO, Section 2	MO Valley D&L Dist. of Ray Co. MO	1.96	277	Low	0	0	\$22.2K
Ray	MO Valley D&L Dist. of Ray Co. MO, Section 3	MO Valley D&L Dist. of Ray Co. MO	2.66	287	Low	0	0	\$49.1K
Ray	RAY- LAFAYETTE LEVEE DIST. NO. 2	Undefined	1.69	511	Not Screened	0	0	\$0
Ray, Carroll	The Ray- Carroll Levee District of Ray County, Missouri	The Ray- Carroll Levee District of Ray County, Missouri	21.86	13,575	Low	627	372	\$77.7M
Ray, Lafayette	MO Valley D&L Dist. of Ray Co. MO, Section 1	MO Valley D&L Dist. of Ray Co. MO	13.65	9,928	Low	78	104	\$14.4M
Ray, Lafayette	RAY- LAFAYETTE LEVEE DIST. NO. 1	Undefined	5.25	8,044	Not Screened	32	20	\$9.9M
Ray, Lafayette	Ray- Lafayette Levee Dist. No. 1	Henrietta- Crooked Section 1, Ray-Lafayette		29,693	Low	399	239	\$48.8M

FEMA Accredited Levees

Many levees shown on the effective Flood Insurance Rate Maps (FIRM) were mapped in the 1970s and 1980s and have never been remapped by FEMA. Prior to 1986, levees were shown on FIRMs as providing protection from base flood when they were designed and constructed in accordance with sound engineering practices. Since 1986, levees have been shown as accredited on FIRMs only when they meet the requirements of 44 CFR 65.10 "Mapping Areas Protected by Levee Systems," including certification by a registered professional engineer or a federal agency with responsibility for levee design.

Levees that do not meet the requirements of 44 CFR 65.10 cannot be shown as accredited on a FIRM. Furthermore, floodplain areas behind the levee are at risk to base flood inundation and are mapped as high-risk areas subject to FEMA's minimum floodplain management regulations and mandatory flood insurance purchase requirement.

In 2004, as it initiated work under the Flood Map Modernization Initiative (Map Mod), FEMA determined that analysis of the role of levees in flood risk reduction would be an important part of the mapping efforts. A report issued in 2005 noted that the status of the nation's levees was not well understood and the condition of many levees and floodwalls had not been addressed since their original inclusion in the NFIP. As a result, FEMA established policies to address existing levees.

For the remainder of this discussion, FEMA Accredited Levees will be discussed in two main types: those mapped on Digital Flood Insurance Rate Maps (DFIRM) since the Flood Map Modernization Initiative and those that are mapped prior to the initiative and not mapped on DFIRMs.

FEMA Accredited Levees Mapped on DFIRMS

As DFIRMs are developed, levees fall under one of the three following categories:

Accredited Levee – With the exception of areas of residual flooding (interior drainage), if the date and documentation specified in 44 CFR 65.10 is readily available and provided to FEMA, the area behind the levee will be mapped as moderate-risk areas. There is no mandatory flood insurance purchase requirement in a moderate-risk area, but flood insurance is strongly recommended.

Provisionally Accredited Levee (PAL) – If data and documentation is not readily available, and no known deficiency precludes meeting requirements of 44 CFR 65.10, FEMA can allow the party seeking recognition up to two years to compile and submit full documentation to show compliance with 44 CFR 65.10. During this two-year period of provisional accreditation, the area behind the levee will be mapped as moderate-risk with no mandatory flood insurance purchase requirement.

De-Accredited Levees – If the information established under 44 CFR 65.10 is not readily available and provided to FEMA, and the levee is not eligible for the PAL designation, the levee will be de-accredited by FEMA. If a levee is de-accredited, FEMA will evaluate the level of risk associated with each non-accredited levee through its Levee Analysis Mapping Procedures (LAMP) criteria to consider how to map the floodplain and which areas on the dry side of the levee will be shown as high risk. The mapping will then be updated to reflect this risk.

Table 4.10.2 shows the status of accredited levees within the region. The table distinguishes between USACE program levees and non-USACE program levees.

Table 4.10.2: Levee Accreditation Status in DFRIM Counties in the Kansas City Region					
County	Primary Community	Levee Owner	USACE Program Levee	Levee Status	
Clay	Kansas City, MO	Birmingham Drainage District	Yes	PAL	
Clay	Kansas City, MO; North Kansas City, MO	City of Kansas City, MO	Yes	Accredited	
Clay	North Kansas City	North Kansas City Levee District	Yes	PAL	
Jackson	Kansas City, MO	City of Kansas City, MO	Yes	PAL	
Jackson	Jackson County Unincorporated Areas	Atherton Levee District	Yes	PAL	
Jackson	Jackson County Unincorporated Areas	Atherton- Blue Mills Levee District	Yes	PAL	
Jackson	Kansas City, MO	GSA Yes		Accredited	
Jackson	Levasy	Northeast Industrial District (East Bottoms)	Yes	Not PAL Eligible	
Platte	Platte County Unincorporated Areas	Waldron Levee District	Yes	PAL	
Platte	Platte County Unincorporated Areas	Farley-Beverly Levee District	Yes	PAL	
Platte	Riverside	Riverside- Quindaro Bend Levee District	Yes	PAL	
Platte	Riverside	Riverside- Quindaro Bend Levee District	Yes	PAL	
Ray	None Identified				

4.10.1 Historical Occurrences

Data Limitation: The damage years for levees in the five-county area are unknown. The Missouri State Hazard Mitigation Plan provides an example of levee damage history (1942–1993) for southeastern Missouri. A similar history can provide the extent and probability for the Kansas City area. For example, Ray County has received 13 federal disaster declarations for flooding. *xiiii*

The historical narratives below provide an overview of significant floods in recent years relative to levee failure mainly due to spring thaw and storms.

Flood of 1993 Summary

Known as the "Great Flood of 1993," this flood is considered to be among the most expensive ever in the United States, with total damages of over \$15 billion and an overall death toll of 50, of which at least 13 took place in Missouri. This flood evolved from a series of heavy rain events along the Missouri and Mississippi Rivers, culminating with a crest of 49.58 feet and a flow of 1.08 million cubic feet per second on August 1 on the Mississippi River at St. Louis. The areas of record flooding extended well upstream on both the Missouri and Mississippi Rivers within Missouri, including western Illinois, western Wisconsin, southern Minnesota, southeastern South Dakota, eastern Nebraska, and much of Kansas, Missouri and lowa. Months of heavy rainfall followed a winter of near- to above-average snowfall to produce significant spring flooding over much of Missouri. For the first seven months of 1993, United States

Department of Agriculture/Agriculture Stabilization and Conservation Service county offices reported more than 50 inches of rainfall in Osage, Sullivan and Worth Counties — more than twice their normal totals. In June and July, the rainfall intensified as mainly nocturnal thunderstorms affected much of the lower Missouri and middle Mississippi River basins.

Throughout the Midwest, at least 75 towns were completely inundated, an estimated 54,000 people were evacuated, and about 50,000 homes were damaged or destroyed by the flooding. And personal impacts extended well beyond flooded structures. In Iowa, for example, tens of thousands of people were unable to work due to a lack of public water supplies needed for sanitation, firefighting, and routine operation of businesses. Transportation was severely affected throughout Missouri. At one point in July, all road bridges between St. Louis and Burlington, Iowa, were closed due to flooding. On Friday, July 16, only 5 of 28 bridges connecting Missouri with Illinois were open. At one point, all bridges crossing the Missouri River between St. Louis and Kansas City were closed, along with sections of Interstates 29, 35, and 70 across Missouri, all at considerable cost to the trucking industry. Along the Mississippi River, barge traffic was halted for over a month, costing the barge industry between \$3–4 million each day. The rail industry suffered losses of over \$300 million, with more than \$100 million in losses in Missouri alone. Damages to locks and dams and levee systems were staggering. Over a thousand levee systems, including 40 federal levees, were damaged or destroyed.

The agriculture industry also experienced huge losses. More than 600 billion tons of topsoil were removed by the flood and deposited downstream. Over a million acres were flooded, much of it farmland. All of this was a complete loss at harvest time, resulting in a total agricultural loss of \$1 billion.

According to SEMA, this flood brought issues related to levees to the forefront.** The flood approached or exceeded the 100-year threshold on most major rivers and resulted in overtopping or failure of large numbers of levees, most of them agricultural levees that provided various levels of damage/risk reduction. As a result of this flooding, 840 of Missouri's estimated 1,456 levees were damaged. A number of flood-level records were broken in 1993. In the USACE St. Louis and Kansas City Districts, 867 of 947 federal and non-federal levees failed or were overtopped, greatly contributing to the flooding. (See Table 4.10.3) The Missouri River, normally no more than a half-mile wide, expanded to 5–6 miles wide north of St. Joseph and 8–10 miles wide east of Kansas City.

Table 4.10.3 Number of Fai	led or Overtopped Federal and Non-F	ederal Levees – 1993 Flood
USACE District	Federal	Non-Federal
Kansas City	6 of 48	810 of 810

Source: Missouri State Hazard Mitigation Plan

2011 Flooding Summary xxv

On July 25, 2011, a major disaster declaration was requested due to flooding during the period of June 1 to August 1, 2011 (See Figure 4.10.5). The governor requested a declaration for individual assistance for 11 counties, public assistance for 22 counties and hazard mitigation for the entire state of Missouri. During the period of July 18–22, 2011, joint federal, state, and local PDAs were conducted in the requested counties and are summarized below.

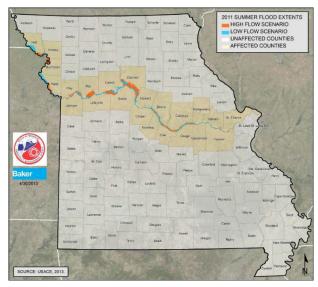


Figure 4.10.5: Summer Flood Extents (Missouri) xxvi

Flooding 2017

Cass, Clay, Jackson, Platte, and Ray counties did not receive federal disaster declaration in 2017. However, a period of flooding occurred during the months of July and August. On the evening of July 26, a line of thunderstorms formed roughly along the Interstate 70 corridor. The storms remained over Kansas City and surrounding areas for several hours, causing some extreme flash flooding. Some of the heaviest rain hit some of the most vulnerable parts of the city, namely Indian Creek near the Kansas and Missouri state line. The Kansas City area received 5 to 7 inches of rain fall over a roughly 3-hour period, causing Indian Creek at State Line Road to rise to 27.96 feet, a new record for that location. The result was businesses in that area becoming inundated with several feet of running water. Numerous car dealerships saw much of their merchandise go underwater at that location. A strip mall consisting of a restaurant among other businesses had water at least 6 feet deep. **xxxxii**

From August 21st through the 22nd, multiple rounds of heavy rain fell, with some of the highest totals observed over the southwestern portions of the Kansas City metro area and other locations south of Kansas City. Widespread amounts of 4 to 6 inches were recorded, with isolated reports of 8 to nearly 10 inches. In addition to numerous roads and some schools closed due to widespread flooding, record crests were made on Indian Creek at State Line Road. Several water rescues were made overnight on August 21 2017, due to flooding. xxviii

2019 Flooding

On May 21, 2019 FEMA announced that federal disaster assistance has been made available to the state of Missouri to supplement state and local recovery efforts in the areas affected by severe storms, straight-line winds, and flooding on March 11 to April 16, 2019. *** Platte and Ray counties were included in this declaration to receive funding for emergency work and repair or replacement of facilities due to severe storms, straight-line winds, and flooding. ***

Bean Lake is a levee system that runs seven miles in Platte County, Missouri. It was breached on March 20, 2019 as well as during the flood of 1993. It's operated by two agencies, the Platte City Drainage District (Platte County Section 2 segment) and the Bean Lake Levee Association (Bean Lake segment). It was inspected in June 2012. The Corps' 2016 risk assessment said that the "likelihood of a flood

overtopping this levee in the next year has been estimated at 2 percent, (one chance in 50)." Extrapolated out, that equaled a 45 percent "likelihood of water overtopping the levee over the life of a typical 30-year mortgage."xxxi

Rushville Sugar Lake is a 10.2-mile levee running across Buchanan and Platte counties in Missouri and operated by the Rushville Sugar Lake Levee District. It was breached around March 22, 2019. It was last inspected in June 2012. The likelihood of a flood overtopping this levee was estimated at 5 percent, or a one-in-20 chance, the assessment said. That equaled a 79 percent "likelihood of water overtopping the levee over the life of a typical 30-year mortgage." XXXXIII

On June 24[,] 2019 Governor Mike Parson, Lt. Governor Mike Kehoe requested the President Donald Trump issue a major disaster declaration for flood, storm, and tornado damage beginning on April 29th, 2019. This declaration request involved 41 counties, Jackson and Platte among them. The Governor's request stated \$25 million in qualifying expenses that had already been identified. "Governor Parson said joint Preliminary Damage Assessments, conducted by the **State Emergency Management Agency, U.S. Small Business Administration, Federal Emergency Management Agency**, and local officials, examined 1,650 primary homes, of which 953 had been destroyed or sustained major damage. The assessments also showed that 125 of 251 businesses that were examined had been destroyed or sustained major damage."

4.10.2 Probable Locations

Magnitude 10%-15%

Figure 4.10.6 below is the Location of Levees and Protected Areas within the Kansas City Region. A magnitude rating of 10%-15% was given to all counties except Cass, because only the portions of the county near levee locations will be affected in the event of a levee failure.

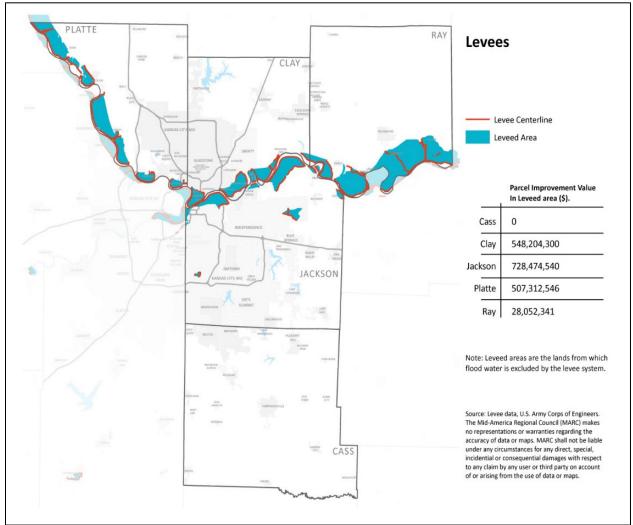


Figure 4.10.6 Location of Levees and Protected Areas, Kansas City Region

4.10.3 Impact

"Levees in the state of Missouri that are accredited against the 0.2 percent and 1 percent annual chance of flooding provide protection for close to 2,200 square miles of land. The majority of privately constructed and maintained levees provide protection for an even greater expanse of agricultural land. Should major flood events like the 1993 flood strike, the severity of damage to human lives and properties from all levee failures is expected to be high. While the U.S. Army Corps of Engineers has done major levee reconstruction for levees that are in the PL84-99 program following the 1993 flood, proper inspection, diligent maintenance and timely repair are key to controlling the severity of levee failure damage in the event of another catastrophic flood.

The magnitude of levee failure during a flooding event can be very similar to a dam failure in that the velocity of the water caused by sudden release. A levee breach can result in a flood surge or flood wave that can cause catastrophic damages. If the levee is overtopped due to flood waters more than that of the levee design, impacts are similar to flood impacts."

4.10.4 Probability of Future Occurrence: Low (500-year Event) to High (100-year Event)

Given the numerous levee systems constructed along the main stems and tributaries of the Missouri River, the Kansas City region is highly susceptible to catastrophic levee failure and/or overtopping. Not counting the great flood of 1993, for the 70-year period from 1942 to 2012 for which levee failure statistics are available, over 100 levee failures/over toppings were recorded. In the Flood of 1993 alone, 840 levees — over 55 percent of the levees in the state of Missouri — sustained significant damages. This translates to an overall high probability of 1 percent (100-year event) annual chance flood levee failure in any given year. The probability of a 0.2 percent (500-year event) annual chance flood levee failure has been defined as low for this plan update. xxxx

4.10.5 Vulnerability Analysis and Potential Loss Estimates

Flooding is the most common hazard associated with levee failure, breach or overtopping. A levee failure, breach or overtopping can result not only in loss of life, but also considerable loss of capital investment, loss of income and property damage. As discussed in the introduction to this section, extreme flooding conditions have the potential to result in levee failures. Since levee failure is an areaspecific hazard, potential loss estimates could be tied directly to the hazard area by jurisdiction. Table 4.10.4 below is the resultant potential loss estimates for jurisdictions within the levee protected areas (*asterisks indicate the community is a current plan participant).

Table	4.10.4 Potent	ial Loss Estima	tes for County/C	ity Structures a	nd Land Protec	ted by Levees	
City	Total Building Value	Total land Value	Total Value	City	Total Building Value	Total land Value	Total Value
Cass County	No risk			Clay County*	\$548,204,300	\$281,844,500	\$830,048,800
Jackson County*	\$728,474,540	\$205,133,266	\$933,607,806	Platte County*	\$507,312,546	\$63,719,224	\$571,031,770
Ray County*	\$28,052,341	\$27,726,259	\$55,778,600	Liberty*	\$46,700	\$1,771,200	\$1,817,900
Birmingham	\$26,280,600	\$4,640,500	\$30,921,100	Missouri City	\$1,164,500	\$463,700	\$1,628,200
Camden	\$0	\$63,680	\$63,680	North Kansas City*	\$345,595,200	\$207,965,200	\$553,560,400

Table	4.10.4 Potent	ial Loss Estima	tes for County/C	ity Structures a	nd Land Protec	ted by Levees	
City	Total Building Value	Total land Value	Total Value	City	Total Building Value	Total land Value	Total Value
Farley*	\$1,101,561	\$4,403,306	\$5,504,867	Parkville*	\$10,967	\$1,148,209	\$1,159,176
Fleming	\$0	\$468,040	\$468,040	Randolph	\$2,217,800	\$4,104,300	\$6,322,100
Harden	\$16,600,690	\$593,120	\$17,193,810	Riverbend	\$0	\$98,900	\$98,900
Henrietta	\$6,281,660	\$437,210	\$6,718,870	Riverside*	\$204,336,624	\$36,368,504	\$240,705,128
Independence*	\$25,332,006	\$13,217,713	\$38,549,719	Sugar Creek	\$9,742,229	\$1,361,080	\$11,103,309
Kansas City*	\$875,002,623	\$248,542,150	\$1,123,544,773	Weston*	\$20,855	\$136,407	\$157,262

Data limitations: Since no good modeling exists to more accurately determine potential loss of the levee systems, the loss estimates below assume a total loss of all buildings within the leveed area. While this may be slightly extreme, it is not unrealistic to assume a total levee failure would cause massive if not catastrophic damage to the protected area.

4.10.6 Problem Statements

Vulnerability statements, such as those below, can support development of mitigation strategies for Levees:

- Several local levees don't have public sponsors identified; upkeep and maintenance for these levees is unclear.
- Unregulated private levees, or those installed without the coordination of a levee district may have negative downstream impacts.
- Property owners may be unaware of public information resources about levee safety.

4.11 Dam Failures



The National Dam Safety Act defines a dam as "an artificial barrier which impounds or diverts water and: (1) is more than 6 feet high and stores 50-acre feet or more [of water] or (2) is 25 feet or higher and stores more than 15 acre-feet [of water]." Dam construction varies widely, ranging from small earthen dams containing farm ponds to large structures of reinforced concrete used for hydroelectric power. Between these two extremes are larger earthen dams reinforced with a core of concrete or asphalt. Most dams in Missouri, including those in the Kansas City metropolitan area, are of earthen construction. **xxxvi*

Dam failures are most likely to happen for the following reasons xxxvii:

- **Piping** Piping is caused when seepage through a dam is not properly filtered and soil particles continue to progress, and form sink holes in the dam. Piping failures are usually caused by embankment leakage, foundation leakage and/or the deterioration of structures on the dam.
- **Structural Failure** Structural failure of materials used in dam construction may be caused by an earthquake, slope instability or poor construction.
- Cracking Cracking of dams may be caused by movement, such as the natural settling of a dam, or by earthquakes.
- **Overtopping** Overtopping is water spilling over the top of a dam. This condition can deteriorate dams made of earth, rock or mine tailings.
- **Inadequate maintenance and upkeep** Inadequate maintenance and upkeep can result in one or more of the aforementioned problems, causing failure of the dam.
- **Erosion** Erosion of dams is generally caused by inadequate capacity of a spillway, resulting in overtopping of the dam, flow erosion or inadequate slope protection. xxxviii

These types of failures may be interrelated. Erosion, for example, may weaken the dam and lead to structural failure. Similarly, structural failure of a dam may shorten the seepage path and lead to a piping failure. Many of the region's dams are old, and with age come a greater likelihood of deterioration and the failure of a dam's structure and systems. **xxix**

Structural failure is the most common cause of dam failure, and flooding is the most common hazard that interacts with dam failure. According to SEMA, "prolonged rains and flooding can saturate earthen dams . . . producing much the same breaching effect as that which occurs with earthen levees. Flooding can also result in overtopping of dams when the spillway and reservoir storage capacities are exceeded by the excess water. A large slide may develop in either the upstream or downstream slope of the embankment and threaten to release the impounded water." Other natural hazards, such as earthquakes or tremors, can also severely damage dams, including complete structural collapse. xl

In the 1970s, three major dam failures occurred within a 15-month period, prompting the development of a national dam safety program. Among the most catastrophic were the failures of the Teton Dam in Idaho in 1976, which killed 14 people and caused more than \$1 billion in damage, and the Kelly-Barnes Dam in Georgia in 1977, which left 39 dead and \$30 million in property damage. In Missouri, dam failures occurred in Lawrenceton in 1968, Washington County in 1975, Fredricktown in 1977, and on December 14, 2005, with the collapse of the Upper Reservoir of Ameren UE's Taum Sauk hydroelectric complex in Reynolds County. Many of Missouri's smaller dams are becoming a greater hazard as they continue to age and deteriorate. Hundreds of dams are in need of rehabilitation; however, a lack of funding and questions of ownership have made it difficult to implement the necessary maintenance. Xii

The Missouri Department of Natural Resources (MDNR) Water Resources Center is responsible for ensuring that all new and existing non-agricultural, non-federal dams 35 feet or higher meet the minimum safety standards established by the Dam and Reservoir Safety Law. The MDNR has three classifications for all state-regulated dams:

- Class 1 The area downstream from the dam that would be affected by inundation contains 10 or more permanent dwellings or any public building. Inspection of these dams must occur every two years.
- **Class 2** The area downstream from the dam that would be affected by inundation contains one to nine permanent dwellings, or one or more campgrounds with permanent water, sewer and electrical services, or one or more industrial buildings. Inspection of these dams must occur once every three years.
- Class 3 The area downstream from the dam that would be affected by inundation does not contain any of the structures identified for Class I or Class II dams. Inspection of these dams must occur once every five years.

4.11.1 Historical Occurrences

There are no historical occurrences of dam failures in Cass, Clay, Platte, Jackson or Ray counties.

4.11.2 Probable Locations

Magnitude <10%

The National Inventory of Dams (NID), xiii developed and maintained by the U.S. Army Corps of Engineers (USACE), and distributed by the Missouri Office of Dam Safety, includes 269 dams in the Kansas City metropolitan area, with 123 of those classified as *high hazard* and 46 classified as *significant hazard*. One high-hazard dam and three significant-hazard dams were included in the 2017 inventory. Lake Deanna Dam and Grand Oaks Dam are both State-regulated and classified as significant-hazard dams. 36601 Jim Owings is a private dam classified as high-hazard. Lake Lotawana Sediment Pond Dam is a private dam classified as significant-hazard. Table **4.11.1** summarizes the 269 dams in Cass, Clay, Jackson, Platte and Ray counties.

Each county was given the lowest magnitude rating of <10% due to no historical dam failure events.

Table 4.11.2 summarizes the 42 dams in the five-county planning area regulated by the state of Missouri by class and hazard. Table 4.11.3 lists all 42 state-regulated dams with select characteristics. The MDNR inventory of dams contains additional information on area dams that is not included in this table due to space limitations. Information from the MDNR inventory of dams is available from the Missouri Department of Natural Resources, Water Resources Program, P.O. Box 250, Rolla, MO 65401, (573) 368-2175. XIIIII As a mitigation measure, stakeholders are encouraged to review the MDNR information on local dams to develop and implement mitigation measures.

Table 4.11.	1: Dams by Hazard	Level, C	wner Type and F	leight by	County			
Owner Type	High Hazard	>35'	Significant	> 35'	Low Hazard	>35'		
Cass County								
Local Government	5	1	0	0	3	0		

Private	23	4	3	2	36	0		
	Clay County							
Federal	1	1	0	0	0	0		
State	1	1	0	0	1	1		
Local Government	0	0	0	0	3	1		
Private	13	2	0	0	19	0		
	Ja	ckson Co	ounty					
Federal	3	2	0	0	4	0		
State	3	1	0	0	8	0		
Local Government	5	3	0	0	1	0		
Private	40	14	1	0	18	2		
Platte County								
Local Government	1	1	0	0	0	0		
Private	16	4	0	0	13	0		
		Ray Cou	nty					
Local Government	4	2	1	0	10	0		
Private	8	3	5	0	20	1		
		Total						
Federal	4	3	0	0	4	0		
State	4	2	0	0	9	1		
Local Government	15	7	1	0	17	1		
Private	100	27	9	2	106	3		
Total	123	39	10	2	136	5		

Table 4.11	.2: MDNR Regulated Dams by County (Class and Hazard Level)					
Country	Re	egulated Cla	ss		Hazard Level	
County	Class 1	Class 2	Class 3	High	Significant	Low
Cass	5	2	0	5	2	0
Clay	2	1	2	3	0	2
Jackson	15	3	2	18	0	2
Platte	5	0	0	5	0	0
Ray	1	4	0	5	0	0
Total	28	10	4	36	2	4

Data limitation: The Emergency Action Plans (EAP) for High-Hazard Potential (HHP) dams have been completed and approved for each of the five counties as of the last 2015 Plan update. **Iiv* An EAP is a plan of action to reduce potential property damage and loss of lives in an area affected by a dam failure and should include a map of the potential inundation area along with procedures and information for warning downstream emergency management authorities. The process for rolling out EAPs to county officials has been staggered. As of this Plan update, only Jackson County inundation pathways were available for inclusion into this risk assessment.

			Table	4.11.3: Miss	ouri State- F	egulated Da	Table 4.11.3: Missouri State- Regulated Dams in the Five County Planning Area	ing Area			
County	Name	Class	Hazard	Owner	Height (Feet)	Storage (Acre-Ft.)	Primary Purpose	Dam Type	River	Nearest City	Distance (Miles)
CASS	GRAND OAKS FARMS LAKE DAM	2	NUID	Private	35.4	91			TRIB EAST CREEK	BELTON	. 8
2000	HABBISONVIIIECITY LAKEDAM	,	ij	Local Govt	75	13520	Recreation and Water	Farth	TRMIDDLE RIG CREEK	PIEASANTHIII	4
CASS	LAKE DEANNA DAM	2	Signficant	Private	67	1876	holder	5	HARDING CREEK	NA	0
CASS	LAKE WINNEBAGO DAM	1,	High	Private	64	7150	Recreation	Earth	MIDDLE BIG CREEK	LATOUR	21
CASS	L'ARE WINNEBAGO DAM EXPANSION, NOT BET	1 1	High	Private	62	3850	Recreation	Earth	MILLCREEK	CITT OF LAKE WINNEBAGO	0
CASS	RAINTREE LAKE DAM	1	High	Private	55	7220	Recreation	Earth	MIDDLE BIG CREEK	PLEASANT HILL	0 &0
CLAY	HELVEY PARK DAM	ю	Low	Local Govt.	36	203	Recreation and Water Supply	Earth	TR WILKERSON CREEK	SMITHVILLE	-
CLAY	НОГГУ ГАКЕ DAM	1	High	Private	40	140	Recreation	Earth	TR-LITTLE SHOAL CREEK	LIBERTY	0
CLAY	MEADOW LAKE ESTATES DAM	2	High	Private	47	400				,	0
CLAY	WATKINS MILL STATE PARK DAM	1	High	State	55	2600	Flood Control, Storm Water Management, and Recreation	Earth	TR-WILLIAMS CREEK	PRATHERSVILLE	
CLAY	WILLIAMS CREEK #4 DAM	3	том	State	46	598	Flood Control, Storm Water Management, and Recreation	Earth	TR TO WILLIAMS CREEK	ABSOW	,
JACKSON		2	High	Local Govt.	48	876	Flood Control and Storm Water Management	Earth	TRIB BLUE BRANCH	GBAIN VAILEY	ю
JACKSON		1	High	Private	25	2186	Irrigation and Recreation	Earth	TR TO WEST FORK SNI-A-BAR CRK	LAKE LOTAWANA	
JACKSON			Low	Private	45	83	Recreation	Earth	TR-LITTLE BLUE RIVER	LEES SUMMIT	
		,	A :	ייייייייייייייייייייייייייייייייייייייי	7 8	8	ייייייייייייייייייייייייייייייייייייייי	Rockfill and	יייב דא ביוונב פרטב איינה	וויטביבור וויטבי	- 0
JACKSON	JOUR LAKE DAM		High	Private	38	38620	Water Supply and Other	Earth	FAST FORK LITTLE BLIF BIVER	INDEPENDENCE LEES SLIMMIT	0 0
JACKSON		7	High	Private	58	11568	Recreation	Earth	WEST FORK SNI-A-BAR CREEK	TARSNEY LAKES	o 60
JACKSON		1	High	Private	22	2000	Recreation	Earth	TR EAST FORK OF LITTLE BLUER	INDEPENDENCE	0
JACKSON	LAKEWOOD-EAST DAM	1	High	Private	75	4810	Recreation	Earth	WEST FORK OF MAY BROOK	LEES SUMMIT	-
JACKSON	JACKSON LAKEWOOD-WEST DAM	1	High	Private	84	0009	Recreation	Earth	WEST FORM OF MAY BROOK	LEES SUMMIT	-
JACKSON	I LONE JACK LAKE DAM	2	High	State	47	999	Flood Control and Storm Water Management	Earth	TRIB TO THE SNI-A-BAR	LONEJACK	25
JACKSON	JACKSON PRAIRIE LEE LAKE DAM	1	High	Local Govt.	69	0009	Recreation	Earth	EAST FORK LITTLE BLUE RIVER	BLUE SPRINGS	0
JACKSON			High	Private	57	400	Recreation	Earth	UNNAMED TRIB TO BLUE RIVER	GRANDVIEW	- 0
JACKSON	I DIM SMITH LAKE -EAST DAIM		High High	Private	22	12/	Kecreation	Earth	TELUE RIVER	STANIES KE	n α
JACKSON	TOM SMITH SOUTH LAKE DAM	1 1	High	Private	57	502		Earth	TRIB. BLUE RIVER	STANLY, KS	2
JACKSON		1	High	Private	48	285	Recreation and Water Supply	Buttress	TR-LITTLE CEDAR CREEK	UNITY VILLAGE	0
IACKSON	MACC # XTINITY	,	High	Private	52	618	Recreation and Water	Farth	TR-I ITTI E CEDAR CREEK	KANSAS CITY	^
JACKSON	VIEW HIGH LAKE DAM	1	High	Private	37	148	Recreation	Earth	TR-LITTLE BLUE RIVER	KANSAS CITY	-
JACKSON	WHISPERING HILLS LAKE DAM	1	High	Private	40	190	Recreation	Earth	TR ROUND GROVE CREEK	KANSAS CITY	0
PLATTE	INTERNATIONAL AIRPORT DAM		High	Local Govt.	45	1670	Flood Control and Storm Water Management	Earth	TR TODD CREEK	PLATTE CITY	9
PLATTE	LAKE WAUKOMIS DAM	1	High	Private	89	2292	Recreation	Earth	TR LINE CREEK	LAKE WAUKOMIS	0
PLATTE	RISS LAKE DAM	1	High	Private	93	7720	Recreation	Earth	WHITE ALOE BRANCH	PARKVILLE	1
PLATTE	THOUSAND OAKS DAM	1	High	Private	20	190		Earth			0
PLATTE	WEATHERBY LAKE DAM	Η,	High	Private	84	5750	Recreation	Earth	RUSH CREEK	PARKVILLE	m +
7	Chisial Lane Daivi	+	_ E	בוואמות	5	70407	Irrigation, Fire Protection,	Edici	FISHING NIVEN	EACELSON SPRINGS	-
RAY	HEDGES LAKE DAM	2	High	Private	43	115	Stock, or Small Farm Pond, and Recreation	Earth	TR-SHACKELFORD BRANCH	ORRICK	0
RAY	HIDDEN VALLEY LAKE DAM	2	High	Private	52	454	Recreation	Earth	TR TO ROCKY FORK	HARDIN	0
RAY	LAWSON CITY LAKE DAM	2	High	Local Govt.	45	380	Recreation and Water Supply	Earth	BRUSHY CREEK	ELMIRA	1
RAY	WILLOW CREEK WTRSHD SITE A-1	2	ЧВіН	Local Govt.	42	2000	Flood Control and Storm Water Management	Earth	WILLOW CREEK	HENRIETTA	
							0				

4.11.3 Impact

There are 123 high-hazard dams plus ten significant-hazard dams located in the five-county area. The majority of these are privately owned and, if they were to fail, would not cause widespread damage. Dam owners are required to notify MDNR of any problem for inspection. Problems deemed a serious nature require the notification of emergency personnel. Problems deemed immediate require evacuation. The transition between those of a serious nature to immediate can either be a slow or rapid transition. At all three reporting levels, efforts are made to save and repair the dam.

Although unlikely, the failure of one of the USACE's six main stem dams on the Upper Missouri River Basin may also impact the Kansas City metropolitan area. These dams with their respective reservoirs and storage capacity include^{xlv}:

- Fort Peck Dam and Lake (18.7 million acre-feet of water) near Glasgow, Montana
- Garrison Dam and Lake Sakakawea (23 million acre-feet of water) near Bismarck, North Dakota
- Oahe Dam and Lake (23.5 million acre-feet of water) near Pierre, South Dakota
- Big Bend Dam and Sharpe Lake (1.9 million acre-feet of water) near Fort Thompson, South Dakota
- Fort Randall Dam and Lake Francis Case (nearly 5.5 million acre-feet of water) near Wagner,
 South Dakota
- Gavins Point Dam and Lewis and Clark Lake (492,000 acre-feet of water) near Yankton, South Dakota

Map 4.11.1 depicts the locations of the six main stem dams on the Upper Missouri River Basin. Each of these dams holds back large bodies of water — Lake Sakakawea and Oahe Lake are two of the largest reservoirs in the nation — and a sudden release of water from one of these reservoirs due to dam failure could have a cascading effect. Water might have to be released from downstream reservoirs to accommodate the additional water received from an upstream dam failure, increasing the flow and level of water in the Missouri River and contributing to the potential for flooding at downstream locations, such as the Kansas City metropolitan area.

Probable Duration

Potential speed of	f onset (probable	amount o	of warning	time):

☐ Minimal	(or r	าด) พล	arning
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☐ 6 to 12 hours warning

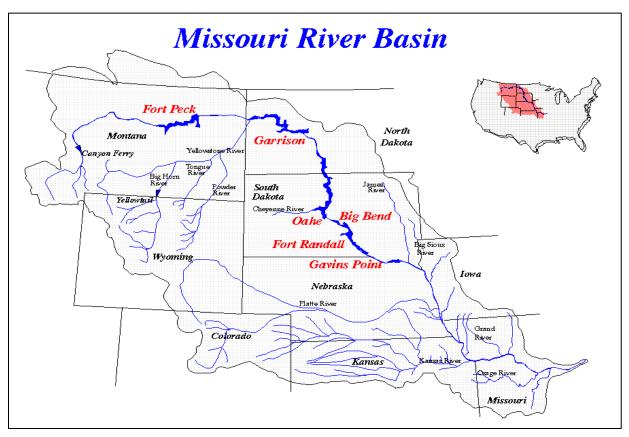
☐ 12 to 24 hours warning

■ More than 24 hours warning

Community Assets

The rise and fall of rushing water can have disastrous impacts on life, property, the economy and the environment. Steps to prevent the loss of life and injuries in the event of a dam failure are similar to those for a tornado. However, instead of seeking shelter underground, evacuation for a dam failure requires people to seek high ground. Persons with disabilities, the elderly, and low-income individuals with limited means would be at a greater disadvantage.

A dam failure would result in damage to residential and commercial structures; critical infrastructure, including transportation and utility service interruptions; and economic losses to agricultural land and businesses. The natural environment could also be impacted by the force of the water damaging or destroying trees and vegetation.



Source: US Army Corps of Engineers, Missouri River Basin Water Management Division

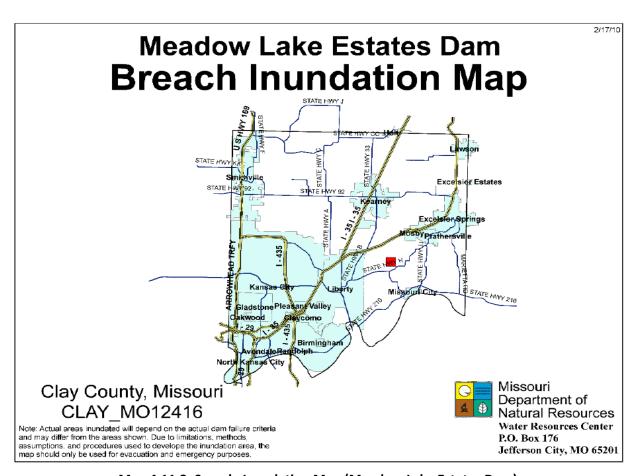
Map 4.11.1: USACE Main Stem Dams in the Upper Missouri River Basin

4.11.4 Probability of Future Occurrence

A probability percentage is unavailable because there no recorded events of dam failure in the five county area. However, the most likely cause of dam failure is heavy rainfall. In the Kansas City metropolitan area, May, June, July and September receive the highest average monthly rainfall amounts. Consequently, the risk of dam failure may be greatest in these months. Although less likely, dam failure may also be caused by a strong earthquake. Earthquakes, however, are not affected by climatic conditions and may occur at any time of the year. The Kansas City metro area is not at high risk for earthquakes (Missouri SEMA New Madrid zone outside KC metro area). Older dams, particularly those holding back large amounts of water, may pose significant risk to downstream populations and structures.

4.11.5 Vulnerability Analysis and Potential Loss Estimates

The Missouri Dam Safety Program reports that all high-hazard dams in the five-county area have approved Emergency Action Plans with inundation maps. As a part of the EAP, dam owners are required to have an evacuation plan and make inundation maps available to the local jurisdiction. See **Map 4.11.2** for a sample map. The state has completed inundation maps for 76 percent of these dams. Once the project is complete, inundation maps will be provided to each respective county in the state for planning and training purposes. *Ivi Inundation maps are currently available for Jackson County.



Map 4.11.2: Sample Inundation Map (Meadow Lake Estates Dam)

Because inundation pathways are not largely available, the statistical risk assessment methodology was used to estimate loss for dam failures. Table 4.11.4 provides the results of the inundation area analysis with the numbers and values of various types of structures, and populations within the mapped areas for state-regulated dams. The table that follows (Table 4.11.5) provides the same analysis of the inundation area analysis of available USACE dams.

Table 4.11.4. Esti	Table 4.11.4. Estimated Numbers and Values of Structures and Population Vulnerable to Failure of State-Regulated Dams with Available Inundation Areas					
County	Category	Number of	Value of Structures	Population		
		Structures				
Cass	Agriculture	59	\$19,408,826	0		
	Commercial	33	\$21,877,498	0		
	Residential	58	\$18,158,559	150		
Clay	Agriculture	7	\$2,001,237	0		
	Commercial	50	\$64,219,612	0		
	Government	1	\$1,363,241	0		
	Residential	75	\$24,996,090	197		
Jackson	Agriculture	33	\$11,653,441	0		
	Commercial	862	\$1,164,527,949	0		
	Education	4	\$10,806,427	0		
	Residential	914	\$294,142,638	2,184		
Platte	Agriculture	8	\$2,425,473	0		
	Commercial	56	\$59,248,958	0		
	Education	1	\$2,061,764	0		
	Government	2	\$2,885,677	0		
	Industrial	2	\$2,192,478	0		
	Residential	106	\$39,664,446	269		
Ray	Agriculture	3	\$1,328,579	0		
	Commercial	7	\$4,730,945	0		
	Residential	2	\$551,568	5		

Source: Missouri State Hazard Mitigation Plan, 2023

Table 4.11.5. Estin	nated Numbers an	d Values of Structure	s and Population Vulr	nerable to Failure of
	USACE Da	ms with Available Inເ	ındation Areas	
County	Category	Number of	Value of Structures	Population
		Structures		
Cass	N/A	N/A	N/A	N/A
Clay	Agriculture	335	\$95,773,470	0
	Commercial	666	\$855,405,224	0
	Education	9	\$21,108,963	0
	Government	38	\$51,803,156	0
	Industrial	451	\$611,170,441	0
	Residential	2298	\$765,880,223	5,975
Jackson	Agriculture	510	\$180,098,625	0
	Commercial	807	\$1,090,225,121	0
	Education	11	\$29,717,673	0
	Government	24	\$41,722,484	0
	Industrial	1,875	\$2,712,261,594	0
	Residential	4,085	\$1,314,630,934	9,967
Platte	Agriculture	600	\$181,910,427	0
	Commercial	434	\$459,179,431	0
	Education	14	\$28,864,695	0

	Government	40	\$57,713,527	0
	Industrial	311	\$340,930,409	0
	Residential	1,886	\$705,727,785	4,640
Ray	Agriculture	899	\$398,130,741	0
	Commercial	92	\$62,178,136	0
	Education	20	\$70,482,819	0
	Government	7	\$5,912,062	0
	Industrial	46	\$37,760,036	0
	Residential	989	\$272,750,163	2,601

Source: Missouri State Hazard Mitigation Plan, 2023

4.11.6 Problem Statements

Vulnerability statements, such as those below, can support development of mitigation strategies for dam failures:

- 134 high-hazard dams (more than 35 feet) that could cause significant damage in inundation pathways exist throughout the planning area. Many of these are unregulated.
- While government and private owners of high-hazard dams have inundation pathways and completed Emergency Action Plans (EAP), these may not have been shared with local officials and potential affected parties.
- Local jurisdictions have little ability to require privately-owned dam owners to adequately maintain dams.
- There may be a need for regular training and exercising of evacuation plans in the vicinity of high-hazard dams.

http://sema.dps.mo.gov/docs/programs/LRMF/mitigation/MO Hazard Mitigation Plan 2013.pdf

¹ FEMA Website, Floods and Flash Floods Fact Sheet

[&]quot; SEMA State Hazard Analysis, Annex B

iii USA Today, online data

iv SEMA State Hazard Analysis, Annex B

^v FEMA Web site, Floods and Flash Floods Fact Sheet, online document

vi USACE Walla Walla District, online data

vii SEMA State Hazard Analysis, Annex B

viii BCN Web site, online data

ix PBS, online data

^x FEMA Web site, Floods and Flash Floods Fact Sheet, online document

xi FEMA Web site, Floods and Flash Floods Fact Sheet, online document

xii Pima County Flood Control District Web site, online data

xiii SEMA State Hazard Analysis, Annex B

xiv Linda Lam, "A Concerning Trend: Flooding Deaths Have Increased in the U.S. the Last Few Years," *The Weather Channel*, November 8, 2018, https://weather.com/safety/floods/news/2018-11-08-flood-related-deaths-increasing-in-united-states

xv Linda Lam, "A Concerning Trend: Flooding Deaths Have Increased in the U.S. the Last Few Years," *The Weather Channel*, November 8, 2018, https://weather.com/safety/floods/news/2018-11-08-flood-related-deaths-increasing-in-united-states

xvi NWS Missoula Web site, online data

xvii Missouri State Hazard Mitigation Plan, State Estimates of Potential Loss, pg. 3.108-3.109

xviii Missouri State Hazard Mitigation Plan,

- xix Jackson County, MO Sheriff's Office, https://www.kshb.com/news/local-news/water-rescue-in-levasy-as-levee-breaches
- ** FEMA Web site, "So You Live Behind a Levee," http://content.asce.org/ASCELeveeGuids.html
- xxi National Committee on Levee Safety, Recommendations for a National Levee Safety Program, http://www.leveesaftey.org/lv_links.cfm
- xxii Missouri State Hazard Mitigation Plan
- xxiii Missouri State Hazard Mitigat6ion Plan
- xxiv Missouri Stat Hazard Mitigation Plan
- xxv FEMA Local Planning Guide
- xxvi Narratives from NOAA Storm Events Database
- xxvi Narratives from NOAA Storm Events Database
- xxvi FEMA, https://www.fema.gov/news-release/2019/05/21/president-donald-j-trump-approves-major-disaster-declaration-missouri
- xxvi FEMA, https://www.fema.gov/news-release/2019/05/21/president-donald-j-trump-approves-major-disaster-declaration-missouri
- xxvi Peggy Lowe, "10 Failed Levees In Midwest Flood Zone Were Not Inspected By Federal Government," KCUR, https://www.kcur.org/post/10-failed-levees-midwest-flood-zone-were-not-inspected-federal-government#stream/0
- xxvi Peggy Lowe, "10 Failed Levees In Midwest Flood Zone Were Not Inspected By Federal Government," KCUR, https://www.kcur.org/post/10-failed-levees-midwest-flood-zone-were-not-inspected-federal-government#stream/0
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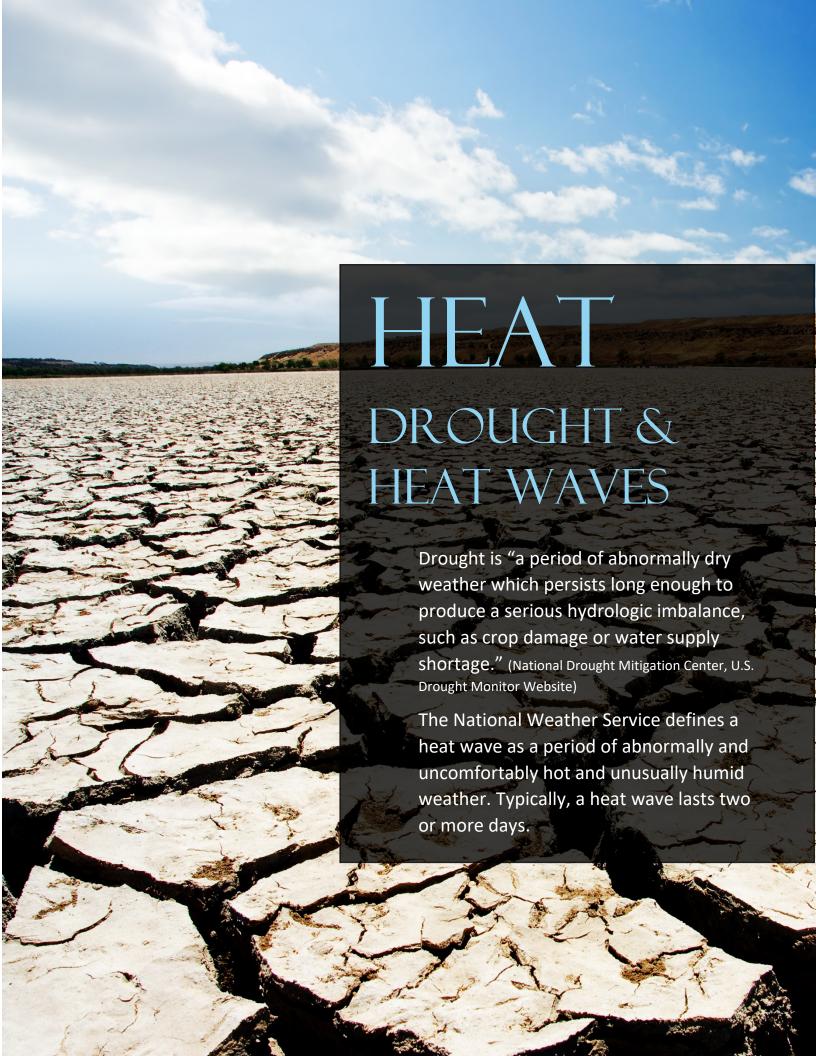
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- xl SEMA State Hazard Analysis, Annex G
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xlvi Glenn Lloyd, Phone Interview, 2015



4.12 Drought



A drought's severity is dependent on a variety of factors, including its duration, the degree of moisture deficiency and the size of the affected area. Drought can be exacerbated by other climatic conditions, including high temperatures, high winds and low humidity.

There are five categories of drought, each one relating the occurrence of drought to water shortfall in some component of the hydrological cycle. These categories are operational definitions and help to describe the onset, severity and end of droughts. Each category affects patterns of water and land use and refers to a repetitive climatic condition. The categories include:

Meteorological Drought – is a measure of precipitation's departure from normal over a period of time. This definition of drought is region-specific, i.e., a drought in one area may not be considered a drought in another area. According to the National Drought Mitigation Center (NDMC), meteorological measurements usually provide the first indication of drought.

Agricultural Drought – occurs when there is not enough moisture in the soil to meet the needs of a crop at a particular time. According to the NDMC, agriculture is usually the first economic area to be affected by drought.

Hydrological Drought – occurs when surface and subsurface water supplies are below normal. Hydrological drought is determined by streamflow and by lake, reservoir and groundwater levels. Hydrological indicators do not provide early indications of drought, since there is a delay between periods with little or no precipitation and low levels of surface and groundwater.

Hydrological Drought and Land Use – refers to a meteorological drought in one area that has hydrological impact in another area. For example, a drought in the Rocky Mountains may have a significant impact in Missouri, since the Missouri River and its tributaries are partly dependent upon precipitation upstream and snowmelt. I

Socioeconomic Drought – occurs when a physical water shortage begins to affect people.

4.12.1 Historical Occurrences

Drought has been a recurrent climatic feature of the Kansas City metropolitan area for many years. Residents of the Kansas City area have experienced some of the nation's worst periods of drought, including the 1930s Dust Bowl drought, the drought of 1954–1956, the Great Drought 1988–1989, the drought of 1999–2000, and the drought of 2012, which was one of the worst droughts to impact Missouri in over 30 years.

Historical occurrences occurring between May 2019 and November 2024 are depicted in **Table 4.12.1**. The planning area did not have any occurrences of excessive heat between May 2019 and November 2024.

	Table 4.12.1 Historical Occurrences, Drought (5/19 to 11/24)							
Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
CASS (ZONE)	09/27/2022	Drought	0	0	\$0	\$0		
CASS (ZONE)	10/01/2022	Drought	0	0	\$0	\$0		
CASS (ZONE)	11/01/2022	Drought	0	0	\$0	\$0		
CASS (ZONE)	05/09/2023	Drought	0	0	\$0	\$0		
CASS (ZONE)	06/01/2023	Drought	0	0	\$0	\$0		
CASS (ZONE)	07/01/2023	Drought	0	0	\$0	\$0		
CASS (ZONE)	08/01/2023	Drought	0	0	\$0	\$0		
CASS (ZONE)	10/01/2023	Drought	0	0	\$0	\$0		
Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
CLAY (ZONE)	09/27/2022	Drought	0	0	\$0	\$0		
CLAY (ZONE)	10/01/2022	Drought	0	0	\$0	\$0		
CLAY (ZONE)	11/01/2022	Drought	0	0	\$0	\$0		
CLAY (ZONE)	12/01/2022	Drought	0	0	\$0	\$0		
Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$		
JACKSON (ZONE)	07/19/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	08/1/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	09/1/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	10/1/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	11/1/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	12/1/22	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	05/9/23	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	06/1/23	Drought	0	0	\$0	\$0		
JACKSON (ZONE)	07/1/23	Drought	0	0	\$0	\$0		

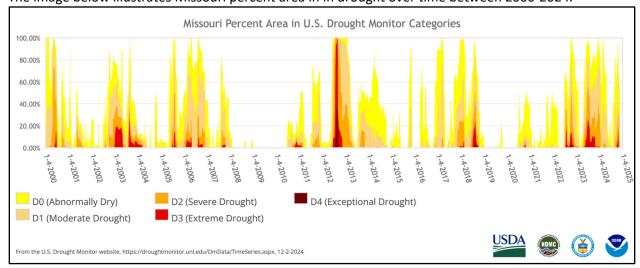
JACKSON (ZONE)	08/1/23	Drought	0	0	\$0	\$0
JACKSON (ZONE)	10/1/23	Drought	0	0	\$0	\$0
Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$
PLATTE (ZONE)	9/27/22	Drought	0	0	\$0	\$0
PLATTE (ZONE)	10/1/22	Drought	0	0	\$0	\$0
PLATTE (ZONE)	11/1/22	Drought	0	0	\$0	\$0
PLATTE (ZONE)	12/1/22	Drought	0	0	\$0	\$0
Location	Date	Event Type	Deaths	Injuries	Property Damage \$	Crop Damage \$
Location RAY (ZONE)	Date 9/27/22	Event Type Drought	Deaths	Injuries 0	Property Damage \$	Crop Damage \$
RAY (ZONE)	9/27/22	Drought	0	0	\$0	\$0
RAY (ZONE)	9/27/22	Drought Drought	0	0	\$0 \$0	\$0 \$0
RAY (ZONE) RAY (ZONE) RAY (ZONE)	9/27/22 10/1/22 11/1/22	Drought Drought Drought	0 0	0 0 0	\$0 \$0 \$0	\$0 \$0 \$0

Source: NOAA NCDC Web site

*the dollar values assigned in storm data are a basic estimate

4.12.2 Historical Trends

The image below illustrates Missouri percent area in in drought over time between 2000-2024.



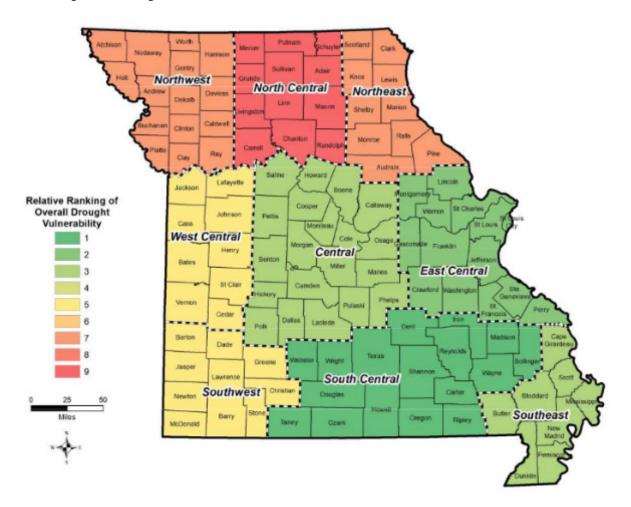
Source: NOAA NCDC Web site

4.12.3 Probable Locations

Magnitude >50%

As in the 2019 Plan, the entire planning area remains susceptible to drought. In its 2023 Missouri Drought Mitigation and Response Plan, MDNR divided the state into multiple regions. These drought regions are depicted in the map below.

The entire Kansas City region is subject to the impacts of drought. Therefore, all counites were given a >50% magnitude rating.



Source: Missouri Drought Mitigation and Response Plan, Missouri Department of Natural Resources

Map 4.12.4: Missouri's Drought Vulnerability Ranking

Specific locations within the regions described above may be susceptible to drought, based on local water supplies and/or patterns of water use. A local area's susceptibility to drought and the severity of drought conditions may also be influenced by a variety of other factors, such as historical occurrences of drought; actual annual and seasonal rainfall amounts; current and projected water demands and uses; sources of available water; water reserves and accessibility to additional water supplies; and current population and projected population trends associated with water use amounts.ⁱⁱⁱ

4.12.4 Impact

There is not a consistent national methodology to determine the impact or severity of droughts. In response to this gap, the National Drought Mitigation Center developed the Drought Impact Reporter to fulfill the need for a national drought impact database for the United States. The Drought Impact Reporter is an interactive web-based mapping tool designed to compile and display impact information across the United States in near real-time from a variety of sources such as media, government agencies, and the public. Launched in July 2005, this tool is the only nationwide, multi-source archive of drought impact information. Iv

Table 4.12.1 shows the number of impact reports received by the National Drought Mitigation Center from various sources. **Table 4.12.2** shows the number of valid impacts determined by the National Drought Mitigation Center using the information from reports. Impacts can be made up of one or more reports.

	Table 4.12.1: Drought Reports 05/19- 11/24								
					Report Ca	ntegory			
County	Agricultural	Business and Industry	Energy	Fire	Plants and Wildlife	Relief, Response & Restrictions	Society and Public Health	Tourism & Recreation	Water Supply and Quality
Cass	2	0	0	1	4	1	2	0	4
Clay	2	0	0	0	2	4	2	0	4
Jackson	20	1	19	3	42	6	16	4	9
Platte	63	62	59	60	62	54	59	61	65
Ray	2	0	0	0	1	4	2	0	4

Source: National Drought Mitigation Center Website, Drought Impact Reporter

	Table 4.12.2: Drought Impacts 05/19- 11/24								
		Impacts Category							
County	Agricultural	Business and Industry	Energy	Fire	Plants and Wildlife	Relief, Response & Restrictions	Society and Public Health	Tourism & Recreation	Water Supply and Quality
Cass	4	1	0	1	3	6	2	1	5
Clay	4	1	0	0	3	5	2	1	5
Jackson	7	3	0	1	6	6	3	1	6
Platte	4	2	0	0	3	6	2	1	6
Ray	4	1	0	0	3	5	2	1	5

Source: National Drought Mitigation Center Website, Drought Impact Reporter

4.12.4a Drought Impact Reporter Categoriesvi

Impacts and reports based on what sectors are involved. A report or an impact can have more than one category.

Agriculture – Drought effects associated with agriculture, farming, aquaculture, horticulture, forestry or ranching. Examples of drought-induced agricultural impacts include damage to crop quality; income loss for farmers due to reduced crop yields; reduced productivity of cropland; insect infestation; plant disease; increased irrigation costs; cost of new or supplemental water resource development (wells, dams, pipelines) for agriculture; reduced productivity of rangeland; forced reduction of foundation stock; closure/limitation of public lands to grazing; and the high cost or unavailability of water for livestock, Christmas tree farms, forestry, raising domesticated horses, bees, fish, shellfish or horticulture.

Business & Industry — This category tracks drought's effects on non-agriculture and non-tourism businesses, such as lawn care, recreational vehicles or gear dealers, and plant nurseries. Typical impacts include reduction or loss of demand for goods or services, reduction in employment, variation in number of calls for service, late opening or early closure for the season, bankruptcy, permanent store closure, and other economic impacts.

Energy – This category concerns drought's effects on power production, rates and revenue. Examples include production changes for both hydropower and non-hydropower providers, changes in electricity rates, revenue shortfalls and/or windfall profits, and purchase of electricity when hydropower generation is down.

Fire — Drought often contributes to forest, range, rural or urban fires, fire danger, and burning restrictions. Specific impacts include enacting or easing burning restrictions, fireworks bans, increased fire risk, occurrence of fire (number of acres burned, number of wildfires compared to average, people displaced, etc.), state of emergency during periods of high fire danger, closure of roads or land due to fire occurrence or risk, and expenses to state and county governments of paying firefighters overtime and paying equipment (helicopter) costs.

Plants & Wildlife – Drought effects associated with unmanaged plants and wildlife, both aquatic and terrestrial, include loss of biodiversity of plants or wildlife; loss of trees from rural or urban landscapes, shelterbelts, or wooded conservation areas; reduction and degradation of fish and wildlife habitat; lack

of feed and drinking water; greater mortality due to increased contact with agricultural producers, as animals seek food from farms and producers are less tolerant of the intrusion; disease; increased vulnerability to predation (from species concentrated near water); migration and concentration (loss of wildlife in some areas and too much wildlife in others); increased stress on endangered species; salinity levels affecting wildlife; wildlife encroaching into urban areas; and loss of wetlands.

Relief, Response & Restrictions — This category refers to drought effects associated with disaster declarations, aid programs, requests for disaster declaration or aid, water restrictions or fire restrictions. Examples include disaster declarations, aid programs, USDA Secretarial disaster declarations, Small Business Association disaster declarations, government relief and response programs, state-level water shortage or water emergency declarations, county-level declarations, a declared "state of emergency," requests for declarations or aid, nonprofit organization-based relief, water restrictions, fire restrictions, National Weather Service Red Flag warnings, and declaration of drought watches or warnings.

Society & Public Health — Drought effects associated with human, public and social health include health-related problems related to reduced water quantity and/or quality, such as increased concentration of contaminants; loss of human life (e.g., from heat stress, suicide); increased respiratory ailments; increased disease caused by wildlife concentrations; increased human disease caused by changes in insect carrier populations; population migration (rural to urban areas, migrants into the United States); loss of aesthetic values; change in daily activities (non-recreational, like putting a bucket in the shower to catch water); elevated stress levels; meetings to discuss drought; communities creating drought plans; lawmakers altering penalties for violation of water restrictions; demand for higher water rates; cultural/historical discoveries from low water levels; prayer meetings; cancellation of fundraising events; cancellation/alteration of festivals or holiday traditions; stockpiling water; public service announcements and drought information websites; protests; and conflicts within the community due to competition for water.

Tourism & Recreation — Drought effects associated with recreational activities and tourism include closure of state hiking trails and hunting areas due to fire danger; water access or navigation problems for recreation; bans on recreational activities; reduced license, permit, or ticket sales (e.g. hunting, fishing, ski lifts, etc.); losses related to curtailed activities (e.g. bird watching, hunting and fishing, boating, etc.); reduced park visitation; and cancellation or postponement of sporting events.

Water Supply & Quality – Drought effects associated with water supply and water quality include dry wells, voluntary and mandatory water restrictions, changes in water rates, easing of water restrictions, increases in requests for new well permits, changes in water use due to water restrictions, greater water demand, decreases in water allocation or allotments, installation or alteration of water pumps or water intakes, changes to allowable water contaminants, water line damage or repairs due to drought stress, drinking water turbidity, change in water color or odor, declaration of drought watches or warnings, and mitigation activities. vii

4.12.5 Probability of Future Occurrence: 20%

The onset, duration, and end of droughts are difficult to classify. Using past drought events to predict future probability is insufficient. Therefore, the weekly probability percentage of 20 percent is a very basic estimate based only on data from the National Oceanic and Atmospheric Administration storm events database (2000-2019). The combination of moderate precipitation amounts and relatively short

growing season (compared to other parts of the state), relatively high evaporation rates, deep soils, poor groundwater, reliance on surface water and historical occurrences (including current drought conditions), contribute to the region's vulnerability to drought. In many parts of the region, particularly rural areas within drought susceptibility Region C, drought conditions may have severe economic, environmental and social impacts. Mitigation measures, particularly those involving conservation and water system infrastructure improvements, may reduce the vulnerability of these areas to the effects of drought.

Another tool for monitoring drought is the United States Drought Monitor. This database allows you to download data in various categories for each week of a selected time period and location. Table 4.12.3 below shows the probability of a D0-D4 drought occurring in more than half a county on a given week.

Due to **Table 4.12.3** including minor drought classifications like D0 and D1, the probability percentages are much higher than the probability percentage calculated from the NOAA storm events database in the previous paragraph. While many weeks experienced only D0 and D1 droughts and were not mentioned in the storm events database, **Table 4.12.4** shows that droughts at lower classification levels are still capable of damage.

Table 4.12.3 P	Table 4.12.3 Probability of a D0-D4 Drought Occurring in a Given Week							
County	Weeks with >50% of county in D0-D4 Drought	Weeks data on record	Probability					
Cass	218	554	39%					
Clay	209	554	38%					
Jackson	202	554	36%					
Platte	196	554	35%					
Ray	191	554	34%					
Planning Area	1,016	2,770	37%					

Source: United States Drought Monitor

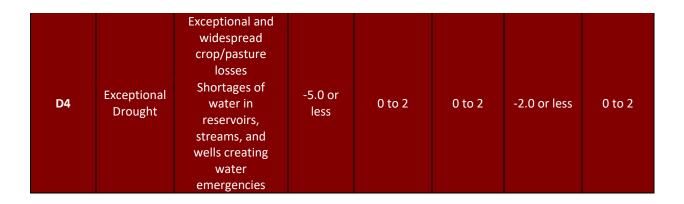
4.12.6 Extent

Like section 4.12.3 mentioned, drought impacts are inherently difficult to quantify. Several methods exist for quantifying the impacts of and economic losses caused by drought in the United States. For ease of comparison, this 2020 Plan update relies on the U.S. Drought Monitoring system classification to describe drought intensity, discussed below. (The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC-UNL.)

"Drought intensity categories are based on five key indicators, numerous supplementary indicators including drought impacts, and local reports from more than 350 expert observers around the country. The accompanying drought severity classification table (Table 4.12.4) shows the ranges for each indicator for each dryness level. Because the ranges of the various indicators often don't coincide, the final drought category tends to be based on what most of the indicators show and on local observations. The analysts producing the map also weigh the indices according to how well they perform in various parts of the country and at different times of the year. Additional indicators are often needed in the West, where winter snowfall in the

mountains has a strong bearing on water supplies. It is this combination of the best available data, local observations and experts' best judgment that makes the U.S. Drought Monitor more versatile than other drought indicators." ix

	Table 4.12.4: Drought Classification							
					Ranges			
Category	Description	Possible Impacts	Palmer Drought Severity Index (PDSI)	CPC Soil Moistu re Model (Percentile s)	USGS Weekly Streamflo W (Percentil es)	Standardiz ed Precipitati on Index (SPI)	Objective Drought Indicator Blends (Percentil es)	
DO	Abnormall y Dry	Going into drought: Short- term dryness slowing planting, growth of crops of pastures Coming out of drought: some lingering water deficits pastures or crops not fully recovered	-1.0 to - 1.9	21 to 30	21 to 30	-0.5 to -0.7	21 to 30	
D1	Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary wateruse restrictions requested	-2.0 to - 2.9	11 to 20	11 to 20	-0.8 to -1.2	11 to 20	
D2	Severe Drought	Crop or pasture losses likely Water shortages common Water restrictions imposed	-3.0 to - 3.9	6 to 10	6 to 10	-1.3 to -1.5	6 to 10	
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions	-4.0 to - 4.9	3 to 5	3 to 5	-1.6 to -1.9	3 to 5	



4.12.7 Vulnerability Analysis

The categories described under section *4.12.3a Drought Impact Reporter Categories* (agriculture, business and industry, energy, fire, plants and wildlife, relief/response, society/public health, tourism/recreation, and water supply/quality) are all vulnerable areas in the region. Severe drought also poses health threats to citizens due to water shortages and can be exacerbated by extreme heat. Particularly vulnerable are children, the elderly, and those with respiratory problems. Contaminated or poor water quality for drinking and sanitation measures can also cause serious illnesses.*

4.12.8 Problem Statements

Drought will continue to impact the Kansas City region, most notably in the agricultural sector and areas of the region with high drought susceptibility. Due to the region's general abundance of potable water via the Kansas and Missouri Rivers and alluvial wells, short-term droughts are not likely to have direct, lasting impacts on the entire region, but may have meaningful impacts on individual communities. "Some preparatory measures and policies may help communities and infrastructure assets and systems (especially aging infrastructure) to cope with the impacts." Xi

Vulnerability statements, such as those below, can support development of mitigation strategies for drought:

- Older infrastructure could be impacted by drought conditions (such as soil or substructure constriction).
- For agricultural communities, inefficient/aging irrigation systems can waste excessive amounts of water and increase the severity of drought impacts.
- Public information campaigns typically don't include water conservation measures.



4.13 Heat Waves

Almost every summer, heat waves affect the Kansas City metropolitan area. Although the entire region is affected by heat waves, the impact of these prolonged periods of heat and humidity tends to be more severe in urban areas because they absorb and retain more heat than rural or natural areas. In addition, elderly, sick and low-income residents — especially those who live in the urban core or other urbanized areas of the Kansas City region — are more susceptible to the hazards of heat waves than those who are young, healthy or have access to adequate air conditioning or ventilation.

4.13.1 Historical Occurrences

Like severe winter weather, heat waves are virtually an annual occurrence in the Kansas City metropolitan area. The region has experienced significant heat waves in the past, including record-setting periods of high temperatures, such as Aug. 4–8, 1934, when the average high temperature was 108 degrees; Aug. 12–15, 1936, with an average high temperature of 110.5 degrees (the region's record high temperature of 113 degrees occurred on Aug.14, 1936); Aug. 22–27, 1936, when the average high temperature was 105.6 degrees; and July 11–14, 1954, with an average high temperature of 110 degrees for the period.xii Summarized below in Table 4.13.1 is a listing of heat events from 2010 to 2018. This table includes heat events from the 2019 Plan because there have been no heat events reported to NOAA between 05/19 and 11/24.

	Table 4.13.1: Heat Events (2010-2018)									
Impacted County	Begin Date	End Date	Deaths	Injuries	Property Damage	Crop Damage	Additional Information			
Jackson	August 2, 2010	August 14, 2010	2	0	0	0	A ridge of high pressure aloft caused unseasonably hot and humid weather settled over west central Missouri during the first two weeks of August. Excessive humidity, combined with afternoon high temperatures in the 95 to 104-degree range, caused heat index readings in the 105 to 115-degree range. As a result, an 86-year-old male and a 92-year-old female, died from the excessive heat in their apartments.			
Jackson	June 28, 2012	June 30, 2012	0	0	0	0	An upper level ridge of high pressure, over the central plains, dominated the weather with hot and humid conditions, June 27th through June 30th. Afternoon heat indices were in the 100 to 105 degree range.			

Clay							An upper level ridge of high pressure allowed hot and humid conditions to prevail
Jackson							across west central Missouri, on June 26th and 27th, 2013.
Platte	June, 26 2013	June 27, 2013	1	0	0	0	The combination of heat and humidity caused afternoon heat indices, to be in the 100
Cass							to 106 degree range. As a result, one person in Kansas City died from the effects of the heat.
Jackson	June 10, 2015	June 11, 2015	1	0	0	0	June 10 temperatures had heat indices in the upper 90s to middle 100s. An elderly woman died as a direct cause of the heat. While the heat wave lasted only a short duration, the death was pronounced on June 15. The heat related fatality was reported to the office by a Kansas City Health Department official.

4.13.2 Probable Location

Magnitude >50%

The entire Kansas City region is subject to the impacts associated with heat waves. Therefore, all counites were given a >50% magnitude rating.

4.13.3 Impact

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. In the planning area, there have been 53 deaths since 1998 due to extreme heat. Americans annually.

According to the NWS, the severity of heat-related disorders tends to increase with age. For example, heat cramps in a 17-year-old can become heat exhaustion for someone in his forties and may result in heat stroke for someone in his sixties. xiv **Table 4.13.2** below describes the possible impacts to health from prolonged heat exposure.

	Table 4.13.2: Heat Index/Heat Disorders						
Category	Heat Index Possible heat disorders for people in higher risk groups						
Extreme Danger	130 degrees or higher (54 C or higher)	Heatstroke/sunstroke highly likely with continued exposure.					
Danger	105-129 degrees (41-54 C)	Sunstroke, heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.					
Extreme Caution	90-105 degrees (32-41 C)	Sunstroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.					
Caution	80-90 degrees (27-32 C)	Fatigue possible with prolonged exposure and/or physical activity.					

In addition to heat-related illnesses, heat waves pose several other problems. Pets and livestock may suffer disorders like those experienced by humans due to prolonged exposure to heat and humidity. High demand for electricity for cooling purposes can lead to blackouts or brownouts. The resultant loss of power can lead to an even greater risk of heat-related illnesses and fatalities due to loss of cooling and ventilation. In urban areas, the opening of fire hydrants can result in a system-wide loss of water pressure. Increased water use may result in water shortages and drought-like conditions. (Heat waves commonly take place during actual droughts, as was the case in the Kansas City area and elsewhere during major droughts of the mid-1930s and mid-1950s.) Extreme heat can cause asphalt on roads and parking lots to soften and buckle. If large numbers of people are affected by heat-related illnesses, local EMS systems and hospital emergency rooms may become overwhelmed, affecting the level of care available to people. Finally, studies indicate that civil disturbances, riots and incidents of domestic violence and abuse are more likely to occur during heat waves.*

4.13.4 Probability of Future Occurrence: 60%

Historical occurrences of heat waves, climatological and meteorological data, demographic data and medical statistics associated with heat-related disorders and deaths provide useful information about the people and places vulnerable to the effects of heat waves. The probability percent is based only on historical occurrences since 1998.

While recent changes in temperatures observed in Kansas City have been relatively modest, temperature is projected to increase substantially in all seasons over the remainder of this century. Heat waves will become more frequent and summer overnight lows will become hotter.

A recent study written by Dan Walker and published by MARC shows increasing annual temperatures due to climate changes. By 2100, in Kansas City:

- Average annual temperature will increase from 56.5°F to 64.4°F.
- The number of days/year in which the temperature exceeds 105°F will increase from 0.7 to 21.9.
- The number of cooling degree days, a reflection of the demand for energy needed to cool a building, will nearly double. Conversely, energy demand for heating will decline by 27 percent.

 The last spring frost is projected to be more than two weeks earlier, whereas the first fall frost will occur about 11 days later.

4.13.5 Extent

The National Weather Service defines a heat wave as a period of abnormally and uncomfortably hot and unusually humid weather. Typically, a heat wave lasts two or more days. The NWS will initiate three types of heat alert products, depending on local conditions:

Excessive Heat Outlooks – issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

Excessive Heat Watches – issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.

Excessive Heat Warning/Advisories – issued when an excessive heat event is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life. Warnings are issued within 12 hours of the onset of the following criteria: 1) heat index of at least 105 degrees F for more than three hours per day for two consecutive days, or 2) heat index more than 115 degrees F for any period.^{xvi}

In the Kansas City metropolitan area, these types of high temperatures generally occur between June and September but are most likely to occur in July and August. Based on data from the High Plains Regional Climate Center covering the past 64 years, from 1948 to 2012, the Kansas City metropolitan area experiences approximately 46.2 days per year above 90 degrees, with a significant number of those days with humidity levels between 50 and 70 percent. *Vii During this period, July averaged the most days with temperatures above 90 degrees (16.1 days), followed by August with an average of 14.5, June with an average of six, and September with an average of 4.9. *Viii According to this climatological data, the Kansas City metropolitan area is subject to heat waves during the summer months of any given year.

Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. Of all the other natural hazards discussed in this Plan, only extreme cold kills more Americans annually.

In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died. To provide warning about the potentially devastating effects of heat waves, the NWS devised the "Heat Index" (HI), shown in Figure 4.13.1, which is sometimes referred to as the "Apparent Temperature." The HI, given in degrees Fahrenheit, is an accurate measure of how hot it really feels when the effects of relative humidity (RH) are added to the actual air temperature.*

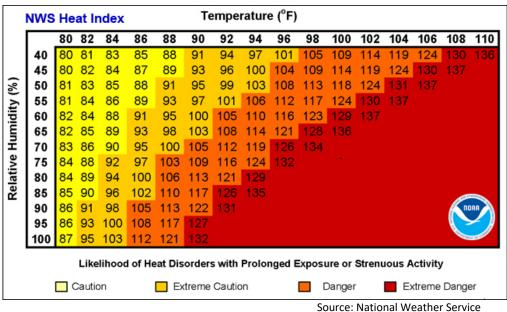


Figure 4.13.1: Heat Index Degrees*

4.13.6 Vulnerability Analysis

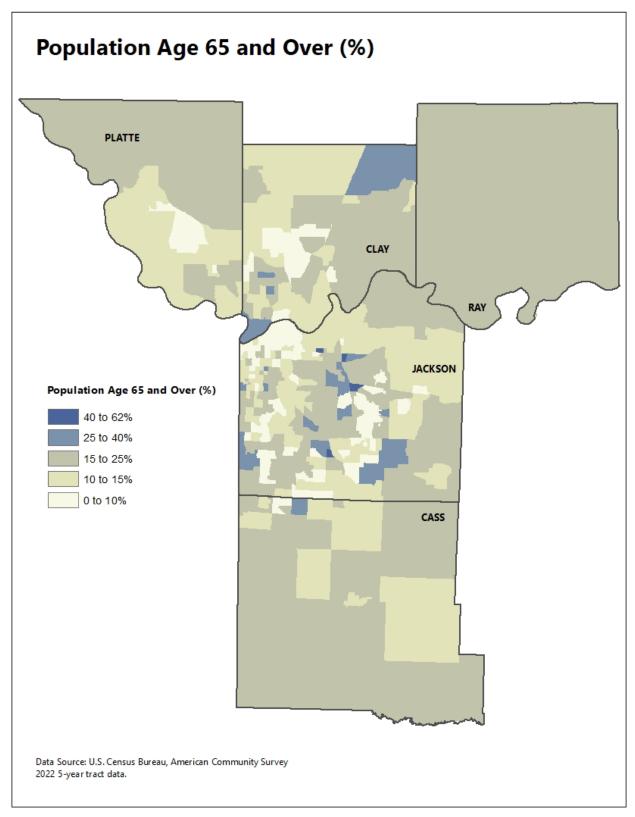
The impact of heat waves is generally limited for most of the population in the metropolitan area, although they can be more severe for the urban areas and at-risk groups described in Section 4.13.3. Socioeconomic problems associated with certain urban populations exacerbate the hazards of heat waves. Many people in the urban core of Kansas City and elsewhere across the metropolitan area, especially the elderly and poor, do not have air conditioning or do not use their air conditioners because of the high cost of electricity. In addition, some residents in high crime areas, particularly the elderly, may be afraid to open their windows or venture outside to seek cooler locations. People with disabilities or other medical needs may also be more susceptible to the effects of heat waves and tend to live more in urban areas. Because of these conditions and problems, most heat-related deaths occur in cities. xx

As previously mentioned, at-risk population groups are:

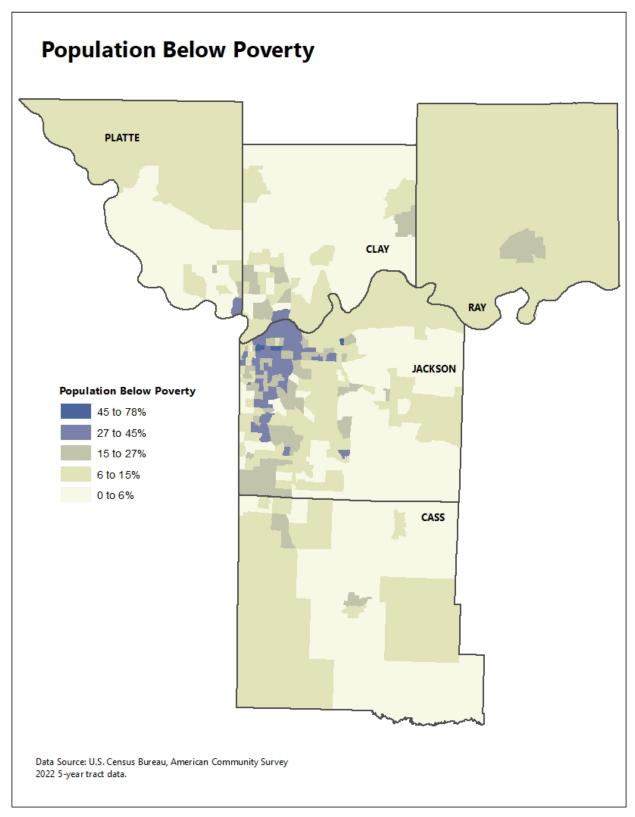
- People with medical/physical conditions or disabilities.
- People who work or conduct leisure activities outside.
- People who are difficult to reach through normal communications.
- People who are elderly.
- People with a lack of access to air-conditioning or other cooling mechanisms due to low incomes.

Maps 4.13.1- 4.13.3 illustrate the locations and distribution of three at-risk populations. Map 4.13.1 depicts the population in the Kansas City metropolitan area over the age of 65. Map 4.13.2 depicts poverty level. Map 4.13.3 depicts the disabled population in the Kansas City metropolitan area.

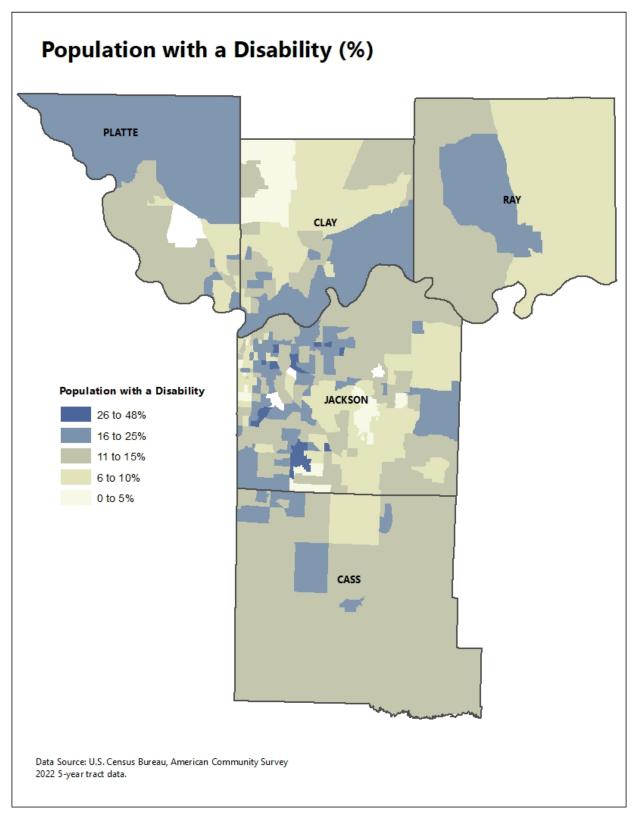
^{*}Note: Because HI values were devised for shady, light-wind conditions, exposure to full sunshine can increase HI values by up to 15 degrees. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.



Map 4.13.1: Population Over age 65 in the Kansas City Metropolitan Area



Map 4.13.2: Population Below Poverty Kansas City Metropolitan Area



Map 4.13.3: Population with a Disability in the Kansas City Metropolitan Area

4.13.6 Problem Statements

Heat waves can pose a dangerous health threat to the residents of the Kansas City metropolitan area, especially at-risk population groups:

- People with medical/physical conditions or disabilities
- People who work or conduct leisure activities outside
- People who are difficult to reach through normal communications
- People who elderly
- People with a lack of access to air-conditioning or other cooling mechanisms due to low-income

Given the locations and circumstances of these populations, vulnerability statements, such as those below, can support development of mitigation strategies for heat waves:

- If not already identified, cooling centers should be strategically located to maximize coverage for those residents most vulnerable to heat waves.
- Low-income families may not have the ability to acquire or run air conditioning and may need alternative solutions to mitigate the dangers from heat waves (e.g., cooling centers).
- Those most vulnerable to heat waves are often the most difficult to reach with information or warnings about heat waves.

https://droughtmonitor.unl.edu/Data/DataDownload.aspx

¹ National Drought Mitigation Center, U.S. Drought Monitor Website, http://droughtmonitor.unl.edu/

ii Missouri Department of Natural Resources (MDNR) Missouri Drought Mitigation and Response Plan, 2023

iii Drought of 2023 Final Report, MDNR Online, https://dnr.mo.gov/document-search/missouri-drought-mitigation-response-plan-2023

iv National Drought Mitigation Center

^v National Drought Mitigation Center Website, Drought Impact Reporter Help Page

vi National Drought Mitigation Center Website

vii National Drought Mitigation Center Website

viii United States Drought Monitor, Data Download, Comprehensive Statistics,

ix United States Drought Monitor

^{*} SEMA Hazard Mitigation Plan, pg. 3.252

xi Department of Homeland Security, Office of Cyber Infrastructure and Analysis, "Drought Impacts to Critical Infrastructure," April 23, 2015

xii Nation Master Website, www.nationmaster.com

xiii National Oceanic and Atmospheric Administration, Storm Events Database

xiv National Weather Service, Website, http://www.nws.noaa.gov/os/heat

xv Nation Master Website, www.nationmaster.com

xvi [National Weather Service, Website, http://www.nws.noaa.gov/os/heat/ww.shtml

xvii High Plains Regional Climate Center, Website, http://www.hprcc.unl.edu/

xviii High Plains Regional Climate Center, Website, http://www.hprcc.unl.edu/

xix National Weather Service, Website, http://www.nws.noaa.gov/os/heat

xx National Weather Service, Website

ATTACHMENT RISK ASSESSMENT CASS COUNTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	44,013	
Number of Schools	39	
Number of Nursing Homes	10	
Number of Childcare Centers	41	
Number of Apartment Complexes	83	
Number of Hazardous Materials locations	129	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	13	
Floods		
Buildings in floodplain	313	
Commercial property in floodplain (parcels)	15	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	271	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	2	
Dams	30	
Flood events in past 5 years (NOAA)	6	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

CITY OF BELTON SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	10,284	
Number of Schools	9	
Number of Nursing Homes	4	
Number of Childcare Centers	13	
Number of Apartment Complexes	37	
Number of Hazardous Materials locations	34	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	94	
Commercial property in floodplain (parcels)	6	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	67	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	2	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

CITY OF HARRISONVILLE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	4,357	
Number of Schools	5	
Number of Nursing Homes	4	
Number of Childcare Centers	7	
Number of Apartment Complexes	12	
Number of Hazardous Materials locations	34	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	8	
Floods		
Buildings in floodplain	47	
Commercial property in floodplain (parcels)	10	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	32	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	3	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF LAKE WINNEBAGO SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	512	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	0	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	8	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	6	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	2	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF PECULIAR SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	2,276	
Number of Schools	3	
Number of Nursing Homes	0	
Number of Childcare Centers	2	
Number of Apartment Complexes	4	
Number of Hazardous Materials locations	14	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	37	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	31	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	3	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF PLEASANT HILL SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	3,499	
Number of Schools	5	
Number of Nursing Homes	0	
Number of Childcare Centers	3	
Number of Apartment Complexes	10	
Number of Hazardous Materials locations	15	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	10	
Floods		
Buildings in floodplain	98	
Commercial property in floodplain (parcels)	20	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	74	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	1	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF RAYMORE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	8,783	
Number of Schools	7	
Number of Nursing Homes	2	
Number of Childcare Centers	11	
Number of Apartment Complexes	16	
Number of Hazardous Materials locations	7	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	7	
Floods		
Buildings in floodplain	36	
Commercial property in floodplain (parcels)	8	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	27	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	1	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

ARCHIE R-V SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	1,381	
Number of Schools	2	
Number of Nursing Homes	0	
Number of Childcare Centers	3	
Number of Apartment Complexes	1	
Number of Hazardous Materials locations	3	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	58	
Commercial property in floodplain (parcels)	4	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	54	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	5	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

HARRISONVILLE SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	5,949	
Number of Schools	5	
Number of Nursing Homes	4	
Number of Childcare Centers	7	
Number of Apartment Complexes	12	
Number of Hazardous Materials locations	35	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	113	
Commercial property in floodplain (parcels)	10	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	85	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	11	
Flood events in past 5 years (NOAA)	2	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

PLEASANT HILL R-III SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	4,647	
Number of Schools	5	
Number of Nursing Homes	0	
Number of Childcare Centers	3	
Number of Apartment Complexes	9	
Number of Hazardous Materials locations	14	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	6	
Floods		
Buildings in floodplain	146	
Commercial property in floodplain (parcels)	35	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	102	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	4	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

RAYMORE-PECULIAR SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	15,089	
Number of Schools	10	
Number of Nursing Homes	2	
Number of Childcare Centers	13	
Number of Apartment Complexes	24	
Number of Hazardous Materials locations	2	
Tornado events in past 5 years (NOAA)		
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	12	
Floods		
Buildings in floodplain	136	
Commercial property in floodplain (parcels)	8	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	118	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	3	
Flood events in past 5 years (NOAA)	2	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

SHERWOOD-CASS R-8 SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

CLAY COUNTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	105,571
Number of Schools	80
Number of Nursing Homes	21
Number of Childcare Centers	91
Number of Apartment Complexes	248
Number of Hazardous Materials locations	235
Tornado events in past 5 years (NOAA)	3
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	41
Floods	
Buildings in floodplain	663
Commercial property in floodplain (parcels)	74
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	313
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	72
Dams	19
Flood events in past 5 years (NOAA)	3
Severe Winter Weather	
Warming Centers	12
Severe winter weather in past 5 years (NOAA)	
Heat	
Cooling Centers	15
Heat related events in past 5 years (NOAA)	17

CITY OF EXCELSIOR SPRINGS SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	4,368	
Number of Schools	6	
Number of Nursing Homes	1	
Number of Childcare Centers	5	
Number of Apartment Complexes	17	
Number of Hazardous Materials locations	9	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	4	
Floods		
Buildings in floodplain	33	
Commercial property in floodplain (parcels)	5	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	9	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)	0	
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CITY OF GLADSTONE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	12,595	
Number of Schools	7	
Number of Nursing Homes	1	
Number of Childcare Centers	9	
Number of Apartment Complexes	27	
Number of Hazardous Materials locations	12	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	15	
Commercial property in floodplain (parcels)	2	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	8	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)	6	
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

CITY OF KEARNEY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	4,228	
Number of Schools	7	
Number of Nursing Homes	0	
Number of Childcare Centers	7	
Number of Apartment Complexes	8	
Number of Hazardous Materials locations	3	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	4	
Floods		
Buildings in floodplain	12	
Commercial property in floodplain (parcels)	3	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	5	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF LIBERTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	11,749
Number of Schools	16
Number of Nursing Homes	5
Number of Childcare Centers	17
Number of Apartment Complexes	39
Number of Hazardous Materials locations	36
Tornado events in past 5 years (NOAA)	0
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	5
Floods	
Buildings in floodplain	157
Commercial property in floodplain (parcels)	25
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	90
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	1
Dams	5
Flood events in past 5 years (NOAA)	1
Severe Winter Weather	
Warming Centers	2
Severe winter weather in past 5 years (NOAA)	
Heat	
Cooling Centers	3
Heat related events in past 5 years (NOAA)	17

CITY OF NORTH KANSAS CITY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	3,084	
Number of Schools	1	
Number of Nursing Homes	1	
Number of Childcare Centers	3	
Number of Apartment Complexes	24	
Number of Hazardous Materials locations	39	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	68	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	38	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	37	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

CITY OF SMITHVILLE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	3,797	
Number of Schools	5	
Number of Nursing Homes	1	
Number of Childcare Centers	7	
Number of Apartment Complexes	8	
Number of Hazardous Materials locations	8	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	109	
Commercial property in floodplain (parcels)	25	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	49	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	2	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

EXCELSIOR SPRINGS SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	6,592	
Number of Schools	6	
Number of Nursing Homes	1	
Number of Childcare Centers	5	
Number of Apartment Complexes	17	
Number of Hazardous Materials locations	24	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	10	
Floods		
Buildings in floodplain	306	
Commercial property in floodplain (parcels)	24	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	180	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	17	
Flood events in past 5 years (NOAA)	2	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

NORTH KANSAS CITY SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	59,743
Number of Schools	32
Number of Nursing Homes	8
Number of Childcare Centers	47
Number of Apartment Complexes	157
Number of Hazardous Materials locations	28
Tornado events in past 5 years (NOAA)	0
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	13
Floods	
Buildings in floodplain	775
Commercial property in floodplain (parcels)	42
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	625
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	70
Dams	1
Flood events in past 5 years (NOAA)	0
Severe Winter Weather	
Warming Centers	5
Severe winter weather in past 5 years (NOAA)	
Heat	
Cooling Centers	6
Heat related events in past 5 years (NOAA)	17

SMITHVILLE R-II SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	5,411	
Number of Schools	5	
Number of Nursing Homes	1	
Number of Childcare Centers	7	
Number of Apartment Complexes	8	
Number of Hazardous Materials locations	8	
Tornado events in past 5 years (NOAA)	2	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	146	
Commercial property in floodplain (parcels)	34	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	77	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	3	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

JACKSON COUNTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	330,584
Number of Schools	260
Number of Nursing Homes	85
Number of Childcare Centers	350
Number of Apartment Complexes	1,950
Number of Hazardous Materials locations	637
Tornado events in past 5 years (NOAA)	2
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	15
Floods	
Buildings in floodplain	188
Commercial property in floodplain (parcels)	7
Commercial property in floodplain (area)	60
Residential property in floodplain (parcels)	121
Residential property in floodplain (value)	5
Residential property in floodplain (area)	132
Hazardous materials locations in floodplain	188
Dams	7
Flood events in past 5 years (NOAA)	60
Severe Winter Weather	
Warming Centers	41
Severe winter weather in past 5 years (NOAA)	6
Heat	
Cooling Centers	59
Heat related events in past 5 years (NOAA)	17

CITY OF BLUE SPRINGS SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	22,434	
Number of Schools	22	
Number of Nursing Homes	7	
Number of Childcare Centers	27	
Number of Apartment Complexes	61	
Number of Hazardous Materials locations	31	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	7	
Floods		
Buildings in floodplain	32	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	25	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	2	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	3	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	4	
Heat related events in past 5 years (NOAA)	17	

CITY OF GRANDVIEW SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	11,897	
Number of Schools	7	
Number of Nursing Homes	2	
Number of Childcare Centers	16	
Number of Apartment Complexes	45	
Number of Hazardous Materials locations	19	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	30	
Commercial property in floodplain (parcels)	1	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	22	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CITY OF GREENWOOD SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	14,088	
Number of Schools	1	
Number of Nursing Homes	0	
Number of Childcare Centers	4	
Number of Apartment Complexes	2	
Number of Hazardous Materials locations	7	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	0	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	0	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF GRAIN VALLEY SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

CITY OF INDEPENDENCE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	55,913	
Number of Schools	45	
Number of Nursing Homes	9	
Number of Childcare Centers	42	
Number of Apartment Complexes	134	
Number of Hazardous Materials locations	88	
Tornado events in past 5 years (NOAA)	2	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	15	
Floods		
Buildings in floodplain	894	
Commercial property in floodplain (parcels)	37	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	650	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	9	
Dams	2	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	7	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	12	
Heat related events in past 5 years (NOAA)	17	

CITY OF KANSAS CITY, MO SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	241,827	
Number of Schools	191	
Number of Nursing Homes	52	
Number of Childcare Centers	238	
Number of Apartment Complexes	1,678	
Number of Hazardous Materials locations	536	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	55	
Floods		
Buildings in floodplain	2,287	
Commercial property in floodplain (parcels)	263	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	900	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	138	
Dams	24	
Flood events in past 5 years (NOAA)	5	
Severe Winter Weather		
Warming Centers	26	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	38	
Heat related events in past 5 years (NOAA)	17	

CITY OF LEE'S SUMMIT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	40,716	
Number of Schools	32	
Number of Nursing Homes	11	
Number of Childcare Centers	53	
Number of Apartment Complexes	89	
Number of Hazardous Materials locations	60	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	24	
Floods		
Buildings in floodplain	131	
Commercial property in floodplain (parcels)	3	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	77	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	8	
Flood events in past 5 years (NOAA)	3	
Severe Winter Weather		
Warming Centers	2	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CITY OF LEVASY SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

CITY OF OAK GROVE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	
Number of Schools	6,150
Number of Nursing Homes	6
Number of Childcare Centers	1
Number of Apartment Complexes	5
Number of Hazardous Materials locations	49
Tornado events in past 5 years (NOAA)	17 (# of Tornado Warnings)
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	8
Floods	
Buildings in floodplain	3
Commercial property in floodplain (parcels)	2
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	3
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	
Dams	0
Flood events in past 5 years (NOAA)	7
Severe Winter Weather	
Warming Centers	2
Severe winter weather in past 5 years (NOAA)	8
Heat	
Cooling Centers	2
Heat related events in past 5 years (NOAA)	8

CITY OF RAYTOWN SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	13,647	
Number of Schools	10	
Number of Nursing Homes	4	
Number of Childcare Centers	8	
Number of Apartment Complexes	54	
Number of Hazardous Materials locations	12	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	23	
Commercial property in floodplain (parcels)	12	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	10	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CENTRAL JACKSON COUNTY FIRE PROTECTION DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	
Number of Schools	25
Number of Nursing Homes	7
Number of Childcare Centers	31
Number of Apartment Complexes	69
Number of Hazardous Materials locations	39
Tornado events in past 5 years (NOAA)	1
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	8
Floods	
Buildings in floodplain	240
Commercial property in floodplain (parcels)	20
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	189
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	1
Dams	7
Flood events in past 5 years (NOAA)	1
Severe Winter Weather	
Warming Centers	
Severe winter weather in past 5 years (NOAA)	
Heat	
Cooling Centers	5
Heat related events in past 5 years (NOAA)	17

SNI VALLEY FIRE PROTECTION DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	6,150
Number of Schools	6
Number of Nursing Homes	1
Number of Childcare Centers	5
Number of Apartment Complexes	49
Number of Hazardous Materials locations	14
Tornado events in past 5 years (NOAA)	17 (# of tornado warnings)
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	8
Floods	
Buildings in floodplain	12
Commercial property in floodplain (parcels)	
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	
Dams	3
Flood events in past 5 years (NOAA)	7
Severe Winter Weather	
Warming Centers	2
Severe winter weather in past 5 years (NOAA)	8
Heat	
Cooling Centers	2
Heat related events in past 5 years (NOAA)	8

BLUE SPRINGS SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	36,809	
Number of Schools	22	
Number of Nursing Homes	9	
Number of Childcare Centers	36	
Number of Apartment Complexes	83	
Number of Hazardous Materials locations	2	
Tornado events in past 5 years (NOAA)	2	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	8	
Floods		
Buildings in floodplain	159	
Commercial property in floodplain (parcels)	4	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	123	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	3	
Dams	159	
Flood events in past 5 years (NOAA)	4	
Severe Winter Weather		
Warming Centers	3	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	4	
Heat related events in past 5 years (NOAA)	17	

FORT OSAGE R-1 SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	9,711	
Number of Schools	9	
Number of Nursing Homes	0	
Number of Childcare Centers	3	
Number of Apartment Complexes	12	
Number of Hazardous Materials locations	0	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	4	
Floods		
Buildings in floodplain	349	
Commercial property in floodplain (parcels)	55	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	180	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	12	
Dams	10	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

GRAIN VALLEY SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	8,309	
Number of Schools	7	
Number of Nursing Homes	0	
Number of Childcare Centers	7	
Number of Apartment Complexes	17	
Number of Hazardous Materials locations	4	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	142	
Commercial property in floodplain (parcels)	12	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	106	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	1	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

INDEPENDENCE SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	46,141	
Number of Schools	30	
Number of Nursing Homes	8	
Number of Childcare Centers	36	
Number of Apartment Complexes	118	
Number of Hazardous Materials locations	65	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	12	
Floods		
Buildings in floodplain	951	
Commercial property in floodplain (parcels)	62	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	813	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	5	
Dams	1	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	9	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	14	
Heat related events in past 5 years (NOAA)	17	

KANSAS CITY SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	113,216	
Number of Schools	33	
Number of Nursing Homes	37	
Number of Childcare Centers	122	
Number of Apartment Complexes	1,389	
Number of Hazardous Materials locations	78	
Tornado events in past 5 years (NOAA)		
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	18	
Floods		
Buildings in floodplain	1,097	
Commercial property in floodplain (parcels)	575	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	436	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	96	
Dams	2	
Flood events in past 5 years (NOAA)	3	
Severe Winter Weather		
Warming Centers	17	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	25	
Heat related events in past 5 years (NOAA)	17	

LEE'S SUMMIT SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	42,826	
Number of Schools	29	
Number of Nursing Homes	11	
Number of Childcare Centers	49	
Number of Apartment Complexes	85	
Number of Hazardous Materials locations	10	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	25	
Floods		
Buildings in floodplain	213	
Commercial property in floodplain (parcels)	11	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	136	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	26	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	2	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

OAK GROVE R-VI SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	4,104	
Number of Schools	4	
Number of Nursing Homes	0	
Number of Childcare Centers	6	
Number of Apartment Complexes	25	
Number of Hazardous Materials locations	8	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	22	
Commercial property in floodplain (parcels)	2	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	14	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	22	
Flood events in past 5 years (NOAA)	2	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

METROPOLITAN COMMUNITY COLLEGES SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

PLATTE COUNTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	45,378
Number of Schools	36
Number of Nursing Homes	12
Number of Childcare Centers	29
Number of Apartment Complexes	110
Number of Hazardous Materials locations	136
Tornado events in past 5 years (NOAA)	1
Severe Thunderstorm	
Severe thunderstorms in past 5 years (NOAA)	9
Floods	
Buildings in floodplain	262
Commercial property in floodplain (parcels)	14
Commercial property in floodplain (area)	
Residential property in floodplain (parcels)	131
Residential property in floodplain (value)	
Residential property in floodplain (area)	
Hazardous materials locations in floodplain	26
Dams	16
Flood events in past 5 years (NOAA)	1
Severe Winter Weather	
Warming Centers	9
Severe winter weather in past 5 years (NOAA)	
Heat	
Cooling Centers	12
Heat related events in past 5 years (NOAA)	17

CITY OF FARLEY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	91	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	1	
Tornado events in past 5 years (NOAA)		
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	0	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	0	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF LAKE WAUKOMIS SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	492	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	0	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	0	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	0	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	1	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF NORTHMOOR SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	144	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	1	
Tornado events in past 5 years (NOAA)		
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	33	
Commercial property in floodplain (parcels)	5	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	1	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF PARKVILLE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	2,958	
Number of Schools	1	
Number of Nursing Homes	1	
Number of Childcare Centers	2	
Number of Apartment Complexes	18	
Number of Hazardous Materials locations	8	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	51	
Commercial property in floodplain (parcels)	28	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	4	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	2	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CITY OF PLATTE CITY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	2,067	
Number of Schools	4	
Number of Nursing Homes	1	
Number of Childcare Centers	8	
Number of Apartment Complexes	15	
Number of Hazardous Materials locations	12	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	2	
Floods		
Buildings in floodplain	1	
Commercial property in floodplain (parcels)	1	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	0	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	1	
Dams	1	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	2	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	3	
Heat related events in past 5 years (NOAA)	17	

CITY OF PLATTE WOODS SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	228	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	2	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	0	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	0	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	0	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF RIVERSIDE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	1,667	
Number of Schools	1	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	17	
Number of Hazardous Materials locations	22	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	40	
Commercial property in floodplain (parcels)	12	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	6	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	18	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

CITY OF TRACY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	84	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	1	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	2	
Tornado events in past 5 years (NOAA)		
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	0	
Floods		
Buildings in floodplain	1	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	1	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF WEATHERBY LAKE SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	967	
Number of Schools	0	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	0	
Number of Hazardous Materials locations	0	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	4	
Commercial property in floodplain (parcels)	0	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	3	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	1	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	0	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	0	
Heat related events in past 5 years (NOAA)	17	

CITY OF WESTON SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	854	
Number of Schools	3	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	2	
Number of Hazardous Materials locations	6	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	1	
Floods		
Buildings in floodplain	23	
Commercial property in floodplain (parcels)	8	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	6	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	2	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

NORTHLAND REGIONAL AMBULANCE DISTRICT SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

WEST PLATTE FIRE PROTECTION DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units		
Number of Schools	3	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	2	
Number of Hazardous Materials locations	4	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	45	
Commercial property in floodplain (parcels)	13	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	19	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	2	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

NORTH PLATTE R-1 SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	1,757	
Number of Schools	4	
Number of Nursing Homes	0	
Number of Childcare Centers	1	
Number of Apartment Complexes	1	
Number of Hazardous Materials locations	6	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	5	
Floods		
Buildings in floodplain	41	
Commercial property in floodplain (parcels)	9	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	27	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	4	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	3	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	3	
Heat related events in past 5 years (NOAA)	17	

PARK HILL SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	32,136	
Number of Schools	21	
Number of Nursing Homes	7	
Number of Childcare Centers	19	
Number of Apartment Complexes	80	
Number of Hazardous Materials locations	24	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	12	
Floods		
Buildings in floodplain	427	
Commercial property in floodplain (parcels)	86	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	290	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	19	
Dams	3	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	4	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	5	
Heat related events in past 5 years (NOAA)	17	

PLATTE COUNTY R-3 DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	11,401	
Number of Schools	7	
Number of Nursing Homes	7	
Number of Childcare Centers	10	
Number of Apartment Complexes	37	
Number of Hazardous Materials locations	8	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	8	
Floods		
Buildings in floodplain	40	
Commercial property in floodplain (parcels)	3	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	17	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	7	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	2	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	4	
Heat related events in past 5 years (NOAA)	17	

WEST PLATTE R-II SCHOOL DISTRICT SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	1,718	
Number of Schools	3	
Number of Nursing Homes	0	
Number of Childcare Centers	0	
Number of Apartment Complexes	2	
Number of Hazardous Materials locations	10	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	3	
Floods		
Buildings in floodplain	156	
Commercial property in floodplain (parcels)	22	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	75	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	3	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	1	
Heat related events in past 5 years (NOAA)	17	

PARK UNIVERSITY SUMMARY ASSESSMENT OF RISKS

Tornadoes

Number of Housing Units

Number of Schools

Number of Nursing Homes

Number of Childcare Centers

Number of Apartment Complexes

Number of Hazardous Materials locations

Tornado events in past 5 years (NOAA)

Severe Thunderstorm

Severe thunderstorms in past 5 years (NOAA)

Floods

Buildings in floodplain

Commercial property in floodplain (parcels)

Commercial property in floodplain (area)

Residential property in floodplain (parcels)

Residential property in floodplain (value)

Residential property in floodplain (area)

Hazardous materials locations in floodplain

Dams

Flood events in past 5 years (NOAA)

Severe Winter Weather

Warming Centers

Severe winter weather in past 5 years (NOAA)

Heat

Cooling Centers

Heat related events in past 5 years (NOAA)

RAY COUNTY SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	9,388	
Number of Schools	11	
Number of Nursing Homes	2	
Number of Childcare Centers	8	
Number of Apartment Complexes	11	
Number of Hazardous Materials locations	44	
Tornado events in past 5 years (NOAA)	1	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	6	
Floods		
Buildings in floodplain	562	
Commercial property in floodplain (parcels)	25	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	504	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	4	
Dams	19	
Flood events in past 5 years (NOAA)	1	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

CITY OF RICHMOND SUMMARY ASSESSMENT OF RISKS

Number of Housing Units	2,847	
Number of Schools	4	
Number of Nursing Homes	2	
Number of Childcare Centers	7	
Number of Apartment Complexes	9	
Number of Hazardous Materials locations	19	
Tornado events in past 5 years (NOAA)	0	
Severe Thunderstorm		
Severe thunderstorms in past 5 years (NOAA)	4	
Floods		
Buildings in floodplain	45	
Commercial property in floodplain (parcels)	7	
Commercial property in floodplain (area)		
Residential property in floodplain (parcels)	30	
Residential property in floodplain (value)		
Residential property in floodplain (area)		
Hazardous materials locations in floodplain	0	
Dams	0	
Flood events in past 5 years (NOAA)	0	
Severe Winter Weather		
Warming Centers	1	
Severe winter weather in past 5 years (NOAA)		
Heat		
Cooling Centers	2	
Heat related events in past 5 years (NOAA)	17	

Chapter 5: Mitigation Strategy

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Chapter 5: Mitigation Strategy

Requirement [The hazard mitigation strategy **shall** include a] description of **§201.6(c)(3)(i)**: mitigation goals to reduce or avoid long-term vulnerabilities to the

identified hazards.

5.1 Updates to the 2020 Plan Mitigation Goals and Actions

This section of the plan focuses on the mitigation strategies developed by each participating jurisdiction to reduce or avoid long-term vulnerabilities to the five identified natural hazards (severe thunderstorms, severe winter weather, severe heat/drought, high winds/tornadoes and flooding). For continuing participants from the 2020 Plan, each of the jurisdictions' mitigation goals and actions identified in the 2020 Plan were reviewed for relevance and updated with current status. New participants provided goals and mitigation actions beginning in 2025. Continuing and new participants are noted within the mitigation strategies section (Attachment 1).

These mitigation actions were activities that stakeholders in the hazard mitigation planning process, especially local governments, could implement over a five-year period. Many of the actions were intended to be implemented in a relatively short period of time, generally less than two years, using existing organizations and resources in each county or across the region. Other actions required a longer implementation timeframe, perhaps two to five years or longer, as well as additional resources, particularly funding. Most actions require new resources that local jurisdictions may need to secure before implementation is possible.

For the Hazard Mitigation Plans beginning with the 2015 one, an online database was created to allow jurisdictions to evaluate hazards and corresponding mitigation goals and actions for their community. Jurisdictions were instructed to complete information on goals and actions for hazards that were identified threats to their community. For each mitigation action, jurisdictions were asked to designate a project's status as completed, deleted, deferred or ongoing. If the action was completed, jurisdictions were asked to provide a date of completion. For those deleted or deferred, jurisdictions were asked to provide a narrative explanation. If a project was marked as ongoing, further information was requested to document the current status and expected future effort.

The Hazard Mitigation Plan steering committee determined that "priority" should be ranked on a qualitative scale of high, medium and low and jurisdictions were instructed to consider a generic cost/benefit analysis when ranking mitigation actions.

High-priority actions were those for which resources, manpower, political capital, etc., are readily available to accomplish the actions and should generally be accomplished within two years. Medium-priority actions were those that are desirable, but due to various planning limitations, weren't expected to be implemented for two to five years. Low-priority actions were those that weren't scheduled to be implemented in the near future (greater than five years). Actions deleted or deferred were either no longer applicable or regarded as "failing" the cost/benefit analysis.

The mitigation goals and actions were prepared considering the increasing concern over changing climate conditions and the cost of repairing damage and losses from disasters. Many of the cities and counties have updated building codes, adopted infrastructure standards and invested in capital

improvements to reduce risks from natural hazards. Many of the school districts in the region have taken steps in their plans, policies and capital improvements to reduce risks from active shooters, improved sheltering of students and employees, and warning systems.

5.1.1. Changes to 2020 Mitigation Goals and Actions Database for 2025 Plan Update

For this 2025 Plan update, continuing participants used their 2020 goals and mitigation actions as a starting point. The database for mitigation actions includes:

- <u>Type of Mitigation Activity</u> *optional* field to describe if the action related to Natural Systems
 protection, Structure and Infrastructure Projects, Local Plans and Regulations or Education and
 Awareness Programs
- Cost / Benefit Review required field to discuss a benefit-cost review of each action as part of
 the evaluation and prioritization process to determine if costs are reasonable compared to
 probable benefits. Jurisdictions could use cost estimates based on experience and judgment and
 discuss benefits as losses avoided (such as the number and value of structures and
 infrastructure protected by the action and the population protected from injury and loss of life).
 Qualitative benefits, such as quality of life and natural and beneficial functions of ecosystems
 could also be used for the review.
- <u>Target Capacity</u> *optional* field to project the extent of population or infrastructure the action is intended to serve/protect/mitigate.

5.1.1a. Prioritization of Mitigation Actions

The chronological ranking method[†] of prioritizing mitigation goals and actions (based on implementation timeframes) used for the past two Plans (2015 and 2020) were again used for this update and defined as:

- <u>Low-Priority Actions</u> -- those not scheduled to be implemented in the near future (greater than five years). Many jurisdictions removed some of these actions from prior plans given low expectations that resources or other support might be available to implement.
- Medium-Priority Actions those that are desirable but due to various planning limitations, are not expected to be implemented for two to five years.
- High-Priority Actions: -- those for which resources, manpower, political, capital etc. are readily
 available to accomplish the action within the next one to two years. With the exception of larger
 jurisdictions with more resources (including ability to seek and secure FEMA or other grant
 funds), some high priority actions in previous years are seen as difficult for smaller cities and
 school districts.

Jurisdictions considered the results of the hazard profiles and their current capabilities to protect and mitigate natural hazards. They also looked at actions taken previously, 2020 goals and strategies, and projects that could be supported with FEMA pre-disaster or hazard mitigation grants. Local jurisdictions also considered the increase in risks due to changing climate conditions. The increased concern over severe weather events due to climate change became an increased consideration for mitigation goals and actions.

5.1.1b Cost Estimates for Mitigation Action

Unless a proposed mitigation action is included in a jurisdiction's comprehensive, strategic or capital improvements plan, it was difficult to estimate costs. Some education actions could be implemented at a low cost. Although policies could be developed and adopted at low cost, the impact of certain policies could be of greater cost to either the jurisdiction or public or private organizations in the community. (e.g., the cost of building codes to increase resistance to high winds or strengthened energy conservation codes could result in more expensive building costs). The jurisdictions were asked to consider low, medium or high costs, recognizing that such terms are relative based on the budgets and other resources for each jurisdiction. Additionally, jurisdictions were asked to consider whether the costs were one-time or recurring.

5.1.1c Status of Jurisdictional 2015 and 2020 Goals and Actions

As noted above, continuing jurisdictions were required to review the status of their goals and actions and make changes, as appropriate. Attachments 1 and 2 is the consolidated listing of all participating jurisdictions' mitigation goals and actions and reflects the most current status of their goals and actions. Each action is designated as Completed (from previous plans), New for 2025 or Ongoing. A few actions are Undetermined indicating that the local jurisdiction is still considering the appropriateness of the action for the 2025 plan.

5.1.2 Updates to School District/College/University 2025 Mitigation Goals and Actions

Those school districts and colleges and universities that participated in the 2020 plan were asked to review their 2020 goals and strategies similarly to cities and counties. For school districts that did not participate in 2020, they were asked to identify goals and strategies for the 2025 plan. These have been consolidated in Attachment 2 in a table format and include the same information elements discussed above that cities and counties were required to complete.

5.2 Mitigation Goals and Actions for 2025 Plan

Jurisdictions that participated in the 2020 plan were invited to participate in the 2025 plan. In addition, cities and school districts that did not participate in 2020 were invited to be a part of the plan. Continuing participants were encouraged to develop new goals and actions using the online tool (or an excel spreadsheet). Some jurisdictions chose to add new goals and actions, others elected to continue focusing on previously identified strategies. Both the old (2020) and new (2025) mitigation goals and actions were consolidated into **Attachment 2**. The column labeled "Plan year" indicates if the goal or action is from the 2020 plan or newly added as part of the 2025 update. New goals continue to mirror the numbered list from the 2020 goals and actions (see Attachment 1), but new actions are unnumbered, both to avoid confusion and denote them as new actions.

5.3 Implementation of the National Flood Insurance Program (NFIP)

Requirement [The hazard mitigation strategy] must also address the jurisdiction's **§201.6(c)(3)(ii):** participation in the NFIP, and continued compliance with NFIP

requirement, as appropriate.

In accordance with regulatory requirements, all hazard mitigation plans must describe each jurisdiction's participation in the NFIP by identifying, analyzing and prioritizing actions related to continued compliance with the NFIP. These three basic components include:

- 1) Adoption and enforcement of floodplain management requirements, including regulating new construction in Special Flood Hazard Areas (SFHAs);
- 2) Floodplain identification and mapping, including any local requests for map updates; or
- 3) Description of community assistance and monitoring activities

Three sections of this 2025 updated plan were developed to show compliance with the above requirements: 1) and 3) The Local Capabilities Section (Section 3, table 3.7) shows which jurisdictions have floodplain management plans or ordinances in effect and describe community assistance and monitoring activities where applicable. 2) Floodplains were identified and mapped for all participating jurisdictions as part of the Flood risk assessment and are available as part of the data layers for the online planning tool (Refer to Section 4.5.4).

1) Floodplain management

<u>Discourage new development in floodplains and flood-prone areas.</u>

- a.) Adopt ordinances prohibiting residential and commercial development in flood plains or flood-prone areas. (Almost every incorporated city/town and every county in the 5-county Planning Area have joined the federal flood insurance program and adopted an ordinance prohibiting developing in the 100-year floodplain unless conditions to address risk are met).
- b.) Consider using the 500-year floodplain rather than the 100-year floodplain or consider adopting a stream setback ordinance. A number of communities have adopted stream setback ordinances (Table 3.7) and a number have adopted Stormwater Management Plans (Table 3.1).
- c.) Develop or amend comprehensive and/or land use plans to specifically address development in flood-prone areas and recommend strategies for decreasing the jurisdiction's vulnerability to flooding.
- d.) Consider fees on new residential, commercial and infrastructure development in floodplains or flood-prone areas to finance flood mitigation, preparedness, response and recovery actions.

Participate in, and ensure compliance with, flood mitigation and floodplain management programs.

a.) Participate in the National Flood Insurance Program (NFIP) and Community Rating System (CRS). All cities and counties participating in the 2025 plan participate in the NFIP (Table 3.23). Four jurisdictions – Independence, Kansas City, Blue Springs and Platte County – participate in the Community Rating System. (Table 3.30).

- b.) Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. Evaluate current and planned development in areas where risks from flooding have increased due to changes in the FIRMs.
- c.) Designate a Floodplain Manager and support training to become certified.

2) Floodplain identification and mapping

Improve flood hazard assessments and flood mapping.

- a.) Obtain parcel data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas.
- b.) Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process.
- c.) Purchase HAZUS-Flood software from FEMA, possibly in conjunction with other local or regional stakeholders.
- d.) Coordinate the collection of demographic, economic, watershed, land use and other data required by the HAZUS-Flood software program and/or GIS systems. Where appropriate work with MARC to support both local and regional mapping and analysis.
- e.) Conduct an in-depth flood risk analysis utilizing HAZUS data and create detailed maps based on GIS technology to identify areas at risk from flooding.

3) Community assistance and monitoring activities

<u>Examine repetitive flood loss properties in each county and determine feasible and practical mitigation options.</u>

- a.) Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities; determine property owners' interest in specific mitigation options.
- b.) Identify potential funding opportunities to implement mitigation options for repetitive flood loss properties.
- c.) As funding allows, repetitive flood loss properties and structures will be targeted for buyout.
- d.) With stakeholders, explore incentive options to encourage property owners to take action to prevent or reduce future flood losses

Reduce flood-related damage to public, residential and commercial property in flood-prone areas through structural and nonstructural retrofits or removal of property.

a.) Identify incentives to offer property owners to remove or retrofit structures in flood-prone areas.

b.) Encourage cities and counties to adopt the new APWA Stormwater Management Design Standards expected to be completed in mid-2025.

The Metropolitan Emergency Managers Committee has committed to review the Hazard Mitigation Plan annually and assist local jurisdictions with updated information and guidance to maintain the plan and to consider steps to integrate the HMP into other plans and policies. The Kansas City region is preparing a 2025 update to the Regional Climate Action Plan (KC Climate Coalition with support from MARC) and the results of that analysis will be used to engage local officials to take more proactive steps to mitigate risks from natural hazards.

5.4 Attachments

Attachment 5.1: Community Mitigation Goals and Actions

Attachment 5.2: School Mitigation Goals and Actions

Mid-America Regional Council

¹ FEMA Local Mitigation Planning Handbook, 6-B, March 2013

2025 Cass County Emergency Mgmt				Type of Mitigation		Date of	Cost/Benefit	Primary Agency Responsible for Implementation/		
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Reduce vulnerability and enhance community situational awareness			l			T	I	T	1	
Implement a community-wide weather radio distribution program, prioritizing vulnerable and rural populations. 200 radios 100 Light and Pillow shaker kits	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	July 2026	\$17,000	Emergency Mgt	\$17,000	BRIC, HMGP, FMA; Local Budgeted Funds
Implement a comprehensive flood monitoring system to enhance early warni	ng capabilities and	reduce flood-related risi	KS T	I	1	<u> </u>	I		1	
Implement a cloud-based dashboard/map that will visually allow the public and local government to see flood-affected areas. This dashboard will be connected to several water-level sensors throughout the county.	2025	New, reviewed in 2025		Structure and Infrastructure Projects	Medium	N/A	High	Emergency Mgt	High	BRIC, HMGP, FMA
Improve signage for flood areas to a solar lighted sign and water level sensors to provide better visibility and awareness.	2025	New, reviewed in 2025		Structure and Infrastructure Projects	Medium	N/A	Medium	Emergency Mgt	Medium	Local Budgeted Funds and Staff Time
Work with Public Works and gather data from other sources for recurring localized flood areas in the county.	2025	New, reviewed in 2025	Will attempt to start this action in early 2025	Other	Medium	N/A	Medium	Emergency Mgt and Public Works	Low	Local Budgeted Funds and Staff Time
Severe Thunderstorms										
Promote use / sign up of Mass notification	T				T		1		1	
Using social media campaigning to educate the public on the availability of the county mass notification system. Severe Winter Weather	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	N/A	Medium	Emergency Mgt	Low	Local Budgeted Funds and Staff Time
Winter weather public preparedness										
Work with local cities to identify and map local warming centers	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	N/A	Medium	Emergency Mgt	Low	Local Budgeted Funds and Staff Time
Work with the county health department to create a social media campaign for winter weather safety	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	N/A	Medium	Emergency Mgt	Low	Local Budgeted Funds and Staff Time
Extreme Temperatures Develop education and safety messaging for heat-related weather										
Develop education and safety messaging for near-related weather										
Create and post a map of cooling shelters	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	N/A	Medium	Emergency Mgt	Low	Local Budgeted Funds and Staff Time
Social media campaign for safety messages to the public on preventing heat-related injuries.	2025	New, reviewed in 2025		Education and Awareness Programs	Medium	N/A	Medium	Emergency Mgt	Low	Local Budgeted Funds and Staff Time

2025 City of Belton, Missouri Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Enhance community preparedness for tornadoes through targeted outreach	n and education.									
										Local Budgeted
Establish a Community Emergency Response Team (CERT) trained for		New, reviewed		Education and						Funds and Staff
tornado response.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt	Low	Time
										Local Budgeted
Work with the school district to ensure tornado preparedness plans are		New, reviewed								Funds and Staff
regularly updated and exercised.	2025	in 2025			Medium	Ongoing	Medium	Emergency Mgt	Low	Time

	1	1	T	I	ı	1	1	Primary Agency	T	
								Responsible for		
2025 City of Harrisonville, MO				Type of Mitigation		Date of	Cost/Benefit	Implementation/		
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Community Storm Shelter										
				Structure and						General Funds, City of
Identify two strategic locations inside the city limits of Harrisonville.	2025	New, reviewed in 2025		Infrastructure Projects	High	Ongoing	High	Emergency Mgt.	Low	Harrisonville, MO; Staff Time
Ensure public facilities have shelters to accommodate staff and visitors duri	ng tornadoe:	s/ nat. hazards.								
Assess existing facilities for shelter suitability. Mark clearly and inform				Education and						General Funds, City of
visitors/employees of locations.	2025	New, reviewed in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Harrisonville, MO
Consider adopting policies requiring incorporation of safe rooms/shelters				Local Plans and						General Funds, City of
in new public facility construction.	2025	New, reviewed in 2025		Regulations	Medium	Ongoing	Medium	Emergency Mgt.	Low	Harrisonville, MO
Increase public awareness and understanding the benefits of "safe rooms."										
				Education and						General Funds, City of
Develop, distribute informational materials on safe rooms.	2025	New, reviewed in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Harrisonville, MO
				Education and						General Funds, City of
Partner w/ trade orgs. to conduct safe room workshops.	2025	New, reviewed in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Harrisonville, MO
Upgrade outdoor warning Sirens										
Floods										
Improve hazard assessment information for dams across the Kansas City m	etropolitan a	area.		r	•	·	•	1	1	
Include maps and information from inundation studies and dam emergency				Structure and						USACE and City of
action plans in local emergency operations and land use plans.	2025	New, reviewed in 2025		Infrastructure Projects	Medium	Ongoing	Medium	Emergency Mgt.	Medium	Harrisonville
Obtain assessed valuation data and population figures for areas in the										
vicinity of dam inundation pathways so that enhanced vulnerability							ĺ			
assessments may be conducted describing the number of lives and amount			USACE completed innundation analysis							USACE and City of
of property at risk from dam failure.	2025	New, reviewed in 2025	of Town Creek Dams	Infrastructure Projects	Medium	Ongoing	Medium	Emergency Mgt.	Medium	Harrisonville

	<u> </u>									
Lake Annette 2025 Mitigation Strategy ((Continuing		ipant, NFIP Particip	•	.				I Fallows	_
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for	Estimate of Cost (\$)	Funding Source
Phugation Joats and Action Steps	rtan rea	Froject	Status Explanation	Activity	Filolity	Date of Completion	COSt/ Delient Neview	Responsible for	01 003ε (ψ)	runung Source
Tornadoes										
Ensure the community has shelters to accommo	date residents	and visitors d	uring tornadoes/natural l	hazards						
Endare the dominantly had sheeters to accommis	uuto residente	and visitors a	No public building;							
Retrofit or add shelters to existing public/critical			community center no	Structure and		TBD as funds are	Will better ensure safety			
facilities.	2020	continuing	longer an option	Infrastructure Projects	Medium	available	of residents	board of aldermen	High	TBD
landari da la										
Improve tornado warning capabilities.		1	IVVIII WORK WITH TIPE GEPT	<u> </u>	<u> </u>	1	1	<u> </u>	1	<u> </u>
			to determine best	Structure and		TBD as funds are	Will better ensure safety			
Install outdoor warning sirens	2020	completed	option for community	Infrastructure Projects	Medium	available	of residents	board of aldermen	Medium	TBD
Floods										
Floods										
Discourage new development in floodplains and	flood-prone a	reas.								
Identify damaged properties and seek grant	•		have a number of				will prevent future flood			
funds to acquire and demolish the structures and			vacant flood damaged	Structure and		as funds are	impacts on lives and			Grants through FEMA
use property for public open space	2025	new	properties in need of	Infrastructure Projects	High	available	proerty	board of aldermen	High	CDBG
Implement or improve flood warning systems.										
Develop and implement procedures to quickly			Explore ordinances and				Will ensure that citizens			
analyze and disseminate information from flood			policies that may	Local Plans and			are prepared real time			Local funds; possible
warning systems to the public.	2020	ongoing	require attorney and	Regulations	High	1-2 years	for flood events.	board of aldermen	Low	grant funds
			Will work with fire dept	Structure and		TBD as funds are	Will better ensure safety			Grants through FEMA or
Install outdoor warning sirens	2020	ongoing	to determine best	Infrastructure Projects	Medium	available	of residents	board of aldermen	Medium	CDBG
							Low/no cost			
Increase communication with NWS for timely	2000			Local Plans and	L I Cada	4.0	mechanism to increase			1 1
reporting	2020	ongoing		Regulations	High	1-2 years	public safety.	board of aldermen	LOW	Local
Participate in, and ensure compliance with, flood	d mitigation ar	nd floodplain n	nanagement programs.							
Continue to participate in the National Flood				Local Plans and						
Insurance Program (NFIP)	2025	Ongoing			High	Ongoing	Part of city operation	board of aldermen	Low	Local
msurance Frogram (NFIP)	2020	Ongoing		Regulations	півіі	Ongoing	rait of city operation	board of aldermen	LUW	LUCAL

2025 Lake Winnebago Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost	Funding Source
Tornadoes										
Encourage building practices and the use of materials that	reduce the damagin	g effects of tornadoe:	s.							
Adopt current edition of a model building code to address										
structural and architectural issues related to tornadoes and				Local Plans and			While may increase building costs, will			
nigh wind events.	2010	Ongoing		Regulations	High	Ongoing	lead to greater occupant safety	building official	Medium	building permits
Require the use of tempered or shatter-resistant glass in the										
vindows of new public/private facilities where large numbers				Local Plans and			While may increase building costs, will			
of people may congregate. Retrofit existing facilities.	2010	Ongoing		Regulations	High	Ongoing	lead to greater occupant safety	building official	Medium	building permits
n people may congregate. He don't existing facilities.	2010	Опроше		ricgatations	111611	Oligonia	tead to greater occupant sarety	baltaring official	riculani	building permits
Review and enhance (if necessary) regulations related to										
design and installation of architectural features on buildings				Local Plans and			While may increase building costs, will			
to minimize the creation of windborne debris.	2010	Ongoing		Regulations	High	Ongoing	lead to greater occupant safety	building official	Low	building permits
Vork w/ trade orgs to inform builders/ developers of										8
onstruction techniques and materials that may minimize										
ornado/ high wind damage to residential/ commercial				Education and			Low/no cost mechanism to increase public			fees for building
structures.	2010	Ongoing		Awareness Programs	High	Ongoing	safety.	building official	Low	permits
Floods		. 0. 0			Ü	. 0. 0	,			
Discourage new development in floodplains and flood-pror	ne areas.									
			We do not allow							Local Budgeted
**Adopt ordinances prohibiting residential and commercial			building in the flood	Local Plans and						Funds and Staff
development in flood plains or flood-prone areas.	2010	Completed	plain.	Regulations	Unspecified	N/A	Medium	building official	Low	Time
Improve flood hazard assessments and flood mapping.										
**Obtain parcel data (assessed valuation and other										Local Budgeted
nformation) for flood boundary areas and enhance				Local Plans and						Funds and Staff
vulnerability assessments for these areas.	2010	Ongoing		Regulations	Medium	Ongoing	Low cost mechanism to evaluate flood risk	engineer	Low	Time
Participate in, and ensure compliance with, flood mitigatio	n and floodplain ma	nagement programs.								
										Local Budgeted
**Participate in the National Flood Insurance Program (NFIP)				Local Plans and			Will ensure homeowners and businesses			Funds and Staff
and Community Rating System (CRS).	2010	Ongoing		Regulations	High	Ongoing	are protected.	floodplain manager	Low	Time
							Will ensure latest copies of flood maps are			Local Budgeted
**Obtain the latest copies of flood insurance rate maps				Local Plans and			on hand to guide development and			Funds and Staff
FIRMs), floodplain maps and similar documents.	2010	Ongoing		Regulations	High	Ongoing	mitigation strategies.	floodplain manager	Low	Time
leduce flood-related damage to public, residential and cor	nmercial property ir	flood-prone areas th	rough structural and	nonstructural retrofits	or removal of proper	rty.	la e e e	T		
							Requires cooperation of landowners to			
**Encourage homeowners and businesses in flood-prone				l			implement, but ultimately beneficial as will			
areas to elevate mechanical systems (i.e., furnaces, hot	0040	Outsing		Local Plans and	Mar alicens	N1/A	greatly reduce recovery costs and	h	Mar alliana	
vater heaters, electrical panels, etc.).	2010	Ongoing		Regulations	Medium	N/A	insurance rates.	board of aldermen	Medium	property owner

Peculiar 2025 Mitigation Strategy (Continuing Plan Pai	rticipant, NFIF	Participan	t)						
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Cost/Benefit Review	Primary Agency Responsible for Implementation/Administ ration	Estimate of Cost (\$)	Funding Source
Tornadoes and Severe Thunderstorms		-	·	,,,				()	
Encourage building practices and the use of materials that reduce t	the damaging effe	ects of tornado	oes.						
Work w/ trade orgs to inform builders/ developers of construction						No/low cost			
techniques and materials that may minimize tornado/ high wind						mechanism to increase			
damage to residential/ commercial structures.	2010	Ongoing		Education and Awareness	High	public safety.	building official	Low	Local city resources
Encourage construction of community tornado shelters in office co	omplexes, factori	es, apt comple	exes, schools mobile hon	ne parks, stadiums, and othe	r large population	congregation centers.			
Consider adopting ordinances or regs requiring the construction of									
tornado shelters in new buildings where people live, work or									
congregate.	2010	Ongoing		Plans and Policies	High	could save lives	building official	Medium	FEMA HMP and BRIC grants
						No/low cost			
Work with chambers of commerce, school districts, corporations,						mechanism to increase			
etc. to promote benefits of safe rooms.	2010	Ongoing		Education and Awareness	High	public safety.	emergency manager	High	Local city resources
Increase public awareness and understanding the benefits of "safe	rooms."								
Develop, distribute informational materials on safe rooms.	2010	Ongoing		Education and Awareness	Medium	could save lives	emergency manager	Low	Local city resources
bevelop, distribute informational materials on sale rooms.	2010	Oligonia		Education and / Wareness	riculani	codia save lives	emergency manager	LOW	Education resources
Floods									
Enhance public awareness and education efforts related to floodin	g.								
·						Will reduce recovery			
Encourage home owners and businesses to purchase flood						costs and ensure			
insurance.	2010	Ongoing		Education and Awareness	High	compliance with NFIP.	floodplain manager	Low	Local city resources
Improve flood hazard assessments and flood mapping.						,			
						available and can be			Public Works, Capital,
Coordinate the collection of demographic, economic, watershed,						easily imported to			Water and Wastewate
land use and other data and/or GIS systems.	2010	Ongoing		Plans and Policies	Medium	identify potential areas	planning and public works	Medium	Utilty Funds
Integrate flood mitigation strategies with projects and activities de	signed to (1) prot	ect, restore oi	r enhance ecosystems an	nd the environment and/or (2) create recreation	nal opportunities for the o	ommunity.		
greenways or riparian corridors in areas of new development to						new downstream			
channel and catch storm water, thereby reducing the likelihood of						conditions are better			
flooding.	2010	Ongoing		Structure & Infrastructure	Medium	than existing	planning and public works	High	Provided by development
Develop partnerships between regional emergency management,									
floodplain management and environmental groups to educate one						No/low cost			
another and the public of the benefits of collaboration and identify						mechanism to increase			
specific programs and activities that can be developed and i	2010	Ongoing		Education and Awareness	Medium	public safety.	planning and public works	Low	Local city resources
	2310	122212	<u> </u>			15-200 00.009.	r and public works		
Participate in, and ensure compliance with, flood mitigation and flo	oodplain manageı	ment program	S.						
						Will ensure reduced			
		<u></u>				insurance rates for			
Participate in the National Flood Insurance Program (NFIP) .	2010	Ongoing		Plans and Policies	High	homeowners and	floodplain manager	Low	Local city resources
Extreme Temperatures and Severe Winter Weather									
Extreme remperatures and Severe winter weather									
Educate the public about steps to reduce risks to life and property	2025	New		Education and Awareness	Medium	help to protect lives	planning and public works	Low	local city resources
						• •			

2025 Pleasant Hill Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes				1					_	
Have a planta de de planta a ser esta ella effecta de para	0005	N		Local Plans and	NA - dia		Mar allianos	emergency	1	O a manual Francis
Have a plan to deploy resources to all affected areas	2025	New	shaala washila hawa wawl	Regulations	Medium	N/A	Medium	management	Low	General Fund
Encourage construction of community tornado shelters in office complexe	es, ractories, a	apt complexes, s	Chools mobile nome park	s, stadiums, and othe	r targe poputa	tion congregation	centers.			
Evaluate commercial building code requirements for storm shelters				Local Plans and						
requirements inside commercial and industrial buildings.	2020	Ongoing		Regulations	Medium	N/A	Medium	building code official	Low	General Fund
requirements made commercial and industrial buildings.	2020	Oligoliig		negutations	riculum	IN/A	riedidili	building code official	LOW	Oerierat i unu
If necessary, implement storm shelter requirements for commercial and				Local Plans and						
industrial buildings.	2020	Ongoing		Regulations	Medium	N/A	Medium	building code official	Low	General Fund
Ensure public facilities have shelters to accommodate staff and visitors di	1		ds	подаваноно	riculani	1071	riculum	building code official	LOW	Concract and
	l l						Low cost			
							mechanism to			
Assess existing facilities for shelter suitability. Mark clearly and inform				Local Plans and			increase public			
visitors/employees of locations.	2010	Ongoing		Regulations	Medium	N/A	safety.	public works	500	General Fund
Floods		Ü		Ü			,			
Enhance public awareness and education efforts related to flooding.										
			Public education efforts will continue in plan year							
Obtain brochures and related publications on flood mitigation,			2020; with a reminder to				No/low cost			
preparedness, response and recovery from FEMA, SEMA, the American Red			all properties and	Education and			mechanism to			
Cross and other organizations and provide them to home owners and			structures located within				encourage flood	emergency		
businesses in flood-prone areas.	2010	Ongoing	the flood plain.	Programs	Medium	N/A	preparedness.	management	Under \$100	General Fund
Ensure all roadways are accessible to emergency service personnel and the	nat at least on	e route to a dest	ination is accessible with		T	T			T	T
				Structure and						
Assess and if necessary replace Culvert C-12a which crosses 58 Highway				Infrastructure						Park/Stormwater Sales
near the railroad track wye.	2020	Ongoing		Projects	High	N/A	Medium	public works	14000	Tax/General Fund
				Structure and						
Assess and if necessary, replace Culvert C-13a which crosses 58 Highway				Infrastructure						Park/Stormwater Sales
southeast of the railroad wye.	2020	Ongoing		Projects	High	N/A	Medium	public works	Low	Tax/General Fund
Assessed Manager and Section 20 Manager 20 47 and table at the section 20 47 and table at the				Structure and						D = 1 - 10 +
Assess and if necessary, replace Culvert C-17a which crosses 58 Highway	0000	0-4-1-4		Infrastructure	L I Carlo		Manadia ana	and Community	00000	Park/Stormwater Sales
east of 7 Highway	2020	Ongoing		Projects	High	N/A	Medium	public works	83000	Tax/General Fund
Consideration of egress in subdivision design, particularly when roadways	2020	Ongoin-		Local Plans and	Lligh	NI/A	Madium	nublic works1	Low	Conoral Fund
cross floodplains. Evaluate ordinances regarding roadway drainage ditches and culverts in an	2020	Ongoing		Regulations	High	N/A	Medium	public works, planning	Low	General Fund
				Local Blanc and						
effort to allow conveyance of stormwater rather than pooling on roadways	2020	Ongoing		Local Plans and	∐igh	NIZA	Modium	nublic works	Low	Conoral Fund
(58 Highway).	2020	Ongoing		Regulations Structure and	High	N/A	Medium	public works	Low	General Fund
Obtain proliminary cost actimates to either clayets readyways or impress										
Obtain preliminary cost estimates to either elevate roadways or improve stormwater systems in areas of persistent roadway flooding.	2020	Ongoing		Infrastructure Projects	High	N/A	Medium	public works	Low	General Fund
Evaluate dams throughout Pleasant Hill to ensure they are structurally sou			<u> </u>	i iojecis	Lugu	TIMA.	II-lealalli	hange Marks	LOW	General Fullu

Evaluate City's responsibility and/or regulations which could be put in				Local Plans and				public works, floodplain		
place for private dam inspections	2020	Ongoing		Regulations	Low	N/A	Medium	manager	Low	General Fund
<u></u>		1 0 0		Structure and						
				Infrastructure						
Obtain cost estimate for improvements at City Lake Dam	2020	Ongoing		Projects	High	N/A	Medium	public works	Low	General Fund
, ,				Structure and	- u			,		
				Infrastructure						
Select and implement a solution for dam repair at the City Lake	2020	Ongoing		Projects	Medium	N/A	Medium	public works	High	Park Fund/General Fund
Examine flood mitigation strategies near downtown Pleasant Hill and alor	g 58 Highway			<u> </u>		I.		<u>, </u>		
				Local Plans and						Park/Stormwater Sales Tax,
Commission a downtown stormwater study	2020	Ongoing		Regulations	High	N/A	Medium	public works, planning	medium	General Fund
				Local Plans and						
Obtain cost estimate for downtown stormwater study	2020	Ongoing		Regulations	High	N/A	Medium	public works, planning	Low	General Fund
Examine repetitive flood loss properties. Evaluate feasible and practical	mitigation o	ptions.								•
							Will eliminate or			
				Structure and			greatly reduce			
**As funding allows, repetitive flood loss properties and structures will be				Infrastructure			repetitive loss			
targeted for buyout.	2010	Ongoing		Projects	Low	N/A	properties.	public works	\$10,000 per year	General Fund
			The City still has a large							
			number of structures							
			within the floodplain.							
			While flooding at some							
			properties have either							
			been alleviated or the				No/ or low cost to			
			structure has been	Structure and			implement and			
**Identify potential funding opportunities to implement mitigation options			removed, there is still	Infrastructure			require little staff			
for repetitive flood loss properties.	2010	Ongoing	work to do.	Projects	Medium	N/A	support.	public works	100	General Fund
		1 0 0		.,			No/ or low cost to			
							implement and			
**With stakeholders, explore incentive options to encourage property				Local Plans and			require little staff			
owners to take action to prevent or reduce future flood losses	2010	Ongoing		Regulations	Low	N/A	support.	public works	100	General Fund
		1 3 18				1	No/ or low cost to		-	
**Work with owners of repetitive flood loss properties to identify feasible							implement and			
mitigation strategies and potential opportunities; determine property		1		Local Plans and			require little staff	public works, floodplain		
owners' interest in specific mitigation options.	2010	Ongoing		Regulations	Low	N/A	support.	manager	100	General Fund
Improve flood hazard assessments and flood mapping.	1-1-1	188		19		1	1	1	1-44	
							Most data readily			
		1					available and can			
							be easily imported			
							to identify potential			
**Obtain parcel data (assessed valuation and other information) for flood				Local Plans and			areas for increased			
boundary areas and enhance vulnerability assessments for these areas.	2010	Ongoing		Regulations	Medium	N/A	mitigation efforts.	planning, public works	medium	General Fund
Integrate flood mitigation strategies with projects and activities designed			 			•			moulum	Ocherati una

	1	1		1	1	1	1		1	
			As the City prepares for							
In concert with existing comprehensive and land use plans, develop a			a comprehensive plan							
strategy for acquiring flood-prone property for use as open space or park			update, this action will	Local Plans and				planning, city		
land.	2010	Ongoing	be considered again.	Regulations	Medium	N/A	Medium	administration	Low	General Fund
Provide a flood warning system for residents and motorists to alert of clos						IN/A	Medialli	aummistration	LOW	Generat Fund
Frovide a flood warning system for residents and motorists to atert of clos	ures anu msm	water to attow	line to atter routes, sandi	Education and	Luate.					
Continue to work with MoDOT regarding 58 Highway closures and placing				Awareness						
the closure on the road conditions map as quickly as possible.	2020	Ongoing		Programs	Low	N/A	Medium	public works	Low	General Fund
Coordinate with MoDOT regarding 58 Highway closure signage closer to	2020	Oligoling		Structure and	LOW	IN/A	riculum	public works	LOW	Generati unu
291 to reduce the number of individuals who drive through flooded				Infrastructure						
roadways.	2020	Ongoing		Projects	Medium	N/A	Medium	public works	Low	General Fund
Toduways.	2020	Oligoling		Education and	Medium	IN/A	rieululli	public works	LOW	General Fund
Explore utilization of Everbridge or other alert notification system for a				Awareness				emergency		
1 '	2020	Ongoing			Low	N/A	Medium		Medium	General Fund
specialized flash flood prone area.	1	Ongoing	igh etrijetural and nanetrij	Programs	Low		Medidili	management	Medium	General Fund
Reduce flood-related damage to public, residential and commercial prop	егту іп ттооа-р	rone areas throu	ign structural and nonstru	ctural retrofits or ren	loval of prope	rty.	Will eliminate or		T .	
				Structure and			greatly reduce			
**As funding allows, repetitive flood loss properties and structures will be				Infrastructure			repetitive loss			
targeted for buyout.	2010	Ongoing		Projects	Medium	N/A	properties.	floodplain manager	Varies	General Fund
targeted for buyout.	2010	Oligoling		Local Plans and	Medium	IN/A	properties.	noouptain managei	varies	General Fund
**Evaluate the adoption of stream setback ordinances	2020	Ongoing		Regulations	Medium	N/A	Medium	planning, public works	Low	General Fund
Explore ways to mitigate against extreme heat during outdoor activities.	2020	Oligoling		negulations	Medium	IN/A	Medialli	planning, public works	LOW	General Fund
Explore ways to find gate against extreme heat during outdoor activities.				Education and						
Coordinate with the Cass County Library for use as a cooling center when				Awareness				emergency		
needed	2020	Ongoing		Programs	Low	N/A	Medium	management	100	General Fund
needed	2020	Ongoing		Structure and	LOW	IN/A	Mediaiii	management	100	General Fund
				Infrastructure				emergency		
Evaluate cooling centers for use at the Cass County Fair.	2020	Ongoing		Projects	Low	N/A	Medium	management	100	General Fund
Increase awareness of effects of extreme heat.	2020	Oligoling		i rojects	LOW	IN/A	riedidili	management	1100	Generat i unu
increase awareness or effects of extreme neat.	T	1		Education and	T		1		I	T
Create a public information campaign regarding the effects of extreme heat				Awareness				emergency		
on your body and health.	2020	Ongoing		Programs	Medium	N/A	Medium	management	200	General Fund
on your body and neath.	2020	Oligoling		Education and	riedidiii	IN/A	riculum	management	200	Generat i unu
Create a public information campaign regarding water conservation				Awareness				emergency		
methods.	2020	Ongoing		Programs	Medium	N/A	Medium	management	200	Water/Sewer Fund
Severe Thunderstorms	2020	Oligoling		Fiograilis	Medium	N/A	Medium	Пападешен	200	Water/Sewer Fullu
Severe-munuerstorms				Structure and						
				Infrastructure			1	emergency		
Provide back up power to critical infrastructure	2020	Ongoing		Projects	Medium	N/A	Medium	management	Low	General Fund
Continue educational campaigns regarding severe thunderstorms, primar				Fiojecis	Medium	IN/A	Medialli	management	LOW	General Fund
Continue educational campaigns regarding severe thuriderstorms, primar	lty during out	door activities.		Education and						
Incorporate severe weather public information campaigns to all parents of				Awareness			1			
1	2020	Ongoing			Low	N/A	Medium	parks and recreation	200	General Fund/Park Fund
children enrolled in recreation programs	2020	Ongoing		Programs Education and	Low	IV/A	Medium	parks and recreation	200	General Fund/Falk Fund
Provide signage at Cass County Fair regarding Everbridge and other means				Awareness				emergency		
	2020	Ongoing			Medium	N/A	Medium	emergency	300	Cass County Fair
of weather alerts, encouraging patrons to utilize these systems. Ensure warming centers and critical services can continue operations in the services can continue operations.		Ongoing	utages	Programs	medium	IN/A	medium	management	300	Cass Coully Fall
Ensure warming centers and critical services can continue operations in t	ne event of pr	otoligeu power o	utages.							

		1	Structure ar	d					
			Infrastructu				emergency		
Assess availability of fuel resources in the event of power outages.	2020	Ongoing	Projects	Medium	N/A	Medium	management	Low	General Fund
Assess availability of fact resources in the event of power satages.	2020	Oligonia	Structure ar		1071	riculani	management	2011	Ocheraci and
Coordinate with critical facilities to assess back up generation capabilities			Infrastructu				emergency		
including how long generators are operable.	2020	Ongoing	Projects	Medium	N/A	Medium	management	Low	General Fund
including new teng generators are operation.	2020	Oligonia	Structure ar		1071	riculani	management	2011	ocheraci ana
			Infrastructu				emergency		
Evaluate number of emergency generators available for warming centers.	2020	Ongoing	Projects	Medium	N/A	Medium	management	100	General Fund
		88	Structure ar					1	
Evaluate the backup generation capacity at each of the Red Cross			Infrastructu				emergency		
emergency shelters listed in Pleasant Hill.	2020	Ongoing	Projects	Medium	N/A	Medium	management	Low	General Fund
3 7			Structure ar	d			- v		
			Infrastructu	e					
Purchase emergency generators for sewer lift stations.	2020	Ongoing	Projects	Medium	N/A	Medium	public works	600000	Water/Sewer Fund
			Structure ar	d					
			Infrastructu	e					
Purchase generator for emergency warming center (Memorial Building)	2020	Ongoing	Projects	Medium	N/A	Medium	public works	200000	General Fund
			Structure ar	d					
Test the generator for the emergency warming shelter at the Methodist			Infrastructu	e			emergency		
Church.	2020	Ongoing	Projects	Medium	N/A	Medium	management	100	General Fund
Reduce the number of trees or tree limbs likely to cause damage during se	evere winter v	veather.							
			Education a	nd					
Create a public education campaign regarding tree health and property			Awareness						
evaluations.	2020	Ongoing	Programs	Medium	N/A	Medium	parks and recreation	Low	General Fund
			Structure ar	d					
			Infrastructu	e					
Have the City Arborist inventory trees near utility poles.	2020	Ongoing	Projects	Medium	N/A	Medium	parks and recreation	Low	General Fund
Identify nearest emergency shelter for public outdoor facilities.									
			Local Plans						
Identify sheltors for public outdoor facilities.	2020	Ongoing	Regulations	Medium	N/A	Medium	parks and recreation	Low	General Fund

	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes Encourage construction of community tornad	o shelters in office	complexes, fac	tories, apt complexes, schools m	obile home parks, s	tadiums, and	other large pop	ulation congregation	n centers.		
Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	updated 2025	Ongoing	This action is continually promoted through various departments.	Education and Awareness Programs	Medium	Ongoing	Low/no cost mechanism to increase public safety.	emergency management	Low	Local Budgeted Funds and Staff Time
Encourage electric and telecommunications	utilities to protect tl	neir existing inf	rastructure from the effects of tor	nadoes and high wi	nds.					
Adopt ordinances or regulations requiring the underground placement of new electric and				Local Plans and			Would reduce recovery costs and better limit damage/interrupti on to electrical and communications			Local Budgeted Funds and Staff
telecommunications transmission lines.	2010	Completed	This is completed.	Regulations	Medium	Completed	services.	emergency management	Medium	Time
Ensure public facilities have shelters to accor	nmodate staff and v	isitors during t	ornadoes/natural hazards.	ı	ı	T	•	T	Т	1
Assess existing facilities for shelter suitability. Mark clearly and inform visitors/employees of locations.	updated 2025	Ongoing	We have finished all identifications necessary and will be working to complete all appropriate signage as soon as possible. Especially for our new buildings.	Structure and Infrastructure Projects	Medium	Ongoing	Low/no cost mechanism to increase public safety.	emergency management	Low	Local Budgeted Funds and Staff Time
Increase public awareness and understandin	g the benefits of "sa	ife rooms."	ı	ı	ı	T	•	T	Т	1
Develop, distribute informational materials on safe rooms.	updated 2025	Ongoing	We continue to develop individual preparedness materials that include safe rooms. Additionally, I attended the safe room construction class in order to better serve the community in answering questions.	Education and Awareness Programs	Medium	Ongoing	No/low cost mechanism to increase public safety.	emergency management	Low	Local Budgeted Funds and Staff Time

	1	1	ı	T	T	Ongoing (oc	Mill raduas	I		1
						Ongoing (as	Will reduce			
						new homes	recovery costs and			Land Dudgatad
				Education and		and	ensure			Local Budgeted
Encourage home owners and businesses to				Awareness		businesses	compliance with			Funds and Staff
purchase flood insurance.	2010	Ongoing	We also market the NFIP.	Programs	Medium	continue)	NFIP.	floodplain management	Low	Time
Integrate flood mitigation strategies with proj	ects and activities d	lesigned to (1) p	orotect, restore or enhance ecosy	stems and the envi	ronment and/	or (2) create re		ities for the community.		<u> </u>
							Will reduce			
							floodplain			
Consider alternative uses for floodplains and			We also have city ordinances	Structure and			vulnerability and			Local Budgeted
flood-prone areas, such as sports fields,			restricting building in a	Infrastructure			increase city			Funds and Staff
parks, wildlife habitats, etc.	updated 2025	Ongoing	floodplain.	Projects	Low	Ongoing	greenspace.	planning, public works	High	Time; HMGP, BRIC
Consider the construction of detention										
basins, small lakes and greenways or riparian										
corridors in areas of new development to				Structure and			Will prevent			Local Budgeted
channel and catch storm water, thereby			We have a designated	Infrastructure			flooding for			Funds and Staff
reducing the likelihood of flooding.	updated 2025	Ongoing	stormwater plan.	Projects	Medium	Ongoing	moderate costs	planning, public works	Medium	Time; BRIC, HMGP
Severe Thunderstorms										
Ensure local alert systems are in place and op	perational during se	vere weather.	_	T	T	<u> </u>	<u> </u>	1		1
							l			
							Low cost			
Continue to promote the emergency alert			<u>-</u>	Education and			mechanism for			Local Budgeted
notification system within the City of Raymore			We use Everbridge now, not	Awareness		I	mass alerting of			Funds and Staff
and the county	updated 2025	Ongoing	Code Red.	Programs	Medium	Ongoing	citizens to danger.	emergency management	Low	Time
							Will sustain			
Maintain the city's siren system in good			We continue to contract with	Structure and			primary warning			Local Budgeted
working order and continue to assess the			Blue Valley Public Safety for this	Infrastructure			capability of the			Funds and Staff
coverage those sirens provide	updated 2025	Ongoing	issue.	Projects	Medium	Ongoing	city.	emergency management	Low	Time
Establish a current database of Red Cross ce	rtified shelters that o	could be used d	luring severe weather and make t	hat list available to	the public.	1	T	T		T
			W. L							
Identify all establishments that could be used			We have one dedicated (and Red				Low cost			
as shelters. If consented to be a shelter, have			Cross inspected) shelter and are			1	mechanism to			Local Budgeted
Red Cross inspect and certify establishment			currently in the process of	Infrastructure			increase public			Funds and Staff
as a shelter	2015	Ongoing	getting a second site inspected.	Projects	Medium	Ongoing	safety.	emergency management	Low	Time
						1	Low cost			
Work with neighboring communities, MEMC,			We need to continually get an				mechanism to			Local Budgeted
and MARC on creating an updated shelter			updated list from MARC of area	Local Plans and		1	increase public			Funds and Staff
	1		1	Inc. a target and	I S 4 If	10	1	I	lı	T:
database for the entire region Increase the public's awareness of the dange	2015	Ongoing	shelters.	Regulations	Medium	Ongoing	safety.	emergency management	LOW	Time

	I	1	T		I	1	I			1
			We offer a robust platform for							
			severe weather information				Low cost			
Distribute severe storms safety literature at			including literature, Facebook,	Education and			mechanism to			Local Budgeted
public events and launch announcements			Twitter, city website, and outside	Awareness			increase public			Funds and Staff
through social media and the city website	2015	Ongoing			Medium	Ongoing		emergency management	Low	Time
							Free program that			
			We continually promote the				benefits public			
			annual storm spotting class	Education and			awareness and city			Local Budgeted
Promote storm spotter training for the entire			through the National Weather	Awareness			alerting			Funds and Staff
region	2015	Ongoing	Service.	Programs	Low	Ongoing	procedures.	emergency management	Low	Time
Promote the advantages of identifying, creati	ng, or building a safe	e room to be us	ed during severe weather.							
							Low cost			
Continue to register storm shelters as they are			We maintain a safe room				mechanism to			Local Budgeted
installed in homes and businesses throughout			registration list within our Police	Local Plans and			increase public			Funds and Staff
the community	2015	Ongoing	Department.	Regulations	Low	Ongoing	safety.	emergency management	Low	Time
							Low cost			
Work with residents and business partners by				Education and			mechanism to			Local Budgeted
providing information on safe rooms and			This would be the same as above	Awareness			increase public			Funds and Staff
shelters when requested	2015	Ongoing	in the Tornado section.	Programs	Low	Ongoing	safety.	emergency management	Low	Time

								Primary Agency		
								Responsible for		
		Status of		Type of Mitigation		Date of	Cost/Benefit	Implementation/	Estimate of	
2025 Clay County Mitigation Strategy	Plan Year	Project	Status Explanation	Activity	Priority	Completion	Review	Administration	Cost (\$)	Funding Source
Tornadoes										
Encourage construction of community tornado shelters in office complexes,	factories, ap	ot complexes, sch	nools mobile home pa	rks, stadiums, and other	large populati	ion congregation c	enters.	<u> </u>	<u> </u>	
Offer residential/ commercial builders/developers tax incentives to		New, reviewed		Local Plans and						Local Budgeted Funds
construct safe rooms/community shelters in new public facilities.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Planning & Zoning	Low	and Staff Time/BRIC
Work with chambers of commerce, school districts, corporations, etc. to	2005	New, reviewed		Education and				5 . Ma		Local Budgeted Funds
promote benefits of safe rooms.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
Ensure Alert, Warning and Mass Notification systems are in place and operati	Ullat.									
		New, reviewed		Local Plans and						Local Budgeted Funds
Conduct monthly test of outdoor siren warning system.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
		New, reviewed		Structure and						
Continue outdoor siren routine maintenance program	2025	in 2025		Infrastructure Projects	Medium	Ongoing	Medium	Emergency Mgt.	Low	Sheriff Office Budget
		New, reviewed		Education and						
Subscibe to a Mass Notification System	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	BRIC, HMGP
Floods										
Discourage new development in floodplains and flood-prone areas.										
Adopt ordinances prohibiting residential and commercial development in	0005	New, reviewed		Local Plans and	Marallinas	0	Mariliana	Diameira o Zanina	1	Local Budgeted Funds
flood plains or flood-prone areas.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Planning & Zoning	Low	and Staff Time
Develop or amend comprehensive and/or land use plans to specifically										
address development in flood-prone areas and recommend strategies for		New, reviewed		Local Plans and						Local Budgeted Funds
decreasing the jurisdiction's vulnerability to flooding.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Planning & Zoning	Low	and Staff Time
Levy fees on new residential, commercial and infrastructure development in						0 0				
floodplains or flood-prone areas to finance flood mitigation, preparedness,		New, reviewed		Local Plans and						Local Budgeted Funds
response and recovery actions.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Planning & Zoning	Low	and Staff Time
Enhance public awareness and education efforts related to flooding. Enhance	public awa	reness and educa	ation efforts related to	flooding.						
		New, reviewed		Education and						Local Budgeted Funds
Encourage home owners and businesses to purchase flood insurance.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
		Now regions		Education						Local Budgeted Funds
Develop and chare flood hazard mane and evacuation plane with the public	2025	New, reviewed		Education and	Modium	Ongoing	Modium	Dianning & Zoning	Low	Local Budgeted Funds
Develop and share flood hazard maps and evacuation plans with the public.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Planning & Zoning	Low	and Staff Time
Implement or improve flood warning systems. Determine the need for stream gauges in waterways without flood warning										
2 otto and nood for our our had been in waterways without flood walling		l	1	Local Diana and	1	1	1			Land Dudgeted Founds
systems or additional stream gauges in waterways with flood warning		New, reviewed		Local Plans and						Local Budgeted Funds

into and backup power supplies. 20		I	1		1				$\overline{}$		
Residence from experiments in multiple lipideclicances. 1970 1970 1970 1970 1970 1970 1970 1970	Work with local governments and other stakeholders to share data from		Now rovioused		Local Plans and						Local Budgeted Funds
Server Purples yearness and pepsiagness for savest buddestorm events. Develop public campaigns to promote the importance of having emergency like and backup grower supplies. Develop public campaigns to promote the importance of having emergency like and backup grower supplies. Develop public campaigns to promote the importance of having emergency like and backup grower supplies. Develop public campaigns to promote the importance of having emergency like and backup grower supplies. Develop public campaigns to promote the importance of having emergency like and backup grower supplies. Develop and soft firm and growing supplies and adopt thundentorm. Position of the public pu		2025	-			Medium	Ongoing	Medium	Planning & Zoning	Low	•
Develop public campages to promote the importance of having energency life. Size of the programs of the importance of having energency 2022 in 2025 and 2025		2020	111 2020		ricgulations	riculani	Oligoling	riculani	r tarring & Zoring	LOW	and otan nine
Develop public campages to promote the importance of having emergency 2025 in 2025 Awareness Programs Awaren											
International power supplies. 2025 In 2025 A warreness Programs Medium Organia, Medium Changency Mgt. Low and Staff Time Enterourage businesses to assess wider-polities and adopt thurdersoon 1025 In 2025 A warreness Programs Medium Organia, Medium Changency Mgt. Low and Staff Time Enterourage businesses to assess wider-polities and adopt thurdersoon 1025 In 2025 A warreness Programs Medium Organia, Medium Changency Mgt. Low and Staff Time Enterourage Communication and emergency systems for municipal to 1025 In 2025 In 2025 New York Programs Medium Organia, Medium Organia, Medium Read and Bridge Low and Staff Time Enterourage Communication and emergency systems for municipal to 1025 New, reviewed 1025 New, reviewed 1025 New York Programs Medium Organia, Medium Organia, Medium Read and Bridge Low and Staff Time Enterourage Communication and Enterourage Communication and England England Enterourage Communication and England Enterourage Communication and England Enterourage Communication and England Enterour											
Find publishesses to assess wither mailtitles and adopt thunderstorm 20 New, reviewed Awareness Programs Medium Ongoing	Develop public campaigns to promote the importance of having emergency		New, reviewed		Education and						Local Budgeted Funds
midgation measures. The result in minimate of measures and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and preserves white resulting response to the first plant of the management of the manage	kits and backup power supplies.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
midgation measures. The result in minimate of measures and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and emergency response capabilities our preserves the management of municipal communication and preserves white resulting response to the first plant of the management of the manage											
Regularly test, monitor, and maintain backup power systems for municipal consumerations and emergency response capabilities quire governor to municipal 2025 New, reviewed part of the par	Encourage businesses to assess vulnerabilities and adopt thunderstorm		New, reviewed		Education and						Local Budgeted Funds
Regularly test, monitor, and maintain backup power systems for municipal for library steeps and staff but within the wather perspersed spaces guides, including glob water and sufficient wather including show, i.e., and externed colf. Develop and distribute winter weather proparedness guides, including glob water and sufficient water weather proparedness guides, including glob water and sufficient water w	mitigation measures.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
reclaimes with revealment received in 2025 in	Ensure uninterrupted communication and emergency response capabilities of	during sever	e thunderstorms.								
reclaimes with revealment received in 2025 in											
Steere Winter Westher Enhance city readiness for severe winter weather, including snow, ice, and extreme cold. Develop and distribute winter weather preparedness guides, including stips for home hearing, whiche sarkey, and preventing frostable. 2025 In 2025 In 2025 Regulations New, reviewed Establish partnerships with local business to provide warming centers during extreme rold weather. Establish partnerships with local business to provide warming centes during extreme rold were weather. Establish partnerships with local business to provide warming centes during 2025 In 2025 Awareness Programs Sustain the operation of municipal services, including snow removal and emergency response, during severe winter weather. Energency Mgt. Local Budgeted Funds and Staff Time Local	Regularly test, monitor, and maintain backup power systems for municipal		New, reviewed		Local Plans and						Local Budgeted Funds
Develop and distribute wither weather preparedness guides, including sprow, i.e., and extreme cold. Develop and distribute wither weather preparedness guides, including tips 2025 In 2025 New, reviewed in 2025 New, revi	facilities.	2025	in 2025		Regulations	Medium	Ongoing	Medium	Road and Bridge	Low	and Staff Time
Develop and distribute winter weather preparedness guides, including tips for home heating, whicle safety, and preventing frostbite. Develop and distribute winter weather preparedness guides, including tips for home heating, whicle safety, and preventing frostbite.	Severe Winter Weather										
for home heating, vehicle selfety, and preventing rostbine. 2025 in 2025 New, reviewed retaining selfets with the operation of municipal services, including prods, to minimize disruptions. 2025 in 2025 i	Enhance city readiness for severe winter weather, including snow, ice, and ex	treme cold.									
for home heating, vehicle selfety, and preventing rostbine. 2025 in 2025 New, reviewed retaining selfets with the operation of municipal services, including prods, to minimize disruptions. 2025 in 2025 i											
Partner with community stakeholders to identify heated public, private, and nonprofit facilities that can be used as "emergencywarming shelters" during extremen cold events. Sustain the operation of municipal services, including snow removal and emergency response, during severe winter weather. Regularly test, monitor, and maintain backup power systems for municipal activities. New, reviewed lactivities. New, reviewed in 2025 Regulations New, reviewed in 2025 Regulations New, reviewed in 2025 Regulations New, reviewed lactivities. Coordinate with the school district to ensure continuity of operations during winter storms. Coordinate with the school district to ensure continuity of operations during winter storms. Local Plans and Regulations New, reviewed lactivities. New, reviewed lactivities Regulations New, reviewed latities Reg	Develop and distribute winter weather preparedness guides, including tips				Local Plans and						-
Establish partnerships with local business to provide warming centers during extremen cold events. 2025 In 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Sustain the operation of municipal services, including snow removal and emergency response, during severe winter weather. Regularly test, monitor, and maintain backup power systems for municipal tacilities. New, reviewed In 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Conduct regular maintenance and upgrades to critical infrastructure, including roads, to minimize disruptions. New, reviewed Local Plans and Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Coordinate with the school district to ensure continuity of operations during winter storms. 2025 In 2025 Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Extreme Temperature Protect vulnerable populations from extreme heat impacts. 1021 In 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Emergency Mgt. Low and Staff Time Coordinate with the seminary of the Emergency Mgt. Low and Staff Time Coordinate with the seminary of the Emergency Mgt. Low and Staff Time Coordinate with the seminary of the Emergency Mgt. Low and Staff Time Coordinate with Develop heat awareness campaigns, focusing on hydration, recognizing heartest of the Emergency Mgt. Low and Staff Time Coordinate with Develop heat awareness campaigns, focusing on hydration, recognizing heartest of the Emergency Mgt. Low and Staff Time Coordinate with Develop heat awareness and cooling strategies. New, reviewed Education and Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Indicators and Staff Time Indicators and	for home heating, vehicle safety, and preventing frostbite.								Emergency Mgt.	Low	and Staff Time
Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Sustain the operation of municipal services, including snow removal and emergency responses, during severe winter weather. New, reviewed including roads, to minimize disruptions. Coordinate with the school district to ensure continuity of operations during winter storms. Protect Vulnerable populations for extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed in 2025	Partner with community stakeholders to identify heated public, private, and n	onprofit fac	ilities that can be	used as "emergency v	varming shelters" during	extreme cold	and severe winte	er weather.			
Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Sustain the operation of municipal services, including snow removal and emergency responses, during severe winter weather. New, reviewed including roads, to minimize disruptions. Coordinate with the school district to ensure continuity of operations during winter storms. Protect Vulnerable populations for extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed in 2025											
Sustain the operation of municipal services, including snow removal and emergency response, during severe winter weather. Regularly test, monitor, and maintain backup power systems for municipal facilities. New, reviewed facilities. New, reviewed in 2025 New, reviewed in											•
Regularly test, monitor, and maintain backup power systems for municipal facilities. New, reviewed fa					Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
facilities. 2025 in 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Conduct regular maintenance and upgrades to critical infrastructure, including roads, to minimize disruptions. 2025 In 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Coordinate with the school district to ensure continuity of operations during winter storms. 2025 In 2025 Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Extreme Temperature Protect vulnerable populations from extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed in 2025 Structure and Infrastructure Projects Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation Regulations New, reviewed Reduction and Regulations Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time	Sustain the operation of municipal services, including snow removal and eme	ergency resp	oonse, during seve	re winter weather.		T	1				
facilities. 2025 in 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Conduct regular maintenance and upgrades to critical infrastructure, including roads, to minimize disruptions. 2025 In 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Coordinate with the school district to ensure continuity of operations during winter storms. 2025 In 2025 Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Extreme Temperature Protect vulnerable populations from extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed in 2025 Structure and Infrastructure Projects Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time Education and Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation Regulations New, reviewed Reduction and Regulations Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds and Staff Time	Degularly test, manifer, and maintain backup negreconstants for municipal		Now reviewed		Local Diana and						Local Dudgated Funda
Conduct regular maintenance and upgrades to critical infrastructure, including roads, to minimize disruptions. New, reviewed in 2025 Ne		2025				Modium	Ongoing	Modium	Dood and Pridge	Law	-
Including roads, to minimize disruptions. 2025 in 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Local Plans and Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Local Budgeted Funds Advance Service Servi	lacinnes.	2025	111 2025		negulations	Medium	Oligoling	Medium	Nodu dilu biluge	LOW	allu Stall fillle
Including roads, to minimize disruptions. 2025 in 2025 Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Local Plans and Regulations Medium Ongoing Medium Road and Bridge Low and Staff Time Local Budgeted Funds Advance Service Servi	Conduct regular maintenance and ungrades to critical infrastructure		New reviewed		Local Plans and						Local Rudgeted Funds
Coordinate with the school district to ensure continuity of operations during winter storms. New, reviewed winter storms 2025 in		2025				Medium	Ongoing	Medium	Road and Bridge	Low	_
winter storms. 2025 in 2025 in 2025 Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time	inictualing rounds, to minimize disruptions.	2023	111 2020		подачанопо	riculani	Oligoliig	ricularii	rtoda ana briage	LOW	and Stair Time
winter storms. 2025 in 2025 in 2025 Regulations Medium Ongoing Medium Emergency Mgt. Low and Staff Time	Coordinate with the school district to ensure continuity of operations during		New reviewed		Local Plans and						Local Budgeted Funds
Extreme Temperature Protect vulnerable populations from extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. Develop heat awareness campaigns, focusing on hydration, recognizing heat-related illnesses, and cooling strategies. Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydrations. New, reviewed in 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds Advance Frograms Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Local Budgeted Funds Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time		2025				Medium	Ongoing	Medium	Emergency Mgt.	Low	-
Protect vulnerable populations from extreme heat impacts. Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed and partnering organizations. New, reviewed in 2025 New, reviewed and partnering organizations. New, reviewed in 2025 New									g,g		
Identify and publicize locations for cooling centers, including city facilities and partnering organizations. New, reviewed in 2025 New											
and partnering organizations. 2025 in 2025 Infrastructure Projects Medium Ongoing Medium Emergency Mgt. Low and Staff Time Develop heat awareness campaigns, focusing on hydration, recognizing heat- related illnesses, and cooling strategies. New, reviewed in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. 2025 in 2025 Education and Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time											
and partnering organizations. 2025 in 2025 Infrastructure Projects Medium Ongoing Medium Emergency Mgt. Low and Staff Time Develop heat awareness campaigns, focusing on hydration, recognizing heat- related illnesses, and cooling strategies. New, reviewed in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time	Identify and publicize locations for cooling centers, including city facilities		New, reviewed		Structure and						Local Budgeted Funds
related illnesses, and cooling strategies. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time	and partnering organizations.	2025	in 2025		Infrastructure Projects	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
related illnesses, and cooling strategies. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time											
Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. New, reviewed in 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time	Develop heat awareness campaigns, focusing on hydration, recognizing heat	4	New, reviewed		Education and						Local Budgeted Funds
Collaborate with businesses and schools to establish heat mitigation measures, such as shaded areas and hydration stations. New, reviewed in 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time	related illnesses, and cooling strategies.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
measures, such as shaded areas and hydration stations. 2025 in 2025 Awareness Programs Medium Ongoing Medium Emergency Mgt. Low and Staff Time							_				
	Collaborate with businesses and schools to establish heat mitigation		New, reviewed		Education and						Local Budgeted Funds
Ensure city services and cooling options remain accessible during prolonged extreme heat events.	measures, such as shaded areas and hydration stations.	2025	in 2025		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
	Ensure city services and cooling options remain accessible during prolonged	extreme he	at events.								

Regularly test, monitor, and maintain backup power systems for municipal facilities.	2025	New, reviewed	Local Plans and Regulations	Medium	Ongoing	Medium	Road and Bridge		Local Budgeted Funds
addition of the state of the st	2020		riogatations	- roundin	0.180.118		rioda dira Briage	2011	and otan inite
Integrate heat mitigation strategies into city-wide continuity and emergency		New, reviewed	Local Plans and						Local Budgeted Funds
operations plans.	2025	in 2025	Regulations	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time

2025 Excelsior Springs Mitigation Strategy										
Mitization Coale and Astion Stans	Dian Va av	Status of	Status Fundamentian	Type of Mitigation	Delovito	Date of Commission	Cost/Benefit Review	Primary Agency Responsible for Implementation/	Estimate of	Funding Course
Mitigation Goals and Action Steps Tornadoes	Plan Year	Project	Status Explanation	Activity	Priority	Date of Completion	Review	Administration	Cost (\$)	Funding Source
Encourage building practices and the use of materials that reduce	o the damaging	offocts of torna	doos							
Adopt current edition of a model building code to address	e tile uamaging i		uoes.	l						Local Budgeted
structural and architectural issues related to tornadoes and high				Local Plans and						Funds and Staff
wind events.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	building code official	Low	Time
wind events.	2010	Oligoling	Lack of fesources	negutations	rieululli	Oligoling	Mediaiii	building code official	LOW	Time
Require the use of tempered or shatter-resistant glass in the										Local Budgeted
windows of new public/private facilities where large numbers of				Local Plans and						Funds and Staff
people may congregate. Retrofit existing facilities.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	building code official	Low	Time
Review and enhance (if necessary) regulations related to design	2010	Oligoling	Lack of resources	riegutations	riedidili	Oligoling	riedidili	building code official	LOW	Local Budgeted
and installation of architectural features on buildings to minimize				Local Plans and						Funds and Staff
the creation of windborne debris.	2010	Ongoing	Look of recourses	Regulations	Modium	Ongoing	Medium	building and afficial	Low	Time
the creation of windborne debris.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	building code official	Low	Time
Work w/ trade orgs to inform builders/ developers of construction				Education and						Local Budgeted
										Funds and Staff
techniques and materials that may minimize tornado/ high wind	2010	Ongoing	Look of room uroon	Awareness	Madium	Ongoing	Madium	building and afficial	Low	
damage to residential/ commercial structures.		Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	building code official	Low	Time
Encourage construction of community tornado shelters in office	complexes, facto	ories, apt comp	lexes, schools mobil	e nome parks, stadit	ims, and other ta	rge population congre	egation centers.		l .	Local Dudgatad
Consider adopting ordinances or regs requiring the construction				Local Diana and						Local Budgeted Funds and Staff
of tornado shelters in new buildings where people live, work or	0010	0		Local Plans and	M = ali	0	Mandiage		1	
congregate.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	planning; public works	Low	Time
Encourage construction of community tornado shelters in office				Education and						
complexes, factories, apt complexes, schools mobile home				Education and						
parks, stadiums, and other large population congregation	2222		Identified for new	Awareness		0			111.4	LIMOR BRIG
centers.	2020	Ongoing	plan	Programs	Medium	Ongoing	Medium	planning; public works	High	HMGP, BRIC
Offer residential/ commercial builders/developers tax incentives										Local Budgeted
to construct safe rooms/community shelters in new public				Local Plans and						Funds and Staff
facilities.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	planning; public works	Low	Time
				Education and						Local Budgeted
Work with chambers of commerce, school districts,				Awareness						Funds and Staff
corporations, etc. to promote benefits of safe rooms.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
Encourage electric and telecommunications utilities to protect t	heir existing infra	astructure from	the effects of tornad	oes and high winds.	T T	1	1			l
			L							Local Budgeted
Offer financial or other incentives to utility providers to replace			This is an ongoing	Local Plans and			1			Funds and Staff
existing above-ground utility lines with underground utility lines.	2010	Ongoing	process.	Regulations	Medium	Ongoing	Medium	public works	Low	Time
Ensure public facilities have shelters to accommodate staff and	visitors during to	rnadoes/natura	al hazards.	<u> </u>	1		1		T	I
				Structure and						Local Budgeted
Assess existing facilities for shelter suitability. Mark clearly and				Infrastructure						Funds and Staff
inform visitors/employees of locations.	2010	Ongoing	Lack of resources	Projects	Medium	Ongoing	Medium	public works	Low	Time
										Local Budgeted
Consider adopting policies requiring incorporation of safe				Local Plans and						Funds and Staff
rooms/shelters in new public facility construction.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	public works	Low	Time

Retrofit or add shelters to existing public facilities with				Structure and	1					
inadequate protection from tornadoes and high wind including				Infrastructure						
	2010	Ongoing	Lack of resources		Modium	Ongoing	Modium	public works	Lligh	HMGP, BRIC
Hall of Waters and schools in the city.		Ongoing	Lack of resources	Projects	Medium	Ongoing	Medium	public works	High	nMGP, BNIC
Increase public awareness and understanding the benefits of "s	aie rooms.	1	<u> </u>	Teducation and	<u> </u>	T	<u> </u>	I	1	I a a al Dividenta d
				Education and						Local Budgeted
				Awareness						Funds and Staff
Develop, distribute informational materials on safe rooms.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
Increase public Education/ Awareness and Readiness for Torna	does and Severe T	hunderstorms			1	1				
			Needs to be				Low cost			
			completed with ever	Education and			mechanism to			Local Budgeted
			changing city	Awareness			increase public			Funds and Staff
Host a mock drill with all city officials.	2015	Ongoing	officials.	Programs	High	Ongoing	safety.	emergency management	Low	Time
			Resources for this							
			event is limited,				Low cost			
			minor ongoing	Education and			mechanism to			Local Budgeted
			education	Awareness			increase public			Funds and Staff
Host a public education event.	2015	Ongoing			Medium	2+ voors	*	omordonov manadomont	Low	Time
	2015	Ongoing	continues.	Programs	Medium	2+ years	safety.	emergency management	Low	Tillle
Floods		_								
Develop plans and adopt policies to address sound stormwater	and flooding chal	lenges			<u> </u>	<u> </u>		1	<u> </u>	
Mitigation Action: Adopt new stormwater engineering design		Participating								
and management standards and stream setback		in review of	Metro KC APWA							
		draft	Section is working							
development standards to reduce the risk of stream and		standards	with consultants to							Local Budgeted
flash flooding		under	complete the new	Local Plans and						Funds and Staff
	2025	development	standards in 2025	Regulations	High	12/31/2026	no costs identified	City Council	Low	Time
Discourage new development in floodplains and flood-prone are						-				<u> </u>
			Part of city's					1		
**Continue to implement city regulations as participation in the			planning and zoning	Local Plans and			part of city			
federal flood insurance program.	2020	Ongoing	process.	Regulations	High	Ongoing	operation	floodplain manager	Low	general revenue
		Oligoling	process.	negulations	liligii	Ongoing	operation	noouptaiii iiiaiiagei	LOW	generatievenue
Enhance public awareness and education efforts related to floo	unig.	<u> </u>	<u> </u>	<u> </u>	1		<u> </u>	1		
Obtain hereboure and related as 10° 0° 0° 0° 0°										
Obtain brochures and related publications on flood mitigation,										
preparedness, response and recovery from FEMA, SEMA, the				Education and						Local Budgeted
American Red Cross and other organizations and provide them to				Awareness						Funds and Staff
home owners and businesses in flood-prone areas.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
Partner with emergency services, public health, human services										
organizations, appropriate state and federal agencies and the				Education and						Local Budgeted
business community to conduct special public education				Awareness						Funds and Staff
events, such as a Flood Mitigation and Preparedness Workshop.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
Examine repetitive flood loss properties in each county and det				3		199			120	
repetitive iteed toos properties in each county and uet	isasibie ai	practicut IIII		Structure and	1					Local Budgeted
**Identify notantial funding appartunities to implement										_
**Identify potential funding opportunities to implement mitigation options for repetitive flood loss properties.	2010	Ongoing	Lack of resources	Infrastructure Projects	Medium	Ongoing	Medium	floodplain manager	Low	Funds and Staff Time

**With stakeholders, explore incentive options to encourage				Structure and						Local Budgeted
property owners to take action to prevent or reduce future flood				Infrastructure						Funds and Staff
losses	2010	Ongoing	Lack of resources	Projects	Medium	Ongoing	Medium	floodplain manager	Low	Time
**Work with owners of repetitive flood loss properties to identify	2010	0.180.118	2401 01 1000 41000			5.1.85.11.8	- roundin	noo aptam manager	2011	
feasible mitigation strategies and potential opportunities;				Structure and						Local Budgeted
determine property owners' interest in specific mitigation				Infrastructure						Funds and Staff
options.	2010	Ongoing	Lack of resources	Projects	Medium	Ongoing	Medium	floodplain manager	Low	Time
Implement or improve flood warning systems.		1	1	1	1	1 - 1 - 1 - 1		The september of the se	1-4	
Determine the need for stream gauges in waterways without				Structure and						Local Budgeted
flood warning systems or additional stream gauges in waterways				Infrastructure						Funds and Staff
with flood warning systems already in-place.	2010	Completed		Projects	Medium	Completed	Medium	emergency management	Low	Time
Develop and implement procedures to quickly analyze and		·		Education and		·		9 , 9		Local Budgeted
disseminate information from flood warning systems to the				Awareness						Funds and Staff
public.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
				<u> </u>	1			<u> </u>		Local Budgeted
Work with local governments and other stakeholders to share				Local Plans and						Funds and Staff
data from flood warning systems in multiple jurisdictions.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	floodplain manager	Low	Time
Improve flood hazard assessments and flood mapping.		1 0 0		1 .0.		1 0 0				
**Obtain parcel data (assessed valuation and other information)										Local Budgeted
for flood boundary areas and enhance vulnerability assessments				Local Plans and						Funds and Staff
for these areas.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	planning, public works	Low	Time
**Partner with FEMA in the Cooperating Technical Partners (CTP)		3 3 3				0.0		37174		Local Budgeted
Program to increase local involvement in, and ownership of, the				Local Plans and						Funds and Staff
flood mapping process.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	planning, public works	Low	Time
11 51		0 0				0 0				Local Budgeted
Purchase HAZUS-Flood software from FEMA, possibly in				Local Plans and						Funds and Staff
conjunction with other local or regional stakeholders.	2010	Deferred	Lack of resources	Regulations	Medium	Ongoing	Medium	emergency management	Low	Time
Integrate flood mitigation strategies with projects and activities	designed to (1) n			_	ant and/or (2) or		nnortunities for the			
0 0 1 7	ucoignicu (U (1) D	rotect, restore	or enhance ecosyste	ms and the environn	ienii anu/oi (2) ci	eate recreational or	pportunities for the	Community.		
Develop partnerships between regional emergency	acoigned to (1) p	rotect, restore	or enhance ecosyste	ms and the environn	lent and/or (2) cr	eate recreational op	pportunities for the	community.		
	acaigned to (1) p	rotect, restore	or enhance ecosyste	ms and the environn	lent and/or (2) cr	eate recreational op	pportunities for the	community.		
Develop partnerships between regional emergency management, floodplain management and environmental groups to educate one another and the public of the benefits of	acoigned to (1) p	rotect, restore	or enhance ecosyste	ms and the environn	lent and/or (2) Cr	eate recreational op	pportunities for the	community.		Local Budgeted
management, floodplain management and environmental	<u>чезівней го (т) р</u>	rotect, restore	or enhance ecosyste	ms and the environn Local Plans and		eate recreational op	pportunities for the	community.		Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of	2010		Lack of resources		Medium		Medium		Low	
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that		Ongoing		Local Plans and		Ongoing		emergency management	Low	Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that				Local Plans and Regulations					Low	Funds and Staff Time
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed.				Local Plans and Regulations Structure and				emergency management	Low	Funds and Staff Time Local Budgeted
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land	2010	Ongoing Ongoing	Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects	Medium Medium	Ongoing Ongoing	Medium	emergency management public works, parks and		Funds and Staff Time Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses.	2010	Ongoing Ongoing	Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects	Medium Medium	Ongoing Ongoing	Medium	emergency management public works, parks and		Funds and Staff Time Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses.	2010	Ongoing Ongoing	Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re	Medium Medium	Ongoing Ongoing	Medium	emergency management public works, parks and		Funds and Staff Time Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commet	2010	Ongoing Ongoing	Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re	Medium Medium	Ongoing Ongoing	Medium	emergency management public works, parks and		Funds and Staff Time Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commental was funding allows, repetitive flood loss properties and	2010 2010 rcial property in f	Ongoing Ongoing lood-prone are	Lack of resources Lack of resources as through structural	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re Structure and Infrastructure	Medium Medium trofits or remova	Ongoing Ongoing L of property.	Medium Medium	emergency management public works, parks and recreation	Low	Funds and Staff Time Local Budgeted Funds and Staff Time
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commental commen	2010 2010 rcial property in f	Ongoing Ongoing lood-prone are	Lack of resources Lack of resources as through structural	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re Structure and Infrastructure Projects	Medium Medium trofits or remova	Ongoing Ongoing L of property.	Medium Medium	emergency management public works, parks and recreation	Low	Funds and Staff Time Local Budgeted Funds and Staff Time BRIC, HMGP, FMA
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commental commental and structures will be targeted for buyout. **Elevate public facilities in flood-prone areas. Encourage home	2010 2010 rcial property in f	Ongoing Ongoing lood-prone are. Ongoing	Lack of resources Lack of resources as through structural Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re Structure and Infrastructure Projects Structure and Infrastructure	Medium Medium trofits or remova Medium	Ongoing Ongoing Lof property. Ongoing	Medium Medium	emergency management public works, parks and recreation floodplain manager	Low	Funds and Staff Time Local Budgeted Funds and Staff Time BRIC, HMGP, FMA Local Budgeted
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commentals allows, repetitive flood loss properties and structures will be targeted for buyout.	2010 2010 rcial property in f	Ongoing Ongoing lood-prone are	Lack of resources Lack of resources as through structural	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re Structure and Infrastructure Projects Structure and	Medium Medium trofits or remova	Ongoing Ongoing L of property.	Medium Medium Medium	emergency management public works, parks and recreation	Low	Funds and Staff Time Local Budgeted Funds and Staff Time BRIC, HMGP, FMA Local Budgeted Funds and Staff
management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses. Reduce flood-related damage to public, residential and commental commental and structures will be targeted for buyout. **Elevate public facilities in flood-prone areas. Encourage home owners and businesses to elevate their structures.	2010 2010 rcial property in f	Ongoing Ongoing lood-prone are. Ongoing	Lack of resources Lack of resources as through structural Lack of resources	Local Plans and Regulations Structure and Infrastructure Projects and nonstructural re Structure and Infrastructure Projects Structure and Infrastructure Projects	Medium Medium trofits or remova Medium	Ongoing Ongoing Lof property. Ongoing	Medium Medium Medium	emergency management public works, parks and recreation floodplain manager	Low	Funds and Staff Time Local Budgeted Funds and Staff Time BRIC, HMGP, FMA Local Budgeted Funds and Staff Time

**Encourage utility providers to assess their facilities,				Education and						Local Budgeted
distribution systems, etc. for vulnerability to flooding and, if				Awareness						Funds and Staff
necessary, retrofit or modify them to decrease vulnerability.	2010	Completed		Programs	Medium	Completed	Medium	emergency management	Low	Time
**Encourage water and wastewater districts to elevate										
vulnerable equipment, electrical controls and other equipment				Education and						Local Budgeted
at wastewater treatment plants, potable water treatment plants				Awareness						Funds and Staff
and pumping stations.	2010	Completed		Programs	Medium	Completed	Medium	emergency management	Low	Time
		<u> </u>								Local Budgeted
**Identify incentives to offer home owners and businesses to				Local Plans and						Funds and Staff
remove or retrofit their structures in flood-prone areas.	2010	Ongoing	Lack of resources	Regulations	Medium	Ongoing	Medium	floodplain manager	Low	Time
Reduce flood risk to city.										
Consider the construction of detention basins, small lakes and										
greenways or riparian corridors in areas of new development to				Structure and						
channel and catch storm water, thereby reducing the likelihood				Infrastructure						
of flooding.	2010	Completed		Projects	Medium	Completed	Medium	emergency management	High	BRIC, HMGP, FMA
		,								
Develop partnerships between regional emergency										
management, floodplain management and environmental										
groups to educate one another and the public of the benefits of				Education and						Local Budgeted
collaboration and identify specific programs and activities that				Awareness						Funds and Staff
can be developed and implemented.	2010	Ongoing	Lack of resources	Programs	Medium	Ongoing	Medium	emergency management	Low	Time
our so de tete ped una implemente di	2010	0.180.118	Zuck or recourses	Structure and		0.180.118	110414111	cineigeney management	2011	Local Budgeted
Identify funding sources for the acquisition of flood-prone land				Infrastructure				public works, parks and		Funds and Staff
for environmental, recreational and flood mitigation uses.	2010	Ongoing	Lack of resources	Projects	Medium	Ongoing	Medium	recreation	Low	Time
In concert with existing comprehensive and land use plans,	2010	0.180.118	Zuck or recourses	Structure and		0.180.118	110414111	Tool outlon	2011	Local Budgeted
develop a strategy for acquiring flood-prone property for use as				Infrastructure						Funds and Staff
open space or park land.	2010	Completed		Projects	Medium	Completed	Medium	emergency management	Low	Time
Participate in, and ensure compliance with, flood mitigation and			ns.	1	1	1	1			
and pare in, and one of our parents on in, need in inguity										Local Budgeted
**Obtain the latest copies of flood insurance rate maps (FIRMs),	İ			Local Plans and						Funds and Staff
floodplain maps and similar documents.	2010	Completed		Regulations	Medium	Completed	Medium	emergency management	Low	Time
**Participate in the National Flood Insurance Program (NFIP)	2010	Comptotou		- iogatationio	- rounam	Comptotou	110414111	emergene) management	2011	Local Budgeted
and consider participation in the Community Rating System				Local Plans and						Funds and Staff
(CRS).	2025	Ongoing		Regulations	Medium	Ongoing	Medium	emergency management	Low	Time
Dam Failures	2020	Cilgoling		Hogatations	riculani	Oligonia	riculum	emergency management	LOW	Time
Enhance public awareness of the hazards associated with dam	failures as well a	s mitigation and	I nrenaredness activ	ities				•	•	
Zimanoo passis awareness of the nazaras associated with dain	untares, as well as	- Intigation and	propurounoss activ		1		Low cost			
Identify area at risk for Crystal Lakes to provide updates as to	l			Education and			mechanism to			Local Budgeted
condition of dam and ensure residents at risk have evacuation	l	1		Awareness			increase public			Funds and Staff
access.	2020	Ongoing	New	Programs	Low	Ongoing	safety.	public works	Low	Time
Extreme Temperatures	2020	Oligonia	IACAA	i rogianis	FOAA	Ongoing	Juicty.	public WOIK3	LUW	THILE
Ensure local government and human service agencies ae aware	of A/C facilities a	cross area that	can he used as shelf	ers in the event of a l	neat wave					
Ensure rocar government and naman service agencies de dware	or Ar o racinities di		cuit be useu as silett	ers in the event of a l	icat wave.		Low cost			
	l	1			1		mechanism to			Local Budgeted
	l	1		Local Plans and			increase public			Funds and Staff
Identify cooling centers in the city.	2020	Ongoing	New	Regulations	Low	Ongoing	safety.	emergency management	Low	Time
racinary cooming centers in the city.	2020	Oligolis	TACAA	riogulations	LOW	Oligoling	Jaicty.	cineigency management	LUW	Tillie

Severe Winter Weather						•				
Increase winter weather response readiness										
										Local Budgeted
				Local Plans and						Funds and Staff
Identify emergency snow routes.	2020	Ongoing	New	Regulations	Medium	Ongoing	Medium	public works	Low	Time
Ensure local government and human service agencies ae aware	of facilities across	s area with bac	kup power or genera	tors that can be used	as shelters in the	e event of severe wint	ter weather			
							Low cost			
							mechanism to			Local Budgeted
				Local Plans and			increase public			Funds and Staff
Identify potential sites for emergency shelters.	2020	Ongoing	New	Regulations	Low	Ongoing	safety.	emergency management	Low	Time

2025 Gladstone Mitigation Strategy	1							Primary Agency	I	T
								Responsible for		
				Type of Mitigation		Date of		· ·	Estimate of Cost	Funding
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Cost/Benefit Review	Administration	(\$)	Source
Tornadoes										
Encourage building practices and the use of ma	terials that reduc	e the damaging effe	cts of tornadoes.	l		I	T		T	
Work w/ trade orgs to inform builders/										Local
developers of construction techniques and										Budgeted
materials that may minimize tornado/ high wind							Low/no cost mechanism to	Planning, building		Funds and
damage to residential/ commercial structures.	2024	Ongoing		Bldg Code Update	Medium	Ongoing	increase public safety.	codes	Low	Staff Time
Encourage construction of community tornado	shelters in office	complexes, factorio	es, apt complexes, sch	ools mobile home parks	, stadiums, and	d other large pop	ulation congregation center	rs.		
										Local
Consider adopting ordinances or regs requiring										Budgeted
the construction of tornado shelters in new							Low/no cost mechanism to			Funds and
buildings where people live, work or congregate.	2024	Ongoing		Bldg Code Update	Medium	Ongoing	increase public safety.	codes	Low	Staff Time
							Tax incentives could defray			
Offer residential/ commercial							otherwise high costs for			Local
builders/developers tax incentives to construct							developing safe rooms and			Budgeted
safe rooms/community shelters in new public				Local Plans and			· -	planning, building		Funds and
•	2024	Ongoing	Case by Case	Regulations	Medium	Ongoing	acceptance.		Low	Staff Time
Ensure public facilities have shelters to accomi	nodate staff and	visitors during torna	does/natural hazards.	, ,		, , ,				_
										Local
Retrofit or add shelters to existing public										Budgeted
facilities with inadequate protection from			Fire Station 2	Structure and			City bldgs being retrofit as	Planning, building	\$25,000 per	Funds and
tornadoes and high wind.	2023	Ongoing	completed 2023	Infrastructure Projects	Medium	Ongoing	renovations occur	codes	structure	Staff Time
Provide more public information on preparing fo	or a disaster.	1	T			1	T		ı	
										Local
							l. ,			Budgeted
Dublic Education and EOD undates	2024	Ongoing		Education and	l liorla	Ongoing	Low/no cost mechanism to	,	1 0.00	Funds and
Public Education and EOP updates	2024	Ongoing	,	Awareness Programs	High	Ongoing	increase public safety.	Management Agency	LOW	Staff Time
Floods										

				I				1	1	
			Metro KC APWA							
Mitigation Action: Adopt new stormwater			Section is working with							
engineering design and management			consultants to							
standards and stream setback development			complete the new							Local
standards and stream setback development			standards in 2025;							Budgeted
flash flooding			Participating in review							Funds and
itasii itoodiiig			of draft standards	Local Plans and						Staff Time;
	2025	New	under development	Regulations	High	12/31/2026	no costs identified	City Council	Low	HMGP, BRIC
Examine repetitive flood loss properties in each	•	<u> </u>	•		i iigii	12/31/2020	no costs identined	Oity Councit	LOW	TH-TOT, BING
Examine repetitive freeze tode properties in each		Thin to rousing to unu								$\overline{}$
			Identify repetitive							
As funding allows, repetitive flood loss			flood loss properties							
properties and structures will be targeted for			and determine buyout	Structure and						
buyout.	2025	New	opportunities.	Infrastructure Projects	Medium	Ongoing	no costs identified	City Council	High	HMGP, BRIC
·				,		5 5		,		Local
With stakeholders, explore incentive options to							No/ or low cost to			Budgeted
encourage property owners to take action to				Education and			implement and require			Funds and
prevent or reduce future flood losses	2010	Ongoing		Awareness Programs	Medium	Ongoing	little staff support.	floodplain manager	Low	Staff Time
Improve flood hazard assessments and flood m	apping.			, and the second						
Obtain parcel data (assessed valuation and										Local
other information) for flood boundary areas and										Budgeted
enhance vulnerability assessments for these				Local Plans and						Funds and
areas.	2024	Ongoing		Regulations	Medium	Ongoing	Medium	floodplain manager	Low	Staff Time
Participate in, and ensure compliance with, floo	od mitigation and	floodplain manage	ment programs.							_
										Local
Obtain the latest copies of flood insurance rate										Budgeted
maps (FIRMs), floodplain maps and similar				Local Plans and						Funds and
documents.	2024	Ongoing		Regulations	Medium	Ongoing	Medium	floodplain manager	Low	Staff Time
Reduce flood-related damage to public, resider	ntial and commer	cial property in floo	d-prone areas through s	tructural and nonstruc	tural retrofits o	r removal of pro	perty.	<u> </u>	T	
As funding allows, repetitive flood loss										
properties and structures will be targeted for				Structure and						
buyout.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	floodplain manager	High	HMGP, BRIC
Elevate public facilities in flood-prone areas.										
Encourage home owners and businesses to				Structure and						
elevate their structures.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	floodplain manager	High	HMGP, BRIC
Encourage utility was indepented access the size										
Encourage utility providers to assess their										Local
facilities, distribution systems, etc. for				Education						Budgeted
vulnerability to flooding and, if necessary, retrofit		Ongoing		Education and	Modium	Ongoing	Modium	floodplain manager	Low	Funds and
or modify them to decrease vulnerability.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	floodplain manager	Low	Staff Time

Identify incentives to offer home owners and businesses to remove or retrofit their structures in flood-prone areas. Severe Thunderstorms Increase public disaster preparedness.		Ongoing	Local Plans and Regulations	Medium	Ongoing	Medium	floodplain manager	Low	Local Budgeted Funds and Staff Time
									Local
									Budgeted
Provide Public Education materials and EOP			Education and			Low cost mechanism to	emergency		Funds and
updates	2024	Ongoing	Awareness Programs	High	Ongoing	increase public safety.	management	Low	Staff Time

2025 Kearney Mitigation Strategy										
Mitigation Cools and Astion Stone	Blon Voor	Status of Divisions	Status Evalenation	Type of Mitigation	Delovity	Date of	Cost/Benefit	Primary Agency Responsible for Implementation/	Estimate of Cost	Funding Source
Mitigation Goals and Action Steps Tornadoes	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	Administration	(\$)	Funding Source
Encourage building practices and the use of materia	als that roduce the d	amaging offocts of t	ornadoos							
Efficultage building practices and the use of materia	ats that reduce the u	amaging enects of the	l l		l				T	
Require the use of tempered or shatter-resistant			The City follows the 2012 IRC				While may increase			
glass in the windows of new public/private facilities			and IBC, which has standards	Structure and			building costs, will			Local Budgeted
where large numbers of people may congregate.			for when tempered glass is	Infrastructure			lead to greater			Funds and Staff
Retrofit existing facilities.	2010	Completed	required during construction.	Projects	Low	Completed	occupant safety	Emergency Mgt.	100000	Time
Encourage construction of community tornado she	1	<u> </u>		<u> </u>				z.mergeney r igu	100000	
tornado one								I		
Work with chambers of commerce, school districts,			The City encourages the use of safe rooms/storm shelters with educational material available	Awareness			Low/no cost mechanism to increase public			Local Budgeted Funds and Staff
corporations, etc. to promote benefits of safe rooms.		Completed	online and city hall.	Programs	Low	Completed	safety.	Emergency Mgt.	5000	Time
Ensure public facilities have shelters to accommod	late staff and visitors	during tornadoes/ r	nat. hazards.		ı				T	T
Consider adopting policies requiring incorporation of			The City encourages the use of safe rooms/storm shelters with educational material available online and city hall. New public building construction in the City has only been school							Local Budgeted
safe rooms/shelters in new public facility			district facilities the past 10	Local Plans and				code official,		Funds and Staff
construction.	2010	Ongoing	years.	Regulations	Low	Ongoing	Medium	planning	Low	Time
Improve emergency response to large scale events		G.1.8G.11.8) Journal	riogatationio	12011	0.180.118	. roundin	P.G	12011	
Create a Community Emergency Response Team				Education and Awareness			Increases community involvement and disaster preparedness at			
program	2015	Ongoing		Programs	Low	2025	relatively low cost.	Emergency Mgt	Low	Fire District Budget
Floods	2010	Oligoling		i iogiailis	LUVV	2020	rotativety tow cost.	Lineigency Mgt.	LUW	i ne District buuget
Discourage new development in floodplains and flo	ond-nrone areas									
2.000 and a decomposition in moduplants and no	prono areas.									
**Levy fees on new residential, commercial and infrastructure development in floodplains or flood-			The City requires residential							Local Budgeted
prone areas to finance flood mitigation,			construction to be a minimum	Local Plans and				planning, public		Funds and Staff
preparedness, response and recovery actions.	2010	Ongoing	3' the base flood elevation.	Regulations	Medium	Ongoing	Medium	works	Low	Time
Enhance public awareness and education efforts re		1000		1504.44.15110	1 20.0	10~0	1	151110	1	1

		1	1				1	I	1	1
							Will reduce recovery			
				Education and			costs and ensure			Local Budgeted
Encourage home owners and businesses to purchase			The City's website includes	Awareness			compliance with			Funds and Staff
flood insurance.	2010	Ongoing	flood insurance information		Low	Ongoing	NFIP.	floodalain managar	2000	Time
ntood insurance.	2010	Ongoing	11000 insurance information	Programs	Low	Ongoing	NFIP.	floodplain manager	3000	Time
Obtain brochures and related publications on flood										
mitigation, preparedness, response and recovery										
from FEMA, SEMA, the American Red Cross and other			The City has flood information	Education and						Local Budgeted
organizations and provide them to home owners and			available at City Hall and city	Awareness						Funds and Staff
businesses in flood-prone areas.	2010	Completed	website.	Programs	Medium	Completed	Medium	Emergency Mgt.	Low	Time
Implement or improve flood warning systems.	2010	Completed	Website.	Повішна	riculum	Completed	riculum	Emergency Figt.	LOW	Time
and the state of t										
			Police & Fire monitor problem				Low cost			
Develop and implement procedures to quickly			areas and maintain close				mechanism to			Local Budgeted
analyze and disseminate information from flood			communication during flooding	Local Plans and			increase public			Funds and Staff
warning systems to the public.	2010	Ongoing	events	Regulations	Low	Ongoing	safety.	Emergency Mgt.	3000	Time
The state of the s										
			Police & Fire monitor problem							
Work with local governments and other stakeholders			areas and maintain close	Education and						Local Budgeted
to share data from flood warning systems in multiple			communication during flooding	Awareness						Funds and Staff
jurisdictions.	2010	Ongoing	events	Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Time
Integrate flood mitigation strategies with projects a									1	1
Develop partnerships between regional emergency							Low cost			
management, floodplain management and							mechanism to			
environmental groups to educate one another and							improve floodplain			
the public of the benefits of collaboration and identify	,			Education and			management on			Local Budgeted
specific programs and activities that can be				Awareness			local and regional			Funds and Staff
developed and implemented jointly.	2010	Ongoing		Programs	Low	Ongoing	levels.	Emergency Mgt.	Low	Time
Identify funding sources for the acquisition of flood-		88		Structure and				planning, public		Local Budgeted
prone land for environmental, recreational and flood				Infrastructure				works, parks and		Funds and Staff
mitigation uses.	2010	Ongoing		Projects	Low	Ongoing	Medium	recreation	low	Time
Reduce flood-related damage to public, residential			areas through structural and no				i routum	roor outlier.	1.0	
			The City elevated electrical						1	
			controls at the east side lift							
**Elevate public facilities in flood-prone areas.			station. Sewer plant expansion	Structure and						Local Budgeted
Encourage home owners and businesses to elevate			improvements have been	Infrastructure						Funds and Staff
their structures.	2010	Ongoing	located outside the floodplain.	Projects	Medium	Ongoing	Medium	public works	high	Time
**Encourage water and wastewater districts to			The City elevated electrical							
elevate vulnerable equipment, electrical controls and			controls at the east side lift				While initial cost is			
other equipment at wastewater treatment plants,			station. Sewer plant expansion				high, will reduce			
potable water treatment plants and pumping			improvements have been	Local Plans and			recovery and			water and sewer
stations.	2010	Ongoing	· ·	Regulations	Medium	2025	-	floodplain manager	100000	revenues, grants
1					i .					

Ensure operability of public facilities during severe weather events

			Backup power was installed at							
			the water plant in 2016, and							
			installed at the sewer plant and				Would ensure			
			Jamespoint lift station in 2020.				continuity of			
			Remaining facilities include the	Structure and			government			Local Budgeted
Retrofit existing city faculties with backup power -			east side lift station, water	Infrastructure			operations and			Funds and Staff
city hall, water wells	2015	Ongoing	wells, and city hall.	Projects	High	2025	public services.	public works	300000	Time

2025 Lawson Mitigation Strategy										
				Type of Mitigation		Date of		Primary Agency Responsible for	Estimate of	
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Cost/Benefit Review	Implementation/ Administration	Cost (\$)	Funding Source
Tornadoes										
Create a safe storm shelter for people at p	ublic campgr	ounds and for city l		T	1	1	T	1	1	<u> </u>
Identification and Planning for a storm			Public safety issue has been	Structure and						
shelter at public campgrounds and city			identified but an affordable solution					planning, public works, parks and		
lakes.	2020	Ongoing	has yet to be found.	Projects	High	Ongoing	Medium	recreation	High	HMGP, BRIC
Create a safe storm shelter in the downtow	n district to r	nouse members of			its.	1	<u> </u>			1
Identification and Diamingfor a store			Public safety issue has been	Structure and						
Identification and Planning for a storm	0000	Ongoing	identified but an affordable solution	Infrastructure	11:	0	Ma divers	and the second s	11:	LIMOD DDIO
shelter in the downtown area.	2020	Ongoing	has yet to be found	Projects	High	Ongoing	Medium	emergency management, public works	High	HMGP, BRIC
Create municipal storm shelter plan and p	urcnase requ	irea supplies to no	use evacuees locally.	<u> </u>	1	1	<u> </u>		1	1
			The community safety issue has							Local Budgeted
Identification and Planning to identify storm			been identified but an affordable	Local Plans and						Funds and Staff
	2020	Ongoing	solution has yet to be found.	Regulations	Medium	Ongoing	Medium	emergency management, public works	Low	Time
Develop and implement a continuity of ser					riculani	Oligoling	riculum	emergency management, public works	LOW	Time
Develop and implement a continuity of con-										
			Operational challenges have been							
Identification and Planning for a continuity			identified and are being examined	Local Plans and				city administration, emergency		Municipal
of operations plan following a tornado.	2020	Ongoing	in follow up meetings.	Regulations	Medium	Ongoing	Medium	management	Low	revenues
Floods			,							
Participate in, and ensure compliance with	n, flood mitiga	ation and floodplai	n management programs.							
							Having and maintaining			
							most current FIRM map			
**Obtain the latest copies of flood							editions will allow for most			Local Budgeted
insurance rate maps (FIRMs), floodplain				Local Plans and			accurate review of			Funds and Staff
maps and similar documents.	2020	Ongoing		Regulations	Medium	Ongoing	floodplain management.	floodplain manager	Low	Time
							Will ensure reduced			
							insurance rates for			
**Participate in the National Flood							homeowners and			Local Budgeted
Insurance Program (NFIP) and consider the				Local Plans and	l	L .	businesses while			Funds and Staff
Community Rating System (CRS).	2025	New		Regulations	Medium	Ongoing	controlling recovery costs.	floodplain manager	Low	Time
Execute additional storm water drainage p	lans as listed	In the city's Storm	water Master Plan.	1		1	<u> </u>			1
			Multiple storm drainede preisste	Ctrusture and						Municipal
			Multiple storm drainage projects have been identified and are in	Structure and Infrastructure						Municipal revenues and local
Execution of Plan	2020	Ongoing	execution as funding is obtained	Projects	Medium	Ongoing	Medium	public works	Low	bonds
Execute north fork of Fishing River Flood P					i-icuiuiII	Oligoliig	Picululii	Papare Mol vo	LUW	Dollus
Excepte notal lord of Fishing River Flood P	ani mingado	in project to tessell	Discussion with public concerning	Structure and	1					Local Budgeted
			projectPossible preliminary	Infrastructure						Funds and Staff
Preliminary planning	2020	Ongoing	engineering	Projects	Medium	Ongoing	Medium	public works	Low	Time
			nage system by purchasing addition		1			p	1	

			1	1					<u> </u>	
			The need for additional equipment	Structure and						Local Budgeted
			has been identified to allow for	Infrastructure						Funds and Staff
Identification and Planning	2020	Ongoing	more in house work projects.	Projects	High	Ongoing	Medium	public works	Low	Time
indentania i tanining	2020	0.180.118				0.180.118	- roundin	pasae nome		1
			Identify equipment that would aid in							Local Budgeted
			maintenance of current stormwater							Funds and Staff
Preliminary planning	2020	Ongoing	system and procure	Other	High	Ongoing	Medium	public works	Low	Time
Improve natural drainage creek to mitigate	e storm wate	r flooding between	North Pennsylvania and North Raum	street.		_				
			Storm water flooding issue has							
			been identified but project funding							
			has not been located to move	Local Plans and						
Identification and Planning	2020	Ongoing	forward with mitigation.	Regulations	Medium	Ongoing	Medium	public works	High	HMGP, BRIC
Replace wooden bridge on North Raum St	reet to allow	for a norther evacu	ation route out of town capable of ca	arrying the weight of	fire trucks.					
Engineering work has been completed and			A wooden bridge (last refurbished							
an approved plan was selected.Plan is			in 1940) owned privately by Union	Structure and						20% funding
submitted to UP railroad for their review			Pacific which is no longer rated for	Infrastructure						provided by the
and approval	2020	Ongoing	fire truck or school bus weights.	Projects	High	Ongoing	Medium	public works	3200000	railroad.
Storm water drainage improvements near	8th Terrace.							·		
			Discussion with public concerning							
			project. Possible preliminary	Local Plans and						
Preliminary planning	2020	Ongoing	engineering	Regulations	Medium	Ongoing	Medium	public works	High	HMGP, BRIC
Storm water drainage improvements near	Cardinal Circ	cle/Nolker Drive.								•
				Structure and						
			Discussions with public on project.	Infrastructure						
Preliminary planning	2020	Ongoing	Possible preliminary engineering	Projects	Medium	Ongoing	Medium	public works	High	HMGP, BRIC
Storm water drainage improvements near	Milwaukee S	treet.								•
			Engineering is nearly completed.							
			Project will be going out for bid in	Structure and						
			Spring 2020Construction to begin	Infrastructure						
Engineering and construction	2020	Ongoing	Summer 2020	Projects	High	Ongoing	Medium	public works	400000	HMGP, BRIC
Severe Thunderstorms		. 6. 6		.,	U	. 0. 0		Production of the second		,
Establish safe storm shelter for use as an	evacuation p	oint for the munici	pal pool complex.							
			Public safety issue has been	Structure and						
			identified but an affordable solution	Infrastructure						
Identification and Planning	2020	Ongoing	has yet to be found.	Projects	High	Ongoing	Medium	parks and recreation	High	HMGP, BRIC
Severe Winter Weather			yes to de realitat							,
Establish a transportation plan to evacuat	e at risk indiv	riduals and create a	municipal warming shelter.							
			Public safety threat do to long term							
			power outages have been							
			identified. Planning to meet this							Local Budgeted
			threat is ongoing but funding has yet	Local Plans and						Funds and Staff
Identification and Planning	2020	Ongoing	to be located.	Regulations	Medium	Ongoing	Medium	emergency management, public works	Low	Time
Extreme Temperatures	2020	O I BOIL B	to be tocated.	110batations	, iculuili	Chechie	i iouiuiii	emergency management, public works		Timic
Extreme remperatures										

Institute a severe heat response by purcha	Institute a severe heat response by purchasing in home air conditioners and establishing public cooling centers.												
			The need for in home cooling and										
			local cooling centers has been							Local Budgeted			
			identified but additional funding	Local Plans and						Funds and Staff			
Identification and Planning	2020	Ongoing	has yet to be found.	Regulations	Medium	Ongoing	Medium	emergency management, public works	Low	Time			

2025 Liberty Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Continue to educate the public about the importance of havi	ng a weather radio in	their home								
Outreach at local events	2020	Ongoing	Community outreach using CERT volunteers to distribute information to the public at local events.	Education and Awareness Programs	High	Ongoing	Low cost mechanism to increase public safety and avoid loss of life.	emergency management		Local Budgeted Funds and Staff Time
Encourage building practices and the use of materials that ro			the public at total events.	/wareness r rograms	1.11811	опроше	tood of the.	emergency management	LOW	Time
Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures.	2020	Ongoing	Ensure building codes pertaining to wind damage mitigation requirements are being followed	Education and Awareness Programs	High	Ongoing	Medium	building code official	Low	Local Budgeted Funds and Staff Time
Encourage construction of community tornado shelters in of	fice complexes, facto	ries, apt complexes,	schools mobile home parks,	stadiums, and other large	e population congreg	gation centers.				
Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	2020	Ongoing		Education of stakeholders in meetings such as our Safe Schools Task Force.	Medium	Ongoing	Low/no cost mechanism to increase public safety.	emergency management	Low	School district
Encourage electric and telecommunications utilities to prot	ect their existing infra	structure from the ef	fects of tornadoes and high v	vinds.		1			1	
Adopt ordinances or regulations requiring the underground placement of new electric and telecommunications transmission lines.	2020	Ongoing	All new residential and commercial construction has buried electrical service lines.	Plan reviews are completed for all building projects within the city to ensure compliance		Ongoing	Medium	building code official	Low	Local Budgeted Funds and Staff Time
Ensure public facilities have shelters to accommodate staff	and visitors during to	nadoes/ nat. hazards	s.							
Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction.	2020	Ongoing	While a low cost item we lack resources and funding to incorporate into public structures	The city will follow its own buidling and fire codes that require this	Low	Ongoing	Low/no cost mechanism to increase public safety.	planning, building code	Low	Local Budgeted Funds and Staff Time
Improve storm warning capabilities.										
Continue to hold monthly siren tests	2020	Ongoing		Local Plans and Regulations	High	March-Oct	No cost mechanism to ensure sirens operate effectively.	emergency management	Low	Local Budgeted Funds and Staff Time
Sommas to note monthly short tools		G901119			0.,		opolate encouvery.	oo. Borroy management		

		T	Г			1	I .	T		
1										
			Lack the necessary funding.							
			Will have to seek grant							
			opportunities in order to							
			replace aging outdoor							
			sirens as well as adding							
			sirens to areas that have			Will have to seek out				Local Budgeted
			recently opened for	Structure and		and apply for grants				Funds and Staff
Continue to upgrade outdoor warning sirens as funding allows	2020	Ongoing	development.	Infrastructure Projects	Medium	to complete	Medium	emergency management	\$175,000	Time
Increase public awareness and understanding the benefits of	"safe rooms."									
							Distribution of			
I							materials is a			
							low/no cost			
							mechanism to			Local Budgeted
			Lack the resources and	Education and			increase public			Funds and Staff
Develop, distribute informational materials on safe rooms.	2020	Ongoing	funding for development.	Awareness Programs	Low	Ongoing	safety.	emergency management	Low	Time
Floods							ea.e.y.			
Develop plans and adopt policies to address sound stormwate	er and flooding challe	enges								
Adopt new stormwater engineering design and			Metro KC APWA Section is							
management standards and stream setback development			working with consultants to							Local Budgeted
standards to reduce the risk of stream and flash flooding			complete the new	Local Plans and						Funds and Staff
	2025	New	standards in 2025	Regulations	High	12/31/2026	Medium	City Council	Low	Time
Enhance public awareness and education efforts related to flo	ooding.									
Obtain brochures and related publications on flood mitigation,			Community outreach using				Low cost			
preparedness, response and recovery from FEMA, SEMA, the			CERT volunteers to				mechanism to			Local Budgeted
American Red Cross and other organizations and provide them			distribute information to	Education and			increase flood			Funds and Staff
to home owners and businesses in flood-prone areas.	2020	Ongoing	the public at local events.	Awareness Programs	Low	Ongoing	preparedness	emergency management	Low	Time
Partner with emergency services, public health, human services			Community outreach using							
organizations, appropriate state and federal agencies and the			CERT volunteers to							Local Budgeted
business community to conduct special public education			distribute information to	Education and						Funds and Staff
events, such as a Flood Mitigation and Preparedness Workshop.	2020	Ongoing	the public at local events.	Awareness Programs	Medium	Ongoing	Medium	emergency management	Low	Time
Improve flood hazard assessments and flood mapping.						l	I			
**Conduct an in-depth flood risk analysis utilizing HAZUS data			The city utilizes GIS data	Have used the data to						Local Budgeted
, , , , , , , , , , , , , , , , , , , ,			from FEMA and the Army							Funds and Staff
and create detailed maps based on GIS technology to identify areas at risk from flooding.	2020	Ongoing	Corp of Engineers.	identify potential risks to the community	High	Ongoing	low	planning, public works	Low	Time
areas at risk from flooding.	2020	Ongoing	Corp of Engineers.	the community	підіі	Ongoing	low	planning, public works	LOW	Time
							Most data readily			
							available and can be			
										1
**Coordinate the collection of demographic according							easily imported to			Local Budgeted
**Coordinate the collection of demographic, economic,				Local Diane and		Ongoing undating	identify potential			Local Budgeted
watershed, land use and other data required by the HAZUS-	2020	Ongoing		Local Plans and	Low	Ongoing, updating	areas for increased	planning public works	Low	Funds and Staff
Flood software program and/or GIS systems.	2020	Ongoing		Regulations	Low	as needed	mitigation efforts.	planning, public works	Low	Time

	•									
							Most data readily			
							available and can be			
							easily imported to			
**Obtain parcel data (assessed valuation and other							identify potential			Local Budgeted
information) for flood boundary areas and enhance vulnerability				Local Plans and		Ongoing, updating	areas for increased			Funds and Staff
assessments for these areas.	2020	Ongoing		Regulations	Low	as needed	mitigation efforts.	planning, public works	Low	Time
		. 0. 0					g	D/F**		
							Free technical			
**Partner with FEMA in the Cooperating Technical Partners							assistance to			Local Budgeted
(CTP) Program to increase local involvement in, and ownership				Local Plans and			improve floodplain			Funds and Staff
of, the flood mapping process.	2020	Ongoing		Regulations	Low	Ongoing	management	planning, public works	Low	Time
Integrate flood mitigation strategies with projects and activiti			nce ecosystems and the en					planning, public works	LOW	Time
integrate nood mitigation strategies with projects and detivit	cs designed to (1) pro	Tect, restore or enna	lice ecosystems and the em	monnient ana/or (2) creat	c recreational opport	lumites for the comm	lumty.		1	
Consider alternative uses for floodplains and flood-prone areas,				Structure and				planning, parks and		
such as sports fields, parks, wildlife habitats, etc.	2020	Ongoing		Infrastructure Projects	Low	Ongoing	Medium	recreation, public works	High	HMGP, BRIC
						Developers are				
Consider the construction of detention basins, small lakes and						required to follow				
greenways or riparian corridors in areas of new development to			The city follows regional			regional stormwater				
channel and catch storm water, thereby reducing the likelihood			stormwater guidelines	Structure and		management		planning, parks and		
of flooding.	2020	Ongoing	issued by the MARC	Infrastructure Projects	High	guidelines	Medium	recreation, public works	High	HMGP, BRIC
				•						
							Low cost			
Develop partnerships between regional emergency							mechanism to			
management, floodplain management and environmental			The city continues to				improve floodplain			
groups to educate one another and the public of the benefits of			participate in regional				management on			Local Budgeted
collaboration and identify specific programs and activities that			stormwater management	Local Plans and			-	public works, emergency		Funds and Staff
can be developed and implementted	2020	Ongoing	practices	Regulations	Low	Ongoing	levels.	management	Low	Time
Participate in, and ensure compliance with, flood mitigation a			pradado	nogatations	2011	0.18011.8	1070101	тападоттот	2011	
		, omen programor								
							Having and			
							maintaining most			
							current FIRM map			
							editions will allow			
							for most accurate			Local Budgeted
Obtain the latest copies of flood insurance rate maps (FIRMs),				Local Plans and		Ongoing, updating	review of floodplain			Funds and Staff
floodplain maps and similar documents.	2020	Ongoing		Regulations	Low	as needed	management.	floodplain manager	Low	Time
noouptain maps and similar documents.	2020	Oligoling		negulations	LOW	as needed	management.	noouptain manager	LOW	Time
	1						Will ensure reduced			
							insurance rates for			
							homeowners and			
										Local Budgeted
Porticipate in the National Flood Insurance Program (NEID) and				Local Diana and			businesses while			Local Budgeted
Participate in the National Flood Insurance Program (NFIP) and	0005	0		Local Plans and		0	controlling recovery	flandalain massassas		Funds and Staff
consider participation in the Community Rating System (CRS).	2025	Ongoing		Regulations	Low	Ongoing	costs.	floodplain manager	Low	Time
Severe Thunderstorms										

Description Continue to monitor weather situation and provide warnings through Public relations department

			PR department is active in							Local Budgeted
			providing mass text and	Education and						Funds and Staff
Provide warning through public relations	2020	Ongoing	social media alerts.	Awareness Programs	High	Ongoing	Medium	emergency management	Low	Time

2025 North Kansas City Mitigation Strategy										
			Status	Type of Mitigation		Date of		Primary Agency Responsible for Implementation/		
Mitigation Goals and Action Steps	Plan Year	Status of Project	Explanation	Activity	Priority	Completion	Cost/Benefit Review	Administration	Estimate of Cost (\$)	Funding Source
Tornadoes	maring offe	ata aftamada a								
Encourage building practices and the use of materials that reduce the dar	naging erre	cts of tornadoes.		Education and						
Work w/ trade orgs to inform builders/ developers of construction				Education and						Least Dudgeted Funds
techniques and materials that may minimize tornado/ high wind damage to	2010	0-4-1-4		Awareness	Marallinas	0	Maraticum	E		Local Budgeted Funds
residential/ commercial structures.		Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
Ensure public facilities have shelters to accommodate staff and visitors of	iuring torna	does/natural nazards.		<u> </u>	1	<u> </u>		1	1	1
Retrofit or add shelters to existing public facilities with inadequate	0045			Structure and Infrastructure			The cost of installing a tornado shelter in the fire station will be \$5600.00 to install the shelter. Benefit is to the Fire and Police personnel whose duty assignment places them in	emergency management,		Local Budgeted Funds
protection from tornadoes and high winds	2015	Ongoing		Projects	High	Ongoing	this station and patrol area	public works	5600	and Staff Time
Increase public awareness and understanding the benefits of "safe rooms	S."	1		<u> </u>	1		<u> </u>	1	1	1
Develop and distribute informational materials on safe rooms	2015	Ongoing		Structure and Infrastructure Projects Education and	High	Ongoing	The cost of installing a tornado shelter in the fire station will be \$5600.00. The benefit is that it provides a shelter from tornados independent of the existing structure and will serve as an example to be used when doing public education on tornado shelters	Emergency Mgt.	5600	Local Budgeted Funds and Staff Time
Provide updated information to the citizens in the areas where a tornado				Awareness						Local Budgeted Funds
would create the most issues.	2025	Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
Partner w/ trade orgs. to conduct safe room workshops.	2010	Ongoing		Education and Awareness Programs	High	Ongoing	Low cost mechanism to increase public safety.	Emergency Mgt.		Local Budgeted Funds
Increase public awareness and understanding of severe weather events a			1	1	10	1	1		1	
The North Kansas City Fire Department has become an official Weather Ready Nation Ambassador and is working to provide consistent information about severe weather through social media	2020	Ongoing		Education and Awareness Programs	High	3- months	little to no cost	fire department	minimal	Local Budgeted Funds
						0		o a opai amont		

									•	
Conduct special public education events	2015	Deferred	Waiting for approval of a new flood evacuation plan from our engineer.	Education and Awareness Programs	High	12 months	Since the training will be conducted by existing personnel and the media materials will come from FEMA there is no monetary outlay, the benefits will be to the at risk population and to the businesses located in flood prone areas.	Emergency Mgt.		Local Budgeted Funds and Staff Time
Develop plans and adopt policies to address sound stormwater and flood	ing challen	ges								
Adopt new stormwater engineering design and management standards and stream setback development standards to reduce the risk of stream and flash flooding	2025	New: Participating in review of draft standards under development	Metro KC APWA Section is working with consultants to complete the new standards in 2025	Local Plans and Regulations	High	12/31/2026	Medium	City Council	Low	Local Budgeted Funds and Staff Time
Integrate flood mitigation strategies with projects and activities designed	to (1) prote		ecosystems and th	ne environment ar		te recreationa				
Complete inspection of storm sewers in the Paseo Industrial District (PID)	2020	Ongoing	We had severe damage from 2019 floods this will identify future problem areas	Prevention	High	1-year	Cost of inspection prior to damage is much less than repairs	nublic works	\$50,000	Local Budgeted Funds and Staff Time
Participate in, and ensure compliance with, flood mitigation and floodpla			12.5.00	<u> </u>		1_ ,			1423,000	
**Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents.	2020	Ongoing		Local Plans and Regulations	Medium	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. There is no cost to become part of the NFIP or CRS systems. Benefits are to the Residents and	floodplain manager	Low	Local Budgeted Funds and Staff Time
**Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2025	Ongoing	We currently participate in NFIP	Local Plans and Regulations	High	Ongoing	Businesses who take advantage of the programs	floodplain manager		Local Budgeted Funds and Staff Time

025 Pleasant Valley Mitigation Strategy (New Participant)	į.									
litigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/	Estimate of Cost (\$)	Funding Source
ornadoes and Severe Thunderstorms										
	voro thundorotor	ar tarnada a								
nsure the public is alerted when the city is at risk from se Continue to fund the resident alert system and	vere thunderstori	ms or tornadoe	S	Education and Awareness	<u> </u>			emergency management, public	I	Local Budgeted Funds and
encourage participation	2025	new		Programs	High	Ongoing		works	medium	Staff Time
			l	1 0		1 0 0				
crease public awareness and understanding of severe w	eather events and	d safe practices								
Provide public education material on tornado safety and										
the use of the Civic Center as a community storm shelter				Education and Awareness						Local Budgeted Funds and
the use of the civic center as a community storm sherter	2025	new		Programs	High	ongoing	low cost	fire department	low	Staff Time
loods										
articipate in, and ensure compliance with, flood mitigation	n and floodplain	management	We currently	1	<u> </u>		There is no cost to		I	Local Budgeted Funds and
articipate in the National Flood Insurance Program (NFIP)	2025	New	,	Local Plans and Regulations	High	Ongoing	become part of the	floodplain manager	Low	Staff Time
indipate in the National Flood insurance Frogram (NFIF)	2025	INEW	participate ili NFIF	Local Flans and Regulations	nigii	Oligoling	become part of the	пообрантнанадег	LOW	Stall fille
avere Winter Weather										
evere Winter Weather										
evere Winter Weather nsure the public is alerted when the city is at risk from se	vere winter weath	her.								
nsure the public is alerted when the city is at risk from se	vere winter weath	her.	<u> </u>	Education and Awareness	T		1	emergency management, public		Local Budgeted Funds and
nsure the public is alerted when the city is at risk from se Continue to fund the resident alert system and	vere winter weath	ner.		Education and Awareness Programs	High	Ongoing	low cost	emergency management, public works	Low	Local Budgeted Funds and Staff Time
nsure the public is alerted when the city is at risk from ser Continue to fund the resident alert system and					High	Ongoing	low cost		Low	-
nsure the public is alerted when the city is at risk from ser Continue to fund the resident alert system and encourage participation					High	Ongoing	low cost		Low	_
nsure the public is alerted when the city is at risk from ser Continue to fund the resident alert system and encourage participation					High	Ongoing	low cost		Low	-
isure the public is alerted when the city is at risk from ser Continue to fund the resident alert system and encourage participation Evere Temperatures and Drought	2025	New	t and how to conser	Programs		Ongoing	lowcost		Low	-
	2025 alth problems du	New	t and how to conser	Programs		Ongoing	lowcost		Low	-

Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes Upgrade outdoor tornado sirens in the next 2-3 years										
		•		Structure and						
Review current outdoor tornado sirens and prepare grant application to install new				Infrastructure			N. 12	E	112.4	FF144
sirens to address gaps in coverage	2025	new		Projects	Medium	New	Medium	Fire department	High	FEMA grant
Encourage building practices and the use of materials that reduce the damaging	effects of	tornadoes.	1				I		T	
Adopt surrent edition of a model building code to address structural and				Local Plans and						Local Budgeted Funds
Adopt current edition of a model building code to address structural and	2010	Adopted			Modium	Ongoing	Modium	Dianning	Low	Local Budgeted Funds and Staff Time
architectural issues related to tornadoes and high wind events. Require the use of tempered or shatter-resistant glass in the windows of new	2010	Adopted		Regulations Structure and	Medium	Ongoing	Medium	Planning	Low	Local Budgeted Funds
public/private facilities where large numbers of people may congregate. Retrofit		Adopted no		Infrastructure						and Staff Time; HMGP.
existing facilities.	2010	retrofit			Medium	Ongoing	Medium	Planning	⊔iαh	BRIC
Ensure public facilities have shelters to accommodate staff and visitors during t				Projects	Medium	Ongoing	Inedialii	Ftailling	High	DNIC
Ensure public facilities have shellers to accommodate stan and visitors during to	liiauues/	ilaturat ilazarus.		Structure and						
Assess existing facilities for shelter suitability. Mark clearly and inform				Infrastructure			No cost mechanism to			
visitors/employees of locations.	2020	next 5 yrs.		Projects	Medium	Next 5 Years	increase public safety.	public works	Low	Local
violeto employees et tesations.	2020	next o yro.	+	Structure and	Ticulatii	TTCAT O TCGTS	moreage public salety.	public Works	2011	Locat
Retrofit or add shelters to existing public facilities with inadequate protection from				Infrastructure						
tornadoes and high wind.	2020	next 5 yrs.		Projects	Medium	Next 5 Years		public works	High	Local
Increase emergency shelter capacity.	1			,		1		p and the tree tree tree tree tree tree tree	19	1
	1			Education and						
Develop relationships with area churches, library and senior center for use of		will determine		Awareness			No cost mechanism to			Local Budgeted Funds
facilities if needed as a shelter.	2015	in next 5 yrs.		Programs	Medium	Ongoing	increase public safety.	emergency management	Low	and Staff Time
				Education and						
Hold discussions with school district to obtain permission to use Performing Arts				Awareness			No cost mechanism to			Local Budgeted Funds
Center as a tornado shelter	2015	undetermined		Programs	Medium	Ongoing	increase public safety.	emergency management	Low	and Staff Time
Increase public safety alert and warning mechanisms.										
				Education and						
Continue social media use. Provide officers training on how to use social media to				Awareness			No cost mechanism to			Local Budgeted Funds
send info on weather incidents	2015	Ongoing		Programs	High	Ongoing	increase public safety.	emergency management	Low	and Staff Time
				Education and						
				Awareness			No cost mechanism to			Local Budgeted Funds
Provide officers on-going training in use of the tornado siren system.	2015	Ongoing	receive training		High	Ongoing	increase public safety.	emergency management	Low	and Staff Time
	1	38		Education and			in a production of the control of th	0 × 7 × 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	
Use social media to provide community notice of upcoming weather related				Awareness			No cost mechanism to			Local Budgeted Funds
training and free weather radios.	2015	Ongoing		Programs	Medium	Ongoing	increase public safety.	emergency management	Low	and Staff Time

		1	1	1	1	_		1	T	
			More							
			information							
**Work with owners of repetitive flood loss properties to identify feasible mitigation				Structure and						
strategies and potential opportunities; determine property owners' interest in			initiate this	Infrastructure						
specific mitigation options.	2020	Ongoing	effort	Projects	Medium	Ongoing	Medium	floodplain manager	Low	HMGP, BRIC, FMA
Participate in, and ensure compliance with, flood mitigation and floodplain mana	igement p	rograms.								
							Having and maintaining			
							most current FIRM map			
							editions will allow for			
Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and				Local Plans and			most accurate review of			Local Budgeted Funds
similar documents.	2020	Ongoing		Regulations	Unspecified	Ongoing	floodplain management.	floodplain manager	Low	and Staff Time
							There is no cost to			
							become part of the			
							NFIP. Benefits are to the			
			We				Residents and			
			currently				Businesses who take			
**Participate in the National Flood Insurance Program (NFIP) and consider			participate	Local Plans and			advantage of the			Local Budgeted Funds
participation in the Community Rating System (CRS).	2025	Ongoing	in NFIP	Regulations	High	Ongoing	programs	floodplain manager	Low	and Staff Time
Reduce flood-related damage to public, residential and commercial property in f	lood-pron						<u>,, </u>			
		1				1				T
										Local Budgeted Funds
Continue implementing flooding mitigation initiatives through the City's CIP	2025	Ongoing		CIP	Medium	Ongoing	Medium	floodplain manager	Low	and Staff Time
Severe Thunderstorms				1					1	
Severe munuerstorms				Structural and						
install lightning styles sivens in nublic neglects and annual sefety and annual series.										
install lightning strike sirens in public parks to enhance safety and provide early	0005			Infrastructure			M P	1.8		EENA LINAOD
warnings during severe weather conditions	2025	new	1	Projects	Medium	new	Medium	public works	Medium	FEMA HMGP

2025 Jackson County Mitigation Strategy									·				
		Status of		Type of Mitigation		Applies to Community Assets		Primary Agency Responsible for Implementation/	Date for	Cost / Benefit		Estimated Cost	
Mitigation Goals and Action Steps Tornadoes	Plan Year	Project	Status Explanation	Activity	Priority	(New/Existing)	implemented	Administration	Completion	Review	Target Capacity	(\$)	Funding Source
Ensure public facilities have shelters to accommodate staff a	nd visitors during	tornadooc/na	tural hazarde										
Ensure public facilities have shellers to accommodate stair a	lu visitors during	torriauves/ria	turat nazarus.										
			The County has designated safety locations in governmental facilities for staff and visitors to shelter in during severe weather events. As a "Storm Ready" Community each				Eastern Jackson County has designated shelter /safety locations as part of the Office of Emergency Preparedness	Department of		Low/no cost			
	ĺ		facility has an "All-Hazard" weather				function within	Emergency		mechanism to			County Department
Assess existing facilities for shelter suitability. Mark clearly and	1		radio and a method of being	Local Plans and			County ordnances	Preparedness/		increase public			general funds and
inform visitors/employees of locations.	2020	Ongoing	contacted by the EOC	Regulations	High	Existing	and codes	County	Ongoing	safety.		Low	grants
Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction.	2020	Ongoing	Continued work with local jurisdictions within the County to implement such regulations.	Local Plans and Regulations	Medium	New and Existing		public works, code officials	Ongoing	Medium		Low	County Department general funds and grants
Retrofit or add shelters to existing public facilities or incorporate safe rooms into new public buildings to allow for adequate protection from tornadoes and high wind.	2020	Ongoing	The county continues to try and develop storm shelters in existing public facilities as funding and opportunities become available. As new construction of public facilities is planned, consideration will be given to the addition of safe rooms.		High	Existing	Eastern Jackson County has designated shelter /safety locations as part of the Office of Emergency Preparedness function within County ordnances and codes	Department of Emergency Preparedness/ County	Ongoing	High cost to retrofit existing buildings but can also prevent large number of injuries and fatalities. Some cost could be subsidized by tax incentives and grants		High	нмдр, вгіс
Encourage building practices and the use of materials that re	luce the damagin	ng effects of tor	nadoes.										
Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures. Encourage construction of community tornado shelters in off	2020	Ongoing ant co	The County continues to work with contractors in regards to utilizing construction techniques and materials that may minimize tornado/ high wind damage	Programs	High	New and Existing	Office of Emergency Preparedness function within County ordnances and codes	Department of Emergency Preparedness/Coun ty	Ongoing	Low/no cost mechanism to increase public safety.		Low	County General Funds
2ourage constituent of community tornual shetters in on	oo comptexes, la		mptones, solitotis mobile nome parks,	Januarino, una ottier	po populati	on congregation cen							
				Education and			Office of Emergency Preparedness function within	Department of Emergency		Low/no cost mechanism to			
Work with chambers of commerce, school districts,	1		Jackson County and many corporate	Awareness			County ordnances	Preparedness/Coun	ĺ	increase public		L	County General
corporations, etc. to promote benefits of safe rooms.	2020	Ongoing	facilities	Programs	High	New and Existing	and codes	ty	Ongoing	safety.		Low	Funds
Increase capabilities to provide mass notifications to the pub	lic												

Adding "Outdoor Warning Sirens" to increase warning notification coverage for County lake properties / Jacomo/Blue Springs/Longview and assess and install additional sirens as appropriate to warn the public	2020	ongoing		Structure and Infrastructure Projects	Medium	New	Office of Emergency Preparedness function within approved County ordnances and codes	Department of Emergency Preparedness/Coun ty and Public Works Department	Ongoing	Would give residents enhanced warnings and improved response coordination but would have a high implementation and maintenance cost.	4	1 edium	County General Funds
Increase public awareness and understanding the benefits of	f "safe rooms."	_		ı				ı					_
Develop, distribute informational materials on safe rooms. Flooding	2020	Ongoing	Implemented through the Counties preparedness educational and outreach program with emphasis on existing shelter facilities located throughout the county	education and Awareness Programs	High	Existing	Office of Emergency Preparedness function within County ordnances and codes	Department of Emergency Preparedness/Coun ty	Ongoing	Low/no cost mechanism to increase public safety.	L	ow	County General Funds
Discourage new development in floodplains and flood-prone	areas and improv	ve safety for the	traveling public from flash floods acro	ss roadways.									
**Adopt ordinances prohibiting residential and commercial			Flood Plan management continues to enforce and recommend changes to meet FEMA requirements and	Local Plans and			Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA	Flood Plain Management/Public		Low/no cost mechanism to increase public			County General
development in flood plains or flood-prone areas.	2020	Ongoing	regulations	Regulations	High	Existing	NFIP requirements	Works	Ongoing	safety.	L	.OW	Funds
**As low water crossings are identified and evaluated, seek funding to redesign and construction roadway segments to reduce further risks to travelers.	2020	ongoing		Structure and Infrastructure Projects				public works	Ongoing	Medium	F	ligh	HMGP, BRIC
**Develop or amend comprehensive and/or land use plans to specifically address development in flood-prone areas and recommend strategies for decreasing the jurisdiction's vulnerability to flooding.	2020	Ongoing	County's Flood Plan manager continues to enforce and recommend changes to meet FEMA requirements and regulations	Local Plans and Regulations	High	Existing	Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements	Flood Plain Management/Public Works Flood Plain	Ongoing	Low/no cost mechanism to increase public safety.	Į.	ow	County General Funds
**Identify low water crossings along roadways in unincorporated Jackson County	2020	Ongoing	In progress; as identified putting up signage	Local Plans and Regulations	Medium			Management/ Public Works/Emergency Preparedness	Ongoing	Medium	ŀ	ligh	HMGP, BRIC
Enhance public awareness and education efforts related to fl	ooding.												
Encourage home owners and businesses to purchase flood insurance.	2020	Ongoing	The County Office of Emergency Preparedness has several outreach programs to Encourage home owners and businesses to purchase flood insurance.	Education and Awareness Programs	High	New and Existing	Flood Plain Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements	Flood Plain Management/Public Works	Ongoing	No/low cost mechanism to encourage flood preparedness.	L	ow	County's general funds and EMPG program grant monies

The County's Office of Emergency		
Preparedness and Public Works		
Departments have on-going program		
to educate the public about flooding		
and its associated hazards. This		
program includes standardized		
educational materials coordinated		
with local and regional partners. This Flood Plan		
initiative includes brochures and Management,		
related publications on flood Public Works and		
Obtain brochures and related publications on flood mitigation, mitigation, preparedness, response Emergency No/low cost		County's general
preparedness, response and recovery from FEMA, SEMA, the and recovery from FEMA, SEMA, the education and Preparedness Flood Plan mechanism to		funds and EMPG
American Red Cross and other organizations and provide them American Red Cross, NFIP and other Awareness addressing FEMA Management/Public encourage flood		program grant
to home owners and businesses in flood-prone areas. 2020 Ongoing organizations. Programs High New and Existing NFIP requirements Works Ongoing preparedness.	Low	monies
The County's Office of Emergency		
preparedness and Public works		
Departments have on-going program		
to educate the public about flooding		
and its associated hazards. This		
program includes standardized		
educational materials coordinated		
with local and regional partners. Flood Plan		
County department also participate in Management,		
Partner with emergency services, public health, human local, regional, State and national Public Works and		0
services organizations, appropriate state and federal agencies Dublic educational events such as Emergency No/low cost		County's general
and the business community to conduct special public Safety City and Echo- Fest put on by Preparedness Flood Plan mechanism to		funds and EMPG
education events, such as a Flood Mitigation and Preparedness local jurisdictions throughout the Local Plans and addressing FEMA Management/Public encourage flood		program grant
Workshop. 2020 Ongoing county each year. Regulations High New and Existing NFIP requirements Works Ongoing preparedness.	Low	monies
Examine repetitive flood loss properties in each county and determine feasible and practical mitigation options.		
High Initial cost of		
purchasing		
property but also		
Public Works and high returns by		
Emergency preventing future		
Preparedness flooding of		
Repetitive Loss properties in the function within properties that		
unincorporated portions of the County Structure and approved County Public Works / have had history of		
**As funding allows, repetitive flood loss properties and in Flood Plain Hazard areas are Infrastructure ordinances and emergency major flood		Hazard Mitigation
structures will be targeted for buyout. 2020 Ongoing reviewed for buyout potential. Projects High Existing codes Preparedness Ongoing damages	High	Grants
Stated as writted angeted for buyout. 2020 Origining Tevrewed for buyout potentials. I Tojects Trigging Codes Treparedness Origining Gardinases Uniform Public Works and Low/no cost		0.00
The County continually tries to Emergency mechanism to		
identify potential funding sources to Preparedness increase public		
mitigate flood losses to repetitive function within safety and help		
properties. This sources include approved County prevent the high		
**Identify potential funding opportunities to implement private, local, state and federal Local Plans and Jackson County cost of flood		
mitigation options for repetitive flood loss properties. 2020 Ongoing grants. Regulations High Existing codes Public Works ongoing damages		

							Public Works and						
							Emergency						
							Preparedness	Flood Plain		Preventing future			
			County has identified repetitive loss				function within	Management/		flooding of			
**With stakeholders, explore incentive options to encourage			areas and residences and continues				approved County	Public					County General
							1			properties that			
property owners to take action to prevent or reduce future flood			to work with them in ways to prevent	Local Plans and			ordnances and	Works/Emergency		have had history of			funds and EMPG
losses	2020	Ongoing	or reduce future flood losses	Regulations	High	Existing	codes	Preparedness	Ongoing	flood damage		Low	funding/
							Public Works and			Low/no cost			
							Emergency			mechanism to			
							Preparedness			increase public			County General
**Work with owners of repetitive flood loss properties to			County continues to work with local				function within			safety and help			Funds along with
				Education and				Dublic Weden and					-
identify feasible mitigation strategies and potential			jurisdictions, Public Works and Parks	Education and			approved County	Public Works and		prevent the high			grant funding such
opportunities; determine property owners' interest in specific			and Rec to assess needs and	Awareness			ordnances and	Emergency		cost of flood			as HMPG, PDM,
mitigation options.	2020	Ongoing	mitigation options	Programs	Medium	New	codes	Preparedness	Ongoing	damages		Low	FMA and RFC
Improve emergency response during flooding events.													
							Office of Emergency						
		Deferred;					Preparedness and						
		depend upon					Public Works	1		1			
		region's	Development of specialized teams to				Department	1		No/low cost			
		technical	help clean-up flooded homes and				functions within	Office of		mechanism to			County General
		rescue teams	businesses to reduce flood damages				City ordnances and			reduce flood			Funds and EMPG
Develop rapid response teams	2020	for response	throughout the County.	Planning	Medium	new	codes	Preparedness	Ongoing	damages		Low	grants
Integrate flood mitigation strategies with projects and activit	ies designed to (1	L) protect, resto	ore or enhance ecosystems and the env	vironment and/or (2)	create recreati	ional opportunities		sed on building codes	s for various juris	dictions and have a	ddressed regularly	1.	•
							Public Works and						
							Emergency						
			The County continues to reduce				Preparedness						
a. Consider the construction of detention basins, small lakes			flooding hazards in the unincorporated	I			function within						
and greenways or riparian corridors in areas of new			portions of the county through ongoing	Structure and			approved County	Parks & Rec/Public		Will prevent			
development to channel and catch storm water, thereby			efforts to channel and catch storm	Infrastructure			ordnances and	works/Corps of		flooding for			Mitigation grant
reducing the likelihood of flooding.	2020	Ongoing	water as funding allows	Projects	High	Existing	codes	Engineers	0	moderate costs		Medium	funding
reducing the likelihood of flooding.	2020	Oligoling	water as furiding attows	riojecis	nigii	EXISTING	codes	Eligiliceis	Ongoing	moderate costs		Medium	lullullig
										11:-1-1-14:-14 -4			
										High Initial cost of			
										purchasing			
										property but also			
							Public Works and			high returns by			
							Emergency			preventing future			
							Preparedness	Department of		flooding of			
			The County will continue to look for				function within	Emergency		properties that			Local Jurisdictional
h la													
b. In concert with existing comprehensive and land use plans,			funding opportunities to remove				approved County	Preparedness/Coun		have had history of			funding sources and
develop a strategy for acquiring flood-prone property for use as			targeted repetitive loss properties for	Local Plans and			ordnances and	ty and Public Works		major flood			government
open space or park land.	2020	Ongoing	use a open space land.	Regulations	High	New and Existing	codes	Department	Open	damages		High	incentives
		1						1					
		1						1					
		1	The County consistently continue to					1		1			
		1	apply for State and Federal grants to					1		1			
			support and enhance flood mitigation					İ		1			
			and prevention programs. Recently										
		1	walking and bicycle trails have been					1		1			
								İ		1			
			developed in flood prone area. The							L			
			county encourages local jurisdictions							Medium initial			
			within the county to do the same. This					İ		cost to preventing			
			includes identifying funding sources							future flooding of			
			for the acquisition of flood-prone land				Local Public Works			properties that			
c. Identify funding sources for the acquisition of flood-prone	1		and the second second second second			1		1					1
			for environmental recreational and	Local Plans and			and Water Pollution			have had history of			County general
land for environmental, recreational and flood mitigation uses.	2020	Ongoing	for environmental, recreational and flood mitigation uses.	Local Plans and Regulations	High	Existing	and Water Pollution Control districts	Public Works	Ongoing	have had history of flood damage		Medium	County general funds

							Public Works, Parks					
							& Rec and					
							Emergency					
							Preparedness			Medium initial		
							Department	Department of		cost to preventing		
			The county continues to work with				functions within	Emergency		future flooding of		
				Structure and			approved County	Preparedness/Coun		properties that		County general
d. Consider alternative uses for floodplains and flood-prone			implement "Green Plans" and other	Infrastructure			ordnances and	ty and Public Works		have had history of		funds and grants
areas, such as sports fields, parks, wildlife habitats, etc.	2020	Ongoing	alternative uses of flood prone areas.	Projects	High	Existing	codes	Department	Ongoing	flood damage	Medium	resources
	2020	ongoing .		,			Public Works and		ongoing .			
			The County's Public Works and				Emergency					
			Emergency Preparedness				Preparedness			Medium initial		
			Departments works with property				Department	Department of		cost to preventing		
e. Work with area environmental groups, property owners and			owners and other stakeholders to				functions within	Emergency		future flooding of		
other stakeholders to develop and implement flood mitigation			develop and implement flood	Education and			approved County	Preparedness/Coun		properties that		County general
strategies that also promote the restoration and/or	0000		mitigation strategies which promotes		in a	E.dating	ordnances and	ty and Public Works		have had history of	Mandiona	funds and grant
sustainability of fish and wildlife habitats	2020	Ongoing	protection of fish and wildlife habits	Programs	High	Existing	codes	Department	Ongoing	flood damage	Medium	applications
			The County has ongoing programs to									
			educate the public about flooding and									
			its associated hazards. These									
			programs include standardized									
			educational materials coordinated									
			with local and regional partners.				Numerous County					
f. Develop partnerships between regional emergency			County Department also participate				Department					
management, floodplain management and environmental			in local, regional, State and national				functions within	Department of		Low/no cost		
groups to educate one another and the public of the benefits of			public educational events put on by				approved County	Emergency		mechanism to		
I = -:			the local jurisdictions throughout the	Local Plans and						increase public		County general
collaboration and identify specific programs and activities that	2020	Ongoing	· · · · · · · · · · · · · · · · · · ·	Local Plans and	High	New & Existing	ordnances and	Preparedness/Coun	Ongoing	increase public	Low	County general
collaboration and identify specific programs and activities that can be developed and implemented jointly.	2020	Ongoing	County each year.	Local Plans and Regulations	High	New & Existing			Ongoing	increase public safety.	Low	County general funds
collaboration and identify specific programs and activities that			County each year.		High	New & Existing	ordnances and		Ongoing		Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year.		High	New & Existing	ordnances and		Ongoing	safety.	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year.		High	New & Existing	ordnances and codes		Ongoing	safety. Having and	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year.		High	New & Existing	ordnances and codes Office of Emergency		Ongoing	safety. Having and maintaining most	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year.		High	New & Existing	ordnances and codes Office of Emergency Preparedness and		Ongoing	Having and maintaining most current FIRM map	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year.		High	New & Existing	ordnances and codes Office of Emergency Preparedness and Public Works	Preparedness/Coun ty	Ongoing	Having and maintaining most current FIRM map editions will allow	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly.			County each year. grams.		High	New & Existing	ordnances and codes Office of Emergency Preparedness and Public Works Department	Preparedness/Coun ty Public Works	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation			County each year. grams. The County continues to maintain up-	Regulations	High	New & Existing	ordnances and codes Office of Emergency Preparedness and Public Works Department functions within	Preparedness/Coun ty Public Works Department and	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any	Regulations Local Plans and			ordnances and codes Office of Emergency Preparedness and Public Works Department functions within City ordnances and	Preparedness/County Public Works Department and Office of Emergency		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain		funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation			County each year. grams. The County continues to maintain up-	Regulations	High High	New & Existing	ordnances and codes Office of Emergency Preparedness and Public Works Department functions within	Preparedness/Coun ty Public Works Department and	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of	Low	
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any	Regulations Local Plans and			Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes	Preparedness/County Public Works Department and Office of Emergency		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management.		funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any	Regulations Local Plans and			Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan	Preparedness/County Public Works Department and Office of Emergency		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood		funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any	Regulations Local Plans and			Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes	Preparedness/County Public Works Department and Office of Emergency		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management.		funds
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collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents.	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to	Regulations Local Plans and Regulations			Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency	Preparedness/County Public Works Department and Office of Emergency Preparedness		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and		funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation. **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP)	and floodplain ma	anagement pro	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing	Regulations Local Plans and Regulations			Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan		Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to		funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations.	Regulations Local Plans and Regulations Local Plans and Regulations	High	New and Existing	Office of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding	Low	funds City General Funds
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collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations. Ireas through structural and nonstructural and country constantly tries to identify	Regulations Local Plans and Regulations Local Plans and Regulations	High	New and Existing	Orffice of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements Flood Plan Management,	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public Works	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding costs.	Low	funds City General Funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations. Treas through structural and nonstructural and nonstr	Regulations Local Plans and Regulations Local Plans and Regulations	High	New and Existing	Orffice of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements Flood Plan Management, Public Works and	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public Works Department of	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding costs.	Low	funds City General Funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations. The County constantly tries to identify potential funding sources to mitigate flood losses to repetitive properties by	Regulations Local Plans and Regulations Local Plans and Regulations are retrofits or remo	High	New and Existing	Orffice of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements Flood Plan Management, Public Works and Emergency	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public Works Department of Emergency	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding costs.	Low	funds City General Funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS). Reduce flood-related damage to public, residential and comi	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations. Treas through structural and nonstructural funding sources to mitigate flood losses to repetitive properties by encouraging owners and businesses	Regulations Local Plans and Regulations Local Plans and Regulations ural retrofits or remo	High	New and Existing	Orffice of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements Flood Plan Management, Public Works and Emergency Preparedness	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public Works Department of Emergency Preparedness/Coun	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding costs. Initial high cost but prevents future flooding of properties that have had history of	Low	City General Funds City General Funds
collaboration and identify specific programs and activities that can be developed and implemented jointly. Participate in, and ensure compliance with, flood mitigation **Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents. **Participate in the National Flood Insurance Program (NFIP) and consider participation in the Community Rating System (CRS).	2020	Ongoing Ongoing	County each year. grams. The County continues to maintain upto-date flood maps and tracks any LOMR etc. The County has adopted the NFIP regulations and continues to participate in the program completing mandatory maintenance as required by program regulations. The County constantly tries to identify potential funding sources to mitigate flood losses to repetitive properties by	Regulations Local Plans and Regulations Local Plans and Regulations are retrofits or remo	High	New and Existing	Orffice of Emergency Preparedness and Public Works Department functions within City ordnances and codes Flood Plan Management, Public Works and Emergency Preparedness addressing FEMA NFIP requirements Flood Plan Management, Public Works and Emergency	Preparedness/County Public Works Department and Office of Emergency Preparedness Flood Plan Management/Public Works Department of Emergency	Ongoing	Having and maintaining most current FIRM map editions will allow for most accurate review of floodplain management. Will ensure flood insurance is available for homeowners and businesses to control flooding costs.	Low	funds City General Funds

	1				1		1-	1			1	1
							Emergency					
							Preparedness,					
							Flood Plan					
							management and					
			The County works with property				Public Works	Department of				
			owners and other stakeholders to				implementing FEMA	Emergency		Low/no cost		
Encourage homeowners and businesses in flood-prone areas to			develop and implement flood	Structure and			codes and	Preparedness/Coun		mechanism to		
elevate mechanical systems (i.e., furnaces, hot water heaters,			mitigation strategies which promotes	Infrastructure			requirements for	ty and Public Works		increase public		County general
electrical panels, etc.).	2020	Ongoing	protection of these items	Projects	High	Existing	flood planes	Department	Ongoing	safety.	Low	funds and EMPG
		0.0			T T		· ·		0 0			
			The County encourages utilities to				Flood Plan					
			flood proof infrastructure in				Management,			While initial cost		
			unincorporated areas and Local				Public Works and	Department of		is high, will reduce		
			Public Works departments are				Emergency	Emergency		recovery and		
Encourage utility providers to assess their facilities, distribution		1	encouraged to mitigating flood prone	Structure and			Preparedness	Preparedness/Coun		replacement costs		
		1					1					
systems, etc. for vulnerability to flooding and, if necessary,	2000	0	streams and corresponding facilities	Infrastructure	I I i wh	Eviating	addressing FEMA	ty and Public Works	0	from flooding	Lligh	Drivata funding
retrofit or modify them to decrease vulnerability.	2020	Ongoing	at the local level	Projects	High	Existing	NFIP requirements	Department	Open	events	High	Private funding
							Floor Dion					
							Flood Plan					
							Management,			While may		
			All County departments work to				Public Works and	Department of		increase building		
Encourage water and wastewater districts to elevate vulnerable			reduce flood damages to				Emergency	Emergency		and development		
equipment, electrical controls and other equipment at			infrastructure when designing new	Structure and			Preparedness	Preparedness/Coun		costs, will reduce		
wastewater treatment plants, potable water treatment plants			projects and mitigate current facilities	Infrastructure			addressing FEMA	ty and Public Works		significant flood		NFIP CRS program
and pumping stations.	2020	Ongoing	as funding is available.	Projects	High	Existing	NFIP requirements	Department	On going	impacts	Medium	and grant funding
Severe Winter Weather												
Enhance public awareness of severe winter weather mitigation	n and preparedne	ess activities.		1	1	1	1	1			1	1
			The County's Office of Emergency									
			Preparedness has an on-going									
			program to educate the public about									
			"All hazards" preparedness and				Emergency					
			safety. This program includes				Preparedness			No/low cost		
Collect and disseminate public education materials that			standardized educational materials	education and			working with relief			mechanism to		
address winter weather safety, preparedness and mitigation			that address the hazards of severe	Awareness			agencies and	Emergency		increase public		
activities.	2020	Ongoing	winter weather.	Programs	High	Existing	United Way and 211	Preparedness	Ongoing	safety.	Low	City general funds
					Ĭ	Ĭ				<u> </u>		7.5
		1	The County's Office of Emergency									
		1	Preparedness has an on-going									
		1	program to educate the public about									
			"All hazards" preparedness and					1				
		1	safety. This program includes									
		1	standardized educational materials				Emergency					
		1	that address the hazards of severe				Preparedness			No/low cost		
		1	winter weather. Also as new	aducation and			1			mechanism to		
Develop and conduct a public education and aver				education and			working with relief	Emergency				County donoral
Develop and conduct a public education and awareness			homeowners are registered they	Awareness	110.46	F. daties	agencies and	Emergency	0	increase public		County general
campaign on properly winterizing homes.	2020	Ongoing	receive preparedness materials.	Programs	High	Existing	United Way and 211	Preparedness	Ongoing	safety.	Low	funds and EMPG

i 												
			The County's Office of Emergency									
			Preparedness has on-going programs									
			to educate the public about "all									
			Hazards" safety including severe									
			winter weather. These programs									
			include standardized educational									
			materials coordinated with local and									
			regional partners. These partners									
			include County Departments, local									
			faith based organizations and many				Emergency					
			other public and private groups. The				Preparedness and					
							Public Works			No/low cost		
Darker with a second and a second as a second as a second as a second as a second as a second as a second as a			Office of Emergency Preparedness					Dublic Weden and				
Partner with emergency services, public health and community				education and			planning and in	Public Works and	1	mechanism to		
groups to conduct special public education events, such as a			public educational events such as the		L		place generators for	Emergency	L	increase public	_	County general
Severe Winter Weather Awareness Day.	2020	Ongoing	Safety City Preparedness show.	Programs	High	Existing	emergency status	Preparedness	Ongoing	safety.	Low	funds
									I			
			The County's Office of Emergency						I	1		
			Preparedness has an on-going						1			
			program to educate the public about				Emergency		1			
			"All hazards" preparedness and				Preparedness					
			safety. This program includes				working with relief			No/low cost		
				Education and			agencies, United			mechanism to		County general
Provide vulnerable populations with winter weather safety,			that address the hazards of severe	Awareness			Way, 211, MEMC to	Emergency		increase public		funds and EMPG
preparedness and mitigation information.	2020	Ongoing	winter weather.	Programs	High	Existing	provide assistance	Preparedness	Ongoing	safety.	Low	monies
	1	Ongoing	I .	_	U				Ongoing	salety.	LOW	Illullies
Ensure local governments and human services agencies are a	ware or facilities	deross the Kali	Isas City area with generators or emerg	ency power that can	De useu as sile	tters in the event or s	severe willter weathe	l. I	1	1		1
			TI. 0							Establish som		
			The County has numerous shelters							Fairly high cost		
			that have back-up power, but the				Office of Emergency			installation price		
			county continues to work with existing				Preparedness			but will ensure		
			and future shelter locations to find	Structure and			functions within	Office of		continuity of		
Retrofit otherwise suitable existing facilities with generators for			ways to retrofit them with emergency	Infrastructure			City ordnances and	Emergency		shelter		
emergency power.	2020	Ongoing	power.	Projects	High	Existing	codes	Preparedness	Ongoing	operations.	Medium	HMGP, BRIC
										Fairly high cost		
							Emergency		I	program to		
							Preparedness and		1	implement but		
			The County currently does not have				Public Works		I	would help		
Consider the adoption of policies requiring generators or other			any existing regulations, but					Public Works and	1			
				Local Plans and			planning and in		1	ensure continuity		County deporal
emergency power systems in the construction of new public			continues to try and implement these		Let a	E tarrier		Emergency		of government	re a	County general
facilities and critical health care facilities like dialysis centers.	2020	Ongoing	policies	Regulations	High	Existing	emergency status	Preparedness	Ongoing	operations.	High	funds
Increase planning and severe weather coordination between	regional partners				1			I		1		
									1			
							Emergency		1			
			Increase the County's support and				Preparedness and		I			
			coordination efforts with the CORE4				Public Works		1	No/low cost		
			group regarding coordination of severe				planning and in	Public Works and	1	mechanism to		
			winter weather warnings, regional	Local Plans and			place generators for	Emergency	1	increase public		County general
Increase CORE4 participation and coordination efforts	2020	Ongoing	decisions and public safety decisions.	Regulations	Medium	New and Existing	emergency status	Preparedness	Ongoing	safety.	Low	funds
Since traffic accidents account for 70% of injuries related to												
			This expense is outlined in the Public		1							
				1	1	1	1	1	1	1		l
Budget for the stockpiling of sand, salt and other materials			Works budget on a yearly basis and				Public Works			Will ensure		
Budget for the stockpiling of sand, salt and other materials necessary to reduce or eliminate ice on roadways and improve			Works budget on a yearly basis and funding amount is reviewed every	Local Plans and			Public Works function within			Will ensure continued open		
Budget for the stockpiling of sand, salt and other materials necessary to reduce or eliminate ice on roadways and improve road conditions.	2020	Ongoing		Local Plans and Regulations	Low	New	Public Works function within Code of Ordinance	Public Works	Ongoing	Will ensure continued open roadways.	Medium	General Fund

										0			
										Short-term			
			Along with NWS, the largest							potential lost			
			jurisdictions (CORE4) have developed							productivity will be			
			an arrangement to coordinate							offset by savings			
			announcements of such "snow days"							from potential			
In an effort to reduce the number of people on the roadways			for governmental employees and							employee injury			
during periods of severe winter weather, develop and			continues to work on educating non-				Public works and			and also reduce			
implement "snow day" plans and policies for non-essential			governmental organizations on the				Law Enforcement			traffic and delays			
personnel and encourage private sector and non-profit			hazards of employees on roadways	Local Plans and			function within			that would			
employers in the community to stay off the roads.	2020	Ongoing	during severe winter weather.	Regulations	Low	New	Code of Ordinance	Public Works	Ongoing	otherwise occur.		Low	General Fund
										Low cost			
										mechanism to			
										cost share and			
Partner with area local governments to establish a mutual aid							Public Works			increase			
system for sand, salt and other materials and their delivery			The County works with MoDOT and	Local Plans and			function within			availability of sand			
resources (i.e., trucks, crews, etc.).	2020	Ongoing	other jurisdictions	Regulations	Medium	New	Code of Ordinance	Public Works	Ongoing	stockpiles.		Low	General Fund
Drought													
Ensure plans and procedures addressing local drought respo	nse, drought mitig	gation and long	term water planning are developed.	l	1	<u> </u>	T	<u> </u>		<u> </u>	l		
							Office of Emergency						
			The County is constantly utilizing				Preparedness			Low cost			
			local, state and federal programs and				functions within	Office of		mechanism to			
Develop local procedures implementing the provisions of the			guidance regarding long term planning				City ordinances and			support drought			County General
Missouri Drought Plan.	2020	Ongoing	for severe drought.	Planning	Medium	New	codes	Preparedness	Ongoing	response.		Low	Funds
Missouli Diought Ftan.	2020	Ongoing	ioi severe diougnit.	rtaillilig	Medium	INEW	codes	riepaieuliess	Ongoing	response.		LOW	rulius
			The County is utilizing local programs				Office of Emergency						
			and guidance and coordinates with				Preparedness			Low cost			
			MARC regarding water drought and				functions within	Office of		mechanism to			
Working with MARC, develop drought plans and water			conservation programs in County				City ordinances and			support drought			
conservation programs.	2020	Ongoing	plans	Planning	Medium		codes	Preparedness	Ongoing	response.		Low	City General Funds
Enhance public awareness of drought, drought mitigation, st			·		i iodidiii		55455	Troparounoco	0.1801.18	гооролоот		2011	only concruer undo
		,											
			County is working with MDNR and										
			local jurisdictions to conduct local										
			public educational programs. This				Office of Emergency						
			includes supplying literature and				Preparedness			Low cost			
Develop and conduct public education and awareness			conducting presentations at local	Education and			functions within	Office of		mechanism to			
programs on drought mitigation, drought response and water			schools and civic events throughout	Awareness			City ordinances and	Emergency		support drought			County General
conservation.	2020	Ongoing	the County.	Programs	Medium	New	codes	Preparedness	Ongoing	response.		Low	Funds
Extreme Temperatures													
Enhance public awareness of the hazards associated with he	at waves, precaut	ionary measur	es and area heat wave mitigation and pr	reparedness activiti	es.								
			The Count is Office of Francis										
			The County's Office of Emergency			ĺ							
			Preparedness has an on-going			ĺ							
			program to educate the public about			1							
			"All hazards" preparedness and			ĺ	Emergency						
			safety. This program includes			ĺ	Preparedness			Low cost			
Collect and disseminate public education materials that			standardized educational materials	Education and		ĺ	working with local			mechanism to			County Emergency
address heat wave safety, preparedness and mitigation			that address the hazards heat waves	Awareness	l	L	heath departments			increase public			Preparedness
activities.	2020	Ongoing	can cause.	Programs	High	Existing	and NOAA	Preparedness	Ongoing	safety.		Low	Budget/EMPG

			T	1								
			The County's Office of Emergency									
			Preparedness has an on-going									
			program to educate the public about									
			"All hazards" preparedness and				Emergency					
			safety. This program includes				Preparedness			Low cost		
Provide vulnerable populations with public education materials			standardized educational materials	Education and			working with local			mechanism to		County Emergency
that address heat wave safety, preparedness and mitigation			that address the hazards heat waves	Awareness			heath departments	Emergency		increase public		Preparedness
activities.	2020	Ongoing	can cause.	Programs	High	Existing	and NOAA	Preparedness	Ongoing	safety.	Low	Budget/EMPG
			The county participates with the									
			regional Integrated Warning Team.									
			This group is task to bring all organizations with responsibilities				Emorgoney					
			= :				Emergency			Low cost		
Work with the media to publish special powenance coefficient		1	regarding warning the public about	Education and			Preparedness working with local			Low cost mechanism to	1	County Emorgency
Work with the media to publish special newspaper sections or conduct periodic broadcasts with emergency information on			severe weather events together to develop more resilient and effective				heath departments	Emergency				County Emergency Preparedness
	2020	Ongoing		Awareness	Lligh	Eviating	and NOAA		Ongoing	increase public	Low	Budget/EMPG
extreme heat. Ensure at-risk, low income and elderly residents have adequa		Ongoing	warnings.	Programs	High	Existing	and NOAA	Preparedness	Ongoing	safety.	Low	Budget/EMPG
Elisure at-risk, tow income and etderty residents have adequa	te all collultionii	ig (or rails) and	Ventitation in their nomes.	l	T	T			l		I	_
							Emergency					
							Preparedness					
							working with local			Medium cost		
							health departments			method to identify		
			The office of Emergency Preparedness				to link with Safe	Emergency		at-risk populations		
Identify at-risk, low income and elderly residents and develop a			is currently exploring ways to get at-				Shelter and cooling	Preparedness/local		to prevent injury of		County general
database and map (or GIS layers) of their places of residence.	2020	Ongoing	risk populations into a GIS database.	Planning	High	Existing	centers locations	health departments	Ongoing	death	Medium	funds
			The County's Office of Emergency	Ü	Ŭ	Ĭ		·				
			Preparedness has numerous									
			government facilities that are air									
			conditioned and available to residents				Emergency					
			during times of severe heat				preparedness			Low cost		
			conditions. The County also				working with local			mechanism to		
			coordinates with the United Ways				relief agencies and			support resiliency		
Partner with community service organizations and area			regional 211 information system to				business contacts			for vulnerable		
businesses to provide air conditioners and/or fans to at-risk			help residents identify local "Cooling				including Untied	Emergency		populations during		County General
groups, low income residents and the elderly.	2020	Ongoing	Centers"	Planning	High	Existing	Way	Preparedness	Ongoing	heat waves.	Low	Fund
Ensure local governments and human services agencies are a	ware of air condi	tioned facilitie	s across the Kansas City metropolitan a	area that can be use	d as shelters ir	the event of a he	eat wave.	•				
							0/5 / 5					
		1	T				Office of Emergency			Low cost	1	
D		1	The County works with several local				Preparedness and			mechanism to	1	
Partner with MARC, local public health agencies, emergency		1	and regional stakeholders to ensure				County Health			identify mitigation	1	
management agencies, the American Red Cross, Salvation		1	the County and local jurisdictions				Department			strategies for	1	
Army and other stakeholders to inventory public, private and		1	within the county have numerous				functions within	Office of		populations	1	
non-profit facilities that are air conditioned and can be used as	0000		"Cooling Centers" open to the public	Di		F 1.00.	City ordinances and	Emergency		vulnerable to heat	ļ	County General
"heat emergency shelters" in the event of a heat wave.	2020	Ongoing	during times of sever heat waves.	Planning	High	Existing	codes	Preparedness	Ongoing	waves.	Low	Funds

	1	1	T		ı	ı	1	1	1	T T			
Retrofit otherwise suitable existing facilities with air conditioning systems and designate them as shelters for use during heat waves.	2020	Ongoing	Currently the county has numerous shelter sites but, efforts to continue increasing shelter facilities Implemented through the Counties educational preparedness programs and Faith Based shelter initiative are ongoing. Many of these sites have airconditioning but efforts continue to try and retrofit those shelters that are not climate controlled.		High	Existing	Emergency Preparedness utilizes the Safe Shelter Partnership for cooling centers in addition to the Salvation Army and United Way	Office of Emergency Preparedness	Ongoing	Medium cost mechanism to assure populations vulnerable to heat waves are protected.	4	M edium	County general funds
Ensure programs and procedures to mitigate, prepare for and	respond to heat v	waves are devel	oped and implemented.		1	l	1	1		<u> </u>			
Develop local heat emergency plans or heat wave annexes to local emergency operations plans.	2020	Ongoing	All weather procedures and plans are continually updated and changed as needed.	Planning	High	Existing	Emergency Preparedness working with local health departments to link with Safe Shelter and cooling centers locations	Emergency Preparedness/local health departments	Ongoing	Low cost mechanism to increase public safety.	L	.ow	EMPG and County General Fund
Partner with public safety agencies, local public health agencies and community groups to develop a program to regularly check on elderly, low income and at-risk people in the community during heat waves.	2020	Ongoing	The County has a severe heat plan that coordinates with public and private agencies to check on at-risk populations in the unincorporated areas of the county. This is an ongoing program continually identifying additional partners such as CERT, VIPS and faith based organizations.	Planning	High	Existing	The county links with the severe weather plan that coordinates with the local health departments	Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	Į	.ow	EMPG and County General Fund
Work with community groups to sponsor a program to encourage people to think of those who require special assistance (this effort can be incorporated into Neighborhood Watch, CERT or similar programs). Dam Failures	2020	Ongoing	The County has a severe heat plan that coordinates with public and private agencies to check on at-risk populations in the unincorporated areas of the county. This is an ongoing program continually identifying additional partners such as CERT, VIPS and faith based organizations.	Planning	High	Existing	Emergency Preparedness working with Safe Shelter Partnerships FBIO	Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	L	.ow	EMPG and County General Fund
Enhance public awareness of the hazards associated with dar	n failures, as wel	l as mitigation :	and preparedness activities										
Collect and disseminate public education materials that address dam safety, preparedness and mitigation activities.	2010	Ongoing	The County's Office of Emergency Preparedness has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes	Education and Awareness Programs	High	Existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	L	.ow	County General Funds
Conduct a public education campaign to inform dam owners and citizens living near the inundation pathways of dams about the need to properly maintain and upgrade these structures, particularly those that are more than 50 years old.	2010	Ongoing		Education and Awareness Programs	Medium			emergency preparedness office	Ongoing	Medium	L	_OW	County general funds

		•											
Provide property owners in or near the inundation pathways of dams with information on dam safety, preparedness and mitigation activities.	2010	Ongoing	The County's Office of Emergency Preparedness has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of dam failures.	Education and Awareness Programs	High	Existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	ı	Low	County General Funds
<u>-</u>	2010	Ongoing	The County's Office of Emergency Preparedness has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of dam failures.	Education and Awareness Programs	High	Existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	Į	Low	County General Funds
Improve warning and evacuation systems and procedures in th	e event of dam fa	ailure.	1	I		1	1	1	ı		-		I
	2010	Ongoing	The County continues to work with local jurisdictions to discouraging development in the vicinity of dam inundation zones.	Local Plans and Regulations	Medium	Existing	Parks & Rec/Public Works/Corps of Engineers working with MDNR to maintain safety building codes to dam inundation zones	Parks & Rec/ Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.	ı	Low	County General Funds
Reduce the potential for dam failures by enhancing inspection	efforts.					•	•	•					
Adopt codes or ordinances requiring permits, engineering studies and safety certifications prior to the construction of new dams.	2020	Ongoing		Local Plans and Regulations	Medium			public works	Ongoing	Medium	I	Low	County general funds
Adopt local ordinances and/or state laws requiring all dam owners do develop emergency action plans for their dams and provide local public safety agencies with copies of these plans.	2020	Ongoing		Local Plans and Regulations	Medium			public works	Ongoing	Medium	I	Low	County general funds
For dams not regulated by the state, encourage dam owners to inspect their dams at least annually and submit the results of these inspections to MDNR.	2020	Ongoing		Local Plans and Regulations	Medium			public works	Ongoing	Medium	ı	Low	County general funds
c. Encourage the state to provide MDNR's Water Resources Program with funding necessary to regularly inspect all significant and high hazard dams in the state. Severe Thunderstorms	2020	Ongoing		Local Plans and Regulations	Medium			county legislature	Ongoing	Medium	Į.	Low	County general funds
Increase severe weather warning capabilities.													
	2015	Ongoing	Development of a countywide home spotter network increasing weather spotters by a minimum of 50 volunteers	Local Plans and Regulations	Medium	new	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.		Low	County General Funds
Increase weather radio distribution	2015	Completed - Project Community Alert	Increase the use of weather radios by general public and businesses throughout the county	Education and Awareness Programs	Medium	existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency Preparedness	Ongoing	Low cost mechanism to increase public safety.		Medium	HMGP, BRIC

Increase weather training effectiveness Levee Failures Improve levee warning systems.	2015	Develop advanced spotter training classes increasing the level of training weather spotters receive	Local Plans and Regulations	Medium	existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency	Low cost mechanism to increase public safety.	Low	County General Funds
Increase accuracy and timely data release from COE regarding water levels on levees throughout the County	2015	Develop methods to accurately know height and length of time water sits on levees		Medium	existing	Office of Emergency Preparedness, within City ordinances and codes	County's Office of Emergency	Relatively low cost mechanism to increase public safety warnings regarding levee failures.	Low	County General Funds

2025 Blue Springs Mitigation Strategy													
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Applies to Community Assets (New/Existing	Existing Local Planning Mechanism through which the action was/will be implemented	Primary Agency Responsible for Implementation/ Administration	Date for Completion	Cost / Benefit Review	Target Capacity	Estimated Cost (\$)	Funding Source
Tornadoes Encourage building practices and the use of mate	rials that reduc	e the damaging	effects of tornadoes.										
Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events. Encourage electric and telecommunications utili	2025	Completed	Adopted updated building codes		Medium	New and Existing		Planning and Codes Departments	Ongoing	Medium		Low	Local Budgeted Funds and Staff Time
Enouge electric and telecommunications and	lies to protect to	CHI CAISCHIG IIIII	distructure from the effects of ton	added and high with	us.		Γ						
Adopt ordinances or regulations requiring the underground placement of new electric and telecommunications transmission lines.	2020	Complete		Local Plans and Regulations	Medium	New and Existing		Community Development	pre 1990	Medium		Low	Local Budgeted Funds and Staff Time
Anchor or strengthen above-ground transmission lines, poles and similar structures.	2020	Ongoing		Structure and Infrastructure Projects	Low	Existing	Due to the prevalence of ice storms in the area KCP&L and its acquired company Aquila, have been working to find areas that are in peril from trees and other natural factors.	Kansas City Power & Light	Ongoing	Medium		High	HMGP, BRIC
Offer financial or other incentives to utility providers to replace existing above-ground utility lines with underground utility lines.	2020	Ongoing		Local Plans and Regulations	Low	Existing	On a project by project basis the option is strongly considered to put utility lines underground. Some corridors are too expensive to address without a redevelopment project.	City / Utility/ developer	Ongoing	Medium	Planning	Low	HMGP, BRIC, Loca Budgeted Funds and Staff Time
Ensure public facilities have shelters to accommo	odate staff and v	isitors during to	ornadoes/natural hazards.										
Assess existing facilities for shelter suitability. Mark clearly and inform visitors/employees of locations.	2010	Ongoing		Local Plans and Regulations	Medium	New	Plan reviews and code requirements, if adopted.	Community Development staff	October 1, 2014	Medium		\$7,500	City's General Fund
Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction.	2010	Ongoing		Local Plans and Regulations	Medium	New	This component will be addressed with the update of the development code. Further stakeholder input required.	Planning and Codes Departments	Unknown at this time	Medium		Low	City's General Fund
Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	2010	Ongoing		Structure and Infrastructure Projects	Medium	New	The new building designs will include rooms that provide safe refuge from tornados and storms.	Planning and Codes Departments	Ongoing	Medium		High	HMGP, BRIC
To use the latest guidance issued in upcoming Int			ersions.			•					•		
				Local Plans and	Lligh	Overall	IRC Code adention	Planning and Development	Ongoing	Include in operational costs overall	8000	10000	General Fund -
Update Building regulations as the IBC changes Floods	2020	Completed		Regulations	High	Overall	IBC Code adoption	Department	Ongoing	UVEIdII	0000	10000	Building Fees
Examine repetitive flood loss properties in each of	county and dete	rmine feasible a	and practical mitigation options.										

			1	•		,					,	,	
							The Public Works Department						
							reviews each water call to						
Work with owners of repetitive flood loss							determine the source of the flow.						
properties to identify feasible mitigation strategies				Structure and			Mitigation strategies are						
and potential opportunities; determine property				Infrastructure			formulated on a case by case	Blue Springs Public				Depends on the	City's General
owners' interest in specific mitigation options.	2020	Ongoing		Projects	Low		basis.	Works	Ongoing	Medium		situation.	Fund
Identify potential funding opportunities to													
implement mitigation options for repetitive flood				Local Plans and				Blue Springs Public					
loss properties.	2020	Ongoing		Regulations	Low	Existing	Public Works grant searches.	Works	Ongoing	Medium		High	HMGP, BRIC
												The City has very	
												few homes that	
							The Department consistently looks					experience	
With stakeholders, explore incentive options to				Structure and			for ways to partner with residents					overland flow	
encourage property owners to take action to				Infrastructure			and property owners to alleviate	Blue Springs Public				issues. Most are	City's General fund
prevent or reduce future flood losses	2020	Ongoing		Projects	Medium		overland flooding issues.		Ongoing	Medium		simply yard	and CIP Budget
Integrate flood mitigation strategies with projects	and activities of	lesigned to (1)	protect, restore or enhance ecosys	stems and the enviro	nment and	d/or (2) create r	ecreational opportunities for the co	mmunity.					
							Through the plan review process						
							and code requirements detention						
							is required. A comprehensive plan						
Consider the construction of detention basins,							update that was completed in						
small lakes and greenways or riparian corridors in							September 2009 heightened	Public Works and					
areas of new development to channel and catch				Structure and			awareness of natural detention	Community					
storm water, thereby reducing the likelihood of				Infrastructure			options and encourages the	Development					Developer /
flooding.	2020	Ongoing		Projects	High	Existing	implementation of such practices.		Ongoing	Medium		High	Owners
In concert with existing comprehensive and land				-				Public Works and					
use plans, develop a strategy for acquiring flood-								Community					
prone property for use as open space or park				Local Plans and				Development					City's General
land.	2020	Completed		Regulations					Pre 1990	Medium		Low	Fund; Staff Time
							Development in flood zones is						
							prohibited by code. If flood prone	City's Community					
Identify funding sources for the acquisition of							areas are incorporated in a large	Development and					
flood-prone land for environmental, recreational				Local Plans and			development the area is typically	Public Works					
and flood mitigation uses.	2020	Ongoing		Regulations	Medium	Now	used as green space.		Ongoing	Medium		High	HMGP, BRIC
and nood magadon uses.	2020	Oligoling		negutations	riculum	IVCW	used as green space.	исранинента	Oligoliig	riculum		i iigii	TII-IOI , BIIIO
				1			The city has very few flood plain						
				1			areas within the current						
				1			boundaries. However, there has						
							· ·			Will roduce			
				1			been an area identified in the intent	Community		Will reduce			
Consider alternative uses for fleedalains and				Structure and			to annex area that would be	Community		floodplain vulnerability and			
Consider alternative uses for floodplains and							suitable for some of these uses. If	Development,		1			
flood-prone areas, such as sports fields, parks,	0000	0 1 1		Infrastructure	NA - diam	N.	the area is annexed these	Public Works, and	Ongoing	increase	Diamaina	1	LIMOR RRIG
wildlife habitats, etc.	2020	Ongoing		Projects	Medium	ivew	applications will be considered.	Parks departments	Ongoing	greenspace.	Planning	Low	HMGP, BRIC
Davidon northographina hattire in the state of													
Develop partnerships between regional													
emergency management, floodplain management													
and environmental groups to educate one another				1			The City partners with the Jackson						
and the public of the benefits of collaboration and				l			County Storm water commission to						
identify specific programs and activities that can				Local Plans and			identify regional initiatives and	Storm water				l .	City's General
be developed and implemented jointly.A30	2020	Ongoing		Regulations	Medium		programs.	Commission	Ongoing	Medium	<u> </u>	\$7,500 per year	Fund; Staff Time
Reduce flood-related damage to public, residenti	al and commerc	ial property in f	lood-prone areas through structur	al and nonstructural	retrofits o	r removal of pro	perty.						

		1	T.	ı			1	1		T T		
- Francisco hamasumara and husinaasa in							The city was the with seek areas and				Danas dant as the	
a. Encourage homeowners and businesses in				Church una am d			The city works with each property				Dependent on the number of	
flood-prone areas to elevate mechanical systems				Structure and Infrastructure			owner on a case by case basis to					
(i.e., furnaces, hot water heaters, electrical panels, etc.).	2010	Ongoing		Projects	Medium	Fuinting	identify solutions to flooding in buildings.	Public Works	Ongoing	Medium	significant rain events per year.	General Fund
panets, etc./.	2010	Ongoing		Projects	Medium	EXISTING	bulluligs.	Public Works	Oligoling	Medium	events per year.	General Fund
b. Encourage water and wastewater districts to												
elevate vulnerable equipment, electrical controls												
and other equipment at wastewater treatment				Structure and								
plants, potable water treatment plants and				Infrastructure								
pumping stations.	2020	Completed		Projects				Public Works	Ongoing	Medium	High	HMGP, BRIC
c. Encourage utility providers to assess their												
facilities, distribution systems, etc. for				Structure and								
vulnerability to flooding and, if necessary, retrofit				Infrastructure								
or modify them to decrease vulnerability.	2020	Completed		Projects				Public Works	Ongoing	Medium	High	HMGP, BRIC
d. As funding allows, repetitive flood loss				Structure and								
properties and structures will be targeted for			This initiative has been deferred	Infrastructure								
buyout.	2020	Deferred	until funds become available.	Projects				Public Works	Ongoing	Medium	High	HMGP, BRIC
Discourage new development in floodplains and fl	lood-prone area	is.	T	l	1		ı	l	T			
a. Adopt ordinances prohibiting residential and								0				Oite de Oessessel
commercial development in flood plains or flood-	0000	0		Local Plans and				Community	D 0000	Mandiana	Laur	City's General
prone areas. Improve flood hazard assessments and flood map	2020	Complete		Regulations				Development	Pre 2000	Medium	Low	Fund; Staff Time
**a. Obtain parcel data (assessed valuation and	ping.				l				1			
other information) for flood boundary areas and												
enhance vulnerability assessments for these				Local Plans and			The data is available through the	Community				
areas.	2010	Ongoing		Regulations	Low	Existing	City's GIS system.	Development	Ongoing	Medium	Low	General Fund
b. Partner with FEMA in the Cooperating	2010	Oligoling		negutations	LUW	Existing	City 3 Old System.	Development	Oligoliig	riculum	LOW	Ocherat i unu
Technical Partners (CTP) Program to increase												
local involvement in, and ownership of, the flood				Local Plans and				Community				City's General
mapping process.	2020	Completed		Regulations				Development	October 2007	Medium	Low	Fund; Staff Time
Enhance public awareness and education efforts r		<u> </u>		riogatationo	l .			Borotopinone	0010001 2007	riodidiii	2511	r una, otan milo
	olutou to Hoou.											
b. Obtain brochures and related publications on												
flood mitigation, preparedness, response and			Standard practice is to direct									
recovery from FEMA, SEMA, the American Red			interested parties to the FEMA									
Cross and other organizations and provide them			website. Brochures available at	Education and								
to home owners and businesses in flood-prone			City Hall and local libraries and	Awareness				Community				City's General
areas.	2020	Deferred	City Website.	Programs				Development	Ongoing	Medium	Low	Fund
Participate in, and ensure compliance with, flood	mitigation and 1	floodplain mana	gement programs.									
a. Participate in the National Flood Insurance												
Program (NFIP) and Community Rating System				Local Plans and					September			
(CRS).	2020	Completed	Participation begain in 2018	Regulations					1978	Medium	Low	General Fund
**b. Obtain the latest copies of flood insurance												
rate maps (FIRMs), floodplain maps and similar				Local Plans and				Public Works				
documents.	2020	Ongoing		Regulations	High	New	Project Plan Review	Engineering	Ongoing	Medium	Low	General Fund
Goal: Develop plans and adopt policies to address	sound stormwa	ater and floodin	g challenges	T	T		T	T		,		I
Mitigation Action: Adopt new stormwater		Dentistrente d										
engineering design and management		Participating in	Martin KO ADMA S									
standards and stream setback development		review of draft										
standards to reduce the risk of stream and		standards	working with consultants to	I I Di								Oite de Oessessel
flash flooding	2225	under	complete the new standards in	Local Plans and	Llieda	40 (04 (0000	no costo identificad	City Coursell	Onzainz	h do elicomo	1	City's General
To continue to monitor for possible flooding issue	2025	development	2025	Regulations	High	12/31/2026	no costs identified	City Council	Ongoing	Medium	Low	Fund; Staff Time
To continue to monitor for possible modaling issue:	s within the city	, anu auapt solu	nons to correct the issues when ti	icy diise.								

	1	1	1	I	1	1	T	ı	ı		T		т т
								Planning and					
				Local Plans and				Development					
Monitor for FEMA Flood Map updates	2020	Ongoing		Regulations	High	Overall	Flood Plain Management	Department	Ongoing	Medium	N/A	Low	General Fund
		L .		Local Plans and			Local Emergency Operations						
Update DAM EAP Annually	2020	Ongoing		Regulations	High	Yes	Planning	Public Works	Annual	Medium	N/A	Low	General Fund
Severe Winter Weather													
Encourage electric and telecommunications utili	ties to protect t	heir existing infi	astructure from the effects of seve	ere winter weather.	ı	T	<u> </u>		4000	T	1	T	
A doub and in a new year of the second size of the									pre 1990 mid				
Adopt ordinances or regulations requiring the underground placement of new electric and				Local Plans and					level transmission				City's General
telecommunications transmission lines.	2020	Completed		Regulations	High				lines	Medium		Low	Fund; Staff Time
b. Offer incentives to utility providers to replace	2020	Completed		negutations	riigii				unes	Mediaiii		LOW	runu, stan rime
existing above-ground utility lines with				Local Plans and			Department discussions with the	Kansas City Power					
underground utility lines.	2020	Ongoing		Regulations			utility provider.	& Light	Ongoing	Medium		Low	Utility
Ensure local governments and human services ag			cross the Kansas City area with ge		cv nower1	that can be used			Oligoling	riculani		LOW	Ottaty
Ensure took governments and namen services a	Serioles are awa	Te or identifies de		icrators or emerger	ley power	linut cuir be uset	and shellers in the event of severe w	Vinter weather.	1		1		
a. Partner with MARC, the American Red Cross,													
Salvation Army and other stakeholders to													
inventory public, private and non-profit facilities													
that have generators or emergency power and can													
be used as shelters in the event of severe winter				Local Plans and				Blue Springs and					
weather.	2020	Ongoing		Regulations	Medium	New	Discussions and project reviews.	CJCEMA	Ongoing	Medium		Low	Developer
				Structure and			MARC emergency management in						
b. Retrofit otherwise suitable existing facilities				Infrastructure			conjunction with Central Jackson						MARC Participating
with generators for emergency power.	2020	Ongoing		Projects	High		County Emergency Management.	MARC	ongoing	Medium		Medium	agencies
c. Consider the adoption of policies requiring													
generators or other emergency power systems in				Local Plans and				City/ owner/					
the construction of new public facilities.	2020	Ongoing		Regulations	Medium	New	Strategic planning and plan review.	developer	ongoing	Medium		Low	Owner / developer
Since traffic accidents account for 70% of injurie	s related to ice	and snow, devel	op and implement programs to im	prove road condition	ns and pro	tect motorists d	luring severe winter weather						
a. Budget for the stockpiling of sand, salt and													
other materials necessary to reduce or eliminate				Local Plans and									City's General
ice on roadways and improve road conditions.	2020	Completed		Regulations				Public Works	Pre 1984	Medium		Low	Fund; Staff Time
Enhance public awareness of drought, drought m	itigation, state a	and local drough	t response actions and water cons	ervation measures.		1		1	ı		1		
							L						
a. Offer economic incentives to encourage water		1					The water rates are set in a tiered						
conservation, e.g., through modification of water	0000	0		Local Plans and	NA 17	Entretor :	structure with prices increasing as		0	Reduction in water		0.0	City's General
rate structures.	2020	Ongoing		Regulations	Medium	Existing	certain levels are reached.	Department	On going	usage overall.		0\$	Fund; Staff Time
h. Davidan and implement water can		1		Land Diama and				Divo Coningo Mitto					Citula Canaval
b. Develop and implement water conservation	2020	Omenic		Local Plans and	Madi	Eviatio -	Code of Ordinances Water Date	Blue Springs Water	On going	Modium		40	City's General
ordinances.	2020	Ongoing	to drought and most water was de	Regulations	Medium	Existing	Code of Ordinances - Water Rates	Department	On going	Medium	1	\$0	Fund; Staff Time
Encourage improvements to water system infras	tructures to real	uce vumerability	to drought and meet water dse de	manus.							1		
		1					System improvements are						
Budget for infrastructure improvements to		1		Local Plans and			System improvements are continuously included in the	Blue Spring Public					
municipal water systems.	2020	Ongoing		Regulations	Medium	Evicting			On Going	Medium		\$200,000 per year	Water fees
municipal water systems.	2020	Ongoing		negulations	rieuluill	EVIORIIR	Capital Improvement Program.	Works Department	On Going	riculuiii		φ∠ου,σου μει year	water rees
b. Develop and approve bond measures to fund		1											
improvements to municipal and/or water district		1											
water treatment plants, transmission systems,		1		Local Plans and				Blue Springs Public					Water Fees and
water mains and related infrastructure.	2020	Ongoing		Regulations	High	Existing	Capital Improvement Program	Works	On Going	Medium		\$21,000,000	SRF bonds
mate. maine and retated illitrastructure.	2020	JUPOULE	1		I. 1.P.1	LAISUIIE	Suprtat Improvement Flogranii		on ooms	cuium	1	4-1,000,000	ora pondo

											•		
1									January 2015				
c. Identify and apply for state and federal grants									through Tri				
to improve water treatment plants, transmission				Local Plans and				Blue Springs Public	County Water				City's General
systems, water mains and related infrastructure	. 2020	Complete		Regulations				Works	Authority	Medium		Low	Fund; Staff Time
To ensure an adequate water supply by maintai	ning contracts for	r water purchase	from three separate entities.										
Monitor water use during times of drought and u	se			Local Plans and									City's General
voluntary restrictions if warranted	2020	Ongoing		Regulations	High	Yes	Water Modeling	Public Works	Annual	Medium	N/A	Low	Fund; Staff Time
Heat Waves													
Ensure local governments and human services	agencies are awa	are of air condition	oned facilities across the Kansas C	City metropolitan are	ea that can	be used as she	Iters in the event of a heat wave.						
a. Partner with MARC, local public health													
agencies, emergency management agencies, the	و												
American Red Cross, Salvation Army and other													
stakeholders to inventory public, private and no	1-												
profit facilities that are air conditioned and can b													
used as "heat emergency shelters" in the event of				Local Plans and									City's General
a heat wave.	2020	Completed		Regulations					June 2014	Medium		Low	Fund; Staff Time
a neat wave.	2020	Completed		ricgutations					Julie 2014	riculum	+	LOW	Tunu, Stan Time
b. Retrofit otherwise suitable existing facilities				Structure and									
with air conditioning systems and designate ther	_			Infrastructure									City's General
= :		Commissor							huma 001.4	Madium		Laur	1 -
as shelters for use during heat waves.	2020	Completed	(Projects		<u> </u>			June 2014	Medium		Low	Fund; Staff Time
Ensure at-risk, low income and elderly resident	s have adequate a	air conditioning ((or fans) and ventilation in their h	omes.	1	T	T	1	T		1		1
b. Partner with community service organizations													
and area businesses to provide air conditioners				Education and									
and/or fans to at-risk groups, low income				Awareness									City's General
residents and the elderly.	2020	Completed		Programs				Emergency Mgt.	June 2014	Medium		Low	Fund; Staff Time
Ensure programs and procedures to mitigate, p	epare for and res	pond to heat wa	ives are developed and implemen	ted.	1			_					
a. Develop local heat emergency plans or heat													
wave annexes to local emergency operations				Local Plans and									City's General
plans.	2020	Completed		Regulations				Emergency Mgt.	June 2014	Medium		Low	Fund; Staff Time
To continue to offer air conditioned shelters du	ing heat waves.												
1													
I											As identified, 5		
I											people in one		
1											season have used		
İ											the facility while		
Offer air conditioned facilities to the public durir	ıg		Vesper Hall is available during	Local Plans and							their A/C was being		
heat waves	2020	Ongoing	business hours	Regulations	М		CJCEMA	Blue Springs	Ongoing	Medium	repaired.	Low	General Fund
Dam Failures													
Improve hazard assessment information for da	ns across the Kar	nsas City metror	oolitan area.										
	uorosa tric Kar												
	doi 033 the Rai									•	1		1
a. Work with MDNR's Water Resources Program													
_													
and USACE to determine which dams in Cass,													
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had				Local Plans and									City's General
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar	nd	Completed		Local Plans and				Blue Springs	2007	Medium		Low	City's General
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had		Completed		Local Plans and Regulations				Blue Springs	2007	Medium		Low	-
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed.	nd	Completed						Blue Springs	2007	Medium		Low	-
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed. b. Using the latest information from the NID,	nd	Completed						Blue Springs	2007	Medium		Low	-
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed. b. Using the latest information from the NID, MDNR's inventory of dams and other sources,	nd	Completed						Blue Springs	2007	Medium		Low	-
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed. b. Using the latest information from the NID, MDNR's inventory of dams and other sources, develop GIS layers and maps indicating the	nd	Completed						Blue Springs	2007	Medium		Low	-
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed. b. Using the latest information from the NID, MDNR's inventory of dams and other sources, develop GIS layers and maps indicating the locations, inundation pathways and hazard	nd	Completed		Regulations				Blue Springs	2007	Medium		Low	Fund; Staff Time
and USACE to determine which dams in Cass, Clay, Jackson, Platte and Ray counties have had inundation studies, inundation pathway maps ar emergency action plans developed. b. Using the latest information from the NID, MDNR's inventory of dams and other sources, develop GIS layers and maps indicating the	nd	Completed						Blue Springs Blue Springs	2007	Medium Medium		Low	City's General Fund; Staff Time City's General Fund; Staff Time

		1		1	1	1	1		ı	1		1	
c. Obtain assessed valuation data and population													
figures for areas in the vicinity of dam inundation													
pathways so that enhanced vulnerability													
assessments may be conducted describing the													
number of lives and amount of property at risk				Local Plans and									City's General
	2020	Completed		Regulations				Blue Springs	2010	Medium		Low	Fund; Staff Time
nom dam faiture.	2020	Completed		ricgutations				Dide oprings	2010	riculum		LOW	r unu, stan riine
d. Include maps and information from inundation													
studies and dam emergency action plans in local				Local Plans and									City's General
	2020	Completed		Regulations				Blue Springs	2010	Medium		Low	Fund; Staff Time
Reduce the potential for dam failures by enhancin	g inspection eff	orts.		, ,									
b. Adopt codes or ordinances requiring permits,													
engineering studies and safety certifications prior				Local Plans and									City's General
to the construction of new dams.	2020	Completed		Regulations				Blue Springs	2007	Medium		Low	Fund; Staff Time
c. Encourage the state to provide MDNR's Water													
Resources Program with funding necessary to													
regularly inspect all significant and high hazard				Local Plans and									City's General
dams in the state.	2020	Completed		Regulations				Blue Springs	2010	Medium		Low	Fund; Staff Time
d. Adopt local ordinances and/or state laws													
requiring all dam owners do develop emergency													
action plans for their dams and provide local				Local Plans and									City's General
public safety agencies with copies of these plans.		Completed		Regulations			l	Blue Springs	2010	Medium		Low	Fund; Staff Time
Improve the structural integrity of dams to reduce	the threat of da	m failures.		I	1	I			la	I		ı	
									On going				
									maintenance is				
				Church up and					budgeted for				
a. Budget for regular repairs and improvements to				Structure and Infrastructure				Blue Springs Public	within the Public Works				
	2020	Ongoing		Projects	Low	Existing	City's budget	Works	budget.	Dam erosion.		\$5,000 per year.	General revenue
b. Develop and implement codes and ordinances	2020	Oligoling		Projects	LOW	EXISTING	City's budget	WUIKS	buuget.	Daill elosion.		\$5,000 per year.	General revenue
requiring minimum site and construction				Local Plans and									City's General
• =	2020	Completed		Regulations				Blue Springs	2010	Medium		Low	Fund; Staff Time
Improve warning and evacuation systems and pro			Ire	ricgutations	<u>l</u>	L		Dide oprings	2010	riculum		LOW	r unu, Stan riine
Adopt policies, codes or ordinances discouraging	ocuareo in die e	or dam late		1						I		1	
development in the vicinity of dam inundation				Local Plans and									City's General
	2020	Completed		Regulations				Blue Springs	2012	Medium		Low	Fund; Staff Time
To update the Dam Emergency Action Plan annual						L							
Update inundation maps in the Dam EAP as				Local Plans and						Included in general			City's General
provided in the USACE	2020	Ongoing		Regulations	High	Yes	Dam Emergency Action Plan	Public Works	Ongoing	operational costs	N/A	Low	Fund; Staff Time
Severe Thunderstorms													
To maintain the level of awareness and public edu	cation concerni	ing severe thund	erstorms as guided by the NWS.										
To manipulate the level of accommon and acciding													
To maintain the level of awareness and public				Education and									
education concerning severe thunderstorms as	2020	Ongoing		Education and Awareness Programs				CJCFPD	Ongoing	Medium		Low	City's General Fund; Staff Time

								Primary Agency		
2025 Central Jackson County				Type of				Responsible for		
Fire Protection District		Status of	Status	Mitigation		Date of	Cost/Benefit	Implementation/	Estimate of Cost	
Mitigation Strategy	Plan Year	Project	Explanation	Activity	Priority	Completion	Review	Administration	(\$)	Funding Source
Tornadoes										
Establish locations throughout the community that can be		for those who i	need it during severe	thunderstorms an	d tornadoes.					
	2025	New		Local Plans and	Medium	Ongoing	Medium	fire district	Low	Local Budgeted
Ensure public facilities have shelters to accommodate s		during tornad	oes/natural hazard:							
Assess existing facilities for shelter suitability. Mark clearly				Structure and						Local Budgeted
and inform visitors/employees of locations.	2020	Ongoing		Infrastructure Structure and	Medium	ongoing	Medium	fire district	Low	Funds and Staff
Construct safe rooms or shelters in public facilities	2020	Ongoing		Infrastructure	Medium	ongoing	Medium	city and fire district	High	HMGP, BRIC
Ensure Alert, Warning and Mass Notification systems are				iiiiastiactare	riculum	origonia	riculum	city and mic district	111811	TH-IOT, BING
Ensure Acti, Warning and Flass Holmouton Systems are	li place and o	perationat.		I		Τ				
Evaluate the need for new storm sirens or to upgrade										
technology to ensure that all parts of the fire district's				Structure and						
service area, including Blue Springs and Grain Valley, may				Infrastructure						
be warned during severe weather.	2020	Ongoing		Projects	High	ongoing	Medium	fire district	High	HMGP, BRIC
Floods	2020	0808			6	51.8511.8	. roundin	in a diation		
				Education and						Local Budgeted
				Awareness						Funds and Staff
Educate the public on the seriousness of flooding.	2025	New		Programs	Low	Ongoing	Low	fire district	low	Time
Severe Thunderstorms	•									
Educate the public on the seriousness of severe thundersto	orms.									
				Education and						Local Budgeted
				Awareness						Funds and Staff
	2025	New		Programs	Medium	Ongoing	Medium	fire district	Low	Time
Severe Winter Weather										
Establish warming shelter locations throughout the commu	unity for those w	ho need it.								
										Local Budgeted
				Local Plans and						Funds and Staff
	2025	New		Regulations	Medium	Ongoing	Medium	fire district	Low	Time
Extreme Temperatures										
Establish cooling shelters around the community for those	that need it.									
						1				Local Budgeted
				Local Plans and		1				Funds and Staff
	2025	New		Regulations	Medium	Ongoing	Medium	fire district	Low	Time

2025 Grain Valley Mitigation Strategy										
Mitigation Goals and Action Steps Tornadoes	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Applies to Community Assets	Primary Agency Responsible for Implementation/ Administration	Cost / Benefit Review	Estimated Cost (\$)	Funding Source
	2025	new		Education & Awarene	Low	new	public works	low cost relative to benefit	Low for education	City budget
Floods Participate in, and ensure compliance	with flood mitigatio	n and floodnlain mar	aggement programs							
Participate III, and ensure compliance	with, itoou mitigatio	ii anu itoouptani mai	lagement programs.							
Continue to participate in the National			Current NFIP	Local Plans and			Will ensure reduced insurance rates for homeowners and businesses while controlling recovery			
Flood Insurance Program (NFIP)	2025	new	Participant	Regulations	Low	Ongoing	costs.	floodplain manager	low cost	city resources
Severe Thunderstorms Increase public awareness of family and	d individual preparedr	ness actions they can	take to prepare for tor	nadoes and severe st	orms through nublic e	education activities				
public divarences of farmity differences		loco doctorio cricy curi	tans to property for tor	The state of the s	oo an ough public (accertain activities.				
Use social media, poster presentations, speaking opportunities, and other means as available to educate the public about individual,										
family, organization, and community				Education and				omordonov		
preparedness relating to tornadoes and severe storms.	2025	new		Awareness Programs	medium	Continuous project	low cost	emergency	Low	city resources
Extreme Temperatures	2020	new	Continuous project	riugiailis	meulum	Continuous project	IOM COST	management	Low	city resources
Protect residents during times of extrem	ne heat or cold									

2025 Grandview Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Assist housing and business recovery										
Educate and awareness	2015	Ongoing	We view this as part of a response plan versus mitigation.		High	As needed	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
Collect and dispose of debris										
Contract debris disposal	2015	Ongoing	We view this as part of a response plan versus mitigation.	Local Plans and Regulations	High	As needed	Medium	public works	Medium	Local Budgeted Funds and Staff Time
			We view this as part of a response					emergency		Local Budgeted Funds and Staff
Educate and awareness	2015	Ongoing	plan versus mitigation. We view this as part of a response	Programs Education and	High	As needed	Medium	management	Low	Time Local Budgeted Funds and Staff
Place directional signage	2015	Ongoing	plan versus mitigation.		High	As needed	Medium	public works	Low	Time
Encourage building practices and the use of materials that reduce			promise management	18	Jg	1	1		1	
			Currently only required where change of impact. Review current							
Require the use of tempered or shatter-resistant glass in the	<u>'</u>		process/code for update							
windows of new public/private facilities where large numbers of			possibility. Community	Local Plans and						
people may congregate. Retrofit existing facilities.	2010	Ongoing	Development, Building Services.	Regulations	Medium	Ongoing	Medium	building services	High	HMGP, BRIC
Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind			Adopt 2018 Building Code. Community Development,	Education and Awareness						Local Budgeted Funds and Staff
damage to residential/ commercial structures.	2010	Ongoing	Building Services.	Programs	Medium	Ongoing	Medium	building services	Low	Time
Encourage construction of community tornado shelters in office co	omplexes, factories	, apt complexes, scl	nools mobile home parks, stadium	s, and other large po	pulation congregat	ion centers.				
Consider adopting ordinances or regs requiring the construction of tornado shelters in new buildings where people live, work or	2010	Ongoing	Review options with adoption of 2018 Building Code and Zoning	Local Plans and	Madium	Ongoing	Modium	planning 9 maning	Law	Local Budgeted Funds and Staff
Offer recidential/commercial builders/developers tay incentives to	2010	Ongoing	Updates. Start conversation on requiring in commercial	Regulations Local Plans and	Medium	Ongoing	Medium	planning & zoning	LOW	Time Local Budgeted Funds and Staff
Offer residential/ commercial builders/developers tax incentives to construct safe rooms/community shelters in new public facilities.	2010	Ongoing	developments.Community Development.	Regulations Education and	Medium	Ongoing	Medium	planning & zoning	Low	Time Local Budgeted
Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	2010	Ongoing	Community Development, Building Services.	Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Funds and Staff Time
Encourage electric and telecommunications utilities to protect the			_	, <u> </u>		, , ,				
			Future code changes will change							Local Budgatad
Adopt ordinances or regulations requiring the underground placement of new electric and telecommunications transmission			from recommendation to requirement. Community	Local Plans and						Local Budgeted Funds and Staff
lines.	2010	Ongoing	Development.	Regulations	Medium	Ongoing	Medium	planning & zoning	Low	Time

				Structure and						
Anchor or strengthen above-ground transmission lines, poles and			Report any identified concerns to	Infrastructure						
similar structures.	2010	Ongoing	KCP&L.	Projects	Medium	Ongoing	Medium	local utilities	High	HMGP, BRIC
omital ordetares.	2010	Ongoing	Seek possible incentives that are	Structure and	riculani	Ongoing	riculum	todat datates	111611	Local Budgeted
Offer financial or other incentives to utility providers to replace			available to complete this.	Infrastructure						Funds and Staff
	0010	Ongoing	•		Madium	Ongoing	Madium	aite e admaini atmatia e		
existing above-ground utility lines with underground utility lines.	2010	Ongoing	Administration.	Projects	Medium	Ongoing	Medium	city administration	1 LOW	Time
Ensure public facilities have shelters to accommodate staff and v	isitors during t	ornadoes/natural naz		T	1			<u> </u>	1	
			Share assessment report							
.			completed by Fire Department							
Assess existing facilities for shelter suitability. Mark clearly and			with Hazard Mitigation	Local Plans and						General fund -
inform visitors/employees of locations.	2010	Ongoing	Committee.	Regulations	Medium	Ongoing	Medium	fire department	Low	plan review fees
			Undetermite were building and							
			Update with new building code							
			and zoning updates in 2020.							Local Budgeted
Consider adopting policies requiring incorporation of safe			Community Development,	Local Plans and						Funds and Staff
rooms/shelters in new public facility construction.	2010	Ongoing	Building Services.	Regulations	Low	Ongoing	Medium	Planning	Low	Time
			Hazard mitigation committee		1					
			review assessment report and	Structure and						
Retrofit or add shelters to existing public facilities with inadequate			determine action needed based	Infrastructure						
protection from tornadoes and high wind.	2010	Ongoing	on review.	Projects	Medium	Ongoing	Medium	public works	High	HMGP, BRIC
Increase public awareness and understanding the benefits of "sa	fe rooms."		<u>.</u>						•	
			Previously deferred, need to							
			create materials for distribution.	Education and						Local Budgeted
			Community Development,	Awareness				emergency		Funds and Staff
Develop, distribute informational materials on safe rooms.	2010	Ongoing	Building Services.	Programs	Medium	Ongoing	Medium	management	Low	Time
									1	
			Previously deferred, need to reach	ı						
			out to trade organization to	Education and						Local Budgeted
			develop workshop. Community	Awareness				emergency		Funds and Staff
Partner w/ trade orgs. to conduct safe room workshops.	2010	Ongoing	Development, Building Services.	Programs	Medium	Ongoing	Medium	management	Low	Time
Restore transportation network			1 2 2 4 7 2 2 3 2 2 2 2 2							
·										Local Budgeted
			We view this as part of a response	Natural Systems						Funds and Staff
Clean Streets	2015	Ongoing	plan versus mitigation.	Protection	High	As needed	Medium	public works	Low	Time
Otean offeets	2015	Oligoliig	ptan versus magation.	Trotection	111611	Astriccucu	riculum	public works	LOW	Local Budgeted
			Ma view this as part of a record	Notural Cuatares						Funds and Staff
Diamaga of delayin	2015	0======	We view this as part of a response	-	l li ah	An manda d	Madium	mulalia vuonto-		
Dispose of debris	2015	Ongoing	plan versus mitigation.	Protection	High	As needed	Medium	public works	Low	Time
Secure property	1	1		T	1			<u> </u>		
			M/							
			We do not currently have a							
			comprehensive plan addressing							
			this. Addressed as needed. Create		1					
			policy to ensure needs are met		1					Local Budgeted
			and process is identified. Fire	Local Plans and						Funds and Staff
Establish Boundaries	2015	Ongoing	Department.	Regulations	High	As needed	Medium	first responders	Low	Time

	Γ	ı		ī			T	Г		T
Provide Fencing	2015	Ongoing	We do not currently have a comprehensive plan addressing this. Addressed as needed. Create policy to ensure needs are met and process is identified. Public Works.	Structure and Infrastructure Projects	High	As needed	Medium	public works	Low	Local Budgeted Funds and Staff Time
			We do not currently have a comprehensive plan addressing this. Addressed as needed. Create policy to ensure needs are met and process is identified. Administration, Outside	Local Plans and						Local Budgeted Funds and Staff
Provide shelter and water	2015	Ongoing	resources.	Regulations	Medium	As needed	Medium	city administration	Low	Time
Floods										
Enhance public awareness and education efforts related to flooding	ng.	l	h.,	l						1
			We have an ordinance that prohibits building in the floodplain. Share information with any homes previously built in	Education and						Local Budgeted
Encourage home owners and businesses to purchase flood			floodplain. Community	Awareness				community		Funds and Staff
insurance.	2010	Ongoing	Development.	Programs	Medium	Ongoing	Medium	development	Low	Time
Obtain brochures and related publications on flood mitigation, preparedness, response and recovery from FEMA, SEMA, the American Red Cross and other organizations and provide them to home owners and businesses in flood-prone areas.	2010	Ongoing	Obtain and share via social media and material at apartment complexes. Community Development, Communications Manager.	Education and Awareness Programs	Low	Ongoing	Medium	community development	Low	Local Budgeted Funds and Staff Time
Partner with emergency services, public health, human services organizations, appropriate state and federal agencies and the business community to conduct special public education events, such as a Flood Mitigation and Preparedness Workshop.	2010	Ongoing	Community Development.	Education and Awareness Programs	Low	Ongoing	Medium	community development	Low	Local Budgeted Funds and Staff Time
Examine repetitive flood loss properties in each county and deter	mine feasible and pr	ractical mitigation o		T						1
**As funding allows, repetitive flood loss properties and structures will be targeted for buyout.	2010	Ongoing	Dangerous Building program along with seeking funding options. Community Development, Public Works.	Structure and Infrastructure Projects	Medium	Ongoing	Medium	community development	\$1,000 per year	General Fund
**Identify potential funding opportunities to implement mitigation	2010			Structure and Infrastructure	Medium		Medium	public works		General Fund
options for repetitive flood loss properties. **With stakeholders, explore incentive options to encourage	2010	Ongoing	WOING.	Projects Structure and	ricululii	Ongoing	ricululli	public WOIKS	\$1,000 per year	Jeneral Fund
property owners to take action to prevent or reduce future flood losses	2010	Ongoing	Back-flow prevention options. Public Works.	Infrastructure Projects	Low	Ongoing	Medium	public works	\$500 per year	General Fund
**Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities;			impacted in the past. Community	Structure and Infrastructure						
determine property owners' interest in specific mitigation options.	2010	Ongoing	Development, Public Works.	Projects	Medium	Ongoing	Medium	public works	\$5,000 per year	General Fund
Implement or improve flood warning systems.										

	T	_	1	1	1		1		1	
			Review current methods to							
			disseminate information. Seek							
			funding for weather radio							
			program. Emergency							Local Budgeted
Develop and implement procedures to quickly analyze and			Management, Communications	Local Plans and				emergency		Funds and Staff
disseminate information from flood warning systems to the public.	2010	Ongoing	Manager.	Regulations	High	Ongoing	Medium	management	Low	Time
				Education and						Local Budgeted
Work with local governments and other stakeholders to share data			Develop list of partners and plan	Awareness						Funds and Staff
from flood warning systems in multiple jurisdictions.	2010	Ongoing	to accomplish. Public Works.	Programs	Low	Ongoing	Medium	public works	Low	Time
Improve flood hazard assessments and flood mapping.										
**Conduct an in-depth flood risk analysis utilizing HAZUS data and										
create detailed maps based on GIS technology to identify areas at				Local Plans and						HMGP, BRIC;
risk from flooding.	2010	Ongoing	Public Works	Regulations	Low	Ongoing	Medium	public works	10000	General Fund
**Coordinate the collection of demographic, economic,			Complete and share with Hazard					public works,		
watershed, land use and other data required by the HAZUS-Flood			Mitigation Team. Community	Local Plans and				community		
software program and/or GIS systems.	2010	Ongoing	Development, Public Works.	Regulations	Low	Ongoing	Medium	development	\$5,000 per year	General Fund
			Data available. Create GIS							
**Obtain parcel data (assessed valuation and other information)			mapping and share with Hazard							
for flood boundary areas and enhance vulnerability assessments			Mitigation team. Community	Local Plans and				community		
for these areas.	2010	Ongoing	Development.	Regulations	Medium	Ongoing	Medium	development	Low	General Fund
			Flood map has been updated.							
Partner with FEMA in the Cooperating Technical Partners (CTP)			Continue monitoring of current							
Program to increase local involvement in, and ownership of, the			boundaries to ensure	Local Plans and				emergency		
flood mapping process.	2010	Completed	accuracy.Public Works.	Regulations	Medium	Ongoing	Medium	management	\$2,500 per year	General Fund
Integrate flood mitigation strategies with projects and activities d		<u> </u>						management	φ2,000 pci yeai	Ocheraci una
micegrate 1000 micigation strategies with projects and activities a	Congricu to (1) prote	t, restore or criman		Transfer (2) create i	- Corcutionat opp	ortalities for the co	initiality.			
			Include in Comprehensive Plan							
			Update. Identify locations and					community		
			develop ideas. Develop policy.	Structure and				development,		
Consider alternative uses for floodplains and flood-prone areas,				Infrastructure						
•	2010	Ongoing	Community Development, Parks, Public Works.		Modium	Ongoing	Medium	parks, public	Low	HMGP, BRIC
such as sports fields, parks, wildlife habitats, etc.	2010	Ongoing	Public Works.	Projects	Medium	Ongoing	Medium	works	Low	nimge, bric
			Hadata saning and sub-division							
Consider the construction of detection begins and like and			Update zoning and sub-division							
Consider the construction of detention basins, small lakes and			regulations to ensure adequate	Church una and				community		
greenways or riparian corridors in areas of new development to			requirements. Individual plan	Structure and				development,		
channel and catch storm water, thereby reducing the likelihood of	2010		review. Public Works, Community					parks, public		
flooding.	2010	Ongoing	Development.	Projects	Medium	Ongoing	Medium	works	Low	HMGP, BRIC
								community		l
			Seek funding sources. Community					development,		Local Budgeted
Identify funding sources for the acquisition of flood-prone land for		L .	Development, Parks, Public	Local Plans and				parks, public		Funds and Staff
environmental, recreational and flood mitigation uses.	2010	Ongoing	Works.	Regulations	Medium	Ongoing	Medium	works	Low	Time
								community		
In concert with existing comprehensive and land use plans,			Develop policy. Community					development,		Local Budgeted
develop a strategy for acquiring flood-prone property for use as			Development, Parks, Public	Local Plans and				parks, public		Funds and Staff
open space or park land.	2010	Ongoing	Works.	Regulations	Medium	Ongoing	Medium	works	Low	Time

	1	1	1		1	T		1	ı	
			Create list of partners and meet to discuss options available.							
Work with area environmental groups, property owners and other			Approach home owners identified					community		
stakeholders to develop and implement flood mitigation strategies			at risk. Develop policy.					development,		Local Budgeted
that also promote the restoration and/or sustainability of fish and			Community Development, Parks,	Local Plans and				parks, public		Funds and Staff
wildlife habitats	2010	Ongoing	Public Works.	Regulations	Medium	Ongoing	Medium	works	Low	Time
Reduce flood-related damage to public, residential and commerc						168	1	1	1	1
<u> </u>		1	Dangerous Building program		<u> </u>					
			along with seeking funding	Structure and				community		
**As funding allows, repetitive flood loss properties and structures			options. Community	Infrastructure				development,		HMGP, BRIC;
will be targeted for buyout.	2010	Ongoing	Development, Public Works.	Projects	Low	Ongoing	Medium	public works	\$500 per year	General Fund
		- G - G		.,		1 0 0			, ,	
			Add requirement to new zoning in							
			areas that do not restrict building.							
			Develop list of properties at risk							
			and approach owners. Seek							
Encourage homeowners and businesses in flood-prone areas to			funding to assist with cost.	Structure and						
elevate mechanical systems (i.e., furnaces, hot water heaters,			Community Development,	Infrastructure						
electrical panels, etc.).	2010	Ongoing	Business Services.	Projects	Low	Ongoing	Medium	business services	\$2,500 per year	Permit fees
Severe Thunderstorms		88				68			+=,=== per ,===	
Restore Street System										
										Local Budgeted
			We view this as part of a response	Natural Systems						Funds and Staff
Clean debris	2015	Ongoing	plan versus mitigation.	Protection	High	As needed	Medium	public works	Medium	Time
		0.0	3	Structure and						Local Budgeted
			We view this as part of a response							Funds and Staff
Dispose of debris	2015	Ongoing	plan versus mitigation.	Projects	High	As needed	Medium	public works	Medium	Time
Restore utilities	1-4-5	188	January Control of the Control of th	1	16		1		1	1,,,,,,
										Local Budgeted
			We view this as part of a response	Local Plans and						Funds and Staff
Clear transportation networks	2015	Ongoing	plan versus mitigation.	Regulations	High	As needed	Medium	public works	Medium	Time
,		0 0			Ĭ			ľ		
			Social media and newsletters are							
			used to help educate when	Education and						Local Budgeted
			disasters occur. Communication	Awareness				public works,		Funds and Staff
Educate and awareness	2015	Ongoing	Manager, Public Works.	Programs	High	As needed	Medium	communications	Low	Time
				Structure and	-					Local Budgeted
			Coordinate with KCP&L as	Infrastructure						Funds and Staff
Plan infrastructure/Grid protection	2015	Ongoing	needed.	Projects	Medium	As needed	Medium	public works	Low	Time
		56		.,				0		Local Budgeted
			Share shelter plan with Hazard	Local Plans and						Funds and Staff
Provide temporary shelter and water	2015	Ongoing	Mitigation team. Public Works.	Regulations	Medium	As needed	Medium	public works	Low	Time
ovide temperary shetter and water	2010	CI190III8	i inabadon team. i abde works.	110butations	I icaiaiii	7.6 Heeded	i iculum	Papile Works	12017	TITLE

Greenwood 2025 Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes										
Community education for all types of disasters	includiing tona	idoes, winter we	eatner, neat and seve	re storms among otr	ier types of eme T	rgencies and disaste	rs.	l		l
Prepare and disseminate information to residents and those working in the city through				Education and Awareness	Marie and		Mark	emergency		.,
employers on emergency preparedness tips.	2020	Ongoing	Ongoing	Programs	Medium	Ongoing	Medium	management	low cost	city resources
To increase access to safe rooms or shelters fo	r our residents	<u> </u>	<u> </u>		<u> </u>	<u> </u>		l	<u> </u>	<u> </u>
Identify buildings in the city that could be used as storm shelters and determine if additional shelter space is required.	2020	Ongoing	Ongoing	Local Plans and Regulations	Medium	Ongoing	Medium	emergency management	low cost	city resources
Seek funding to build storm shelters as part of new public buildings or to retrofit existing buildings to increase storm shelter space in the			will seek funds once planning work is	Structure and Infrastructure				emergency		
city	2020	Ongoing	completed	Projects	Medium	Ongoing	Medium	management	low cost	HMGP, BRIC
Floods										
Participate in, and ensure compliance with, flo	od mitigation a	nd floodplain m	anagement programs	•						
**Participate in the National Flood Insurance Program (NFIP) and consider participation in			Current NFIP	Local Plans and			Will ensure reduced insurance rates for homeowners and businesses while controlling recovery			
the Community Rating System (CRS).	2025	Ongoing	Participant	Regulations	Low	Ongoing	costs.	floodplain manager	low cost	city resources
							Having and maintaining most current FIRM map editions will allow			
**Obtain the latest copies of flood insurance							for most accurate			
rate maps (FIRMs), floodplain maps and similar				Local Plans and			review of floodplain			
documents.	2020	Ongoing	Ongoing	Regulations	Low	Ongoing	management.	floodplain manager	low cost	city resources
Heat										
Implementing education as well as working on	ways to help w	ith the vulnerab	le populations to pro	vide options for cool	ing in the summ	er months.		ı	<u> </u>	ı
Identify vulnerable populations in the city and determine how to assist them during severe				Local Plans and				emergency		
heat	2020	Ongoing	Ongoing	Regulations	Medium	Ongoing	Medium	management	low cost	city resources
Severe Winter Weather										

To help support vulnerable persons in our com	o help support vulnerable persons in our community during severe winter weather if power is affected.													
Identify vulnerable populations in the city and														
determine how to assist them during severe				Local Plans and				emergency						
winter weather	2020	Ongoing	Ongoing	Regulations	Medium	Ongoing	Medium	management	low cost	city resources				

Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity (2025)	Priority	Applies to Community Assets (New/Existing)	Existing Local Planning Mechanism through which the action was/will be implemented	Primary Agency Responsible for Implementation/ Administration	Date for Completio n	Cost / Benefit Review	Target Capacity (2030)	Estimated Cost (\$)	Funding Source
Tornado 1. Increase public awareness and understanding the benefits of "safe room	- "												
a. Develop, distribute informational materials on safe rooms and storm shelters.	2026	Ongoing	Implemented through the City's preparedness educational and outreach program with emphasis on existing shelter facilities located throughout the City	Public Education and Awareness	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	Ongoing	Low/no cost mechanism to increase public safety.	An educated public has knowledge and access to safe rooms and shelters.	Low	City's General Fund
b. Partner w/ trade organizations, community-based-organizations and not- for-profit organizations to conduct safe room workshops.	2027	Ongoing	Work with private facilities, City and County volunteer groups, neighborhood groups, the City PIO and the Independence School District to put on workshops and classes to increase "Safe Room" awareness and utilization during severe weather events.	Public Education and Awareness	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	Ongoing	Low/no cost mechanism to increase public safety.	A variety of reliable partner organizations collaborate on providing safety information and awareness.	Low	City's General Fund
2. Ensure public facilities have shelters to accommodate staff and visitors of	luring torna	does/ nat. hazaı	rds.										
a. Review existing facilities for shelter suitability. Mark clearly and inform visitors/employees of locations.	2027	Ongoing	The City of Independence has designated safety locations in all City facilities for staff and visitors to shelter in during severe weather events. As a "Storm Ready" Community each facility has an "All-Hazard" weather radio and a method of being contacted by the EOC	Local Planning ar	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	Ongoing	Low/no cost mechanism to increase public safety.	50% of facilities have access to shelters	Low	City's general fund
b. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	2028	Ongoing	The city continues to try and develop storm shelters in existing public facilities as funding and opportunities become available.	Local Planning ar	High	Existing	Emergency Preparedness Division functions within City ordnances and codes	Emergency Preparedness Division	Ongoing	High cost to retrofit existing buildings but can also prevent large number of injuries and fatalities. Some cost could be subsidized by tax incentives and grants	50% of facilities have access to shelters	High	City's General Fund, Grants, or other future sources
c. Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction. 3. Encourage construction of community tornado shelters in office complex.	2029	Ongoing	The City does not have any tax incentives for residential/ commercial builders/developers to construct safe rooms/community shetters in new public facilities due to economic conditions and City finances.	Local Planning ar		New	Utilize Community Development Department regulatory systems and infrastructure Emergency Preparedness Division functions within City ordnances and codes	Emergency Preparedness Division and Community development Department	2018	No cost to advocate and build awareness in the public. High cost to retrofit existing buildings but can also prevent large number of injuries and fatalities. Some cost could be subsidized by tax incentives and grants	50% of facilities have access to shelters	Med	City's General Fund, Grants, or other future sources

a. Offer residential/ commercial builders/developers tax incentives to construct safe rooms/community shelters in new public facilities.	2026	Ongoing	The City does not have any tax incentives for residential/ commercial builders/developers tax incentives to construct safe rooms/community shelters in new public facilities due to economic conditions and City finances.	Structure and Infrastructure Projects	Med	New	Emergency Preparedness Division functions within City ordnances and codes	Community Development	2028	Low cost to the City. Significant cost to developers.	50% of facilities have access to shelters or safe rooms	Low to High	City's General Fund, Grants, or other future sources
b. Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	2026	Ongoing	The City of Independence continues to work with all schools and non-governmental entities to promote the benefits of Safe Rooms in all public educational outreach materials.	Education and Awareness Programs	High	New	Emergency Preparedness Division functions within City ordnances and codes	Emergency Preparedness Office	On-Going	Low/no cost mechanism to increase public safety.	50% of facilities have access to shelters or safe rooms	Low	General Funds and EMPG grants
c. Consider adopting ordinances or regs requiring the construction of tornado shelters in new buildings where people live, work or congregate.	2026	Ongoing	The City of Independence has an ordinance in place requiring all premanufactured home parks to include a community shelter for their residents if they expand or build a new facility. Other ordinances for apartment complexes and other large venue complexes are being considered.	Local Planning and Regulations /Education and Awareness Programs	High	New	Emergency Preparedness Division functions within City ordnances and codes	Community Development	On-going	High cost to design and build shelter facilities but can prevent large number of injuries and fatalities. Some cost could be subsidized by tax incentives and grants	50% of facilities have access to shelters or safe rooms	High	Private Sector Funding
a. Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures.	2027	Ongoing	The Community Development Department adheres to the standards outlined in the 2012 International Building Code.	Local Planning and Regulations /Education and Awareness Programs	Med	New	The City of Independence, Missouri uses the following building codes: 2018 International Residential Code (IRC) 2018 International Building Code (IBC) 2018 International Existing Building Code 2018 International Existing Building Code 2018 International Hechanical Code 2018 International Plumbing Code 2018 International Plumbing Code 2018 International Fuel Gas Code 2017 National Electrical Code 2017 National Electrical Code 2010 ADA Accessibility Requirements The city also adopted the 2024 edition of the International Residential Code with 2024 Energy Code Amendments.	Community Development	On-going	Low cost to the City. Significant cost to developers.	New construction has improved storm resistance.	Medium	City's General Fund, Grants, or other future sources

b. Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events.	2027	Ongoing	The Community Development Department adheres to the standards in the 2012 International Building Code.	Local Planning and Regulations /Education and Awareness Programs	Med	New	See above.	Community Development	On-going	Low cost to the City. Significant cost to developers.	New construction has improved storm resistance.	Medium	City's General Fund, Grants, or other future sources
c. Review and enhance (if necessary) regulations related to design and installation of architectural features on buildings to minimize the creation of windborne debris.	2027	Ongoing	The Community Development Department adheres to the standards outlined in the 2012 International Building Code.	and Regulations /Education and Awareness Programs	Med	New	See above.	Community Development	2028	Low cost to the City. Significant cost to developers.	construction has improved storm resistance.	Medium	City's General Fund, Grants, or other future sources
5. Encourage electric and telecommunications utilities to protect their exis	ting infrastr	ucture from the	effects of tornadoes and high winds.										
a. Anchor or strengthen above-ground transmission lines, poles and similar structures.	2027	Ongoing	There is currently no funding available to encourage this mitigation action. Independence Power and Light (IPL) does offer residents a discounted price for burying electrical lines. This discount is offered because of bulk pricing agreements negotiated between IPL and the associated contractors.	Structure and Infrastructure Projects	High	Existing	Independence Power and Light Operations	Independence Power and Light	2035	High cost yielding high benefits in preserving life and property especially in regard to access and functional needs populations.	Practically all above ground power lines are below ground.	High	Rate surcharges, City's General Fund, Grants, or other future sources
c. Offer financial or other incentives to utility providers to replace existing above-ground utility lines with underground utility lines.	2027	Ongoing	Independence Power and Light is a city owned utility. There is currently no mitigation money being used to bury power lines. Residents can get a discount for burying their lines due to a bulk pricing agreement with contractors.	Structure and Infrastructure Projects and Structure and Infrastructure Projects	High	Existing	Independence Power and Light Operations	Independence Power and Light	2035	High cost yielding high benefits in preserving life and property especially in regard to access and functional needs populations.	Practically all above ground power lines are below ground.	High	Rate surcharges, City's General Fund, Grants, or other future sources
6. Encourage Water Utility to install generators for emergency power should	power line	s go down.											
a: Install natural gas fired generator and all necessary appurtenances to allow water plant to operate at the minimum day usages should electric power be disrupted.	2029	Ongoing	The Water Plant currently has power supplies from two lines served by KCPL. If KCPL was unable to supply the electricity, the water plant would not be able to provide water which is an essential service to the community.	Solar with redundant system for climate adaption	High	New and existing	Planning by Water Pollution Control and Independence Power and Light	Water Pollution Control and Independence Power and Light	2030	Initial investment will be high but resiliency gained will be substantial.	Project completed by 2029	Medium	City's General Fund, Grants, or other future sources
7. Increase capabilities to provide mass notifications to the public and incre	ase coordin	ation among cit	y departments during times of severe	weather.	ı			T	l		T	1	
a. Maintain the Mass Notification System to inform residents and city employees during severe weather.	2025	Ongoing	Implement a citywide notification system that can warn residents of severe weather events and other natural and manmade hazards. The system can also help facilitate effective response with city employees, volunteers, faith based partners etc.	Education and Awareness Programs	High	Existing	Expand current system (RAVE) Work with other City departments through local ordnances to fund, implement, manage and maintain.	Emergency Preparedness	Unknown	Would give residents enhanced warnings and improved response coordination but would have a high implementation and maintenance cost.	2027	Medium	City's General Fund, Grants, or other future sources

	b. Expand, maintain, upgrade, and modernize city wide Tornado Siren network.	2025	Ongoing	The City of Independence is a continually growing city, and as the city grows it can outgrow the footprint of our established tornado siren capabilities. Additionally, technological failures or changes can require siren infrastructure to be upgraded, changed, or added to in order to maintain capabilities and viability. This can include access, operating systems, and cybersecurity.	Education and Awareness Programs and Structure and Infrastructure Projects	High	Existing	Emergency Preparedness Division will have the lead planning duty, but will coordinate with the city Emergency Communication Center as the 24-hour backup location for siren control.	Emergency Preparedness	Ongoing	Maintenance and required upgrades have a moderate ongoing yearly cost, while expansion costs can be high. As the most visible and commonly used method of warning, ensuring there is no lapse of coverage or use is vital to ensuring life safety to anyone outside during severe weather.	2027	Medium - High	City's General Fund, Grants, or other future sources
,	Flooding			·										
	**a. Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities; determine property owners' interest in specific mitigation options.	2026	Ongoing	The City of Independence tracks all repetitive loss properties and works with the owners to mitigate potential flood losses through potential development and storm drainage enhancements.	Structural and Non-structural flood mitigation.	High	Existing	City Codes and Community Development Plans	Public Works/Water Pollution Control	Ongoing		Practically no flood endangered properties and structures not meant to withstand flooding are in flood plains.	Low	City General Funds and Stormwater Sales Tax
	**b. Identify potential funding opportunities to implement mitigation options for repetitive flood loss properties.	2026	Ongoing	The City of Independence constantly tries to identify potential funding sources to mitigate flood losses to repetitive loss properties. This sources include private, local, state and federal grants.	HMGP - Flood Property Buyouts	Medium	Existing	City Codes and Community Development Plans	Public Works/Water Pollution Control	Ongoing	Preventing future flooding of properties that have had history of flood damage	Practically no flood endangered properties and structures not meant to withstand flooding are in flood plains.	High	City General Funds and Stormwater Sales Tax
	**c. As funding allows, target repetitive flood loss properties and structures for buyout.	2026	Ongoing	The City of Independence, since 1982, has worked with property owners, using city, State and Federal funding, to buyout over 58 properties that were considered repetitive loss or severe repetitive loss properties. The City continues to apply for funding opportunities to remove targeted repetitive loss properties.	HMGP - Flood Property Buyouts	High	Existing	City Codes and Community Development and Storm water plans	Public Works/Water Pollution Control	Ongoing	history of flood damage	Practically no flood endangered properties and structures not meant to withstand flooding are in flood plains.	High	HMGP, BRIC, FMA

**d. With stakeholders, explore incentive options to encourage property owners to take action to prevent or reduce future flood losses	2026	Ongoing	The City of Independence continually works with property owners to mitigate future flood losses. While economic incentives are not always implemented many educational programs such as building water gardens, backflow valves and landscaping are done.		High	New & Existing	Emergency Preparedness, Public works and Water Pollution Control function within Code of Ordnances	Emergency preparedness	Ongoing	Low cost mechanism to identify r ways to prevent damages to residential properties	Practically no flood endangered properties and structures not meant to withstand flooding are in flood plains.	Low	City's general fund
2. Integrate flood mitigation strategies with projects and activities designed	d to (1) prote	ect, restore or e	nhance ecosystems and the environm	ent and/or (2) cre	ate recreation	onal opportunities f	or the community.	T					1
a. Consider the construction of detention basins, small lakes and greenways or conserving riparian corridors in areas of new development to channel and capture storm water, thereby reducing the likelihood of flooding.	2027	Ongoing	The City continues to maintain and expand a network of regional detention basins to help reduce flooding potential and impacts throughout the city. Native plantings are used within the network of detention basins, incorporating water quality improvement potential. In the current 5-year plan, planning and design work for the Bundschu detention basin, along Bundschu Road, will occur. The City has already implemented a riparian corridor preservation program and will continue to implement this conservation program for all new developments.	FMA/PDM or now calted Building- Resilient- Infrastructure- Communities (BRIC)	High	New	Storm water and Community Development Plans	Water Pollution Control	Ongoing	Will prevent flooding for moderate costs	Substantial capability to retain and divert storm water. Capability throughout all City flood plains.	Medium	HMGP, BRIC, FMA
b. In concert with existing comprehensive and land use plans, develop a strategy for acquiring flood-prone property for use as open space or park land.	2027	Ongoing	The City of Independence, since 1982, has worked with property owners, using city, State and Federal funding, to buyout over 58 properties that were considered either repetitive loss or severe repetitive loss properties. The City continues to apply for funding opportunities to remove targeted repetitive loss properties. As part of these buyouts, each property is deed restricted, requiring the land to be used for open space.	BRIC / HMGP - Flood Property Buyouts	High	Existing	City Codes and Regulations	Public Works	Ongoing	Preventing future flooding of properties that have had history of flood damage	Substantial capability to retain and divert storm water. Capability throughout all City flood plains.	High	HMGP, BRIC, FMA
c. Identify funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses.	2027	Ongoing	The City continues to apply for State and Federal grants to support and enhance flood mitigation and prevention programs. This includes identifying funding sources for the acquisition of flood-prone land for environmental, recreational and flood mitigation uses.	BRIC and Flood Water Reduction/Storm water Conveyance Improvements	l High	Existing	City Codes and Regulations	Water Pollution Control and Public Works Department	On-going	Preventing future flooding of properties that have had history of flood damage	Substantial capability to retain and divert storm water. Capability throughout all City flood plains.	Low	City general funds and/or grant funding

d. Consider alternative uses for floodplains and flood-prone areas, such as sports fields, parks, wildlife habitats, etc.	2027	Ongoing	Where applicable, flood buyout properties will be evaluated for future usage, including sports fields, parks, wildlife habitats, etc. In most cases, the areas will qualify as riparian corridor and be allowed to be naturally restored.	BRIC and HMGP - Flood Buyouts	Medium	Existing	City Codes and Regulations and NFIP CRS programs	Water Pollution Control and Public Works Department	Ongoing	Preventing future flooding of properties that have had history of flood damage	Substantial capability to retain and divert storm water. Capability throughout all City flood plains.	High	City general funds and/or grant funding
e. Work with area environmental groups, property owners and other stakeholders to develop and implement flood mitigation strategies that also promote the restoration and/or sustainability of fish and wildlife habitats	2027	Ongoing	The City works with property owners and other stakeholders to develop and implement flood mitigation strategies which promotes protection of fish and wildlife habits. Water Pollution Control works with partner organizations including volunteer groups. For instance, the Stream Clean initiative has worked to improve stream and runoff improvements The City continues to find opportunities with volunteer organizations to promote wildlife habitats.	BRIC and Planning Strategies and Flood Plain Mitigation Grants	Medium	Existing	Emergency Preparedness Division function within City ordnances and codes	Water Pollution Control and Public Works Departments	Ongoing	Natural riparian corridors restored and preserved result in improved water quality.	Substantial capability to retain and divert storm water. Capability throughout all City flood plains.	Low	Stormwater Sales Tax funds & Regional Detention funds
f. Develop partnerships between regional emergency management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed and implemented jointly.	2027	Ongoing	The City has on-going programs to educate the public about flooding and its associated hazards. This program includes standardized educational materials coordinated with local and regional partners. City departments also participate in local, regional, State and national public educational events such as Safety City and Eco-Fest, hosted by the City each year. The City's stormwater sales tax, approved by vote and established in 2000, secures funds for stormwater mitigation activities. Oversight of the sales tax usage is comprised of the Stormwater Oversight Committee (SWOC), consisting of Independence citzens. The Committee meets quarterly and includes presentations to Council to help educate about the program's achievements.	BRIC and Planning Strategies and Flood Plain Mitigation Grants	High	Existing	City departmental functions within Water Pollution Control Division, Municipal Services (includes Flood Plain Management) and Emergency Preparedness Division. City ordnances and codes	Water Pollution Control and Public Works Department and Emergency Preparedness Division	On-going	Low/no cost mechanism to increase public safety.	Increased public awareness and support for stormwater control projects	Low	Stormwater Sales Tax funds & Regional Detention funds

g. Engage both public and private stakeholders in flood control projects to encourage mutually beneficial activities to promote flood control with other stakeholder goals.	2027	Ongoing	The City has on-going programs to educate the public about flooding and its associated hazards. When Water Pollution Control determines the need for a regional detention basin within an area, public meetings are held with property owners to discuss the flood control needs of the project. Public comments help steer design considerations to address the flood control efforts as well as mutually beneficial activities. For instance, in the 39th Street and Phelps detention basin, trails were incorporated to help promote public engagement with the native plants and ecosystem.	Public Education	Medium	New and Existing	City departmental functions within Water Pollution Control Division, Municipal Services (includes Flood Plain Management) and Emergency Preparedness Division. City ordnances and codes	Water Pollution Control	Ongoing	Low	Increased public awareness and support for stormwater control projects.	Low	Stormwater Sales Tax funds & Regional Detention funds
3. Reduce flood-related damage to public, residential and commercial prope	erty in flood	l-prone areas th	rough structural and nonstructural re	trofits or removal	of property.	T	1	•			ı	1	ı
a. Encourage homeowners and businesses in flood-prone areas to elevate mechanical systems (i.e., furnaces, hot water heaters, electrical panels, etc.).	2026	Ongoing	The Municipal Services Department oversees and maintains the City of Independence Municipal Separate Storm Sewer System (MS4). This system is made up of more than 13,800 structures, 230 miles of stormwater pipe, 19 regional detention basins, all within 23 local watersheds. Stormwater Management Plan Objectives In addition to maintaining stormwater infrastructure Municipal Services operates an Environmental Compliance Program. The purpose of this program is to protect human health and the environment by reducing pollutants released into our local waterways. National Pollutant Discharge Elimination System Permit The Environmental Compliance Program oversees compliance Program oversees compliance With the Missouri Department of Natural Resources, National Pollutant	Elevation of Mechanical Systems/Risk Mitigation	High	Existing	City departmental functions within City ordnances and codes	Water Pollution Control and Emergency Preparedness Division	Ongoing	Low/no cost mechanism to increase public safety and reduce high cost flood damages	2028	Low	City general funds and/or grant funding
b. Encourage water and wastewater districts to elevate vulnerable equipment, electrical controls and other equipment at wastewater treatment plants, potable water treatment plants and pumping stations.	2026	Ongoing	All City departments work to reduce flood damages to infrastructure when designing new projects and mitigate current facilities as funding is available.	Elevation of Mechanical Systems/Risk Mitigation	High	New & Existing	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	All City Departments	Ongoing	While this may increase building and development costs, will reduce significant flood impacts	2028	Medium	City general funds and/or grant funding

etc. fo	courage utility providers to assess their facilities, distribution systems, or vulnerability to flooding and, if necessary, retrofit or modify them to ase vulnerability.	2026	Ongoing	The City owns the water, electrical and sewer utilities and assess their facilities, distribution systems, etc. for vulnerability to flooding. Each vulnerability is evaluated and where applicable, the Utility tries to retrofit or modify the facility to reduce flood risk.	Risk Reduction by Mitigation	Medium	New & Existing	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	City Utility Departments	Ongoing	While initial cost is high, will reduce recovery and replacement costs from flooding events	2028	High	City general funds and/or grant funding
	funding allows, repetitive flood loss properties and structures will be ed for buyout.	2026	Ongoing	The City of Independence, since 1982, has worked with property owners, using city, State and Federal funding, to buyout over 58 properties that were considered repetitive loss or severe repetitive loss properties. The City continues to apply for funding opportunities to remove targeted repetitive loss properties.	HMGP - Flood Buyouts	High	Existing	Emergency Preparedness, Public works and Water Pollution Control function within Code of Ordnances	Public Works	Ongoing	Initial high cost but prevents future flooding of properties that have had history of high cost flood damage	2028	High	City general funds and/or grant funding
	vate public facilities in flood-prone areas. Encourage home owners and esses to elevate their structures.	2026	Ongoing	The City of Independence constantly tries to identify potential funding sources to mitigate flood losses to repetitive properties by encouraging owners and businesses to elevate their structures in flood prone areas	BRIC and Structural and Non-Structural Flood Mitigation	Med	Existing	Emergency Preparedness, Public works and Water Pollution Control function within Code of Ordnances and as Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Public Works	Ongoing	Initial high cost but prevents future flooding of properties that have had history of high cost flood damage	2028	High	Private Sector and City general funds and/or grant funding
	vate public facilities, commercial businesses, and residential ures to reduce flood risk.	2026	Ongoing	The City is a participating community in the National Flood Insurance Program (NFIP). This program requires elevation of structures above the base flood elevation (BFE) determined for the 1% storm with 1 foot of freeboard. Information is based on the 2017 flood insurance rate maps (FIRM) adopted January 2017. Building above the 1% BFE helps reduce flooding potential.	BRIC and Flood Risk Mitigation	High	New		Public Works	Ongoing	Raising the structure's base floor elevation versus the base flood elevation reduces risk of flooding for larger storm events (i.e. the 1% or 100-year frequency storm).		Low	Pubic/private partnering
	dentify incentives to offer home owners and businesses to remove or it their structures in flood-prone areas.	2026	Ongoing	The City of Independence constantly tries to identify potential funding sources to mitigate flood losses to repetitive properties by encouraging owners and businesses to retrofit their structures to prevent flooding. The City will be to partner with the US Army Corp of Engineers through their Silver Jackets program, to help provide flood mitigation strategies for vulnerable structures.	BRIC and Structural and Non-Structural Flood Mitigation	High	Existing	Emergency Preparedness, Public works and Water Pollution Control function within Code of Ordnances and as Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Public works and Emergency Preparedness Division	Ongoing	Initial high cost but prevents future flooding of properties that have had history of high cost flood damage	2028	High	Private Sector and City general funds and/or grant funding

h: Identify storm sewer and waste water systems to identify and upgrade areas where infrastructure needs repair, replacement, or upgrade	2026	Ongoing	The City of Independence is constantly growing, changing, expanding. Existing stormwater systems might not be adequate to properly contain, control, or convey stormwater flow, which increases the potential for flooding of structures and properties. The Stormwater Sales Tax and Program provides a system of project evaluation and rating to prioritize stormwater improvement projects throughout the city. Since its inception in 2000, the program has completed over 100 projects, helping to reduce flood occurrences.	BRIC and System Upgrades and Rehabilitation	High	Existing	Emergency Preparedness, Public works and Water Pollution Control function within Code of Ordnances and as Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Public Works, Water Pollution Control, Emergency Preparedness Division	Ongoing	High cost of repair, but can result in extremely high flood loses if there is a system failure or overload	2028	High	Stormwater Sales Tax and sanitary sewer fee/rates
4. Improve flood hazard assessments and flood mapping. **a. Obtain parcel data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas.	2020	Ongoing	The City has adopted the City continues to review flood hazard areas and incorporate necessary changes as needed. To assess risk levels the City will utilize FEMA's Map Service Center msc.fema.gov/portal/home or www.floodsmart.gov/ The City's Floodplain Administrator will coordinate how to address mapping concerns.at 816-325-7614	Planning strategy to keep new developments or redevelopment out of floodplains	Medium	New and Existing Areas	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Water Pollution Control, Public Works	Ongoing	Most data readily available and can be easily imported to identify potential areas for increased mitigation efforts.	2029	Low	City's General Funds
**b. Purchase HAZUS-Flood software from FEMA, possibly in conjunction with other local or regional stakeholders.	2020	Ongoing	The City currently uses the HAZUS software at for Level One reviews. It is currently exploring the future integration of GIS data to increase the accuracy of flood inundation prediction capabilities in partnership, the Water Pollution Control and Public Works Departments.	Planning strategy to keep new developments or redevelopment out of floodplains	Medium	New and Existing Areas	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Water Pollution Control, Public Works	Ongoing	Most data readily available and can be easily imported to identify potential areas for increased mitigation efforts.	2029	Low	City's General Funds
**d. Coordinate the collection of demographic, economic, watershed, land use and other data required by the HAZUS-Flood software program and/or GIS systems.	2020	To start in 2021	The City currently uses GIS data and FEMA Mapping Technology to increase the accuracy of flood inundation prediction capabilities in partnership , the Water Pollution Control and Public Works Departments.	Planning strategy to keep new developments or redevelopment out of floodplains		New and Existing Areas	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2006 codes (January 2009)	Water Pollution Control, Public Works	Ongoing	Most data readily available and can be easily imported to identify potential areas for increased mitigation efforts.	2029	Low	City's General Funds

e. Conduct an in-depth flood risk analysis utilizing HAZUS data and create detailed maps based on GIS technology to identify areas at risk from flooding.	2020	To start in 2022	The City currently uses GIS data and FEMA Mapping Technology to increase the accuracy of flood inundation prediction capabilities in partnership , the Water Pollution Control and Public Works Departments.	Planning strategy to keep new developments or redevelopment out of floodplains	Medium	New and Existing Areas	City departmental functions within City ordnances and codes and Regulated through the adoption of NFIP CRS programs (October 1991) and IBC 2018 codes (January 2019)	Water Pollution Control, Public Works	Ongoing	Most data readily available and can be easily imported to identify potential areas for increased mitigation efforts.	2029	Low	City's General Funds
reflect tood zones/risks in this rapidly developing multi-jurisdictional corridor.	2020	Will start in 2021	City is working with the USACE and the Blue jacket Program to scope and prepare for this comprehensive study of the Little Blue River corridor from Lee's Summit to the Missouri River	FMA/PDM - Planning, modeling, and mapping	High	New and Existing Areas	Working with City's Departments, US Army Corp of Engineers, SEMA, and adjacent communities	Water Pollution Control, Public Works	2025	Provide reliable mapping and flood risk analysis. Other aspects of this study may include water quality assessments and improvements and especially those associated with riparian corridor preservation.	2029	Medium	City's General Funds/USACE/oth er federal funds
Enhance public awareness and education efforts related to flooding. a. Encourage home owners and businesses to purchase flood insurance.	2025	Ongoing	The City of Independence is a CRS community with a rating of 9 which allows for a 5% discount on the flood insurance premium. Public Works sends letters annually to property owners in the special flood hazard areas informing about topics such as flood insurance and mitigation activities. The Emergency Preparedness Division has several outreach programs to encourage home owners and businesses to purchase flood insurance. The Emergency Preparedness Division also supports the Flood Plain Manager in completing the Annual Community Rating Survey.	Public Education and National Flood Insurance Program (NFIP)	Medium	New and Existing	Emergency Preparedness Division functions within City ordnances and codes	Emergency Preparedness Division	On-going	No/low cost mechanism to encourage flood preparedness.	2027	Low	City general funds and EMPG program grant monies

Includes standardized educations and traceously from EPMA_SEMA, the American Red Coxes and other organizations and provide them to home owners and businesses in flood- prone areas. Perpendences and coxes and other organizations and provided them to home owners and businesses in flood- prone areas. Perpendences and coxes			1	1	1			1		1		1	1	1
Division, Water Pollution Control and Public works Departments have on-going grant to educate the public about flooding and its associated hazards. This program includes standardized education and regional partners. City general regional partners. City departments have organizations, appropriate state and federal agencies and the business community to conduct special public education events, such as a Flood Mitigation and Preparedness Workshop. Ongoing includes standardized educational materials coordinated with local and regional partners. City departments have program (NFIP) departments have organized in local, regional, State and national public educational events each year. Public Education and Anatomal Flood insurance Program (NFIP) Medium New and Existing Division functions within City ordnances and codes On-going Preparedness Division On-going Preparedness Division On-going Preparedness Division On-going Preparedness Division The City adopted NFIP in October 1991 and has been a CRS programs participated in p	preparedness, response and recovery from FEMA, SEMA, the American Red Cross and other organizations and provide them to home owners and	2025	Ongoing	Division, Water Pollution Control and Public Works Departments (Flood Plain Management) have an on-going program to educate the public about flooding and its associated hazards. This program includes standardized educational materials coordinated with local and regional partners. This initiative includes brochures and related publications on flood mitigation, preparedness, response and recovery from FEMA, SEMA, the American Red Cross, NFIP and	and National Flood Insurance	Medium	New and Existing	Division functions within City	Preparedness	On-going	encourage flood	2027	Low	City general funds and EMPG program grant funding
The City adopted NFIP in October 1991 and has been a CRS programs participant sizes 1/(2014 The City) Emergency Preparedness Public Works Penattment and Insurance rates for	organizations, appropriate state and federal agencies and the business community to conduct special public education events, such as a Flood	2025	Ongoing	Division, Water Pollution Control and Public works Departments have on-going program to educate the public about flooding and its associated hazards. This program includes standardized educational materials coordinated with local and regional partners. City department also participate in local, regional, State and national public educational events each	and National Flood Insurance	Medium	New and Existing	Division functions within City	Preparedness	On-going	encourage flood	2027	Low	City general funds and EMPG program grant monies
Community Rating System (CRS). Ongoing continues to participate in the National Flood insurance Program (NFIP) and Community Rating System (CRS). Ongoing continues to participate in the program completing mandatory maintenance as required by program regulations. New and Existing Department functions within City ordnances and codes Division and Public works Department functions within City ordnances and codes City Gene Funds Fu	**a. Participate in the National Flood Insurance Program (NFIP) and			1991 and has been a CRS programs participant since 10/1991. The City continues to participate in the program completing mandatory maintenance as required by	Floodplain Management	High	New and Existing	Division and Public Works Department functions within	Department and Emergency Preparedness	Ongoing	insurance rates for homeowners and businesses while	2027	Low	City General Funds
The city continues to maintain up-to-date flood maps and tracks any LOMR etc. The Emergency Preparedness Division works with floodplain maps and similar documents. The city continues to maintain up-to-date flood maps and tracks any LOMR etc. The Emergency Preparedness Division works with floodplain manager with our Municipal Services Dept to insure maps stay current. The city continues to maintain up-to-date flood maps and tracks any LOMR etc. The Emergency Preparedness Division works with floodplain manager with our Municipal Services Dept to insure maps stay current. The city continues to maintain up-to-date flood maps and tracks any LOMR etc. The Emergency Preparedness Division and Public Works Department and Emergency Preparedness Division will allow for most accurate review of floodplain management. City Gene Funds This is the flood maps and tracks any LOMR etc. The Emergency Preparedness Division and Public Works Department and Emergency Preparedness Division will allow for most accurate review of floodplain management. S. Implement or improve flood warning systems.	floodplain maps and similar documents.	2020	Ongoing	to-date flood maps and tracks any LOMR etc. The Emergency Preparedness Division works with the local floodplain manager with our Municipal Services Dept to	-	High	New and Existing	Division and Public Works Department functions within	Department and Emergency Preparedness	Ongoing	most current FIRM map editions will allow for most accurate review of	2027	Low	City General Funds

Determine the need for stream gauges in waterways without flood warning systems or additional stream gauges in waterways with flood warning systems already in-place.	2020	Ongoing	The City has installed real time weather stations and utilizes USGS real-time water data for local daily stream flow conditions which are operated in cooperation with the USGS.	Emergency Response	Medium	New and Existing	Emergency Preparedness Division, Water Pollution Control and Public Works Department functions within City ordnances and codes	Emergency Preparedness Division	Ongoing	Stream gauges are relatively cost effective measures to warn of flooding events and implement mitigation measures.	2027	Madium	General Funds and EMPG grants
b. Work with local governments and other stakeholders to share data from flood warning systems in multiple jurisdictions.	2020	Ongoing	The City has real-time weather data stations that track local rainfall amounts that are fully accessible to regional, State and Federal stakeholders. This system has been in place since 2007.	Emergency Response	Medium	New and Existing	Emergency Preparedness Division, Water Pollution Control and Public Works Department functions within City ordnances and codes	Water Pollution Control and Emergency Preparedness Division	2028	Data Sharing is a relatively low cost effective measures to warn of flooding events and implement mitigation measures. Sharing of data will improve county floodplain management.	2027	Low	General Funds and EMPG grants
c. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public.	2020	Ongoing	Currently the City working with the Army Corps of Engineers, the National Weather Service and the Public Works and Water Pollution Control Departments to acquire real-time flood inundation prediction capability using stream gauge and forecast information.	Emergency Response	Medium	New and Existing	Emergency Preparedness Division, Water Pollution Control and Public Works Department functions within City ordnances and codes	Water Pollution Control and Emergency Preparedness Division	2028	Will ensure that citizens are prepared real time for flood events.	2027	Low	General Funds and EMPG grants
9. Work with partner agencies to implement flood inundation prediction cap	ability.	l											
**a. Implement flood prediction software programs in coordination with existing systems already utilized by surrounding jurisdictions	2025	Ongoing	Develop software and hardware systems in the Emergency Operations Center to help predict flooding throughout the city	Emergency Response	Medium	New	Emergency Preparedness Division function within City ordnances and codes	Water Pollution Control and Emergency Preparedness Division	2028	Will ensure that citizens are prepared real time for flood events.	2028	Medium	BRIC, HMGP, FMA
Goal: Develop plans and adopt policies to address sound stormwater and flo	oding chall												
Mitigation Action: Adopt new stormwater engineering design and management standards and stream setback development standards to reduce the risk of stream and flash flooding Winter Weather	2025		new standards in 2025	Local Plans and Regulations	High	12/31/2026	no costs identified	City Council	n/a	n/a			
1. Encourage electric and telecommunications utilities to protect their exist	ing infrastru	ucture from the	effects of severe winter weather.			T	T	<u> </u>		1		1	1
a. Adopt ordinances or regulations requiring the underground placement of new electric and telecommunications transmission lines.	2027	Ongoing	The City of Independence Power and Light Department does not have any ordinances requiring underground placement of electrical infrastructure but has extensive mitigation programs customers can choose to participate in that place electric lines underground. Customers can pay for a portion of the cost over a period of time through their electric	Education and Awareness Programs and Structure and Infrastructure Projects	High	Existing	Power & Light function within City ordnances and codes	City's Power and Light Department	On-going	Would reduce recovery costs and better limit damage/interruption to electrical and communications services.	2030	High	City's General Funds and HMGP monies

b. Offer incentives to utility providers to replace existing above-ground utility lines with underground utility lines.	2027	Ongoing	The City has extensive mitigation programs customers can choose to participate in that place electric lines underground. Customers can pay for a portion of the cost over a period of time through their electric bill.	Education and Awareness Programs and Structure and Infrastructure Projects	High	Existing	Power & Light function within City ordnances and codes	City's Power and Light Department	On-going	Would reduce recovery costs, but would have high initial implementation.	2030	High	City's General Funds and HMGP monies
c. Budget for the incremental replacement of existing above-ground utility lines with underground utility lines.	2027	Ongoing	The City has extensive mitigation programs customers can choose to participate in that place electric lines underground. Customers can pay for a portion of the cost over a period of time through their electric bill.	Education and Awareness Programs and Structure and Infrastructure Projects	High	Existing	Power & Light function within City ordnances and codes	City's Power and Light Department	On-going	Would reduce recovery costs and better limit damage/interruption to electrical and communications services.	2030	Medium	City's General Funds and HMGP monies
2. Ensure local governments and human services agencies are aware of fac	lities acros	s the Kansas Ci	ty area with generators or emergency	power that can be	used as she	lters in the event of	severe winter weather.				•		
b. Retrofit otherwise suitable existing facilities with generators for emergency power.	2025	Ongoing	The City has numerous shelters that have back-up power, but the county continues to work with existing and future shelter locations to find ways to retrofit them with emergency power.	Structure and Infrastructure Projects (BRIC)	High	Existing	Emergency Preparedness Division functions within City ordnances and codes	Emergency Preparedness Division	Ongoing	Fairly high cost installation price but will ensure continuity of shelter operations.	2030	Medium	City's General Fund, Grants, or other future sources
c. Consider the adoption of policy A77:P77s requiring generators or other emergency power systems in the construction of new public facilities.	2025	Ongoing	The City has policies in place for generators required in "Safe Room" applications. The City is also working with BRIC grants to obtain funding to pre-wire Red Cross and City identified shetters for generators. The City's Emergency Preparedness Division has an ongoing program to develop relationships with potential shelters located throughout the City to pre-wire or purchase generators for their facilities.	Structure and Infrastructure Projects (BRIC)	High	New and Existing	Emergency Preparedness Division, Water Pollution Control and Public Works Department functions within City ordnances and codes	Public Works, Emergency Preparedness Division	Ongoing	Fairly high cost program to implement, but would help ensure continuity of government operations.	2030	Medium	City's General Fund, Grants, or other future sources
3. Ensure at-risk, low income and elderly residents have adequate heat in the	eir homes.												
a. Partner with community service organizations to provide materials and volunteer labor to assist at-risk groups, low income residents and the elderly with winterizing their homes.	2025	Ongoing	The City works with the Community Services League, the Community Action Program, and the United Way to assist a assist at-risk groups to winterize their homes.	Local Planning and Regulations, Education and Awareness Programs. Education and Awareness Programs	Med	Existing	Emergency Preparedness Division within City ordnances and codes	Emergency Preparedness Division	Ongoing	Low cost mechanism to support vulnerable populations access to heating to prevent death/injury from exposure to winter storms.	2025	Low	General Funds and EMPG grants

b. Work with utility providers to develop and implement programs to reduce, eliminate or defer home heating costs for elderly, low income and at-risk people in the community.	2025	Ongoing	The City of Independence has several programs to reduce or eliminate home heating cost. The Independence Rate Assistance Program (IRAP) works with qualified low income families, elderly and special needs individuals to cut their energy bills in half. The I-SHARE program is where the City budgets money each year to match a dollar for dollar contributions donated by community partners to pay utility assistance for qualified low income households. The City's Power and Light Department also has an Average Share program where utility customers can average their electric bills over a year's period of time. The City has also started a program to pay utility customers \$20.00 for every energy assistance application to apply for the Federal energy assistance program.	Education and Awareness Programs	High	Existing	Power & Light function within City ordnances and codes	City's Power and Light Department	On-going	High Cost mechanism to support vulnerable populations access to heating but can prevent high numbers of death/injury from exposure to winter storms.	2025	High	City's General Funds and grants
A Circumstation and the Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Additional Country of the Indiana and Indiana a					into divisional								
Since traffic accidents account for 70% of injuries related to ice and snow Budget for the stockpiling of sand, salt and other materials necessary to reduce or eliminate ice on roadways and improve road conditions.	2025	Ongoing	programs to improve road conditions a This expense is outlined in the Public Works budget on a yearly basis and funding amount is reviewed every year.	Local Planning and Regulations	Low	New	Public Works function within Code of Ordinance	Public Works	Ongoing	Will ensure continued open roadways.	2026	Medium	General Fund
b. Work with area local governments and MARC to develop a regional "pool" of sand, salt and other materials necessary to reduce or eliminate ice on roadways.	2025	Ongoing	The City's Public Works Department works with regional partners regarding salt and sand contracts	Local Planning ar	Medium	New	Public Works function within Code of Ordinance	Public Works	Ongoing	Low cost mechanism to cost share and increase availability of sand stockpiles.	2026	Low	General Fund
c. Partner with area local governments to establish a mutual aid system for sand, salt and other materials and their delivery resources (i.e., trucks, crews, etc.).	2025	Ongoing	The City's Public Works Department is part of a regional Public Works Mutual Aid Agreement through the MARC organization	Local Planning ar	Medium	New	Public Works function within Code of Ordinance	Public Works	Ongoing	Low cost mechanism to cost share and increase availability of sand stockpiles.	2026	Low	General Fund
d. In an effort to reduce the number of people on the roadways during periods of severe winter weather, develop and implement "snow day" plans and policies for non-essential personnel and encourage private sector and non-profit employers in the community to 5. Enhance public awareness of severe winter weather mitigation and preparations.	2025	Ongoing	The City does have procedures in- place regarding "snow days" for public employees and continues to work on educating non- governmental organizations on the hazards of employees on roadways during severe winter weather.	Local Planning ar	Low	New	Public works and Law Enforcement function within Code of Ordinance	Public Works	Ongoing	Short-term potential lost productivity will be offset by savings from potential employee injury and also reduce traffic and delays that would otherwise occur.	2026	Low	General Fund

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2025	Ongoing	The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather.	Education and Awareness Programs	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	On-going	No/low cost mechanism to increase public safety.	2026	Low	City's General Funds and EMPG monies
2025	Ongoing	The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather.	Education and Awareness Programs	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	On-going	No/low cost mechanism to increase public safety.	2026	Low	City's General Funds
2025	Ongoing	The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather.	Education and Awareness Programs	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	On-going	No/low cost mechanism to increase public safety.	2026	Low	City's General Funds and EMPG monies
2025	Ongoing	The City's Emergency Preparedness Division has on-going programs to educate the public about "all Hazards" safety including severe winter weather. These programs include standardized educational materials coordinated with local and regional partners. These partners include City Departments, local faith based organizations and many other public and private groups. The Emergency Preparedness Division also participates in local and regional public educational events such as Regional Readiness Fairs.	Education and Awareness Programs	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	On-going	No/low cost mechanism to increase public safety.	2026	Low	City's General Funds
2027	Ongoing	The City of Independence Water Department continually assess the demands on the water system and has plans in place for drought emergencies	Local Planning and Regulations	High	Existing	Water Department function within City ordnances and codes along with procedures in Missouri Drought Plan	1	Ongoing	Relatively low cost mechanism to inform mitigation strategies	2028	Low	City's General Funds
	2025	2025 Ongoing 2025 Ongoing 2027 Ongoing	Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has on-going programs to educate the public about "all Hazards" safety including severe winter weather. These programs include standardized educational materials coordinated with local and regional partners. These partners include City Departments, local faith based organizations and many other public and private groups. The Emergency Preparedness Division also participates in local and regional public educational events such as Regional Readiness Fairs. The City of Independence Water Department continually assess the demands on the water system and has plans in place for drought	Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness programs to educate the public about "all hazards" safety including severe winter weather. The City's Emergency Preparedness Division has on-going programs to educate the public about "all hazards" safety including severe winter weather. These programs include standardized educational materials coordinated with local and regional partners. These partners include City Departments, local faith based organizations and many other public and private groups. The Emergency Preparedness Division also participates in local and regional public educational events such as Regional Readiness Fairs. The City of Independence Water Department continually assess the demands on the water system and has plans in place for drought emergencies	Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. 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The City of Independence Water Department continually assess the demands on the water system and has plans in place for drought emergencies	Division has an on-going program to educate the public about "All Awareness the hazards of severe winter weather. Division has an on-going program to education and hazards' preparedness and safety. This program includes standardized education has an on-going program to educate the public about "All hazards' preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. Division has an on-going program to educate the public about "All hazards' preparedness and safety. This program includes standardized education has on-going program to educate the public about "All hazards' preparedness and safety. This program includes standardized educational materials that address the hazards of severe winter weather. 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The Emergency Preparedness Division also participates in local and regional public educational ventures the public and private groups. The Emergency Preparedness Division also participates in local and regional public educational ventures the public and private groups. The Emergency Preparedness Division also participates in local and reg	Ongoing Ongoing Preparedness and safety. This program includes standardized education and materials that address the hazards of severe winter weather. 2025 Ongoing Ongoing Preparedness and safety. This program includes standardized education and materials that address the hazards of severe winter weather. 2026 Ongoing Ongoing Preparedness Division has an on-going program to educate the public about "All his program includes standardized educational materials that address the hazards of severe winter weather. 2027 Ongoing Ongo	Ongoing The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness Division has an on-going program to educate the public about "All hazards" preparedness Division has an on-going program to educate the public about "All hazards" preparedness of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized education and the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness such as and safety. This program includes standardized educate the public about "All hazards" preparedness such assembly the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness such assembly the hazards of severe winter weather. The City's Emergency Preparedness Division has non-going programs to educate the public about "All Hazards" selection and Hazards" selection and Hazards' selection and Hazards' selection in the hazards of severe winter weather. The City's Emergency Preparedness Division has non-going programs to educate the public about "All Hazards' selection and merginal public education and materials that address programs includes standardized educational materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards' selection and materials that address programs includes the public about "All Hazards	Drission has an on-going program to educate the public about "All Paparedness and safety," this program includes standardies the hazards of severe winter weather. The City's Emergency Preparedness because the hazards of severe winter weather. The City's Emergency Preparedness Division has an on-going program to educate the public about "All Paparedness of the hazards" are paredness and safety, "this program includes standardies the hazards" reparedness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies the hazards" are paredness and safety, "this program includes standardies of severe winter weather. The City's Emergency Preparedness Division has on-going programs to educate the public about "all this pared" are provided to the public about "all this pared" are paredness and safety, "this program includes standardies coordinated with local and regional public about "all this pared to the paredness parties include City Departments, These programs to education and and regional public coordinated educational and are going and provide groups. The Emergency Preparedness and codes solve and the public and provide groups. The regions of going and the public and provided groups. The regions of going and provided groups. The regions of going and provided groups are parties to cold and regional p	Dission has an on-yoing program to reducted the public shador. Programs	Double has an on aging program to educate the public standardines where whether weather. The City's Emergency Preparedness and safety between the hazards of species whether and programs and safety. The program includes standardines whether weathers are safety and the hazards of species whether whether weathers. The City's Emergency Preparedness and safety between the public short 741 in the program includes standardines and safety between the hazards of species whether weathers. The City's Emergency Preparedness and safety has been decidated in the public short 741 in the program includes standardines and safety between the hazards in species and safety has been decidated in the public short 741 in the program includes standardines and safety whether weathers. The City's Emergency Preparedness and safety whether weathers. The City's Emergency Preparedness and safety whether weathers. The City's Emergency Preparedness and safety was the same on aging program to exclude the public short 741 in the program includes standardines should be subtracted in the safety of short 741 in the program includes standardines should be subtracted in the safety of short 741 in the program includes standardines whether weathers were winter weather. 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a. Review the Missouri Drought Plan, as well as local drought plans available from MDNR, and develop a local drought plan.	2027	Ongoing	City is constantly utilizing local, state and federal programs and guidance regarding long term planning	Local Planning and Regulations	Medium	Existing	Water Department function within City ordnances and codes along with procedures in Missouri Drought Plan	Independence Water Department	Ongoing	Low cost mechanism to support drought response.	2028	Low	City's General Funds
b. Develop local procedures implementing the provisions of the Missouri Drought Plan.	2027	Ongoing	City is constantly utilizing local, state and federal programs and guidance regarding long term planning	Local Planning and Regulations	Medium	Existing	Water Department function within City ordnances and codes along with procedures in Missouri Drought Plan	Independence Water Department	Ongoing	Low cost mechanism to support drought response.	2028	Low	City's General Funds
c. Working with MARC, develop drought plans and water conservation programs.	2027	Ongoing	City is utilizing local programs and guidance and coordinates with MARC regarding water drought and conservation programs in local plans	Local Planning and Regulations	Medium	Existing	Water Department function within City ordnances and codes along with procedures in Missouri Drought Plan	Independence Water Department	Ongoing	Low cost mechanism to support drought response.	2028	Low	City's General Funds
3. Enhance public awareness of drought, drought mitigation, state and local	drought res	ponse actions a	and water conservation measures.										
 a. Develop and conduct public education and awareness programs on drought mitigation, drought response and water conservation. 	2027	Ongoing	City Water Department partners with the Water Pollution Control Division to conduct local public educational programs. This includes supplying literature and conducting presentations at local schools and civic events.	Education and Awareness Programs	Medium	New	Water Department function within City ordnances and codes	City's Water Department	On-going	Low cost mechanism to support drought response.	2027	Low	City's General Funds
4. Encourage water conservation efforts by commercial, industrial and priva	te water us	ers.											
a. Develop and implement a program to encourage voluntary water conservation.	2027	Ongoing	City works partners the Water Pollution Control Division to conduct local public educational programs. This includes supplying literature and conducting presentations at local schools and civic events.	Education and Awareness Programs	Medium	Existing	Water Department and Water Pollution Control Department function within City ordnances and codes	City's Water Department	On-going	Low cost mechanism to increase support water conservation measures.	2027	Low	City's General Funds
5. Encourage improvements to water system infrastructures to reduce vulne	erability to d	drought and me	et water use demands.								•		
a. Budget for infrastructure improvements to municipal water systems.	2027	Ongoing	The City has implemented a Leak detection system to determine if underground water pipe infrastructures are leaking water.	Local Planning and Regulations	High	Existing	Water Department and Water Pollution Control Department function within City ordnances and codes	City's Water Department	On-going	Targeted and phased improvements will improve efficiency and reduce future recovery and replacement costs.	2027	High	City's General Funds
c. Identify and apply for state and federal grants to improve water treatment plants, transmission systems, water mains and related infrastructure.	20127	Ongoing	The City consistently continues to apply for State and Federal grants for water system infrastructure improvements	Structure and Infrastructure Projects (BRIC)	High	New	Water Department and Water Pollution Control Department function within City ordnances and codes	City's Water Department	On-going	High cost mechanism to implement but greatly increases water conservation measures.	2027	High	City's General Fund, Grants, or other future sources
Extreme Temperatures													
Ensure local governments and human services agencies are aware of air of the services are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are aware of air of the services agencies are also as a service agencies. Output Description are also as a service agencies and a service agencies are also as a service agencies and a service agencies are a service agencies. Output Description are also as a service agencies are a service agencies and a service agencies are a service agencies and a service agencies are a service agencies and a service agencies ag	onditioned	facilities acros	s the Kansas City metropolitan area t	hat can be used as	shelters in t	he event of a heat v	vave.			l			
a. Partner with MARC, local public health agencies, emergency management agencies, the American Red Cross, Salvation Army and other stakeholders to inventory public, private and non-profit facilities that are air conditioned and can be used as "heat emergency shelters" in the event of a heat wave.	2025	Ongoing	The City of Independence works with several local and regional stakeholders to ensure the City has numerous "Cooling Centers" open to the public during times of severe heat waves.	Local Planning and Regulations Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to identify mitigation strategies for populations vulnerable to heat waves.	2026	Low	City's General Fund

b. Retrofit otherwise suitable existing facilities with air conditioning systems and designate them as shelters for use during heat waves.	2025	Ongoing	Currently the City has numerous shelter sites, but efforts to continue increasing shelter facilities through the City's educational preparedness programs and Faith Based Initiative are ongoing. Many of these sites have air-conditioning but efforts continue to try and retrofit those shelters that are not climate controlled.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness utilizes the Safe Shelter Partnership for cooling centers in addition to the Salvation Army and United Way	Emergency Preparedness Division	Ongoing	Medium cost mechanism to assure populations vulnerable to heat waves are protected.	2026	Medium	City's General Fund, Grants, or other future sources
2. Ensure at-risk, low income and elderly residents have adequate air condi	tioning (or f	ans) and ventila	ition in their homes.	I	ı	1		I	1	1	1	I	
a. Identify at-risk, low income and elderly residents and develop a database and map (or GIS layers) of their places of residence.	2025	Ongoing	The Emergency Preparedness Division is currently exploring ways to get at-risk populations into a GIS database. One option is to use a Mass Notification service.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Medium cost method to identify at-risk populations to prevent injury of death	Local Planning and Regulations. Education and Awareness Programs	Medium	City's General Fund, Grants, or other future sources
b. Partner with community service organizations and area businesses to provide air conditioners and/or fans to at-risk groups, low income residents and the elderly.	2025	Ongoing	The City's Emergency Preparedness Division has numerous City facilities that are air conditioned and available to residents during times of severe heat conditions. The City also coordinates with the United Ways regional 211 information system to help residents identify local "Cooling Centers"	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to support resiliency for vulnerable populations during heat waves.	Local Planning and Regulations. Education and Awareness Programs	Low	City's General Fund
3. Ensure programs and procedures to mitigate, prepare for and respond to	heat waves	are developed	and implemented.										
a. Develop local heat emergency plans or heat wave annexes to local emergency operations plans.	2010	Ongoing	All weather emergency procedures and plans are continually being updated.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division function within City ordnances and codes	Emergency Preparedness Division	Ongoing	Low cost mechanism to increase public safety.	Local Planning and Regulations. Education and Awareness Programs	Low	EMPG and City's General Fund
c. Partner with public safety agencies, local public health agencies and community groups to develop a program to regularly check on elderly, low income and at-risk people in the community during heat waves.	2010	Ongoing	The City has a severe heat plan that coordinates with public and private agencies to check on at-risk populations in the City. This is an on going program continually identifying additional partners such as CERT, VIPS and faith based organizations.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	Local Planning and Regulations. Education and Awareness Programs	Low	City's General Funds
d. Work with community groups to sponsor a program to encourage people to think of those who require special assistance (this effort can be incorporated into Neighborhood Watch, CERT or similar programs).	2010	Ongoing	The City has a severe heat plan that coordinates with public and private agencies to check on at-risk populations in the City. This is an on going program continually identifying additional partners such as CERT, VIPS and faith based organizations.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	Local Planning and Regulations. Education and Awareness Programs	Low	City's General Funds

4. Enhance public awareness of the hazards associated with heat waves, pr	recautionar	y measures and	area heat wave mitigation and prepar	edness activities.					,				
a. Collect and disseminate public education materials that address heat wave safety, preparedness and mitigation activities.	2025	Ongoing	the hazards heat waves can cause.	Local Planning and Regulations. Education and Awareness Programs	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds
b. Provide vulnerable populations with public education materials that address heat wave safety, preparedness and mitigation activities.	2025	Ongoing		_	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds

c. Work with the media to publish special newspaper sections or conduct periodic broadcasts with emergency information on extreme heat.	2025	Ongoing	This year the City also adopted and implemented the regional 'Heat Health Warning System" which will bring advanced notification and education to citizens regarding the forecasting of high heat conditions. This program is designed to communicate standardized warning guidelines and conditions to the public through partnering organizations such as the NWS and local new media outlets. The City's Emergency Preparedness Division also participates with the regional Integrated Warning Team. This group is task to bring all organizations with responsibilities regarding warning the public about severe weather events together to develop more resilient and effective warnings.	and Regulations.	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Office of Emergency Management	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds
d. Develop and conduct a public education and awareness campaign on properly weather stripping homes.	2025	Ongoing	The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards heat waves can cause. The educational program also includes information about making residents homes more energy efficient. The City's power and Light Department also has an educational program to help residents improve their homes energy efficiency and will go to residents homes to survey the structure.	Awareness	High	Existing	Emergency Preparedness Division, City Health Department function within City ordnances and codes	Emergency Preparedness Division and Power and Light Department	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds
Dam Fallures 2. Enhance public awareness of the hazards associated with dam failures, a a. Work with MDNR and USACE to conduct a public education campaign to inform citizens living near the inundation pathways of dams of the need to be familiar with the emergency action plans for these dams.		Ongoing	The City's Emergency Preparedness Division has an on-going program to educate the public about "All hazards" preparedness and safety. This program includes standardized educational materials that address the hazards of dam failures.	Education and Awareness Programs	High	Existing	Emergency Preparedness Division, within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds

	b. Collect and disseminate public education materials that address dam safety, preparedness and mitigation activities.	2026	Ongoing			High		Emergency Preparedness Division, within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	2026	Low	City's General Funds
	c. Provide property owners in or near the inundation pathways of dams with information on dam safety, preparedness and mitigation activities.	2026	Ongoing	This program includes standardized educational materials that address	Education and Awareness Programs	High	Existing	Emergency Preparedness Division, within City ordnances and codes	Emergency Preparedness Division	On-going	Low cost mechanism to increase public safety.	2026	low	City's General Funds
	Levee Failure													
	1. Improve response planning for Levee Failure			1			1	T				1	1	
- 1	Work with the water department to ensure the levees surrounding the water plant are adequate and properly maintained.	2028	Ongoing	Army Corps of Engineers Levee Support Program, FEMA and State DNR to develop a plan to address	Local Plans and Regulations. Structure and Infrastructure Projects (BRIC)	High	New & Existing	ЕОР	Emergency Preparedness Division	Ongoing	Low cost mechanism to increase public safety.	2027	low	City's General Funds

Kansas City 2025 Mitigation Strateg	gy (Coi	ntinuing Plan F	Participant, NFIP Participant)							
	Plan	-		Type of Mitigation		Date of	Cost/Benefit	Primary Agency Responsible for Implementation/Ad		
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
Tornadoes										
Ensure whole community resiliency to migat	te the e	ffects of tornados			T	•	1		T .	
				Education and						
Conduct high wind refuge inspections for			Trained personnel conduct inspections					Emergency		
businesses	2015	Ongoing	upon request.	Programs	Medium	Ongoing	unknown	Management	Unknown	General Fund
Increase tornado siren coverage to keep up				Structure and						
with KCMO expansion and provide more	0005	Maria	Madistration and an area	Infrastructure	Mar diame	On an in a		Emergency	A41	General Fund and
early warning to help mitigate loss of life.	2025	New	Modified from previous plans.	Projects	Medium	Ongoing	unknown	Management	\$41k per siren	grants
				Education and						
Educate the whole community on how to				Education and						
mitigate the effects of Tornados through	0005	Maria	Madistration and an area	Awareness	LIC als	On an in a		Emergency		EM Involved
multiple methods.	2025	New	Modified from previous plans.	Programs	High	Ongoing	unknown	Management	Unknown	EM budget
Adopt current edition of a model building										
code to address structural and architectural			Current building codes address this	Land Diama and						
issues related to tornadoes and high wind	2025	Now	issue. However, KCMO will adapt as	Local Plans and	Madium	Ongoing	unknoven	Duilding Code Dont	Linknoven	Linknown
events.	2025	New	new codes are adopted.	Regulations	Medium	Ongoing	unknown	Building Code Dept	Ulikilowii	Unknown
Incorporate mitigation attrategies into the			As soon as this mitigation plan is							
Incorporate mitigation strategies into the development of KCMO's Comprehensive			complete, then the City's planning	Local Diana and						
· ·	2020	Ongoing	teams will examine what elements can	Local Plans and	Modium	Undotorminad	unknown	City Planning Dont	Linknown	Unknown
Plan Improve Kansas City, MO's, ability to mitigat		Ongoing	be incorporated.	Regulations	Medium	Undetermined	unknown	City Planning Dept.	Unknown	Unknown
improve Kansas City, 140 s, ability to initigat	le uailla	ge to City Illiastit	Cture from tornados.							
								Aviation; City		
				Local Plans and				Planning and		
				Regulations,				Development Dept,		
				Education and				Building Code Div;		
Increase/reinforce refuge areas to mitigate			This was taken from various actions in	Awareness				Emergency		
loss of life from tornados	2025	New	the previous plans.	Programs	Medium	Ongoing	unknown	Management;	Unknown	grants
			F			0~0				0
Research and implement enhanced										
operational methods, hardware, systems,			IT researches and implements current	Structure and						
and technology to mitigate cyber disruption			best practises against power surges	Infrastructure				Emergency		
from the effects of tornados	2015	Ongoing	and cyber intrusions.	Projects	High	Ongoing	unknown	Management	Unknown	Unknown
Improve Kansas City, MO's, ability to reponse							<u> </u>		1	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								City		
Ensure timely warnings are delivered to the				Education and				Communications,		
whole community through a variety of			This was taken from various actions in	Awareness				Emergency		
methods including mass notification.	2025	new	the previous plans.	Programs	High	Ongoing	unknown	Management	Unknown	grants, general fund

								Primary Agency		
				Type of				Responsible for		
	Plan			Mitigation		Date of	Cost/Benefit	Implementation/Ad	Estimate of	
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
		,		,	,	·			(.,	
				Local Plans and						
				Regulations,						
Ensure first responders are prepared to			PPE is continually provided; no funding	Education and						
assist the whole community in the event of a			exists at this time, but KCPD will	Awareness						
tornado.	2015	Ongoing	continue to pursue.	Programs	Unspecified	Ongoing	unknown	Police Dept	Unknown	Unknown
Conduct training and provide information				Education and						
for personnel regarding the inherent dangers			Training for the whole community is	Awareness				Emergency		
of and maintaining safety during a tornado	2025	Ongoing	continual and refreshed constantly.	Programs	High	Ongoing	unknown	Management	Unknown	Unknown
Research methods, training, and funding to										
improve Health Department's processes for										
controlling disease vectors prior to a			KCHD continues to research disease	Education and						
tornado to mitigate disease spread resulting			vector control protocols but could use	Awareness						
from tornadic activity.	2020	Ongoing	additional funding to expand its efforts.	Programs	Medium	Ongoing	unknown	Health Department	Unknown	Unknown
Floods										
Improve Kansas City, MO's, resiliency throu	gh mitig	gation of flooding a	nd flood damage.							_
Research and implement latest methods				Structure and				Emergency		
and lessons learned to mitigate flood			This was taken from various actions in	Infrastructure				Management, Water		
damage to KCMO infrastructure.	2025	New	the previous plans.	Projects	Medium	Ongoing	potentially millions	Services	Unknown	general fund, grants
			The system has been upgraded over							
			the last 5 years. However, new	Structure and						
Upgrade and enhance EOC flood monitoring			technology means that this action will	Infrastructure				Emergency		
systems to mitgate loss of life from flooding.		Ongoing	be ongoing.	Projects	Medium	Ongoing	unknown	Management	Unknown	General Fund
Ensure whole community resiliency to miga	ite the e	ffects of flooding a	and flood damage.	T	1	1	T	I		
Educate the solution of the so				Educati :						
Educate the whole community on how to				Education and				F		
mitigate the effects of Tornados through	0005	Na	Davids and fine me many decreased and the set	Awareness	11:-/-	Ongoing		Emergency	I lada access	la colorata de constitui
multiple methods.	2025	New	Revised from previous plans' actions.	Programs	High	Ongoing	unknown	Management	Unknown	budget, grants
							Dodugoo the builder			
							Reduces the burden			
							of repair costs to			
				Education			home and business	Emorgonou		Water Conjugat Dant
Engage of the whole community to a late in				Education and			owners through the			Water Services Dept.,
Encourage the whole community to obtain	2025	Ongoing	Deviced from proving a plant a still	Awareness	High	Ongoing	use of flood	Management,	l Inknov	Office of Emergency
flood insurance to improve resiliency.		Ongoing	Revised from previous plans' actions.	Programs	High	Ongoing	insurance funds.	Planning Dept	Unknown	Management
Improve Kansas City, MO's, ability to repons	se to mit	tigate loss of life fr	om tiooas.							

	Plan			Type of Mitigation		Date of	Cost/Benefit	Primary Agency Responsible for Implementation/Ad	Estimate of	
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
				-						_
								City		
								Communications,		
land the state of			Th.:	Education and				Emergency		
Improve methods to warn of flooding or	2025	now	This was taken from various actions in	Awareness	∐idh	Ongoing	unknown	Management, Water	Unknown	grante general fund
impending floods to mitigate loss of life.	2025	new	the previous plans.	Programs	High	Ongoing	unknown	Services Dept.	Unknown	grants, general fund
Research and enhance ability to prevent and			This was modified from the previous	Local Plans and						
track diseases borne from floods.	2025	New	plans' similar actions	Regulations	Medium	Ongoing	unknown	Health Dept.	Unknown	budget, grants
								,		3 73
Conduct training and provide information				Education and						
for personnel regarding the inherent dangers			Training for the whole community is	Awareness				Emergency		
of and maintaining safety during flooding	2025		continual and refreshed constantly.	Programs	High	Ongoing	unknown	Management	Unknown	budget, grants
Ensure first responders are prepared to			Th.:	Education and						
assist the whole community in the event of a	2025	New	This was taken from various actions in	Awareness	Modium	Ongoing	unknown	KCFD, KCPD	Unknown	hudgot grants
tornado.	2023	ivew	the previous plans.	Programs	Medium	Ongoing	unknown	KCFD, KCFD	Unknown	budget, grants
Improve evacuation methods to ensure the				Structure and						
whole community can be evacuated from				Infrastructure				Parks and		
area at risk of flooding.	2025	New	This is a new action.	Projects	Medium	Ongoing	unknown	Recreation	Unknown	Unknown
Heat										
Enhance Kansas City, MO's, resiliency throu	ıgh miti	gating the effects o	of excessive or prolonged heat and drou	ght.						
								Ganeral Services,		
Research and implement best practices for			Parks and Recreation provides training;	Structure and				Neighborhood		
building methods to prevent heat absorption			implementing green roofs on certain	Infrastructure				Services, Parks and		
and mitigate heat damage.	2015	Ongoing	new facilities.	Projects	Medium	Ongoing	unknown	Recreation	Unknown	budget, grants
Utilize improved equipment to ensure				Structure and				F		
network resiliency to heat, mitigating heat related damage.	2025	New	This is a new action.	Infrastructure Projects	Medium	Ongoing	unknown	Emergency Management	Unknown	budget, grants
retated damage.	2023	INCW	This is a new action.	Tiojects	riculum	Oligollig	unknown	rianagement	OTIKITOWIT	buuget, grants
Incorporate mitigation strategies into the										
development of KCMO's Comprehensive			KCMO's comprehensive plan is	Local Plans and						
Plan with respect to heat.	2020	Ongoing		Regulations	Medium	Ongoing	unknown	Planning Dept	Unknown	budget, grants
Research and utilize alternative methods				Natural						
(such as landscaping) to mitigate the effects				Systems				Parks and		
of heat and drought.	2025	New	This is modified from previous plans.	Protection	Low	Ongoing	unknown	Recreation	Unknown	budget, grants
Research, identify, and locate funding				Ctructure and						
sources to implement water conservation technologies for new and existing public			This action to be accomplished as time	Structure and						
facilities.	2020	Ongoing	and resources allow.	Projects	Medium	Ongoing	unknown	water services	Unknown	budget, grants
Improve the public and private sector's resi					ourum	211801118	a(10411		- Indiowii	I a a a b o t, b i a i i to

								Primary Agency		
				Type of				Responsible for		
	Plan			Mitigation		Date of	Cost/Benefit	Implementation/Ad	Estimate of	
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
			-							_
Obtain and distribute material and training				Education and				Emergency		
for the whole community on the methods for			This action combines other actions	Awareness				Management,		
mitigating injury from excessive heat.	2025	New	from previous plans.	Programs	Medium	Ongoing	unknown	Health Dept.	Unknown	budget, grants
				Education and						
Include drought information in			WSD provides information on water	Awareness				Emergency		
preparedness outreach and campaigns.	2015	Ongoing	conservation and other programs.	Programs	Low	Ongoing	unknown	Management	Unknown	budget, grants
			CDBG funding annually provides for							
Continue and improve programs to assist			water heaters, A/C units, and furnaces.							
the whole community with cooling their			More funding would increase the	Local Plans and				Emergency		
dwellings		Ongoing	success of the program.	Regulations	Medium	Ongoing	unknown	Management	Unknown	budget, grants
Develop techniques to mitigate the effects	of fire di	ie to drought and e	excessive heat through improved respoi	ise.	1	<u> </u>		Emergeney		<u> </u>
Enhance Kanaga City MOla shilityta			Finding ways to so although als	Ctrusture and				Emergency		
Enhance Kansas City, MO's, ability to			Finding ways to cool the whole	Structure and				Management,		
provide alther cooling sources for the whole	0005	0	community, especially vulnerable	Infrastructure	Madiona	Onzainz		Aviation, Parks and		la contrata de contrata
communicty.	2025	Ongoing	populations, is and ongoing challenge	Projects	Medium	Ongoing	unknown	Rec	unknown	budget, grants
Research and implement methods, training,			KCHD continues to research food							
and funding to improve Health Department's			inspection and contamination	Education and						
inspection of food potentially tainted from			protocols but could use additional	Awareness						
exposure to excessive heat.	2020	Ongoing	funding to expand its efforts.	Programs	High	Undetermined	unknown	health dept	Unknown	budget, grants
Severe Thunderstorms	2020	ongoing	randing to expand the enerts.	rrogramo	111611	Grideterrimied	untiown	neatti dept	OTIKITOWIT	budget, grunts
Enhance Kansas City, MO's, resiliency throu	ıdh mitid	gating the offects (of savara thundarstorms							
Elinance Ransas City, Plo s, residency throu	agii iiii ii	gating the effects t	i severe tiluliderstorilis		1	<u> </u>				
Adopt current edition of building codes to			Current building codes address this	Structure and						
address structural and architectural issues			issue. However, KCMO will adapt as	Infrastructure						
related to severe thunderstorms	2015	Ongoing	new codes are adopted.	Projects	Medium	Ongoing	unknown	Planning Dept	Unknown	budget, grants
Total to covor o management	2010	5.1.85.1.18	non occorda acoptoa.			5.186.118		r tarring 2 opt		budget, Brante
Identify funding sources to provide										
protection to public facilities from high				Structure and						
winds, lightning and hail to mitigate any			KCMO is continually searching for	Infrastructure						
damage that might be caused.	2015	Ongoing	funding sources.	Projects	Medium	Ongoing	unknown	General Services	Unknown	budget, grants
Improve the public and private sector's resi	liency to	the effects of thu	nderstorms.		•					
Provide education and information on how										
the whole community can protect itself and				Education and						
mitigate damage from severe			This is a modified action from previkous	Awareness				Emergency		
thunderstorms.	2025	New	plans.	Programs	High	Ongoing	unknown	Management	Unknown	budget, grants
Improve Kansas City, MO's, ability to repons	se to mit	igate loss of life fr	om severe thunderstorms.							

		1	<u> </u>			1	T	Primary Agency		1
				Type of				Responsible for		
	Plan			Mitigation		Date of	Cost/Benefit	Implementation/Ad	Estimate of	
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
Enhance and improve mass notification to	Tour	Otatas of Froject	Status Explanation	notivity	Tilonty	Completion	neview	illiniotration	σσστ (ψ)	T unum g oour oc
the whole community warning of				Education and						
approaching severe thunberstorms to			This is a new action but modified and	Awareness				Emergency		
mitigate loss of life.	2025	New	updated from previous plans.	Programs	High	Ongoing	unknown	Management	Unknown	budget, grants
						88				
Work with Regional National Weather				Education and						
Service to provide Storm Spotter training to			Training is provided with each new	Awareness						
officers.	2015	Ongoing	class.	Programs	Medium	Ongoing	unknown	Police Dept	Unknown	Unknown
Severe Winter Weather										1
Enhance Kansas City, MO's, resiliency throu	ıgh miti	gating the effects (of severe winter weather.							
Identify and conduct training for personnel			Personnel receive briefings and	Education and]					
to respond to winter related issues such as			trainings to prevent or reduce the	Awareness						
snow and ice removal	2015	Ongoing	effects of weather related injuries.	Programs	High	Ongoing	unknown	Public Works	Unknown	budget, grants
								Aviation, Emergency		
								Management,		
Identify and obtain back up power sources				Structure and				General Services,		
to mitigate the effects long term power			This action is modified from previous	Infrastructure				KCFD, KCPD, Water		
outage from ice/snow.	2025	New	actions.	Projects	Medium	Ongoing	unknown	Services Dept.	Unknown	budget, grants
Research and develop the latest practices				Structure and						
for mitigating snow and ice damage and			This is a new action but modified and	Infrastructure				Aviation Dept.,		
delays for operations.	2025	New	updated from previous plans.	Projects	Medium	Ongoing	unknown	Public Works	Unknown	budget, grants
								Emergency		
Research and implement cold resistant				Structure and				Management, Public		
equipment to mitigate severe winter weather			This is a new action but modified and	Infrastructure				Works, Water	l	
damage to critical infrastructure.	2025	New	updated from previous plans.	Projects	Medium	Ongoing	unknown	Services	Unknown	budget, grants
Incorporate mitigation atvataging into the			Continue to incornerate baset proctices							
Incorporate mitigation strategies into the			Continue to incorporate baset practices							
development of KCMO's Comprehensive Plan	2020	Ongoing	into the KCMO Comprehensive Plan as	Local Plans and	Madium	Ongoing	unknoum	Dlanning Dant	Unknown	budget grante
Research mechanisms and funding to	2020	Ongoing	it is revised.	Regulations	Medium	Ongoing	unknown	Planning Dept	Unknown	budget, grants
increase building resiliency to damage from				Structure and						
winter weather elements such as extreme			This action to be accomplished as time]					
cold, snow, and ice.	2020	Ongoing	and resources allow.	Projects	Medium	Undetermined	unknown	public works	Unknown	hudget grants
Improve the public and private sector's resi				i rojecis	ricululli	Ondetermined	Laukilowii	Papric Morks	OTIKITOWIT	budget, grants
Identify funding sources to provide	y li	Carlo Circots or Sev	or miller weather.	1		T	T			
materials and labor to assist at-risk, low										
income, and elderly residents with				Education and]					
improving their residence's resiliency to				Awareness]					
cold weather.	2025	New	Modified from previous plans.	Programs	Medium	Ongoing	unknown	Health Dept.	Unknown	budget, grants
70ta Wattion	2020	11011	ricamea from previous plans.	i rogiumo	Libuluiii	Checine	amaiowii	Troattii Dopt.	CHRITOWIT	baabet, Branto

	Plan			Type of Mitigation		Date of	Cost/Benefit	Primary Agency Responsible for Implementation/Ad	Estimate of	
Mitigation Goals and Action Steps	Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	ministration	Cost (\$)	Funding Source
Provide education and information on how		_	·			·			, , ,	
the whole community can protect itself and				Education and				Emergency		
mitigate damage from severe winter				Awareness				Management,		
weather.	2025	New	Modified from previous plans.	Programs	High	Ongoing	unknown	Health Department	Unknown	budget, grants
Improve Kansas City, MO's, ability to repons	se to mit	tigate loss of life fr	om winter weather and extreme cold.							
				Structure and				Housing Dept.,		
Expand capacity to provide warming centers			This is a new action but modified and	Infrastructure				Emergency		
to mitigate loss of life from	2025	New	updated from previous plans.	Projects	High	Ongoing	unknown	Management	Unknown	budget, grants

2025 Lee's Summit Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration		Funding Source
Tornadoes										
Encourage building practices and the use of approved materials that reduce	the damaging	effects of to	rnadoes and high wind ever	nts.	I	T			1	<u> </u>
Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events.	2025	New	Considering adoption of updated buidling codes	Local Plans and Regulations	Medium	Every three years	A guide for the safe construction of the built environment.	development dept	2500	Local Budgeted Funds and Staff Time
Consider adopting ordinances or regulations requiring the construction of tornado shelters in new buildings where people live, work or congregate.	2015	Ongoing		Local Plans and Regulations	Low	Ongoing	Provide emergency shelter for the occupants of structures without basements.	development dept	Low	Local Budgeted Funds and Staff Time
Provide education/updates to designers, builders, residents on changes to newly adopted codes related to minimizing storm damage	2015	Ongoing		Education and Awareness Programs	High	Ongoing	Medium	development dept	Low	Local Budgeted Funds and Staff Time
Retrofit or add shelters to existing public facilities with inadequate protection				Structure and Infrastructure			Provide emergency shelter for the occupants of structures without			General Fund/HMGP,
from tornadoesand high wind.	2015	Ongoing		Projects	Low	Ongoing	basements.	public works	High	BRIC
Encourage the construction of safe rooms and tornado shelters in public ar	d private build	lings.	T	T= .	1	<u> </u>		T	T	T= .
Work with chambers of commerce, school districts, corporations, homeowners, developers etc. to promote benefits ofsafe rooms and community shelters.	2015	Ongoing		Education and Awareness Programs	High	Ongoing	Medium	emergency management	Low	Private/Grants for Public Projects
Evaluate warning systems in the City.			•				•		•	
Utilize ongoing communication studies and surveys to determine how residents receive severe weather warnings. Determine what is the most			Continued monitoring and evaluation of notification and warning systems available in our community to include Nixle, social media, NOAA weather radios, and outdoor warning	Education and Awareness			Find cost effective warning systems to enhance mass			General Fund/Public
effective method(s) for the cost.	2020	Ongoing	systems.	Programs	Medium	Ongoing	notification.	emergency management	TBD	Grants
Increase public awareness of severe weather notification systems available	within the Cit	y.								

			Public education and							
			community outreach occurs							
			using variety of mechanisms							
			such as the public education							
			programs delivered in the							
			schools, social medial using							
			systems like hootsuite, and in							
Increase public awareness of severe weather notification systems available			formal presentations. Electronic and printed	Education and						
within the City through social media, school Safety Education Program, civic			materials are available in	Awareness						
presentations, and printed and electronic publications.	2020	Ongoing	website and in city facilities.	Programs	Medium	Ongoing	Medium	emergency management	TBD	General Fund
Update the Local Emergency Operating Plan	1	100	, , , , , , , , , , , , , , , , , , , ,	1	1	188		Towns of the state	1	
			EOP is currently under revision							
			transitioning framework from	Local Plans and						
Undeted and Emergency Operation Plan to account of framework	2020	Ongoing	functional annexes to Emergency		Madium	Ongoing	Madium	amazzanak manazanant	TDD	Conoral Fund
Update Local Emergency Operation Plan to currently accepted framework. Floods	2020	Ongoing	Support Functions	Regulations	Medium	Ongoing	Medium	emergency management	TBD	General Fund
Continue to integrate flood mitigation strategies with projects and activitie	s designed to n	rotoct rocto	ro or onhance occeptoms	and the environme	nt and create	rocroational on	nortunities for the co	mmunity		
In concert with existing comprehensive and land use plans, acquire flood-	designed to p	notect, resto	Te of elifiance ecosystems	and the environme	In and create		portunities for the co	Timumity.	T	
prone property, as deemed reasonable and financially responsible, for use as				Natural Systems				development dept and public		
open space or park land.	2015	Ongoing		Protection	Medium	Ongoing	Medium	works department	High	General Fund
open space of park tand.	2013	Oligoling		riotection	Pieulum	Oligoling	riedidili	works department	Tilgii	Oenerat i unu
							Minimizes the			
Require storm water studies to determine the need for detention basins, small	1			Structure and			impact of flooding			
riegane storm water stadies to actermine the need for acterition busins, small										
lakes and greenways or riparian corridors in areas of new development to	1			Infrastructure			downstream from			

2025 Levasy Mitigation Strategy										
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost	Funding Source
Tornadoes										
Encourage building practices and the use of materials that re	educe the damagin	g effects of tornado	es.							
Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events.	2010	Ongoing		Local Plans and Regulations	Medium	Adopted 2009 code in 2011	Medium	building code official		Local Budgeted Funds and Staff Time
Encourage construction of community tornado shelters in of	fice complexes, fa	ctories, apt comple	exes, schools mobi	ile home parks, sta	diums, and other l	arge population co	ngregation centers.			
Consider adopting ordinances or regs requiring the construction of tornado shelters in new buildings where people live, work or congregate.	2010	Ongoing		Local Plans and Regulations	Medium	2010	Medium	planning & zoning	Low	Local Budgeted Funds and Staff Time
Improve existing and future storm sirens			•						•	
Purchase new/update existing storm sirens.	2025	Ongoing		Structure and Infrastructure Projects	Low	Ongoing	Continued functionality of outdoor warning systems.	emergency management	Medium	HMGP, BRIC
Increase citizen disaster preparedness.		•	•		•					
Provide public education materials.	2025	Ongoing		Education and	High	Ongoing	Citizens better prepared	emergency management	Low	Local Budgeted
Increase public awareness and understanding the benefits o	f "safe rooms."									
Develop, distribute informational materials on safe rooms.	2025	Ongoing		Education and	Medium	Ongoing	Medium	emergency management	Low	Local Budgeted
Floods										
Discourage new development in floodplains and flood-prone	e areas.									Local Budgeted
**Adopt ordinances prohibiting residential and commercial development in flood plains or flood-prone areas.	2025	Completed.		Local Plans and Regulations	High	Ongoing	Medium	planning & zoning	Low	Funds and Staff Time

	1	1		1						T
				Type of				Primary Agency Responsible		
		Status of		Mitigation		Date of		for Implementation/	Estimate of	
2025 Oak Grove Mitigation Strategy	Plan Year		Status Explanation	Activity	Priority	Completion	Cost/Benefit Review	Administration	Cost (\$)	Funding Source
Tornadoes					,				(+)	
Encourage building practices and the use of materials that reduce the damaging effects of tornadoes.										
0.00		1		Local Plans		T				
Adopt current edition of a model building code to address structural and architectural issues related to				and		Continuous				
tornadoes and high wind events.	2020	Ongoing	Continuous project.	Regulations	Medium	project	Medium	Planning	Low	General Revenue
				Structure and						
Require the use of tempered or shatter-resistant glass in the windows of new public/private facilities				Infrastructure		Continuous				
where large numbers of people may congregate. Retrofit existing facilities.	2020	Ongoing		Projects	Medium	project	Medium	Planning	High	General Revenue; EMPG
				Local Plans		Ĺ		Ü	Ŭ	
Review and enhance (if necessary) regulations related to design and installation of architectural				and		Continuous				
features on buildings to minimize the creation of windborne debris.	2020	Ongoing	Continuous project.	Regulations	Medium	project	Medium	Planning	Low	General Revenue; EMPG
							Updated building codes			
							and Uniform Development			
				Education and			Code since 2010. No			
Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may				Awareness		Continuous	mechanism possible to			
minimize tornado/ high wind damage to residential/ commercial structures.	2020	Ongoing	Continuous project	Programs	Medium	project	quantify refults.	Emergency Mgt.	Low	General Revenue; EMPG
Encourage construction of community tornado shelters in office complexes, factories, apartment com	olexes, school	ols mobile home	parks, stadiums, and o	ther large populat	ion congregat	tion centers.				
				Local Plans			No enabling law so far.			
Consider adopting ordinances or regulations requiring the construction of tornado shelters in new				and		Continuous	Efforts to promote			
buildings where people live, work or congregate.	2020	Ongoing	Continuous project	Regulations	Medium	project	legislation continue.	Planning	Low	General Revenue; EMPG
							Shelter completed at R-VI			
							School District in Fall			
				Education and			2014; no incidents			
Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe				Awareness		Continuous	requiring its use at the time	ı.		
rooms.	2020	Ongoing	Continuous project	Programs	Medium	project	of this survey 12-2014	Emergency Mgt.	Low	FEMA Shelter Grant
Encourage electric and telecommunications utilities to protect their existing infrastructure from the eff	ects of torna	does and high w	rinds.							
									None to	
				Local Plans					local	
				and		Continuous			government	
Require that utility lines in new construction be underground.	2020	Ongoing	Continuous project.	Regulations	High	project	Medium	Planning		Utility Providers
							No mechanism possible to			
							quantify results.			
							Numerous poles and			
							infrastructure have been			
							replaced during the last			
							five years., especially			
				1		1	during the two Broadway (F	1		
				Structure and		1	Highway) widening	1		
Urge electric utilities to anchor or strengthen above-ground transmission lines, poles and similar		Undetermine		Infrastructure		Continuous	projects and at other			
structures.	2020	d	Continuous project.	Projects	Medium	project	locations.	Planning	High	Electric Utilities
						1				
				Structure and		1		1	None to	
		Undetermine		Infrastructure		Continuous			local	
Urge utility providers to replace existing above-ground utility lines with underground utility lines.	2020	d	Continuous project.	Projects	Medium	project	Medium	Planning	government	Electric utilities.
Ensure public facilities have shelters and emergency plans to accommodate staff and visitors during to	rnadoes/ na	tural hazards.								
						1	Safe rooms constructed at			
						1	new Sni Valley Fire Station			
				Local Plans		1	1 and as the new R-VI			
Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility				and		1	school district Performing	1		General Revenue and FEMA Shelter
construction.	2020	Ongoing	Continuous project	Regulations	Medium	Ongoing	Arts Center.	Planning	Low	Grants

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				Education and						
In facilities with no designated shelters, assist the facility to identify best possible shelter spaces and				Awareness		Continuous				
make plans for severe weather emergencies.	2020	Ongoing	Continuous project	Programs	High	project	Medium	Planning	Low	General Revenue, EMPG
							Unknown, no tornadoes			
							have caused damage in			
							the area. Some persons			
							were sheltered in the new			
							Fire Station shelter in 2011			
							during a tornado warning,			
				Structure and			but the tornado did not			
Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high				Infrastructure		Continuous	affect Oak Grove and			
wind.	2020	Ongoing	Continuous project	Projects	High	project		Planning	High	General Revenue
Increase local ability to provide warning and information about severe weather through NOAA All Haza						ı. <i>.</i>			10	
increase tocal asiaty to provide warning and information assat severe weather anough no with the razar	us riaulo, ou	Lucor Warring	l l l l l l l l l l l l l l l l l l l	ilications, oociat	Ticula, ii 71110	l dila ottici, as ye	undetermined teermotogies.			I
Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems,				Education and						1
Social Media, Mobile Phone apps, text-email alerting, reverse 911 and and other emergency		Undetermine		Awareness		Continuous				1
	2020	didetermine	A continuous program		Medium		Madium	Emordonou Mat	Low	Undetermined; General Revenue
information technologies.	2020	la	A continuous program	Programs	Medium	program	Medium	Emergency Mgt.	Low	Undetermined; General Revenue
Increase local resilience to electric power loss especially in critical systems and infrastructure.										
Increase public awareness and understanding the benefits of "safe rooms."		1	ı		1	T	T	1		
				Education and			Unknown, since there have			
Develop, distribute informational materials and perform various educational activities on the benefits				Awareness		Continuous	been no tornadoes			
of safe rooms.	2020	Ongoing	Continuous project	Programs	High	project	affecting Oak Grove	Emergency Mgt.	Low	General Revenue, EMPG
Increase public awareness of family and individual preparedness actions they can take to prepare for t	ornadoes and	severe storms	through public education	activities.						
Use social media, poster presentations, speaking opportunities, and other means as available to				Education and						
educate the public about individual, family, organization, and community preparedness relating to		Undetermine		Awareness		Continuous				
tornadoes and severe storms.	2020	d	Continuous project.	Programs	Medium	project.	Medium	Emergency Mgt.	Low	General revenue and EMPG
Increase the ability to gather information on severe weather emergencies through technologies such a	NWS Chat,	radar data, and	other online data source	s and local weat	her observation	ns.				
Research information sources for severe weather information, including information from radar,				Local Plans						
satellite, spotters, observation stations, forecasts, and other jurisdictions and seek ways to evaluate		Undetermine		and		Continuous				
such information in a timely manner.	2020	d	Continuous project	Regulations	Medium	Project	Medium	Emergency Mgt.	Low	Unknown
Floods		_								
Discourage new development in floodplains and flood-prone areas.										
Discourage new development in noodplains and nood-prone areas.	1	1	l	Local Plans	T T	1	1		1	
Low foos on now recidential, commercial and infractructure development in floodulains or flood		Undetermine		and		Continuous			Donondont	
Levy fees on new residential, commercial and infrastructure development in floodplains or flood-	0000	Undetermine			Maralinas	Continuous	Madina	Diameira	Dependent	F
prone areas to finance flood mitigation, preparedness, response and recovery actions.	2020	<u>la</u>		Regulations	Medium	Project	Medium	Planning	on project	Fees
Enhance public awareness and education efforts related to flooding.		<u> </u>	l	1		T		The state of the s		
				1			No mechanism possible to			
				1			quantify results. No			
				1			mechanism exists for local			
				1			government to get			
				Education and			information on numbers of			
		Undetermine		Awareness			flood insurance policy			
Encourage home owners and businesses to purchase flood insurance.	2020	d	Continuous project	Programs	Medium	Ongoing	holders or loss claims.	Planning	Low	Local Budgeted Funds and Staff Time
				1						
		1		I			No mechanism possible to			
				1			quantify results.			
				1			Numerous brochures and			
Obtain brochures and related publications on flood mitigation, preparedness, response and recovery				Education and			information disseminated			
from FEMA, SEMA, the American Red Cross and other organizations and provide them to home owners							through electronic and			
and businesses in flood-prone areas.	2010	Ongoing		Awareness	Low	Ongoing	_	Emergency Mgt.	Low	Local Budgeted Funds and Staff Time
and publicabes ill licou-profite areas.	2010	Ongoing	l	Programs	LUW	Ongoing	print ilieula.	Emergency rigt.	LUW	Local budgeten Fullus allu Stall Time

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			Dependent on			Continuous				
			opportunity and	Structure and		Project; no				
Identify funding sources for the acquisition of flood-prone land for environmental, recreational and			integrating with other	Infrastructure		foreseeable				
flood mitigation uses.	2020	Ongoing	projects.	Projects	Low	end.	Medium	Planning	Low	Local Budgeted Funds and Staff Time
nood midgaton daea.	2020	Oligonia	projects.	i iojects	LOW	enu.	riedidili	i tailillig	LOVV	Local Budgeted Lunds and Stan Time
							A large tract of city-owned			
							property purchased a part			
							of the Sewer Treatment			
							Plant construction project			
							has been designated as			
				Local Plans			green space, and initially			
In concert with existing comprehensive and land use plans, develop a strategy for acquiring flood-				and			will become practice			
	2010	Ongoing			Lligh	Ongoing	· ·	Diagning	Low	Local Budgated Funda and Staff Time
prone property for use as open space or park land.	2010	Ongoing		Regulations	High	Ongoing	soccer fields.	Planning	Low	Local Budgeted Funds and Staff Time
Work with area environmental groups, property owners and other stakeholders to develop and				Structure and						
implement flood mitigation strategies that also promote the restoration and/or sustainability of fish				Infrastructure					Determined	
and wildlife habitats	2020	Ongoing	Based on opportunities.	Projects	Low	Ongoing	Medium	Planning	by project.	Local Budgeted Funds and Staff Time
		1=66		,		1		j	1 j	
Participate in, and ensure compliance with, flood mitigation and floodplain management programs.	•	T	1	1	T	lo	T	1	T	l
	1		Ì	Ì		Continuous		1		
	1		Ì	Local Plans		Project; no		1		
Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar	1	Undetermine	Ì	and		foreseeable		1		
documents.	2020	d	Continuous project	Regulations	Medium	end.	Medium	floodplain manager	Low	National; Flood Insurance Program
					riculum	enu.	riedidili	noouptain manager	LOW	Ivationat, i tood insurance i rogiam
Reduce flood-related damage to public, residential and commercial property in flood-prone areas thro	ugn structura	it and nonstruct	urai retrofits or removal o	r property.		Ta .:		1		
	1		1			Continuous				
	1		Ì	Structure and		Project; no		1		
Elevate public facilities in flood-prone areas. Encourage home owners and businesses to elevate their				Infrastructure		foreseeable				
	0000	0			11:56		Manadia and	Diamine	11:	LIMOR RRIG
structures.	2020	Ongoing		Projects	High	end.	Medium	Planning	High	HMGP, BRIC
				Structure and						
Encourage utility providers to assess their facilities, distribution systems, etc. for vulnerability to				Infrastructure		Continuous			Dependent	Dependent on project; probably
flooding and, if necessary, retrofit or modify them to decrease vulnerability.	2020	Ongoing		Projects	Medium	project	Medium	Planning	on project	electrical utility user fees.
3 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		0.0		.,		1			1 7	, ,
							Has been accomplished in			
							several projects through			
						Continuous	project design and site			
										Maria Coup Day 11 and 11
Encourage water and wastewater districts to elevate vulnerable equipment, electrical controls and				Structure and		Project; no	elevation. No mechanism		Unknown;	Missouri DNR Revolving Wastewater
other equipment at wastewater treatment plants, potable water treatment plants and pumping				Infrastructure		foreseeable	possible to quantify		dependent	Fund and Wastewater and Water
stations.	2020	Ongoing		Projects	High	end.	monetary results.	Planning	on project.	User Fees.
		0.0		.,	Ŭ	Continuous			1 7	
				Structure and		Project; no				
Identify incentives to offer home owners and businesses to remove or retrofit their structures in flood-				Infrastructure		foreseeable				
prone areas.	2020	Ongoing		Projects	High	end.	Medium	floodplain manager	High	HMGP, BRIC
Since most historic flood damage in Oak Grove has been caused by Infiltration and Inflow (I&I) through	the sewer sy		&I) in the sewer system							
onice most historic nood damage in Oak Grove has been caused by militation and millow (Ri) through	ine sewer sy	stem, reduce (I	I in the sewer system.	I C+	ı			1	<u> </u>	
	1		1	Structure and						
Conduct testing of the sewer system to identify entry points for floodwater into sewer systems and	1		1	Infrastructure		Continuous				
illegal connections into the sewer system such as downspouts, sump pumps, and floor drains.	2025	Ongoing	A continuing project.	Projects	Medium	project	Medium	Planning	Low	General Revenue
, and approximately provided the second			This is proposed in the		İ	1	İ	Ĭ	1	
	1			Ì				1		
	1		building code update of							
	I		late 2024 and is					1		
	I		expected to be	Local Plans				1	No cost to	
Require in local building codes that sewer backflow valves be installed in new construction or major	I		approved by the Board	and				1	local	Developers, builders, and property
1 '	0005	0-4-11	1 1 1		110	F10005	Ma disse	Diamaias		
remodeling and strongly recommend their installation in existing construction.	2025	Ongoing	of Aldermen.	Regulations	High	Early 2025	Medium	Planning	government	owners.
Severe Thunderstorms										
Encourage building practices and the use of materials that reduce the damaging effects of tornadoes.										
Encourage construction of community tornado shelters in office complexes, factories, apartment com	lexes school	ols mobile hom	e narks stadiums and o	ther large nonula	tion congregat	tion centers				
	ACAC3, 301100	oto, mobile nom	e parks, staulums, allu 0	iner targe popula	tion congrega	tion centers.				
Increase local resilience to electric power loss especially in critical systems and infrastructure.			1	1	1					
	1		Ì	Ì				1		
	I		Depends on the					1		
	I		location of funding	Structure and				1		l l
	1		-			0		1		
Obtain local resources for back-up electrical supply for critical infrastructure and portable electrical	1		sources for obtaining	Infrastructure		Continuous		1		
supply assets for other needs during electrical power outages.	2025	Ongoing	equipment.	Projects	Medium	project	Medium	emergency management	High	HMGP, BRIC
			•			•	•	•		

Increase public awareness of family and individual preparedness actions they can take to prepare for t	ornadoes and	severe storms	through public education	activities.	•	T		<u> </u>	1	
				F4						
Use social media, poster presentations, speaking opportunities, and other means as available to				Education and						
educate the public about individual, family, organization, and community preparedness relating to				Awareness		Continuous				
tornadoes and severe storms.	2020	Ongoing	Continuous project	Programs	High	project	Medium	emergency management	Low	General revenue, EMPG
Increase local ability to provide warning and information about severe weather through NOAA All Haza	rds Radio, Ou	tdoor Warning	Systems, Indoor Commur		Media, IPAWS	and other, as ye	t undetermined technologies	3.		
Increase local ability to provide warning and information about severe weather through NOAA All				Structure and						
Hazards Radio, Outdoor Warning Systems, Indoor Communications, Social Media, IPAWS and other,				Infrastructure		Continuous				
as yet undetermined technologies.	2020	Ongoing	Continuous project	Projects	Medium	project	Medium	emergency management	Low	General revenue, EMPG, HMGP
Increase the ability to gather information on severe weather emergencies through technologies such a	s NWS Chat,	radar data, and	other online data source		her observation	ns.	<u> </u>	T		
				Structure and						
				Infrastructure		Continuous				
Obtain enhanced weather information systems and incorporate them into operational plans	2020	Ongoing	Continuous project.	Projects	High	project	Medium	emergency management	Low	General revenue, EMPG, HMGP
Research new or enhanced sources of information on severe weather emergencies through				Structure and						
technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local				Infrastructure		Continuous				
weather observations.	2020	Ongoing	Continuous project	Projects	High	project	Medium	emergency management	Low	General revenue, EMPG, HMGP
Severe Winter Weather										
Increase local resilience to electric power loss especially in critical systems and infrastructure.										
			Depends on the							
			location of funding	Structure and						
Obtain local resources for back-up electrical supply for critical infrastructure and portable electrical			sources for obtaining	Infrastructure		Continuous				
supply assets for other needs during electrical power outages.	2025	Ongoing	equipment.	Projects	Medium	project	Medium	emergency management	High	HMGP, BRIC
Increase local ability to provide warning and information about winter weather emergencies through N	OAA All Haza	rds Radio, Outo	loor Warning Systems, Inc	door Communica	itions, Social M	1edia, IPAWS an	d other, as yet undetermined	I technologies.		
Increase the ability to gather information on severe weather emergencies through technologies such a	s NWS Chat,	radar data, and	other online data source	s and local weat	her observation	ns.				
Work with venues in the City of Oak Grove and Sni Valley Fire Protection District to plan for warming ce	nters and she	elters to be avai	lable during times of exce	essive cold and s	evere winter w	eather.				
Incorporate Wet Bulb Global Temperature Heat Index into plans for excessive heat events.										
			Additional information	Local Plans						
Incorporate Wet Bulb Global Temperature Heat Index into plans for excessive heat events to provide a			sources and equipment	and		Continuous				
more scientific measurement of heat stress on persons outdoors.	2020	Ongoing	needed.	Regulations	High	project	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
				Local Plans						
Incorporate wet bulb global temperature measurements into emergency plans and reference				and						
materials.	2025	Ongoing		Regulations	Medium	2025	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
Extreme Temperatures										
Increase local ability to provide warning and information about heat emergencies through NOAA All Ha	zards Radio,	Outdoor Warnii	ng Systems, Indoor Comn	nunications, Soci	ial Media, IPAV	VS and other, as	yet undetermined technolog	jies.		
Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems,				Structure and						
Social Media, Mobile Phone apps, text-email alerting, reverse 911 and and other emergency				Infrastructure		Continuous				
information technologies.	2020	Ongoing	Continuous project.	Projects	High	project	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
Increase local resilience to electric power loss especially in critical systems and infrastructure.	•						·		•	
			Depends on the							
			location of funding	Structure and						
Obtain local resources for back-up electrical supply for critical infrastructure and portable electrical			sources for obtaining	Infrastructure		Continuous				
supply assets for other needs during electrical power outages.	2025	Ongoing	equipment.	Projects	Medium	project	Medium	emergency management	High	HMGP, BRIC
Increase the ability to gather information on severe weather emergencies through technologies such a					her observation					
Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems,				Education and						
Social Media, Mobile Phone apps, text-email alerting, reverse 911 and and other emergency				Awareness		Continuous				
information technologies.	2020	Ongoing	Continuous project.	Programs	High	project	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
Work with venues in the City of Oak Grove and Sni Valley Fire Protection District to plan for cooling cen						. ,				
,	1111111111			Local Plans						
Work with venues in the City of Oak Grove and Sni Valley Fire Protection District to plan for cooling				and		Continuous				
centers to be available during times of excessive heat.	2020	Ongoing	Continuous project.	Regulations	High	project	Medium	emergency management	Low	Local Budgeted Funds and Staff Time
	1-220				10	IF. 5,000	1		1-2	adjoca i ando and otali fillio

								Primary Agency		
								Responsible for		
2025 City of Raytown, MO		Status of	Status	Type of Mitigation			Cost/Benefit	Implementation/	Estimate of Cost	
Mitigation Strategy	Plan Year	Project	Explanation	Activity	Priority	Date of Completion	Review	Administration	(\$)	Funding Source
Tornadoes										
Maintain continuity of municipal operations and services during power outag	es.									
				Structure and						Local Budgeted
Regularly test, monitor, and maintain backup power systems for municipal		New, reviewed		Infrastructure						Funds and Staff
facilities.	2025	in 2025		Projects	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Promote public situational awareness and safety steps regarding tornado thro	eats.									
, , , , ,										
										Local Budgeted
Encourage the use of mass notification systems, such as Nixle, for severe		New, reviewed		Education and						Funds and Staff
weather threats.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time
				Structure and						Local Budgeted
		New, reviewed		Infrastructure						Funds and Staff
Regularly test, monitor, and maintain outdoor tornado warning sirens.	2025	in 2025		Projects	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Floods	2020	111 2020		riojecto	111611	Ongoing	riculani	Emergency right	LOW	Time
Maintain continuity of municipal operations and services during power outag	es									
Training of manieral operations and services during points saug					1					
				Structure and						Local Budgeted
Regularly test, monitor, and maintain backup power systems for municipal		New, reviewed		Infrastructure						Funds and Staff
facilities.	2025	in 2025		Projects	High	Ongoing	Medium	Planning	Low	Time
Reduce risks from stormwater runoff through emergency notification.	2020	111 2020	1	1 Tojecto	111811	Oligonia	riculani	T turning	Low	Time
neduce risks from stormwater runon unough emergency notification.	1	1					I			I
										Local Budgeted
Encourage the use of mass notification systems, including Nixle, for severe		New, reviewed		Education and						Funds and Staff
weather threats.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time
weather timeats.	2023	111 2023		Awareness riograms	IIIgii	Oligoling	rieuluiii	Lineigency rigi.	LOW	Time
										Local Budgeted
Promote public situational awareness and safety steps regarding flash		New, reviewed		Education and						Funds and Staff
	2025	in 2025			Lligh	Ongoing	Madium	Emorgonov Mgt	Low	Time
flooding threats.	2025	111 2025		Awareness Programs	Півіі	Ongoing	Medium	Emergency Mgt.	Low	Time
Reduce risks from stormwater runoff through infrastructure improvements. Consider detention basins and other stormwater management tools in areas										
of new development to channel and catch stormwater, thereby reducing the		New, reviewed		Local Plans and						
	2025	in 2025			Lligh	Ongoing	Madium	Dianning	High	HMGP, BRIC
likelihood of flooding.	2025	111 2025		Regulations	High	Ongoing	Medium	Planning	High	HIMGP, BRIC
				1						Local Budgets
Evaluate and considerate adjusting of undeted various later and at a		Name was days of		Lead Diene and						Local Budgeted
Evaluate and consider the adoption of updated regional stormwater design	0005	New, reviewed		Local Plans and	11:	Ongoing	Madium	Diamaina	1	Funds and Staff
standards.	2025	in 2025		Regulations	High	Ongoing	Medium	Planning	Low	Time
Severe Thunderstorms	00									
Maintain continuity of municipal operations and services during power outag	es.				T T		<u> </u>	1		
				Church and						Land Budget d
De relativista de considera de la circa de				Structure and						Local Budgeted
Regularly test, monitor, and maintain backup power systems for municipal	2025	New, reviewed in 2025		Infrastructure Projects	High	Ongoing	Medium	Planning	Low	Funds and Staff Time
facilities.										

	1	1							1	
										Local Budgeted
Encourage the use of mass notification systems, such as Nixle, for severe		New, reviewed		Education and						Funds and Staff
weather threats.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time
									1-2-11	
				Structure and						Local Budgeted
		New, reviewed		Infrastructure						Funds and Staff
Regularly test, monitor, and maintain outdoor tornado warning sirens.	2025	in 2025		Projects	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Severe Winter Weather										
Encourage the use of mass notification systems, such as Nixle, for severe will	nter weather t	hreats.								
										Local Budgeted
		New, reviewed		Education and						Funds and Staff
Enact and broadcast emergency snow route information as necessary.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Identify and respond to hazardous roadway conditions to reduce risks from s	evere winter v	veather.								
				Structure and						Local Budgeted
Prepare and apply road treatment materials necessary to reduce or eliminate	:	New, reviewed		Infrastructure						Funds and Staff
ice and snow on roadways and improve road conditions.	2025	in 2025		Projects	High	Ongoing	Medium	Public Works	Low	Time
Maintain continuity of municipal operations and services during power outag	es.									*
				Structure and						Local Budgeted
Regularly test, monitor, and maintain backup power systems for municipal		New, reviewed		Infrastructure						Funds and Staff
facilities.	2025	in 2025		Projects	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Extreme Heat										
Encourage the use of mass notification systems, such as Nixle, for severe we	eather threats.									
										Local Budgeted
		New, reviewed		Education and						Funds and Staff
Use Nixle and social media to share heat-related emergency information.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time
Maintain continuity of municipal operations and services during power outag	es.			1		_				
				Structure and						Local Budgeted
Regularly test, monitor, and maintain backup power systems for municipal		New, reviewed		Infrastructure						Funds and Staff
facilities.	2025	in 2025			High	Ongoing	Medium	Emergency Mgt.	Low	Time
Partner with community stakeholders to identify air-conditioned public, priva	te, and nonpr	ofit facilities that car	n be used as "	heat emergency shelte	ers" during	a heat wave.				
										Local Budgeted
		New, reviewed		Education and						Funds and Staff
Share "heat emergency shelter" information as needed.	2025	in 2025		Awareness Programs	High	Ongoing	Medium	Emergency Mgt.	Low	Time

2025 SNI-VALLEY FIRE PROTECTION DISTRICT MITIGATION STRATEGY												
HAZARD	GOAL	ACTION	ACTION	PLAN YEAR	STATUS	EXPLANATION OF STATUS	ACTIVITY TYPE	PRIORITY	COMPLETION DATE	Primary Agency Responsible for Implementation/ Administration	ESTIMATED COST	FUNDING SOURCE
TORNADO AND SEVERE THUNDERSTORM	Goal: Increase public awareness of family and individual preparedness actions they can take to prepare for tornadoes and severe storms through public education activities.	Action: Use social media, poster presentations, websites speaking opportunities, and other means as available to educate the public about individual, family, organization, and community preparedness relating to tornadoes and severe storms.	Use social media, press releases, poster presentations, websites, speaking opportunities, and other means as available to educate the public about individual, family, organization, and community preparedness relating to tornadoes and severe storms.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Increase public awareness and understanding the benefits of "safe rooms."	Action: Develop, distribute informational materials and perform various educational activities on the benefits of safe rooms.	Develop, distribute informational materials and perform various educational activities on the benefits of safe rooms.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Ensure public facilities have shelters and emergency plans to accommodate staff and visitors during tornadoes/ natural hazards.	Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	Develop, distribute informational materials and perform various educational activities on the benefits of safe rooms.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	Medium	Continuous Project	Fire Protection District	Low	General Revenue, FEMA Shelter Grant, HMGP
TORNADO AND SEVERE THUNDERSTORM	Ibid	Action: Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction.	Consider adopting policies requiring incorporation of safe rooms/shelters in new public facility construction.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	Medium	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Ensure public facilities have shelters and emergency plans to accommodate staff and visitors during tornadoes/ natural hazards.	Action: In facilities with no designated shelters, assist the facility to identify best possible shelter spaces and make plans for severe weather emergencies.	In facilities with no designated shelters, assist the facility to identify best possible shelter spaces and make plans for severe weather emergencies.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	Goat: Encourage construction of community tornado shelters in office complexes, factories, apartment complexes, schools mobile home parks, stadiums, and other large population congregation centers.	Action: Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	Work with chambers of commerce, school districts, corporations, etc. to promote benefits of safe rooms.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	Medium	Continuous Project	Fire Protection District	Low	General Revenue, FEMA Shelter Grant, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Consider adopting ordinances or regulations requiring the construction of tornado shelters in new buildings where people live, work or congregate.	Consider adopting ordinances or regulations requiring the construction of tornado shelters in new buildings where people live, work or congregate.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	Medium	Continuous Project	Fire Protection District	Low	General Revenue, EMPG

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TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures.	Work w/ trade orgs to inform builders/ developers of construction techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	Medium	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events.	Adopt current edition of a model building code to address structural and architectural issues related to tornadoes and high wind events.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Review and enhance (if necessary) regulations related to design and installation of architectural features on buildings to minimize the creation of windborne debris.	Review and enhance (if necessary) regulations related to design and installation of architectural features on buildings to minimize the creation of windborne debris.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Require the use of tempered or shatter-resistant glass in the windows of new public/private facilities where large numbers of people may congregate. Retrofit existing facilities.	Require the use of tempered or shatter- resistant glass in the windows of new public/private facilities where large numbers of people may congregate. Retrofit existing facilities.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	High	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Encourage electric and telecommunications utilities to protect their existing infrastructure from the effects of tornadoes and high winds.	Action: Urge electric utilities to anchor or strengthen above-ground transmission lines, poles and similar structures.	Urge electric utilities to anchor or strengthen above-ground transmission lines, poles and similar structures.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Medium	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Urge utility providers to replace existing above-ground utility lines with underground utility lines.	Urge utility providers to replace existing above-ground utility lines with underground utility lines.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Require that utility lines in new construction be underground.	Require that utility lines in new construction be underground.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Increase local ability to provide warning and information about severe weather through NOAA All Hazards Radio, Outdoor Warning Systems, Indoor Communications, Social Media, IPAWS and other, as yet undetermined technologies.	Action: Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems, Social Media, Mobile Phone apps, textemail alerting, reverse 911 and and other emergency information technologies.	Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems, Social Media, Mobile Phone apps, textemail alerting, reverse 911 and and other emergency information technologies.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG

TORNADO AND SEVERE THUNDERSTORM	lbid	Action: Research information sources for severe weather information, including information from radar, satellite, spotters, observation stations, forecasts, and other jurisdictions and seek ways to evaluate such information in a timely manner.	Research information sources for severe weather information, including information from radar, satellite, spotters, observation stations, forecasts, and other jurisdictions and seek ways to evaluate such information in a timely manner.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
TORNADO AND SEVERE THUNDERSTORM	Goal: Increase the capability to for local government facilities to provide emergency electric power in case of long-term, weather related power failure	Action: Install and maintain whole building backup electric power capability for local government infrastructure.	Install and maintain whole building backup electric power capability for local government infrastructure.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Medium	General Revenue, Water Enterprise Fund, Sewer Enterprise Fund, HMGP
FLOODS	Goal: Examine repetitive flood loss properties in each county and determine feasible and practical mitigation options.	Action: Work with owners of repetitive flood loss properties and the respective counties, to identify feasible mitigation strategies and potential opportunities; determine property owners interest in specific mitigation options. Note: The Fire Protection District has no direct building code or flood insurance authority in Jackson County and only building code in Lafayette County.	Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities; determine property owners' interest in specific mitigation options.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	lbid	Action: With stakeholders, explore incentive options to encourage property owners to take action to prevent or reduce future flood losses	With stakeholders, explore incentive options to encourage property owners to take action to prevent or reduce future flood losses	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	lbid	Action: Develop partnerships between regional emergency management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed and implemented.	Develop partnerships between regional emergency management, floodplain management and environmental groups to educate one another and the public of the benefits of collaboration and identify specific programs and activities that can be developed and implemented.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG, HMPG

FLOODS	Goal: Improve flood hazard assessments and flood mapping.	(assessed valuation and other information) for	Obtain parcel data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	lbid	Action: Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process.	Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	Goal: Enhance public awareness and education efforts related to flooding.	Action: Encourage home owners and businesses to purchase flood insurance.	Encourage home owners and businesses to purchase flood insurance.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	Ibid	Cross and other organizations and provide them to home owners and	Obtain brochures and related publications on flood mitigation, preparedness, response and recovery from FEMA, SEMA, the American Red Cross and other organizations and provide them to home owners and businesses in flood-prone areas.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	lbid	Action: Partner with emergency services, public health, human services organizations, appropriate state and federal agencies and the business community to conduct special public education events, such as a Flood Mitigation and Preparedness Workshop.	Partner with emergency services, public health, human services organizations, appropriate state and federal agencies and the business community to conduct special public education events, such as a Flood Mitigation and Preparedness Workshop.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	Goal: Participate in, and ensure compliance with, flood mitigation and floodplain management programs.	Action: Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents.	Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps and similar documents.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG
FLOODS	Goal: Implement or improve flood warning systems.	Action: Determine the need for stream gauges in waterways without flood warning systems or additional stream gauges in waterways with flood warning systems already in-place.	Determine the need for stream gauges in waterways without flood warning systems or additional stream gauges in waterways with flood warning systems already in-place.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG, HM, NWS, USACE

FLOODS		lbid	Action: Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public.	Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG, HM, NWS, USACE
FLOODS		lbid	Action: Increase the ability to gather information on severe weather emergencies through technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local weather observations.	Increase the ability to gather information on severe weather emergencies through technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local weather observations.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue, EMPG, HM, NWS, USACE
FLOODS		Goal: Plan for flash flooding from upstream dam failure.	Action: Conduct dam failure inundation studies using Dam Emergency Plans available from Missouri Department of Natural Resources	Conduct dam failure inundation studies using Dam Emergency Plans available from Missouri Department of Natural Resources	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Medium	General Revenue, EMPG
SEVERE WINTER WI	/EATHER	Goal: Increase local ability to provide warning and information about winter weather emergencies through NOAA All Hazards Radio, Outdoor Warning Systems, Indoor Communications, Social Media, IPAWS and other, as yet undetermined technologies.	NOAA All-Hazards Radio,	Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems, Social Media, Mobile Phone apps, textemail alerting, reverse 911 and and other emergency information technologies.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
SEVERE WINTER WI	/EATHER	Goal: Increase the ability to gather information on severe weather emergencies through technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local weather observations.	Action: Increase the ability to gather information on severe weather emergencies through technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local weather observations including pavement temperature readings.	Increase the ability to gather information on severe weather emergencies through technologies such as NWS Chat, NWS EDD, radar data, and other online data sources and local weather observations including pavement temperature readings.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
SEVERE WINTER WI	/EATHER	Goal: Increase public awareness of the hazards and safety actions for severe winter weather through public education.	Action: Use social media, press releases, poster presentations, websites, speaking opportunities, and other means as available to educate the public about individual, family, organization, and community preparedness relating to tornadoes and severe storms.	Use social media, press releases, poster presentations, websites, speaking opportunities, and other means as available to educate the public about individual, family, organization, and community preparedness relating to tornadoes and severe storms.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG

SEVERE WINTER WEATHER	government facilities to provide emergency electric power in case of	capability for local government	Install and maintain whole building backup and portable electric power capability for local government infrastructure.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Medium	General Revenue, Water Enterprise Fund, Sewer Enterprise Fund, HMGP
SEVERE WINTER WEATHER	Goal: Increase the capability to shelter persons stranded by closing of Interstate Highwaysdue the severe winter weather	Action: Install and maintain whole building backup electric power capability for local government government buildings, suitable as shelters	Install and maintain whole building backup electric power and portable electric power capability for local government government buildings, suitable as shelters	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Medium	General Revenue, HMGP
НЕАТ	the City of Oak Grove and in Sni Valley Fire Protection and District to plan for cooling centers to be available during times of excessive and in the City of Cooling Figure 1.	in the City of Oak Grove and Sni Valley Fire Protection District to plan for cooling centers to be	Work with venues in the City of Oak Grove and Sni Valley Fire Protection District to plan for cooling centers to be available during times of excessive heat.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
НЕАТ	Goal: Incorporate Wet Bulb Global Temperature Heat Index into plans for excessive heat events.	·	Incorporate Wet Bulb Global Temperature Heat Index into plans for excessive heat events to provide a more scientific measurement of heat stress on persons outdoors.	2025-2030	Ongoing	Continuous Project	Local Plans and Regulations	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
НЕАТ	to gather information on in severe weather memergencies through technologies such as NWS Stata, and other online data sources and local a	information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems, Social Media, Mobile Phone apps, text- email alerting, reverse 911	Conduct public information campaigns for NOAA All-Hazards Radio, IPAWS, Indoor Pager Systems, Social Media, Mobile Phone apps, textemali alerting, reverse 911 and and other emergency information technologies.	2025-2030	Ongoing	Continuous Project	Education and Awareness Programs	High	Continuous Project	Fire Protection District	Low	General Revenue and EMPG
НЕАТ	government facilities to provide emergency electric power in case of	capability for local government	Install and maintain whole building backup and portable electric power capability for local government infrastructure.	2025-2030	Ongoing	Continuous Project	Structure and Infrastructure Projects	High	Continuous Project	Fire Protection District	Medium	General Revenue, Water Enterprise Fund, Sewer Enterprise Fund, HMGP

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				Type of				Primary Agency Responsible for		
				Type of Mitigation		Date of		Implementation/		
2025 Platte County Mitigation Strategy	Dian Voor	Status of Project	Status Explanation	Activity	Priority		Cost/Benefit Review	Administration	Estimate of Cost (\$)	Funding Course
Tornadoes	Plan fear	Status of Project	Status Explanation	ACTIVITY	Priority	Completion	Cost/ Bellelit Review	Aummistration	Estimate of Cost (\$)	runung source
Work to continue to get emergency weather radios available to underserved p	onulations									
work to continue to get emergency weather radios available to differ served p	opulations.	T	Linknown if there are any funda	Education and	I	1	I		1	I
Request manies for a stock of weather radios to handout to alderly and			Unknown if there are any funds from MARC for HAZMIT and	Education and Awareness				Emorgonov		
Request monies for a stock of weather radios to handout to elderly and	2025	Now			Medium	Ongoing	Medium	Emergency	Medium	HMGP, BRIC
underserved populations in Platte County. Floods	2025	New	radio program	Programs	Medium	Ongoing	Medium	Management	Medium	HMGP, BRIC
Work to continue to get emergency weather radios available to underserved p	onulations									
work to continue to get emergency weather radios avaitable to underserved p	opulations.	<u> </u>	T	Education and		1				1
Doguest manias for a stock of weather radica to handout to alderly and			Unknown if there is any manay	Education and				Emerdeney		
Request monies for a stock of weather radios to handout to elderly and	2025	Now	Unknown if there is any money	Awareness	Madium	Ongoing	Madium	Emergency	Madium	LIMOD BDIC
underserved populations in Platte County.	2025	New	for radios	Programs	Medium	Ongoing	Medium	Management	Medium	HMGP, BRIC
Severe Thunderstorms Work to continue to got amergancy weather radice available to underscaped a	onulation									
Work to continue to get emergency weather radios available to underserved p	opulations.	<u> </u>		Education and	<u> </u>	<u> </u>	1	<u> </u>		<u> </u>
			Halman it the	Education and				F		
Request monies for a stock of weather radios to handout to elderly and			Unknown if there is any money	Awareness				Emergency		
underserved populations in Platte County.	2025	New	for radios	Programs	Medium	Ongoing	Medium	Management	Medium	HMGP, BRIC
Severe Winter Weather										
Work to continue to get emergency weather radios available to underserved p	opulations.			1	T	1		T T T T T T T T T T T T T T T T T T T	•	
				Education and						
Request monies for a stock of weather radios to handout to elderly and			Unknown if there is any money	Awareness				Emergency		
underserved populations in Platte County.	2025	New	for radios	Programs	Medium	Ongoing	Medium	Management	Medium	HMGP, BRIC
Extreme Temperatures										
Work to continue to get emergency weather radios available to underserved process.	opulations.			1	T	1		T T T T T T T T T T T T T T T T T T T	•	
				Education and						
Request monies for a stock of weather radios to handout to elderly and			Unknown if there is any money	Awareness				Emergency		
underserved populations in Platte County.	2025	New	for radios	Programs	Medium	Ongoing	Medium	Management	Medium	HMGP, BRIC
Tornadoes										
Encourage building practices and the use of materials that reduce the dam	aging effect	s of tornadoes.	1	1		1	_	T	•	_
			Currently the county is							
			considering the adoption of							
			safe rooms to the Planning and							
			Zoning ordinance. The county							
			intends on adopting the 2018							Local Budgeted
Adopt current edition of a model building code to address structural and			version of the International	Local Plans and		1				Funds and Staff
architectural issues related to tornadoes and high wind events.	2010	Ongoing	Codes by the end of 2019	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
						1				
						1				
			Currently the county is	1			1		1	
			considering the adoption of	1			1		1	
			safe rooms to the Planning and			1				
			Zoning ordinance The county			1				
Review and enhance (if necessary) regulations related to design and			intends on adopting the 2018	1			1		1	Local Budgeted
installation of architectural features on buildings to minimize the creation of			version of the International	Local Plans and		1				Funds and Staff
windborne debris.	2010	Ongoing	Codes by the end of 2019	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
			,	<u> </u>					1	

			Currently the county is							
			considering the adoption of							
			safe rooms to the Planning and							
			Zoning ordinance. The county							
			is currently in the process of							
			adopting the 2018							
Work w/ trade orgs to inform builders/ developers of construction techniques			International Codes which	Education and						Local Budgeted
and materials that may minimize tornado/ high wind damage to residential/			deals with new wind bracing	Awareness						Funds and Staff
commercial structures.	2010	Ongoing	and tie downs.	Programs	Medium	Ongoing	Medium	Planning	Low	Time
Encourage construction of community tornado shelters in office complexe								rtaillilig	LOW	Tillie
Encourage construction of community tornado shetters in office complexes	3, 140(01163,	apt complexes, schools		and other targe po	putation congr	egation center	j.	1		<u> </u>
			Currently the county is							
			Currently the county is							l I Dood was a
			considering the adoption of							Local Budgeted
Consider adopting ordinances or regs requiring the construction of tornado			safe rooms to the Planning and							Funds and Staff
shelters in new buildings where people live, work or congregate.	2010	Ongoing	Zoning ordinance	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
					1					
			Currently the county is							
			considering the adoption of							Local Budgeted
Offer residential/ commercial builders/developers tax incentives to			safe rooms as part of the 2018	Local Plans and						Funds and Staff
construct safe rooms/community shelters in new public facilities.	2010	Ongoing	International code adoption.	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
			Working with all but still a hard	Education and			Low/no cost			
Work with chambers of commerce, school districts, corporations, etc. to			issue to sell especially to	Awareness			mechanism to			
promote benefits of safe rooms.	2010	Ongoing	Schools.	Programs	Medium	Ongoing	increase public safety.	Emergency Mgt	Low	FEMA Grants
Encourage electric and telecommunications utilities to protect their existing	ng infrastruc		tornadoes and high winds.					, , , ,		
	Ĭ									
			Working with new construction							
			and ongoing construction to							
			make this happen. This option							Local Budgeted
Adopt ordinances or regulations requiring the underground placement of			is available to home owners at	Local Plans and						Funds and Staff
Adopt ordinances or regulations requiring the underground placement of	0040	0-4-1-4			Mandious	0-4-1-4	Maralissas	Diamaia	1	
new electric and telecommunications transmission lines.	2010	Ongoing	their cost and hookup.	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
				Structure and						
Anchor or strengthen above-ground transmission lines, poles and similar				Infrastructure						
structures.	2010	Ongoing	Currently being done by all.	Projects	Medium	Ongoing	Medium	Planning	High	HMGP, BRIC
Ensure public facilities have shelters to accommodate staff and visitors du	ring tornado	es/ nat. hazards.	T	I	•			1		I
										Local Budgeted
Assess existing facilities for shelter suitability. Mark clearly and inform			County buildings have signage	Local Plans and						Funds and Staff
visitors/employees of locations.	2010	Ongoing	for tornado drills at this time.	Regulations	Medium	Ongoing	Medium	Planning	Low	Time
			Most county buildings are		1			1		
			evaluated and suggestion	Structure and	1			1		
Retrofit or add shelters to existing public facilities with inadequate protection			made for staff and elected	Infrastructure				emergency		
from tornadoes and high wind.	2010	Ongoing	officials.	Projects	Medium	Ongoing	Medium	management	High	HMGP, BRIC
Evaluate the county to continue to add more warning sirens in locations of	the greatest									
			Working with developments to							
			update and add. Developing		1			1		
			an ordinance requiring new	Structure and	1		Will improve	1		
			home development to install	Infrastructure	1		alert/warnings	emergency		
		l	<u>-</u>		l	L .	_		1	l
Add additional outdoor warning sirens	12015	()ngoing	an outdoor siren	Projects	Medilim	Ongoing	coverage	management	121000	Inlinget
Add additional outdoor warning sirens. Increase public awareness and understanding the benefits of "safe rooms."	2015	Ongoing	an outdoor siren.	Projects	Medium	Ongoing	coverage.	management	21000	budget

				т	т	т	7	1	Т	
			Materials are made available	Education and	1					Local Budgeted
			for the public and contractors	Awareness			l	emergency		Funds and Staff
Develop, distribute informational materials on safe rooms.	2010	Ongoing	to gather information.	Programs	Medium	Ongoing	Medium	management	Low	Time
Increase public safety alert and warning.			NA/	Τ				1	<u> </u>	
			We currently text, email, and							
			page alerts on the following		1					
			programs; Textcaster,	Education and	1		Low/no cost			
Continue public education on the all hazard weather radio.ontinued public	0045	Ongoing	Facebook, twitter, and	Awareness	Mandiona	0	mechanism to	emergency	20	DOA
education on the all hazard weather radio.	2015	Ongoing	Nextdoor.	Programs	Medium	Ongoing	increase public safety.	management	30	PCA
Floods Discourage new development in floodplains and flood-prone areas.										
Bisoduluge new development in reodupants and reodu prone dreas.	$\overline{}$						Will provide legal			
			Chapter 410 - Zoning Overlay		1		mechanism to enforce			Local Budgeted
Adopt ordinances prohibiting residential and commercial development in			District Flood Plain	Local Plans and			floodplain			Funds and Staff
flood plains or flood-prone areas.	2010	Ongoing	Management Ordinance	Regulations	High	Ongoing	management.	floodplain manager	Low	Time
need plants of need profit dreas.	2010	Oligonia	Tranagement oraniance	ricgulations	1 11811	Cingoling	munugement.	noouptuiii munugei	LOW	
			Chapter 410 - Zoning Overlay		1					
			District Flood Plain		1					
Develop or amend comprehensive and/or land use plans to specifically			Management Ordinance							Local Budgeted
address development in flood-prone areas and recommend strategies for			· ·	Local Plans and			Will reduce future			Funds and Staff
decreasing the jurisdiction's vulnerability to flooding.	2010	Ongoing	been updated since 2010	Regulations	High	Ongoing		floodplain manager	Low	Time
Enhance public awareness and education efforts related to flooding.	12010	1011801118	poen apaatea emee 2010	riogatations	18	ongoing .	rumorusinty to noour	no o apitani managoi	2011	1
	Т		Insurance companies are							
			aware of the current flood		1					
			plans and working with their		1					
			insured. Through the CRS							
			program, the county	Education and			Will reduce recovery			Local Budgeted
			encourages the purchase of	Awareness	1		costs and ensure			Funds and Staff
Encourage home owners and businesses to purchase flood insurance.	2010	Ongoing	flood insurance.	Programs	Medium	Ongoing	compliance with NFIP.	floodplain manager	Low	Time
	1						·			
			Those in the current area that							
			are new are being updated and		1					
Obtain brochures and related publications on flood mitigation,			requested to have flood				No/low cost			
preparedness, response and recovery from FEMA, SEMA, the American Red			insurance in place. Through the	Education and	1		mechanism to			Local Budgeted
Cross and other organizations and provide them to home owners and			CRS program, the county does	Awareness			encourage flood			Funds and Staff
businesses in flood-prone areas.	2010	Ongoing	an outreach each year.	Programs	Medium	Ongoing	preparedness.	floodplain manager	Low	Time
Partner with emergency services, public health, human services							No/low cost			
organizations, appropriate state and federal agencies and the business				Education and			mechanism to			Local Budgeted
community to conduct special public education events, such as a Flood			We are in the planning stage for	Awareness	1		encourage flood			Funds and Staff
Mitigation and Preparedness Workshop.	2010	Ongoing	this effort.	Programs	Medium	Ongoing	preparedness.	floodplain manager	Low	Time
Examine repetitive flood loss properties in each county and determine feat	sible and pra	ctical mitigation option	s.							
							The county in 2011			
					1		found that they did not			
					1		want to enter in a			
			CRS review on going. Flood		1		buyout for those in			
			plain manager is keeping this	Structure and			Bean Lake as this was			
As funding allows, repetitive flood loss properties and structures will be			data updated and will follow	Infrastructure	1		done once in 1993			
targeted for buyout.	2010	Ongoing	up on our flood plain plan.	Projects	High	Ongoing	flood.	Emergency Mgt	High	CBDG grants
					1					
			CRS review on going. Flood		1		Preventing future			
			plain manager is keeping this	Structure and	1		flooding of properties			CDBG or another
Identify potential funding opportunities to implement mitigation options for	1	1	data updated and will follow	Infrastructure	1	1	that have had history	1	1	grant that might
repetitive flood loss properties.	2010	Ongoing	up on our flood plain plan.	Projects	High	Ongoing	of flood damage	Emergency Mgt	Low	be available

			1	T	1	т		1	1	1
			CRS review on going. Flood				Prevent future flooding			
			plain manager is keeping this	Structure and			of properties that have			Local Budgeted
With stakeholders, explore incentive options to encourage property owners			data updated and will follow	Infrastructure			experienced past			Funds and Staff
1	2010	Ongoing	·		Lligh	Ongoing		Emorgonov Mgt	Low	Time
to take action to prevent or reduce future flood losses	2010	Ongoing	up on our flood plain plan.	Projects	High	Ongoing	damage from floods	Emergency Mgt	Low	Time
			CRS review on going. Flood				Low cost mechanism			CDBG or some
Work with owners of repetitive flood loss properties to identify feasible			plain manager is keeping this	Structure and			to identify r ways to			other grant that
mitigation strategies and potential opportunities; determine property			data updated and will follow	Infrastructure			prevent damages to			might be
owners' interest in specific mitigation options.	2010	Ongoing	up on our flood plain plan.	Projects	High	Ongoing		Emergency Mgt	Low	available
Implement or improve flood warning systems.	2010	Oligonia	ap on our nood plant plan.	i rojects	16	Oligoling	residential properties	Emergency rige	LOW	avaitable
8-7							1			
			With the addition of the river				Stream gauges are			
			gauge for Parkville added to the				relatively cost			
			Missouri River now gives				effective measures to			
Determine the need for stream gauges in waterways without flood warning			Parkville and Riverside a better	Structure and			warn of flooding			Local Budgeted
systems or additional stream gauges in waterways with flood warning			gauge on the current water	Infrastructure			events and implement			Funds and Staff
systems already in-place.	2010	Ongoing	level is for their jurisdiction.	Projects	Medium	Ongoing		floodplain manager	50000	Time
			We have developed a "Flood							
			Group" email for those entities							
			along the Missouri river to keep							
			them updated on current							
			situations that are important to				Will ensure that			
			the levee group and home				citizens are prepared			Local Budgeted
Develop and implement procedures to quickly analyze and disseminate			owners and farmers in this area	Local Plans and			real time for flood			Funds and Staff
information from flood warning systems to the public.	2010	Ongoing	as well and local jurisdictions.	Regulations	Medium	Ongoing	events.	Emergency Mgt.	50000	Time
			We have developed a "Flood							
			Group" email for those entities							
			along the Missouri river to keep							
			them updated on current							
			situations that are important to				Sharing of data will			
			the levee group and home		1		improve county			Local Budgeted
Work with local governments and other stakeholders to share data from			owners and farmers in this area				floodplain			Funds and Staff
flood warning systems in multiple jurisdictions.	2010	Ongoing	as well and local jurisdictions.	Regulations	Medium	Ongoing	management.	Emergency Mgt.	50000	Time
Improve flood hazard assessments and flood mapping.	T			I	1		1	1	I	
							Most data readily			
					1		available and can be			
			We have a SDE program that				easily imported to			
			has this capability already and		1		identify potential			Local Budgeted
Obtain parcel data (assessed valuation and other information) for flood	0010		is updated by the Assessor	Local Plans and	l		areas for increased			Funds and Staff
boundary areas and enhance vulnerability assessments for these areas.	2010	Ongoing	office.	Regulations	High	Ongoing	mitigation efforts.	floodplain manager	LOW	Time
			Mo work with all installation				From products that			Legal Designation
	1	1	We work with all jurisdiction	I	1	1	Free program that can	I	1	Local Budgeted
Postporusith FEMA in the Cooperating Table 1- Destruction (CTD) Destruction			located in the fire of minimum	Local District						Funda seed Ob. "
Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process.	2010	Ongoing	located in the flood plain to accomplish this effort.	Local Plans and Regulations	High	Ongoing	increase floodplain management.	floodplain manager	Law	Funds and Staff Time

Integrate flood mitigation strategies with projects and activities designed t	o (1) protect	. restore or enhance ed	osystems and the environment	and/or (2) create r	ecreational opr	ortunities for	the community.			
	_ (3) p. 0.000	,								
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							
			and 405.225 Stream Preservation and							
			Buffer Zone Requirements Chapter							
			410 - Zoning Overlay District Flood							
			Plain Management Ordinance Current							
			Land Use Plan has not been updated				Will reduce floodplain			
			since 2010 405.230 Park and	Structure and			vulnerability and			
Consider alternative uses for floodplains and flood-prone areas, such as			recreational area requirements as well as 405.240 Linear Parks and Trail	Infrastructure			increase city			
sports fields, parks, wildlife habitats, etc.	2010	Ongoing	Dedication	Projects	High	Ongoing	greenspace.	floodplain manager	Madium	HMGP, BRIC
aporta netas, parka, witaine nabitata, etc.	2010	Oligoling	Dedication	110,000	111611	Oligoliig	вісспарасс.	noouptain manager	riculani	TIPIOT, BITTO
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							
			and 405.225 Stream Preservation and							
			Buffer Zone Requirements Chapter							
Consider the construction of detention basins, small lakes and greenways or			410 - Zoning Overlay District Flood	Structure and						
riparian corridors in areas of new development to channel and catch storm			Plain Management Ordinance Current	Infrastructure			Will prevent flooding			
1 '	0040		Land Use Plan has not been updated		re a				re a	LIMOR PRIO
water, thereby reducing the likelihood of flooding.	2010	Ongoing	since 2010	Projects	High	Ongoing	for moderate costs	floodplain manager	High	HMGP, BRIC
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							
			and 405.225 Stream Preservation and							
Develop partnerships between regional emergency management, floodplain			Buffer Zone Requirements Chapter				Low cost mechanism			
management and environmental groups to educate one another and the			410 - Zoning Overlay District Flood				to improve floodplain			Local Budgeted
			Plain Management Ordinance Current							-
public of the benefits of collaboration and identify specific programs and			Land Use Plan has not been updated	Local Plans and			management on local			Funds and Staff
activities that can be developed and i	2010	Ongoing	since 2010	Regulations	High	Ongoing	and regional levels.	Emergency Mgt.	Low	Time
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							
			and 405.225 Stream Preservation and							
			Buffer Zone Requirements Chapter							
			410 - Zoning Overlay District Flood							
			Plain Management Ordinance Current				No/ or low cost to			Local Budgeted
Identify funding sources for the acquisition of flood-prone land for			Land Use Plan has not been updated	Local Plans and			implement and require			Funds and Staff
environmental, recreational and flood mitigation uses.	2010	Ongoing	since 2010	Regulations	High	Ongoing	little staff support.	floodplain manager	Low	Time
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							
			and 405.225 Stream Preservation and							
			Buffer Zone Requirements Chapter				Will reduce floodplain			
In concert with existing comprehensive and land use plans, develop a			410 - Zoning Overlay District Flood				vulnerability and			Local Budgeted
strategy for acquiring flood-prone property for use as open space or park			Plain Management Ordinance Current Land Use Plan has not been updated	Local Plans and		1	increase city			Funds and Staff
land.	2010	Ongoing	since 2010	Regulations	High	Ongoing	greenspace.	floodplain manager	Low	Time
wind.	2010	O I BOILIE	555 2010	negutations	111811	Cheome	Бі ссіїзрасс.	noouptuin munagei	2011	iiiiii
			Platte County Zoning Order 405.180							
			Storm Drainage Systems and facilities							1
			and 405.225 Stream Preservation and]]				ĺ
			Buffer Zone Requirements Chapter]]	Will reduce floodplain			ĺ
Work with area environmental groups, property owners and other			410 - Zoning Overlay District Flood				vulnerability and			Local Budgeted
			Plain Management Ordinance Current							
stakeholders to develop and implement flood mitigation strategies that also	0040		Land Use Plan has not been updated	Local Plans and	lie a		increase city			Funds and Staff
promote the restoration and/or sustainability of fish and wildlife habitats	2010	Ongoing	since 2010	Regulations	High	Ongoing	greenspace.	floodplain manager	LOW	Time
Participate in, and ensure compliance with, flood mitigation and floodplain	manageme	nt programs.								

			Platte County Flood Plain							
			manager and EM have the							
			latest maps to work from and				Having and			
			we are updating our				maintaining most			
			information for 2019. The				current FIRM map			
			latest maps were adopted				editions will allow for			
			04/2015 and are available in				most accurate review			Local Budgeted
Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain			the Planning and Zoning	Local Plans and			of floodplain			Funds and Staff
maps and similar documents.	2010	Ongoing	Office.	Regulations	Medium	Ongoing	management.	floodplain manager	Low	Time
Reduce flood-related damage to public, residential and commercial proper						Oligoling	management.	ntoouptain manager	LOW	Tillie
neduce room retated duringe to public, residential and commercial proper	l III Itoou	Tone areas an oagn sare		ls or removat or pr	l cherry.					
			Chapter 410 - Zoning Overlay							
			District Flood Plain							
			Management Ordinance				\A/\-:\-:\-:\+:-\			
			Current Land Use Plan has not	C+			While initial cost is			1
A - for all and a little and a			been updated since 2010.	Structure and			high, will reduce			
As funding allows, repetitive flood loss properties and structures will be			Buyout are subject to approval	Infrastructure			recovery and			
targeted for buyout.	2010	Ongoing	by the county commission	Projects	High	Ongoing	replacement costs.	floodplain manager	High	HMGP, BRIC
			Chapter 410 - Zoning Overlay							
			District Flood Plain				While initial cost is			
			Management Ordinance	Structure and			high, will reduce			
Elevate public facilities in flood-prone areas. Encourage home owners and			Current Land Use Plan has not	Infrastructure			recovery and			
businesses to elevate their structures.	2010	Ongoing	been updated since 2010	Projects	High	Ongoing	replacement costs.	floodplain manager	High	HMGP, BRIC
							Requires cooperation			
							of landowners to			
			Chapter 410 - Zoning Overlay				implement, but			
			District Flood Plain				ultimately beneficial			
Encourage homeowners and businesses in flood-prone areas to elevate			Management Ordinance	Structure and			as will greatly reduce			Local Budgeted
mechanical systems (i.e., furnaces, hot water heaters, electrical panels,			Current Land Use Plan has not	Infrastructure			recovery costs and			Funds and Staff
etc.).	2010	Ongoing	been updated since 2010	Projects	High	Ongoing	insurance rates.	floodplain manager	Medium	Time
			Chapter 410 - Zoning Overlay	-						1
			District Flood Plain							
			Management Ordinance							
Encourage water and wastewater districts to elevate vulnerable equipment,			Current Land Use Plan has not	Structure and						
electrical controls and other equipment at wastewater treatment plants,			been updated since 2010.	Infrastructure						
potable water treatment plants and pumping stations.	2010	Ongoing	Storm water plan	Projects	Medium	Ongoing	Medium	floodplain manager	High	HMGP, BRIC
P			mator plan	, 0 0 10		505		z aptani manugoi		
			Chapter 410 - Zoning Overlay				Will greatly reduce			1
			District Flood Plain				and offset			
			Management Ordinance	Structure and			construction costs			
Identify incentings to effect home surpays and businesses to account to			_							Links ours at this
Identify incentives to offer home owners and businesses to remove or retrofit		Ongoing	Current Land Use Plan has not	Infrastructure	Lliado	Ongoing	and limit recovery	floodulain man	Madium	Unknown at this
their structures in flood-prone areas.	2010	Ongoing	been updated since 2010	Projects	High	Ongoing	costs.	floodplain manager	meaium	time

				T		Date of		Primary Agency	F	
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Responsible for Implementation/Ad	Estimate of Cost (\$)	Funding Source
Tornadoes										
Increase tornado preparedness.										
Mark with the county to identify the need for				Structure and		TDD on funding				
Work with the county to identify the need for tornado warning sirens.	2025	new		Infrastructure Projects	Medium	TBD as funding allows	Will provide storm alerting	city	Medium	FEMA grants
ornado warning sirens.	2020	new		Tojects	riculum	attows	with provide storm dierung	city	riculum	TET IA GIUITO
Floods										
Implement or improve flood warning systems.										
implement of improve flood warning systems.										
Determine the need for stream gauges in							Stream gauges are relatively cost			
waterways without flood warning systems or							effective measures to warn of			
additional stream gauges in waterways with flood							flooding events and implement		TBD as	FEMA HMP or BRIC
warning systems already in-place.	2010	Ongoing	Lack of resources		Low	Ongoing	mitigation measures.	city	available.	grants
Improve flood hazard assessments and flood m	apping.									
Obtain parcel data (assessed valuation and										
other information) for flood boundary areas							Most data readily available and			
and enhance vulnerability assessments for							can be easily imported to identify potential areas for		TBD as	Obtian assistance
these areas.	2010	Ongoing	Lack of resources		Low	Ongoing	increased mitigation efforts.	city	available.	from the county
						- 19-119	<u> </u>	,		,
Participate in, and ensure compliance with, floo	od mitigation and	i floodplain ma	nagement programs.				Will ensure reduced			
Participate in the National Flood Insurance							insurance rates for		TBD as	
Program (NFIP).	2010	Ongoing	Lack of resources		Low	Ongoing	homeowners and	city	available.	No money availab
Obtain the latest copies of flood insurance							Having and maintaining			
rate maps (FIRMs), floodplain maps and	0040	0	1 1 6			Our daily d	most current FIRM map	-14-	TBD as	N
similar documents.	2010	Ongoing	Lack of resources		Low	Ongoing	editions will allow for most	city	available.	No money availab
Severe Thunderstorms										
To work with Platte County as much as possible	as we have no pa	aid employees	only volunteers							
Mark with the county to advente regidents to				Awareness		Whenever			No money	
Work with the county to educate residents to				Awareness		vviieriever		l	No money	

2025 Northmoor Mitigation Strate	egv									
Mitigation Goals and Action		Chabus of Pusions	Chahua Fumlamakian	Type of Mitigation	Duianita	Date of Commission	Cook/Donostik Doniona	Primary Agency Responsible for Implementation/	Fatiments of Coat (t)	Funding
Steps Tornadoes	Plan Year	Status of Project	Status Explanation	Activity	Priority	Date of Completion	Cost/Benefit Review	Administration	Estimate of Cost (\$)	Source
Encourage building practices and	d the use of materials t	hat roduce the damagin	or offects of ternadoes							
Elicourage building practices and	d the use of materials t	nat reduce the damagn	ig effects of tornadoes	•		1				
Adopt current edition of a model building code to address										Local
structural and architectural										Budgeted
issues related to tornadoes and				Local Plans and						Funds and
high wind events.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Staff Time
										Local
Require the use of tempered or										Budgeted
shatter-resistant glass in the										Funds and
windows of new public/private										Staff
facilities where large numbers of										Time;
people may congregate. Retrofit				Structure and						HMGP,
existing facilities.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	Planning	High	BRIC
Review and enhance (if										
necessary) regulations related to										
design and installation of										Local
architectural features on										Budgeted
buildings to minimize the				Local Plans and						Funds and
creation of windborne debris.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Staff Time
Work w/ trade orgs to inform										
builders/ developers of										
construction techniques and										
materials that may minimize										Local
tornado/ high wind damage to										Budgeted
residential/ commercial				Education and						Funds and
	2010	Ongoing			Medium	Ongoing	Medium	building code official	Low	Staff Time
Encourage construction of comm	nunity tornado shelters I	in office complexes, fa	actories, apt complexe	s, schools mobile home	parks, stadiums, and	other large population (congregation centers.	<u> </u>		<u> </u>
Consider adenting ordinance or										
Consider adopting ordinances or regs requiring the construction of										Local
tornado shelters in new buildings							Low/no cost			Budgeted
where people live, work or				Local Plans and			mechanism to			Funds and
	2010	Ongoing		Regulations	Medium	Ongoing	increase public safety.	Planning	1000	Staff Time
0011B1 0Buto.	2010	Onbomb		Пориципоно	Todiam	OH POINTS	moreage public safety.	i tarrilli	1000	Stan mile
Offer residential/ commercial										
builders/developers tax										Local
incentives to construct safe										Budgeted
rooms/community shelters in				Local Plans and						Funds and
		1	1			1		1	1	1

Work with chambers of										Local
commerce, school districts,							Low/no cost			Budgeted
corporations, etc. to promote				Education and			mechanism to			Funds and
benefits of safe rooms.	2010	Ongoing			Medium	Ongoing	increase public safety.	Emergency Mgt.	1000	Staff Time
Encourage electric and telecom			nfrastructure from the			188	пистене распесанову		1-444	1
		İ								
							Would reduce recovery	,		
Adopt ordinances or regulations							costs and better limit			
requiring the underground							damage/interruption			Local
placement of new electric and							to electrical and			Budgeted
telecommunications				Local Plans and			communications			Funds and
transmission lines.	2010	Ongoing		Regulations	Medium	Ongoing	services.	Planning	1000	Staff Time
								Ţ.		
							Would reduce recovery	,		
							costs and better limit			
							damage/interruption			
Anchor or strengthen above-							to electrical and			
ground transmission lines, poles				Structure and			communications			HMGP,
and similar structures.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	services.	local utilities	1000	BRIC
							Would reduce recovery	4		
							costs and better limit			
Offer financial or other incentives							damage/interruption			
to utility providers to replace							to electrical and			
existing above-ground utility lines							communications			
with underground utility lines.	2010	Ongoing		Unspecified	Medium	Ongoing	services.	Planning	1000	None
Ensure public facilities have she	Iters to accommodate	staff and visitors during	tornadoes/natural ha	zards.						
	ttoro to accommodate									
Consider adopting policies										Local
Consider adopting policies requiring incorporation of safe										Local Budgeted
				Local Plans and						
requiring incorporation of safe	2010	Ongoing		Local Plans and Regulations	Low	Ongoing	Medium	Planning	Low	Budgeted
requiring incorporation of safe rooms/shelters in new public	2010	Ongoing			Low	Ongoing	Medium	Planning	Low	Budgeted Funds and
requiring incorporation of safe rooms/shelters in new public facility construction.	2010	Ongoing			Low	Ongoing	Medium	Planning	Low	Budgeted Funds and
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing	2010	Ongoing			Low	Ongoing	Medium	Planning	Low	Budgeted Funds and
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate	2010	Ongoing Deferred		Regulations		Ongoing Ongoing	Medium Medium	Planning Emergency Mgt.	Low	Budgeted Funds and Staff Time
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and	2010	Deferred		Regulations Structure and						Budgeted Funds and Staff Time HMGP,
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	2010	Deferred		Regulations Structure and						Budgeted Funds and Staff Time HMGP, BRIC
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	2010	Deferred		Regulations Structure and						Budgeted Funds and Staff Time HMGP, BRIC
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and	2010	Deferred		Regulations Structure and Infrastructure Projects						Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind.	2010 2010 understanding the bene	Deferred		Regulations Structure and			Medium			Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted Funds and
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and	2010	Deferred		Regulations Structure and Infrastructure Projects				Emergency Mgt.		Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and Develop, distribute informational	2010 2010 understanding the bene	Deferred fits of "safe rooms."		Regulations Structure and Infrastructure Projects Education and	Medium	Ongoing	Medium	Emergency Mgt.	High	Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted Funds and Staff Time
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and Develop, distribute informational	2010 2010 understanding the bene	Deferred fits of "safe rooms."		Regulations Structure and Infrastructure Projects Education and	Medium	Ongoing	Medium	Emergency Mgt.	High	Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted Funds and Staff Time
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and Develop, distribute informational materials on safe rooms.	2010 2010 understanding the bene	Deferred fits of "safe rooms."		Regulations Structure and Infrastructure Projects Education and Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt. emergency management	High	Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted Funds and Staff Time Local Budgeted
requiring incorporation of safe rooms/shelters in new public facility construction. Retrofit or add shelters to existing public facilities with inadequate protection from tornadoes and high wind. Increase public awareness and Develop, distribute informational	2010 2010 understanding the bene	Deferred fits of "safe rooms."		Regulations Structure and Infrastructure Projects Education and Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	High	Budgeted Funds and Staff Time HMGP, BRIC Local Budgeted Funds and Staff Time

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**Adopt ordinances prohibiting							Will provide legal			Local
residential and commercial							mechanism to enforce			Budgeted
development in flood plains or				Local Plans and			floodplain			Funds and
flood-prone areas.	2010	Ongoing		Regulations	Low	Ongoing	management.	floodplain manager	1000	Staff Time
**Develop or amend										
comprehensive and/or land use										
plans to specifically address										
development in flood-prone										Local
areas and recommend strategies										Budgeted
for decreasing the jurisdiction's				Local Plans and			Will reduce future			Funds and
vulnerability to flooding.	2010	Ongoing		Regulations	Low	Ongoing	vulnerability to flood.	floodplain manager	1000	Staff Time
**Levy fees on new residential,										
commercial and infrastructure										
development in floodplains or							Will provide legal			Local
flood-prone areas to finance							mechanism to enforce			Budgeted
flood mitigation, preparedness,				Local Plans and			floodplain			Funds and
response and recovery actions.	2010	Ongoing		Regulations	Low	Ongoing	management.	floodplain manager	1000	Staff Time
Enhance public awareness and e	education efforts relate	d to flooding.	T			1	•	1	•	
Partner with emergency services,										
public health, human services										
organizations, appropriate state										
and federal agencies and the										
business community to conduct										Local
special public education events,										Budgeted
such as a Flood Mitigation and				Education and						Funds and
Preparedness Workshop.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	floodplain manager	Low	Staff Time
Examine repetitive flood loss pro	perties in each county	and determine feasible	and practical mitigation	on options.		T	T	T	<u> </u>	
**As funding allows, repetitive							Preventing future			
flood loss properties and				_			flooding of properties			
structures will be targeted for				Structure and			that have had history			HMGP,
buyout.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	of flood damage	floodplain manager	High	BRIC
**Identify potential funding							Preventing future			
opportunities to implement							flooding of properties			
mitigation options for repetitive				Structure and			that have had history			HMGP,
flood loss properties.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	of flood damage	floodplain manager	High	BRIC
**With stakeholders, explore	2010	Oligollig		mmastructure i rojects	Ticulatii	Ongoing	or noou damage	noouptain managei	111611	סוווס
incentive options to encourage							Preventing future			Local
property owners to take action to							flooding of properties			Budgeted
prevent or reduce future flood				Structure and			that have had history			Funds and
l'	2010	Ongoing			Low	Ongoing		floodalain managar	Low	
losses	2010	Ongoing		Infrastructure Projects	LUVV	Ongoing	of flood damage	floodplain manager	Low	Staff Time

		1			T	1	1	T	1
**Work with owners of repetitive									
flood loss properties to identify									
feasible mitigation strategies and									
potential opportunities;						Low cost mechanism			Local
determine property owners'						to identify r ways to			Budgeted
interest in specific mitigation			Structure and			prevent damages to			Funds and
options.	2010	Ongoing	Infrastructure Projects	Medium	Ongoing	residential properties	floodplain manager	Low	Staff Time
Implement or improve flood war		Oligoling	illinastructure i rojects	riedidili	Oligoling	residential properties	ntoouptain manager	LOW	Stall Tille
Determine the need for stream						Stream gauges are			
gauges in waterways without						relatively cost			
flood warning systems or						effective measures to			Local
additional stream gauges in						warn of flooding			Budgeted
waterways with flood warning			Structure and			events and implement			Funds and
systems already in-place.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	mitigation measures.	Emergency Mgt.	1000	Staff Time
Develop and implement									
procedures to quickly analyze						Will ensure that			Local
and disseminate information						citizens are prepared			Budgeted
from flood warning systems to			Structure and			real time for flood			Funds and
the public.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	events.	Emergency Mgt.	1000	Staff Time
Work with local governments and						Sharing of data will			Local
other stakeholders to share data						improve county			Budgeted
from flood warning systems in			Structure and			floodplain			Funds and
multiple jurisdictions.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	management.	Emergency Mgt.	1000	Staff Time
Improve flood hazard assessmen	nts and flood mapping.				_	1	T	_	
**Conduct an in-depth flood risk									
analysis utilizing HAZUS data and						Will allow for better			Local
create detailed maps based on						assumptions to			Budgeted
GIS technology to identify areas			Local Plans and			support mitigation			Funds and
at risk from flooding.	2010	Ongoing	Regulations	Low	Ongoing	activities.	Planning	1000	Staff Time
**Coordinate the collection of						Most data readily			
demographic, economic,						available and can be			
watershed, land use and other						easily imported to			Local
data required by the HAZUS-						identify potential			Budgeted
Flood software program and/or			Local Plans and			areas for increased			Funds and
GIS systems.	2010	Ongoing	Regulations	Low	Ongoing	mitigation efforts.	Planning	1000	Staff Time
						Most data readily			
**Obtain parcel data (assessed						available and can be			
valuation and other information)						easily imported to			Local
for flood boundary areas and						identify potential			Budgeted
enhance vulnerability			Local Plans and			areas for increased			Funds and
assessments for these areas.	2010	Ongoing	Regulations	Low	Ongoing	mitigation efforts.	Planning	1000	Staff Time

						1	I	I	I	
**Partner with FEMA in the										
Cooperating Technical Partners										Local
(CTP) Program to increase local							Free program that can			Budgeted
involvement in, and ownership of,				Local Plans and			increase floodplain			Funds and
the flood mapping process.	2010	Ongoing		Regulations	Low	Ongoing	management.	Planning	1000	Staff Time
the flood mapping process.	2010	Oligoling		negutations	LOW	Oligoling	management.	i tailillig	1000	Stall Tille
**Purchase HAZUS-Flood										Local
software from FEMA, possibly in							Free program that can			Budgeted
conjunction with other local or				Local Plans and			increase floodplain			Funds and
regional stakeholders.	2010	Ongoing		Regulations	Low	Ongoing	management.	Planning	1000	Staff Time
Integrate flood mitigation strate			nrotect restore or en	-			_	_	1000	Stall Tille
integrate flood intigation strate	gies with projects and a	ctivities designed to (1)	protect, restore or em	lance ecosystems and	the environment and/c	1 (2) create recreations			l	
Consider alternative uses for										
floodplains and flood-prone							Will reduce floodplain			
· ·				Structure and			vulnerability and			HMGP,
areas, such as sports fields,	2010	Ongoing			Modium	Ongoing		Dianning	Low	BRIC
parks, wildlife habitats, etc.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	increase greenspace.	Planning	Low	BRIC
Consider the construction of										
Consider the construction of										
detention basins, small lakes and										
greenways or riparian corridors in										
areas of new development to										
channel and catch storm water,										
thereby reducing the likelihood of				Structure and			Will prevent flooding			HMGP,
flooding.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	for moderate costs	Planning	Low	BRIC
Develop partnerships between										
regional emergency										
management, floodplain										
management and environmental										
groups to educate one another										
and the public of the benefits of										
collaboration and identify							Low cost mechanism			Local
specific programs and activities							to improve floodplain			Budgeted
that can be developed and				Local Plans and			management on local			Funds and
implemented jointly.	2010	Ongoing		Regulations	Medium	Ongoing	and regional levels.	Emergency Mgt.	Low	Staff Time
Identify funding sources for the										Local
acquisition of flood-prone land							No/ or low cost to			Budgeted
for environmental, recreational				Local Plans and			implement and require			Funds and
and flood mitigation uses.	2010	Ongoing		Regulations	Medium	Ongoing	little staff support.	Planning	Low	Staff Time
In concert with existing										
comprehensive and land use										
plans, develop a strategy for										Local
acquiring flood-prone property							Will reduce floodplain			Budgeted
for use as open space or park				Local Plans and			vulnerability and			Funds and
land.	2010	Ongoing		Regulations	Medium	Ongoing	increase greenspace.	Planning	Low	Staff Time

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Mark with area and ironmental										
Work with area environmental										
groups, property owners and										
other stakeholders to develop										1 1
and implement flood mitigation										Local
strategies that also promote the							Will reduce floodplain			Budgeted
restoration and/or sustainability	0010			Local Plans and		0	vulnerability and	D		Funds and
	2010	Ongoing		Regulations	Medium	Ongoing	increase greenspace.	Planning	Low	Staff Time
Participate in, and ensure compl	iance with, flood mitiga	ation and floodplain ma	nagement programs.	<u> </u>	I		I	1		T
							Will ensure reduced			
							insurance rates for			
**Participate in the National							homeowners and			Local
Flood Insurance Program (NFIP)							businesses while			Budgeted
and Community Rating System							controlling recovery			Funds and
` '	2010	Ongoing		Unspecified	Low	Ongoing	costs.	floodplain manager	1000	Staff Time
Reduce flood-related damage to	public, residential and	commercial property in	flood-prone areas thr	ough structural and no	nstructural retrofits or	removal of property.	1	1		1
**As funding allows, repetitive							While initial cost is			
flood loss properties and							high, will reduce			
structures will be targeted for				Structure and			recovery and			HMGP,
buyout.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	replacement costs.	Planning	1000	BRIC
Elevate public facilities in flood-							While initial cost is			
prone areas. Encourage home							high, will reduce			
owners and businesses to				Structure and			recovery and			HMGP,
elevate their structures.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	replacement costs.	Planning	1000	BRIC
							Requires cooperation			
							of landowners to			
Encourage homeowners and							implement, but			
businesses in flood-prone areas							ultimately beneficial			
to elevate mechanical systems							as will greatly reduce			
(i.e., furnaces, hot water heaters,				Structure and			recovery costs and			HMGP,
electrical panels, etc.).	2010	Ongoing		Infrastructure Projects	Low	Ongoing	insurance rates.	Planning	1000	BRIC
				·						
Encourage utility providers to										
assess their facilities,										
distribution systems, etc. for							While initial cost may			
vulnerability to flooding and, if							be high, will reduce			
necessary, retrofit or modify them				Structure and			recovery and			HMGP,
	2010	Ongoing		Infrastructure Projects	Low	Ongoing	replacement costs.	Planning	1000	BRIC

Encourage water and wastewater districts to elevate vulnerable equipment, electrical controls and other equipment at wastewater treatment plants, potable water treatment plants and pumping stations.		Ongoing		Structure and	Low	While initial cost is high, will reduce recovery and replacement costs.	Planning		Local Budgeted Funds and Staff Time
	2010	Oligoling	1	initiastructure i rojects i	1		-		otan mine
Identify incentives to offer home owners and businesses to	1 '	1	1	1	Į.	Will greatly reduce and offset construction		!	
remove or retrofit their structures	1 '	1	1	Structure and	l I	costs and limit		ļ	HMGP,
		Ongoing		Infrastructure Projects	II ow		Planning		BRIC

025 Parkville Mitigation Strategy										
litigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
ornadoes incourage building practices and the use of materials that reduce the	damaging offects of	ftornadoes								
neourage building practices and the use of materials that reduce the	damaging effects o	i tornauoes.			1				1	Local Budgeted
dopt current edition of a model building code to address structural and	i l			Local Plans and		Adopted 2009				Funds and Staff
rchitectural issues related to tornadoes and high wind events.	2010	Ongoing		Regulations	Medium	code in 2011	Medium	building code official	Low	Time
incourage construction of community tornado shelters in office comp	lexes, factories, ap	t complexes, schoo	ols mobile home p	arks, stadiums, and	other large popul	ation congregation	centers.			
										Local Budgeted
Consider adopting ordinances or regs requiring the construction of				Local Plans and				l		Funds and Staff
ornado shelters in new buildings where people live, work or congregate	. 2010	Ongoing		Regulations	Medium	Ongoing	Medium	planning & zoning	Low	Time
mprove existing and future storm sirens	1	T	I	I	1	T	I	1	1	1
	2005			Structure and Infrastructure			Continued functionality of outdoor warning	emergency		
Purchase new/update existing storm sirens.	2025	Ongoing		Projects	Low	Ongoing	systems.	management	Medium	HMGP, BRIC
ncrease citizen disaster preparedness.	1	<u> </u>		Education and	1	T	Citizens better	1	1	Local Budgeted
				Awareness			prepared for	omorgonov		Local Budgeted Funds and Staff
Provide public education materials.	2025	Ongoing		Programs	High	2015	disasters.	emergency management	Low	Time
ncrease public awareness and understanding the benefits of "safe ro		Oligoliig		i rograms	111611	2013	uisasters.	management	Low	Time
torouse public arraneress and anderstanding the benefits of Sale to				Education and						Local Budgeted
				Awareness				emergency		Funds and Staff
Develop, distribute informational materials on safe rooms.	2025	Ongoing		Programs	Medium	Ongoing	Medium	management	Low	Time
loods										
Discourage new development in floodplains and flood-prone areas.										
										Local Budgeted
dopt ordinances prohibiting residential and commercial development				Local Plans and						Funds and Staff
n flood plains or flood-prone areas.	2025	Ongoing		Regulations	High	Ongoing	Medium	planning & zoning	Low	Time
nhance public awareness and education efforts related to flooding.	1	1			1	<u> </u>	NACH do	4	1	1
							Will reduce			
				Education and			recovery costs and ensure			Local Budgeted
				Awareness			compliance with	emergency		Funds and Staff
incourage home owners and businesses to purchase flood insurance.	2025	Ongoing		Programs	Medium	Ongoing	NFIP.	management	Low	Time
neoutage name award and pasinesses to parenase nood modificate.	2020	Oligonia		i rogiumo	riculani	Ongoing		тападетен	Low	Time
Obtain brochures and related publications on flood mitigation,	1									
reparedness, response and recovery from FEMA, SEMA, the American				Education and						Local Budgeted
Red Cross and other organizations and provide them to home owners				Awareness				emergency		Funds and Staff
ca oross and other organizations and provide them to nome owners	0005	Ongoing		Programs	Low	Ongoing	Medium	management	Low	Time
and businesses in flood-prone areas.	2025	88					1	1	1	1
	2025									
and businesses in flood-prone areas. Partner with emergency services, public health, human services	2025									
rartner with emergency services, public health, human services organizations, appropriate state and federal agencies and the business				Education and						Local Budgeted
and businesses in flood-prone areas. Partner with emergency services, public health, human services				Education and Awareness				emergency		Local Budgeted Funds and Staff Time

With stakeholders, explore incentive options to encourage properly owners to take action to prevent or reduce future flood losses 2025 Ongoing Projects High Ongoing of flood damage to down Time Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities, determine properly owners' interest in specific mitigation strategies and potential opportunities, determine properly owners' interest in specific mitigation strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work with owners of repetitive flood loss properties to identify feasible mitigation strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work strategies and potential opportunities, determine properly owners' interest in specific mitigation properlies. Work strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work strategies and potential opportunities, determine properly owners' interest in specific mitigation patients. Work strategies and potential opportunities of the public. Work with local governments and other stakeholders to share data from local warring systems in multiple pursue flood warring systems in multiple pursue flood warring systems in multiple pursue flood warring systems in multiple pursue flood warring systems in multiple pursue flood warring systems in multiple pursue flood on and warring systems in multiple pursue flood on and warring systems in multiple pursue flood on and preparedness training.										
**Welf stakeholders, explore incentive food loss properties that funding opportunities to implement mitigation or my complete food loss properties. 2025 Origing Peoplets High available of infrastructure and infrastructure		2025	Ongoing	Infrastructure	High	_	flooding of properties that have had history	floodplain manager	High	HMGP, BRIC
**Welf stakeholders, explore incentive food loss properties that funding opportunities to implement mitigation or my complete food loss properties. 2025 Origing Peoplets High available of infrastructure and infrastructure										
Structure and Infrastructure on Infrastructure o		2025	Ongoing	Infrastructure	High	_	flooding of properties that have had history	floodplain manager	High	HMGP, BRIC
Structure and Infrastructure on Infrastructure o										
**Work with owners of repetitive flood loss properties to identify feasible miligation strategies and potential opportunities; determine property in the prope		2025	Ongoing	Infrastructure	High	Ongoing	flooding of properties that have had history	floodplain manager	Low	Local Budgeted Funds and Staff Time
underest inspecific mitigation options. 2025 Ongoing Projects High Ongoing properties flood warning systems. Will ensure that critizens are prepared real information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. 2025 Ongoing Regulations High Ongoing events. Uncal Plans and Regulations High Ongoing events. Work with local governments and other stakeholders to share data from 2025 Ongoing Regulations High Ongoing management. Work with local governments and other stakeholders to share data from 2025 Ongoing Regulations High Ongoing management. Work with local governments and other stakeholders to share data from 2025 Ongoing Regulations High Ongoing management. Work with local governments and other stakeholders to share data from 2025 Ongoing Regulations High Ongoing management. **Distribute and promote flood preparedness information. 2025 Ongoing Projects High Ongoing management management Low Time **Out of the program to the control of the data from management and other stakeholders to share data from 2025 Ongoing Regulations							mechanism to identify r ways to prevent damages			Local Budgeted
Implement or improve flood warning systems. Will ensure that citizens are prepared real time for flood information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems in multiple jurisdictions. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems in multiple jurisdictions. Develop and implement procedures to quickly analyze and disseminate information flood on the public works. Low Cost mechanism to microse flood preparedness training. Distribute and promote flood preparedness information. 2015 Ongoing Programs High 2015 safety. Distribute and promote flood preparedness information. 2015 Ongoing Programs High 2015 safety. Distribute and promote flood mazard assessments and flood mapping. ***Obtain parcet data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas. Distribute and promote flood preparedness information. 2015 Ongoing Regulations Medium Ongoing Medium planning & zoning Low Time Local Budgetee Funds and Safe analysis of these free program that can increase flood propagament. Develop and safe analysis of the second probability assessments for these flood probability assessments of these flood probability assessments of these flood probability assessments for these flood probability assessments of the second probability assessment flood mapping flood probability assessments for these flood										
Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information from flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information flood warning systems to the public. Develop and implement procedures to quickly analyze and disseminate information flood warning systems to the public works. Low Time Local Plans and Again and Plans and Developed and Staff information flood boundary areas and enhance vulnerability assessments for these areas. Distribute and promote flood preparedness information. Distribute and promote flood preparedness information. Dongoing Programs High 2015 safety. Distribute and promote flood preparedness information. Dongoing Medium planning & zoning Low Time Local Budgetee Funds and Staff in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process. Dongoing Regulations High Ongoing management. High Ongoing management. Dongoing low Time Distribute and promote flood preparedness training the program to increase the call involvement in, and ownership of, the flood mapping process. Dongoing Regulations High Ongoing management. High Ongoing management. Dongoing Low Time		2025	Ongoing	Projects	High	Ongoing	properties	floodplain manager	Low	Time
Develop and implement procedures to quickly analyze and disseminate information from flood warring systems to the public. 2025 Ongoing Regulations High Ongoing events. 2025 Ongoing Regulations High Ongoing events. 2026 Ongoing Regulations High Ongoing events. 2027 Ongoing Regulations High Ongoing events. 2028 Ongoing Regulations High Ongoing management. 2029 Ongoing Regulations High Ongoing management. 2020 Ongoing Regulations High Ongoing management. 2020 Ongoing Regulations High Ongoing management. 2021 Ongoing Regulations High Ongoing management. 2022 Ongoing Regulations High Ongoing management. 2023 Ongoing Regulations High Ongoing management. 2024 Ongoing Regulations High Ongoing management. 2025 Ongoing Regulations High Ongoing Medium planning & zoning Low Time 2026 Ongoing Regulations High Ongoing Medium planning & zoning Low Time 2027 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2029 Ongoing Regulations High Ongoing management. 2020 Ongoing Regulations High Ongoing Medium planning & zoning Low Time 2021 Ongoing Regulations High Ongoing management. 2022 Ongoing Regulations High Ongoing management. 2023 Ongoing Regulations High Ongoing management. 2024 Pans and Regulations High Ongoing Medium planning & zoning Low Time 2025 Ongoing Regulations High Ongoing management. 2025 Ongoing Regulations High Ongoing management. 2026 Ongoing Regulations High Ongoing management. 2027 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing management. 2028 Ongoing Regulations High Ongoing Medium Planning & zoning Low Time	Implement or improve flood warning systems.		<u> </u>			ı	I	I	ı	
Work with local governments and other stakeholders to share data from flood warning systems in multiple jurisdictions. Dogoing Dogo		2025	Ongoing		High	Ongoing	citizens are prepared real time for flood	public works	Low	Local Budgeted Funds and Staff Time
Education and Awareness Education and Awareness Information. 2015 Ongoing Programs High 2015 safety. Increase flood emergency Evidence and Stafe Education and Ongoing Education and Ongoing Evidence Increase Incomposed Increase Incomposed Increase Incomposed Increase Incomposed Increase Incomposed	flood warning systems in multiple jurisdictions.	2025	Ongoing		High	Ongoing	will improve county floodplain		Low	Local Budgeted Funds and Staff Time
Education and Awareness Distribute and promote flood preparedness information. 2015 Ongoing Programs High 2015 Safety. Education and Awareness Programs High 2015 Safety. Emprove flood hazard assessments and flood mapping. **Obtain parcel data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas. 2025 Ongoing Regulations Medium Ongoing Medium Planning & zoning Local Budgeted Funds and Staf Funds and Staf Free program that can increase Program to increase local involvement in, and ownership of, the flood management. Local Budgeted Funds and Staf Funds and Staf Regulations High Ongoing Medium Planning & zoning Low Time Local Budgeted Funds and Staf Free program that can increase floodplain Funds and Staf Funds and Staf Funds and Staf Funds and Staf Funds and Staf Funds and Staf Regulations High Ongoing Medium Planning & zoning Low Time	Improve flood awareness education and preparedness training	l				1	1.	l	1	
**Obtain parcel data (assessed valuation and other information) for flood boundary areas and enhance vulnerability assessments for these areas. 2025 Ongoing Regulations Medium Ongoing Medium planning & zoning Low Time **Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process. 2025 Ongoing Regulations High Ongoing management. planning & zoning Low Time	Distribute and promote flood preparedness information.	2015	Ongoing	Awareness	High	2015	mechanism to increase flood		Low	Local Budgeted Funds and Staff Time
flood boundary areas and enhance vulnerability assessments for these areas. Coal Plans and Regulations Coal Plans and Regulatio										
**Partner with FEMA in the Cooperating Technical Partners (CTP) Program to increase local involvement in, and ownership of, the flood mapping process. Local Plans and Local Plans and High Ongoing management. planning & zoning Low Time	flood boundary areas and enhance vulnerability assessments for these	2025	Ongoing		Medium	Ongoing	Medium	planning & zoning	Low	Local Budgeted Funds and Staff Time
	Program to increase local involvement in, and ownership of, the flood	2025	Ongoing		High	Ongoing	can increase floodplain		Low	Local Budgeted Funds and Staff Time
		<u> </u>							[

									_
						Will reduce			
						floodplain			
			Structure and			vulnerability and			
Consider alternative uses for floodplains and flood-prone areas, such as			Infrastructure			increase city			
sports fields, parks, wildlife habitats, etc.	2025	Ongoing	Projects	High	Ongoing	greenspace.	planning & zoning	Medium	HMGP, BRIC
Consider the construction of detention basins, small lakes and			Structure and			Will prevent			
greenways or riparian corridors in areas of new development to channel			Infrastructure			flooding for			
and catch storm water, thereby reducing the likelihood of flooding.	2025	Ongoing	Projects	High	Ongoing	moderate costs	planning & zoning	Medium	HMGP, BRIC
						Low cost			
						mechanism to			
						improve			
Develop partnerships between regional emergency management,						floodplain			
floodplain management and environmental groups to educate one						management on			Local Budgeted
another and the public of the benefits of collaboration and identify			Local Plans and			local and			Funds and Staff
specific programs and activities that can be developed and i	2025	Ongoing	Regulations	High	Ongoing	regional levels.	planning & zoning	Low	Time
						No/ or low cost to			
						implement and			Local Budgeted
Identify funding sources for the acquisition of flood-prone land for			Local Plans and			require little staff			Funds and Staff
environmental, recreational and flood mitigation uses.	2025	Ongoing	Regulations	High	as available	support.	planning & zoning	Low	Time
						Will reduce			
						floodplain			
In concert with existing comprehensive and land use plans, develop a						vulnerability and			Local Budgeted
strategy for acquiring flood-prone property for use as open space or park			Local Plans and			increase city			Funds and Staff
land.	2025	Ongoing	Regulations	High	Ongoing	greenspace.	planning & zoning	Low	Time
						Will reduce			
Work with area environmental groups, property owners and other						floodplain			
stakeholders to develop and implement flood mitigation strategies that						vulnerability and			Local Budgeted
also promote the restoration and/or sustainability of fish and wildlife			Local Plans and			increase city			Funds and Staff
habitats	2025	Ongoing	Regulations	High	Ongoing	greenspace.		Low	Time
Reduce flood-related damage to public, residential and commercial pro-	operty in flood-pro	ne areas through structural and i	nonstructural retrofits	or removal of prope	erty.	<u>, </u>		•	•
						While initial cost			
						is high, will			
			Structure and			reduce recovery			
**Elevate public facilities in flood-prone areas. Encourage home owners			Infrastructure			and replacement			
and businesses to elevate their structures.	2025	Ongoing	Projects	Medium	Ongoing	costs.	public works	High	HMGP, BRIC
a basinssess to storate their structures.		pp	1 10,000	1	Pom.P	55566.	Pasio Works	19,,	101 , 51110

Encourage homeowners and businesses in flood-prone areas to elevate mechanical systems (i.e., furnaces, hot water heaters, electrical panels, etc.).	2025	Ongoing		Structure and Infrastructure Projects	High	Ongoing	Requires cooperation of landowners to implement, but ultimately beneficial as will greatly reduce recovery costs and insurance rates.	emergency management	Low	Unknown
	2020	5.185.118			g			management	2011	o
Encourage utility providers to assess their facilities, distribution systems, etc. for vulnerability to flooding and, if necessary, retrofit or modify them to decrease vulnerability.	2025	Ongoing		Structure and Infrastructure Projects	Medium	Ongoing	While initial cost may be high, will reduce recovery and replacement costs.	emergency management	Low	HMGP, BRIC
Encourage water and wastewater districts to elevate vulnerable				Structure and			While initial cost is high, will reduce recovery			
equipment, electrical controls and other equipment at wastewater				Infrastructure			-	emergency		
treatment plants, potable water treatment plants and pumping stations.	2025	Ongoing		Projects	High	Ongoing	costs.	management	Medium	HMGP, BRIC
Goal: Develop plans and adopt policies to address sound stormwater ar	d flooding challen	ges								
Adopt new stormwater engineering design and management standards and stream setback development standards to reduce		Participating in	Metro KC APWA Section is working with consultants to							
the risk of stream and flash flooding		review of draft	complete the new							Local Budgeted
	2025	standards under development	standards in 2025	Local Plans and	High	12/31/2026	no costs identified	City Council		Funds and Staff Time
Severe Thunderstorms	2020	uevelopment	2020	Regulations	High	12/31/2020	identilled	City Councit	LUW	IIIIIC
Increase citizen severe thunderstorm preparedness.										
				Education and Awareness			Citizens better prepared for	emergency		Local Budgeted Funds and Staff
Provide public education materials.	2025	Ongoing		Programs	High	2020	disasters.	management	Low	Time
Increase mass notification alert and warning capabilities.		1		1		1	1		ı	
				Local Plans and			Low cost mechanims to increase public aleart and	emergency		
Utilize Textcaster system for City	2025	Ongoing		Regulations	High	2020	warning.	management	donated	donated

2025 Platte City Mitigation Strategy										
	Diam Version	Status of	Charles Freedom ::	Type of Mitigation	Bulgatha	P-110	Ocat/Daniel St Daniel	Primary Agency Responsible for Implementation/	Faliments (20 mill)	Funding 2
Mitigation Goals and Action Steps Tornadoes	Plan Year	Project	Status Explanation	Activity	Priority	Date of Completion	Cost/Benefit Review	Administration	Estimate of Cost (\$)	Funding Source
Encourage building practices and the use of	materials that red	luce the damagi	ng offects of tornadoes							
Lincourage building practices and the use of	nateriats that red	uce the damagi	ing effects of tornaudes	<u>.</u>						
Adopt current edition of a model building code							Low/no cost			
to address structural and architectural issues				Local Plans and			mechanism to			
related to tornadoes and high wind events.	2010	Ongoing		Regulations	Low	Ongoing	increase public safety.	building code official	Low	General Fund
Require the use of tempered or shatter-										
resistant glass in the windows of new							While may increase			
public/private facilities where large numbers							building costs, will			
of people may congregate. Retrofit existing				Structure and			lead to greater			
facilities.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	occupant safety	building code official	Low	General Fund
Review and enhance (if necessary)							While may increase			
regulations related to design and installation							building costs, will			
of architectural features on buildings to				Local Plans and			lead to greater			
minimize the creation of windborne debris.	2010	Ongoing		Regulations	Low	Ongoing	occupant safety	building code official	Low	General Fund
Work w/ trade orgs to inform builders/										
developers of construction techniques and										
materials that may minimize tornado/ high							Low/no cost			
wind damage to residential/ commercial				Education and			mechanism to			
structures.	2010	Ongoing		Awareness Programs	Low	Ongoing	increase public safety.	emergency management	Low	General Fund
Encourage construction of community torna	do shelters in offi	ce complexes, f	actories, apt complexe	s, schools mobile hom	e parks, stadiums, and	other large population	congregation centers.			
Consider adopting ordinances or regs										
requiring the construction of tornado shelters							Low/no cost			
in new buildings where people live, work or				Local Plans and			mechanism to			
congregate.	2010	Ongoing		Regulations	Low	Ongoing	increase public safety.	planning & zoning	Low	General Fund
							Tax incentives could			
							defray otherwise high			
Offer residential/ commercial							costs for developing			
builders/developers tax incentives to							safe rooms and will			
construct safe rooms/community shelters in				Local Plans and			likely lead to greater			
new public facilities.	2010	Ongoing		Regulations	Low	Ongoing	acceptance.	city admin	Medium	General Fund
		1					<u> </u>			
Work with chambers of commerce, school		1					Low/no cost			
districts, corporations, etc. to promote				Education and			mechanism to			
benefits of safe rooms.	2010	Ongoing		Awareness Programs		Ongoing	increase public safety.	emergency management	Low	General Fund
Encourage electric and telecommunications	utilities to protec	t their existing	infrastructure from the	effects of tornadoes an	d high winds.	1				
		1					Would reduce			
							recovery costs and			
							better limit			
		1					damage/interruption			
Adopt ordinances or regulations requiring the							to electrical and			
underground placement of new electric and				Local Plans and			communications			
telecommunications transmission lines.	2010	Ongoing	ĺ	Regulations	Low	Ongoing	services.	planning & zoning	Low	General Fund

								1	_	•
							Would reduce			
							recovery costs and			
							better limit			
							damage/interruption			
Anchor or strengthen above-ground							to electrical and			
transmission lines, poles and similar							communications			
structures.	2010	Ongoing		Unspecified	Low	Ongoing	services.	local utilities	High	General Fund
		0.0				7 0 0	Would reduce			
							recovery costs and			
							better limit			
							damage/interruption			
Offer financial or other incentives to utility							to electrical and			
providers to replace existing above-ground							communications			
utility lines with underground utility lines.	2010	Ongoing		Unspecified	Low	Ongoing	services.	city admin	Medium	General Fund
Ensure public facilities have shelters to acco			tornadoes/nat hazar	<u> </u>	LOW	Oligoling	Services.	City dumin	Integralia	Generati unu
Litatie public facilities have shellers to acco	illillouate stall al	la visitors auring	g tornauoes/ nat. nazar	us.	1				1	
Assess existing facilities for shelter suitability.							Low/no cost			
Mark clearly and inform visitors/employees of							mechanism to			
locations.	2010	Ongoing		Unspecified	Low	Ongoing		emergency management	Low	General Fund
Consider adopting policies requiring	2010	Oligoling		Olispecilleu	LOW	Oligoling	ilicrease public salety.	emergency management	LOW	Generati unu
incorporation of safe rooms/shelters in new				Local Plans and						Local Budgeted Funds
I	2010	Ongoing			Low	Ongoing	Madium	Dianning	Low	_
public facility construction.	2010	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low	and Staff Time
Retrofit or add shelters to existing public				0						
facilities with inadequate protection from				Structure and	l					
tornadoes and high wind.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	Emergency Mgt.	High	HMGP, BRIC
Increase public awareness and understandin	g the benefits of '	"safe rooms."			1				T	
Davidan distribute informational masterials				Education and						Land Dudwated Funda
Develop, distribute informational materials	0040	0		Education and	M	0	M			Local Budgeted Funds
on safe rooms.	2010	Ongoing		Awareness Programs	Mealum	Ongoing	Medium	emergency management	Low	and Staff Time
Double of the decision of the conduct of the conduc				Education and						Lead Dudwated Funds
Partner w/ trade orgs. to conduct safe room	0040	0		Education and	M	0	M			Local Budgeted Funds
workshops.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	emergency management	Low	and Staff Time
Floods										
Discourage new development in floodplains	and flood-prone a	ireas.			1		MGII manida la val	1	T	
A A A A A A A A A A A A A A A A A A A							Will provide legal			
**Adopt ordinances prohibiting residential							mechanism to enforce			
and commercial development in flood plains	0040	0		Local Plans and		0	floodplain			0
or flood-prone areas.	2010	Ongoing		Regulations	Low	Ongoing	management.	planning & zoning	Low	General Fund
++B										
**Develop or amend comprehensive and/or		[
land use plans to specifically address										
development in flood-prone areas and				I I Di			MCII d 6 A			
recommend strategies for decreasing the				Local Plans and			Will reduce future			
jurisdiction's vulnerability to flooding.	2010	Ongoing		Regulations	Low	Ongoing	vulnerability to flood.	planning & zoning	Low	General Fund
**										
**Levy fees on new residential, commercial		[14011			
and infrastructure development in floodplains							Will provide legal			
or flood-prone areas to finance flood							mechanism to enforce			
mitigation, preparedness, response and		[Local Plans and			floodplain	1	l	
recovery actions.		Ongoing		Regulations	Low	Ongoing	management.	city admin	Medium	General Fund
Enhance public awareness and education eff	orts related to flo	oding.								

							•			,
							Will reduce recovery			
Encourage home owners and businesses to				Education and			costs and ensure			
purchase flood insurance.	2010	Ongoing		Awareness Programs	Medium	Ongoing	compliance with NFIP.	floodplain manager	Low	General Fund
Obtain brochures and related publications on										
flood mitigation, preparedness, response and										
recovery from FEMA, SEMA, the American Red							No/low cost			
Cross and other organizations and provide							mechanism to			
them to home owners and businesses in flood-				Education and			encourage flood			
prone areas.	2010	Ongoing		Awareness Programs	Low	Ongoing	preparedness.	emergency management	Low	General Fund
profile areas.	2010	Origonia		Awareness Frograms	LOW	Oligoling	prepareuress.	emergency management	LOW	Generati unu
Portner with a marganey convices public										
Partner with emergency services, public										
health, human services organizations,										
appropriate state and federal agencies and							No/low cost			
the business community to conduct special							mechanism to			
public education events, such as a Flood				Education and			encourage flood			
Mitigation and Preparedness Workshop.	2010	Ongoing		Awareness Programs	Medium	Ongoing	preparedness.	emergency management	Low	General Fund
Examine repetitive flood loss properties in ea	ch county and de	termine feasible	e and practical mitigati	on options.						
							Preventing future			
**As funding allows, repetitive flood loss							flooding of properties			
properties and structures will be targeted for				Structure and			that have had history			
buyout.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	of flood damage	floodplain manager	High	HMGP, BRIC, FMA
				•						
							Preventing future			
**Identify potential funding opportunities to							flooding of properties			
implement mitigation options for repetitive				Structure and			that have had history			
flood loss properties.	2010	Ongoing		Infrastructure Projects	Madium	Ongoing	of flood damage	floodplain manager	High	HMGP, BRIC, FMA
ntood toss properties.	2010	Offgoring		illinastructure r rojects	rieululli	Oligoling	or nood damage	noouptain manager	i iigii	TIPIOT, BINIC, TPIA
							Drayanting future			
**\A/idla adalisala lalana assalana imagadisa							Preventing future			
**With stakeholders, explore incentive							flooding of properties			
options to encourage property owners to take				Structure and			that have had history			
action to prevent or reduce future flood losses	2010	Ongoing		Infrastructure Projects	Low	Ongoing	of flood damage	floodplain manager	Low	HMGP, BRIC, FMA
**Work with owners of repetitive flood loss										
properties to identify feasible mitigation							Low cost mechanism			
strategies and potential opportunities;							to identify r ways to			
determine property owners' interest in				Structure and			prevent damages to			
specific mitigation options.	2010	Ongoing		Infrastructure Projects	Low	Ongoing	residential properties	floodplain manager	Low	HMGP, BRIC, FMA
Implement or improve flood warning systems	.									
							Stream gauges are			
							relatively cost			
Determine the need for stream gauges in							effective measures to			
waterways without flood warning systems or							warn of flooding			
additional stream gauges in waterways with				Structure and			events and implement			
	2010	Ongoing			Low	Ongoing	· ·	public works	Medium	General Fund
flood warning systems already in-place.	∠∪10	Ongoing		Infrastructure Projects	LUW	Ongoing	mitigation measures.	Public WOLKS	rieululli	General Fullu
Danielan and implementation of the control of the c							Will ensure that			
Develop and implement procedures to quickly							citizens are prepared			
analyze and disseminate information from		₋ .		Local Plans and			real time for flood			<u> </u>
flood warning systems to the public.	2010	Ongoing		Regulations	Low	Ongoing	events.	public works	Low	General Funds

		1	1	T	1	T	1		T	1
							Sharing of data will			
Work with local governments and other							improve county			
stakeholders to share data from flood warning				Local Plans and			floodplain			
systems in multiple jurisdictions.	2010	Ongoing		Regulations	Low	Ongoing	management.	emergency management	Low	General Fund
Improve flood hazard assessments and flood	mapping.									
**Conduct an in-depth flood risk analysis							Will allow for better			
utilizing HAZUS data and create detailed							assumptions to			
maps based on GIS technology to identify				Local Plans and			support mitigation			
areas at risk from flooding.	2010	Ongoing		Regulations	Low	Ongoing	activities.	planning & zoning	Low	General Fund
							Most data readily			
							available and can be			
**Coordinate the collection of demographic,							easily imported to			
economic, watershed, land use and other							identify potential			
data required by the HAZUS-Flood software				Local Plans and			areas for increased			
program and/or GIS systems.	2010	Ongoing		Regulations	Low	Ongoing	mitigation efforts.	planning & zoning	Low	General Fund
		0.0				- U U	Most data readily			
							available and can be			
**Obtain parcel data (assessed valuation and							easily imported to			
other information) for flood boundary areas							identify potential			
and enhance vulnerability assessments for				Local Plans and			areas for increased			
these areas.	2010	Ongoing		Regulations	Low	Ongoing	mitigation efforts.	public works	Low	General Fund
these areas.	2010	Oligoliig		ricgulations	LOW	Oligoling	mitigation chorts.	public Works	LOW	Ocherati ana
**Partner with FEMA in the Cooperating										
Technical Partners (CTP) Program to increase							Free program that can			
local involvement in, and ownership of, the				Local Plans and			increase floodplain			
flood mapping process.	2010	Ongoing		Regulations	Low	Ongoing	management.	public works	Low	General Funds
Integrate flood mitigation strategies with pro			1) protect restore or an					The second secon	LOW	Generati unus
integrate nood mitigation strategies with proj	ects and activiti	es designed to (.		liance ecosystems and	tile elivirolililelit allu/	1 (2) create recreation	inacopportunities for the	Community.		
							Will reduce floodplain			
Consider alternative uses for floodplains and							vulnerability and			
flood-prone areas, such as sports fields,				Structure and			increase city			
	2010	Ongoing		Infrastructure Projects	Low	Ongoing		planning 0 zaning	Medium	General Fund
parks, wildlife habitats, etc.	2010	Ongoing		minastructure Projects	LOW	Ongoing	greenspace.	planning & zoning	Medium	General Fund
Consider the construction of detention										
basins, small lakes and greenways or riparian										
corridors in areas of new development to				0			14711			
channel and catch storm water, thereby	0040	0		Structure and		0	Will prevent flooding		Marillana	0
reducing the likelihood of flooding.	2010	Ongoing		Infrastructure Projects	LOW	Ongoing	for moderate costs	planning & zoning	Medium	General Fund
Develop partnerships between regional										
emergency management, floodplain										
management and environmental groups to										
educate one another and the public of the							Low cost mechanism			
benefits of collaboration and identify specific							to improve floodplain			
programs and activities that can be				Local Plans and			management on local			
developed and i	2010	Ongoing		Regulations	Medium	Ongoing	and regional levels.	planning & zoning	Low	General Fund
							No/ or low cost to			
Identify funding sources for the acquisition of							implement and			
flood-prone land for environmental,				Local Plans and			require little staff			
recreational and flood mitigation uses.	2010	Ongoing		Regulations	Low	Ongoing	support.	planning & zoning	Low	General Fund

		T T		T	1	T	T	1	1
In concert with existing comprehensive and						Will reduce fleedpleip			
In concert with existing comprehensive and						Will reduce floodplain vulnerability and			
land use plans, develop a strategy for acquiring flood-prone property for use as			Local Plans and			increase city			
	2010	Ongoing		Low	Ongoing	-	planning 9 zoning	Low	General Fund
open space or park land.	2010	Ongoing	Regulations	LOW	Ongoing	greenspace.	planning & zoning	LOW	General Fund
Work with area environmental groups,									
property owners and other stakeholders to						MCH and the confidence of the confidence			
develop and implement flood mitigation						Will reduce floodplain			
strategies that also promote the restoration						vulnerability and			
and/or sustainability of fish and wildlife		l	Local Plans and			increase city			
habitats	2010	Ongoing	Regulations	Low	Ongoing	greenspace.	planning & zoning	Low	General Fund
Participate in, and ensure compliance with, f	lood mitigation a	nd floodplain manag	ement programs.			I			
						Having and			
						maintaining most			
						current FIRM map			
						editions will allow for			
Obtain the latest copies of flood insurance						most accurate review			
rate maps (FIRMs), floodplain maps and			Local Plans and			of floodplain			
similar documents.	2010	Ongoing	Regulations	Low	Ongoing	management.	floodplain manager	Low	General Fund
						Will ensure reduced			
						insurance rates for			
						homeowners and			
Participate in the National Flood Insurance						businesses while			
Program (NFIP) and consider participation in			Local Plans and			controlling recovery			
the Community Rating System (CRS).	2025	Ongoing	Regulations	Low	Ongoing	costs.	floodplain manager	Low	General Fund
Reduce flood-related damage to public, resid	ential and comm	ercial property in floo	od-prone areas through structural and no	nstructural retrofits o	r removal of property.				
						While initial cost is			
**As funding allows, repetitive flood loss						high, will reduce			
properties and structures will be targeted for			Structure and			recovery and			
buyout.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	replacement costs.	floodplain manager	High	General Fund
						While initial cost is			
Elevate public facilities in flood-prone areas.						high, will reduce			
Encourage home owners and businesses to			Structure and			recovery and			
elevate their structures.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	replacement costs.	floodplain manager	Medium	General Fund
						Requires cooperation			
						of landowners to			
						implement, but			
Encourage homeowners and businesses in						ultimately beneficial			
flood-prone areas to elevate mechanical						as will greatly reduce			
systems (i.e., furnaces, hot water heaters,			Structure and			recovery costs and			
electrical panels, etc.).	2010	Ongoing	Infrastructure Projects	Low	Ongoing	insurance rates.	floodplain manager	Low	General Fund
Encourage utility providers to assess their		J. J.			J. J.				
facilities, distribution systems, etc. for						While initial cost may			
vulnerability to flooding and, if necessary,						be high, will reduce			
retrofit or modify them to decrease			Structure and			recovery and			
vulnerability.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	replacement costs.	floodplain manager	Low	General Fund
vaciorability.	2010	- II SUIII S	minastructure r Tojects	1-044	Jugoma	propiacement costs.	Incomplain manager	LOW	Ocheraci unu

Encourage water and wastewater districts to elevate vulnerable equipment, electrical						While initial cost is			
controls and other equipment at wastewater						high, will reduce			
treatment plants, potable water treatment			Structure and			recovery and			
plants and pumping stations.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	replacement costs.	floodplain manager	Medium	General Fund
						Will greatly reduce			
						and offset			
Identify incentives to offer home owners and						construction costs			
businesses to remove or retrofit their			Structure and			and limit recovery			
structures in flood-prone areas.	2010	Ongoing	Infrastructure Projects	Low	Ongoing	costs.	city admin	Low	General Fund
Severe Thunderstorms									
Increase citizen preparedness for severe thu	nderstorms.								
						Low cost mechanism			
			Education and			to increase public			
Provide education and awareness	2015	Ongoing	Awareness Programs	Low	Ongoing	safety.	emergency management	Low	City budget

2025 Platte Woods Mitigation Strate	gv									
Mitigation Goals and Action Steps		Status of Project	Status Explanation	Type of Mitigation	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes	tun rour	otatas or r roject	otatuo Explanation	rotivity	Thomas	Bute of Completion	Occupant nevicu	Administration	Estimate of Gost (\$)	r unung oouroc
Encourage building practices and th	e use of materials th	at reduce the damagi	ng effects of tornadoe	s.						
Adopt current edition of a model										
building code to address structural										
and architectural issues related to				Local Plans and						Local Budgeted
	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Funds and Staff Time
Require the use of tempered or										
shatter-resistant glass in the										
windows of new public/private										
facilities where large numbers of				Structure and						Local Budgeted
people may congregate. Retrofit				Infrastructure						Funds and Staff
existing facilities.	2010	Ongoing		Projects	Medium	Ongoing	Medium	Planning	High	Time; HMGP, BRIC
Review and enhance (if necessary)										
regulations related to design and										
installation of architectural features										
on buildings to minimize the				Local Plans and						Local Budgeted
creation of windborne debris.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Funds and Staff Time
Work w/ trade orgs to inform										
builders/ developers of										
construction techniques and										
materials that may minimize										
tornado/ high wind damage to				Education and						Local Budgeted
residential/ commercial structures.		Ongoing		Awareness Programs		Ongoing	Medium	building code official	Low	Funds and Staff Time
Encourage construction of commun	ity tornado shelters i	in office complexes, f	actories, apt complex	es, schools mobile ho	ime parks, stadiums, a	and other large popula	ation congregation cei	nters.	1	1
Oiddti-ddi										
Consider adopting ordinances or										
regs requiring the construction of										
tornado shelters in new buildings				Least Diagram						Land Budwahad
where people live, work or	2040	Ou de la d		Local Plans and	Ma alicena	0-4-1-4	Marations.	Disconing	1	Local Budgeted
congregate. 2	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Funds and Staff Time
Offer residential/ commercial										
builders/developers tax incentives					1	1	1		1	
·				Local Plans and	1	1	1		1	Local Budgeted
to construct safe rooms/community shelters in new public facilities.	2010	Ongoing		Local Plans and Regulations	Medium	Ongoing	Medium	Planning	Low	Local Budgeted Funds and Staff Time
Siletters in new public idelitities.	2010	Ongoing		negulations	rieululli	Ongoing	riculum	Planning	LUVV	i unus anu stan ilme
Work with chambers of commerce										
Work with chambers of commerce, school districts, corporations, etc.				Education and	1	1	1		1	Local Budgeted
school districts, corporations, etc.			1	Luucation allu	1					Local buugeteu
	2010	Ongoing		Awareness Programs	Modium	Ongoing	Medium	Emergency Mgt.	Low	Funds and Staff Time

	T	<u> </u>			1	1	T		1	1
Adopt ordinances or regulations										
requiring the underground										
placement of new electric and										
telecommunications transmission				Local Plans and						Local Budgeted
lines.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Funds and Staff Time
Anchor or strengthen above-ground		J		Structure and				Ü		
transmission lines, poles and				Infrastructure						
similar structures.	2010	Ongoing		Projects	Medium	Ongoing	Medium	local utilities	Low	HMGP, BRIC
Offer financial or other incentives to										
utility providers to replace existing										
above-ground utility lines with				Local Plans and						Local Budgeted
underground utility lines.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Funds and Staff Time
Ensure public facilities have shelte	ers to accommodate s	taff and visitors during	g tornadoes/ nat. haza	rds.	T	1		I	 	T
Assess eviating to Hittor for all 11										
Assess existing facilities for shelter				Local Plans and						
suitability. Mark clearly and inform visitors/employees of locations.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Local
Consider adopting policies	2010	Oligoling		negutations	Medidili	Oligoling	Medium	Planning	LOW	LUCAL
requiring incorporation of safe										
rooms/shelters in new public				Local Plans and						Local Budgeted
facility construction.	2010	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low	Funds and Staff Time
Retrofit or add shelters to existing		- 1.8-11.8				- 1.629				
public facilities with inadequate				Structure and						
protection from tornadoes and high				Infrastructure						
wind.	2010	Ongoing		Projects	Medium	Ongoing	Medium	Emergency Mgt.	High	HMGP, BRIC
Increase public awareness and un	derstanding the benef	its of "safe rooms."								
Develop, distribute informational				Education and				emergency		Local Budgeted
materials on safe rooms.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	management	Low	Funds and Staff Time
Partner w/ trade orgs. to conduct				Education and				emergency		Local Budgeted
safe room workshops.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	management	Low	Funds and Staff Time
Install generator at city hall and ot	ner critical facilities.			Local Diana and	<u> </u>			amardana.	<u> </u>	<u> </u>
Mutual Aid Agraamanta	2015	Ongoing		Local Plans and	Medium	Ondaine	Medium	emergency	Law	Land
Mutual Aid Agreements Floods	2015	Ongoing		Regulations	Medium	Ongoing	Medium	management	Low	Local
Participate in, and ensure complia	nce with flood mitiga	tion and floodplain ma	nagement programs							
**Obtain the latest copies of flood	The with, Root mitiga	lion and Roouptum me	magement programs.							
insurance rate maps (FIRMs),				Local Plans and			Low cost mechanism			
floodplain map	2010	Ongoing		Regulations	Medium	Ongoing	to inform flood risk.	floodplain manager	Low	Operating Budget
		5 5		<u> </u>	-	3. 0		1		, , , , , , , , , , , , , , , , , , , ,
**Participate in the National Flood										
Insurance Program (NFIP) and										
consider participation in the				Local Plans and			Low cost mechanism			
Community Rating System (CRS).	2010	Ongoing		Regulations	Medium	Ongoing	to inform flood risk.	floodplain manager	Low	Operating Budget

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2025 City of Riverside, MO Mitigation Strategy	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes Add a second siren controller										
Add a Second Site resolutioner				Structure and						
				Infrastructure				emergency		Local Budgeted Funds and
Add a second siren controller	2025	New		Projects	Medium	Ongoing	Medium	management	Medium	Staff Time; HMGP, BRIC
Floods										
Review and update 2009 Emergency Flood Operations Manual	1		1	<u> </u>		1	ı	1	1	T
				Local Plans and				emergency		Local Budgeted Funds and
Review and update 2009 Emergency Flood Operations Manual		New		Regulations	Medium	Ongoing	Medium	management	Low	Staff Time
Develop plans and adopt policies to address sound stormwater and flo	oding challeng	ges		I		T			T	
Adopt new stormwater engineering design and management standards		Nava Dantiains *** :	Materia I/O ADMA Castino in							
and stream setback development standards to reduce the risk of stream		New: Participating in review of draft	Metro KC APWA Section is working with consultants to							
and flash flooding		standards under	complete the new	Local Plans and						Local Budgeted Funds and
	2025		standards in 2025	Regulations	High	12/31/2026	Medium	City Council	Low	Staff Time
Tornadoes	2020	development	Standards III 2020	перишнопо	111611	12/01/2020	riculum	Oity Godineit	2011	otan rime
Encourage building practices and the use of materials that reduce the c	lamaging effe	cts of tornadoes.								
Adopt current edition of a model building code to address structural and				Local Plans and						Local Budgeted Funds and
architectural issues related to tornadoes and high wind events.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Staff Time
Review and enhance (if necessary) regulations related to design and										
installation of architectural features on buildings to minimize the creation				Local Plans and						Local Budgeted Funds and
of windborne debris.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Staff Time
Work w/ trade orgs to inform builders/ developers of construction				Education and				building and		Local Budgeted Funds and
techniques and materials that may minimize tornado/ high wind damage to residential/ commercial structures.	2010	Ongoing		Education and Awareness Programs	Madium	Ongoing	Medium	building code official	Low	Local Budgeted Funds and Staff Time
Encourage construction of community tornado shelters in office compl			chools mobile home narks				L	Ulliciat	LOW	Stall fille
Encourage construction of community tornado sheeters in office comp	LCACS, Idetoric	s, apt comptexes, se	noots mobite nome parks, s	, and other tar	Sc population	Congregation	Tax incentives		1	
							could defray			
							otherwise high			
							costs for			
							developing safe			
							rooms and will			
							likely lead to			
Offer residential/ commercial builders/developers tax incentives to				Local Plans and			greater			Local Budgeted Funds and
construct safe rooms/community shelters in new public facilities.	2010			Regulations	Medium	Ongoing	acceptance.	city admin	Low	Staff Time
				Education :						Level Booker, 15
Work with chambers of commerce, school districts, corporations, etc. to	2010	Ongoing		Education and	Modium	Ongoin	Madium	Emerger M-4	Low	Local Budgeted Funds and
promote benefits of safe rooms. Ensure public facilities have shelters to accommodate staff and visitor	2010	Ongoing	le .	Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Staff Time
Ensure public facilities have shellers to accommodate stall and visitor	a dulling tollia	uves/ilaturat ilazaru				1	Low/no cost		1	
							mechanism to			
Assess existing facilities for shelter suitability. Mark clearly and inform				Local Plans and			increase public	emergency		
visitors/employees of locations.	2010	Ongoing		Regulations	Medium	Ongoing	safety.	management	None	None
Consider adopting policies requiring incorporation of safe rooms/shelters				Local Plans and			,.		1	Local Budgeted Funds and
in new public facility construction.	2010	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low	Staff Time
in new public racially construction.	2010	Oligoling	l .	megulations	LUW	Oligonig	i-ieuluiii	ir tallilling	LUW	Juli IIIIE

	ı	1	1			1			1	1
			Structur							
Retrofit or add shelters to existing public facilities with inadequate			Infrastru							
protection from tornadoes and high wind.	2010	Ongoing	Projects		Medium	Ongoing	Medium	public works	High	HMGP, BRIC
Increase public awareness and understanding the benefits of "safe roor	ns."	1							<u> </u>	
			Education					emergency		Local Budgeted Funds and
Develop, distribute informational materials on safe rooms.	2010	Ongoing	Awarene	ess Programs	Medium	Ongoing	Medium	management	Low	Staff Time
			Education					emergency		Local Budgeted Funds and
Partner w/ trade orgs. to conduct safe room workshops.	2010	Ongoing	Awarene	ess Programs	Medium	Ongoing	Medium	management	Low	Staff Time
Floods										
Enhance public awareness and education efforts related to flooding.	ı	1				ı			1	T
Obtain brochures and related publications on flood mitigation,							No/low cost			
preparedness, response and recovery from FEMA, SEMA, the American							mechanism to			
Red Cross and other organizations and provide them to home owners and			Education				encourage flood	emergency		Local Budgeted Funds and
businesses in flood-prone areas.	2010	Ongoing	Awarene	ess Programs	Medium	Ongoing	preparedness.	management	Low	Staff Time
Partner with emergency services, public health, human services							No/low cost			
organizations, appropriate state and federal agencies and the business							mechanism to			
community to conduct special public education events, such as a Flood			Education	on and			encourage flood	emergency		Local Budgeted Funds and
Mitigation and Preparedness Workshop.	2010	Ongoing	Awarene	ess Programs	Medium	Ongoing	preparedness.	management	Low	Staff Time
Improve citizen preparedness.										
							Low/no cost			
							mechanism to			
			Education	on and			increase public	emergency		Local Budgeted Funds and
Continue public education programs	2015	Undetermined	Awarene	ess Programs	High	Ongoing	safety.	management	Low	Staff Time
Improve flood hazard assessments and flood mapping.		•								
							Most data readily			
							available and can			
							be easily imported			
							to identify			
							potential areas for			
**Obtain parcel data (assessed valuation and other information) for flood			Local Pla	ans and			increased	planning & public		Local Budgeted Funds and
boundary areas and enhance vulnerability assessments for these areas.	2010	Ongoing	Regulati		High	Ongoing	mitigation efforts.	works	Low	Staff Time
boundary areas and emidnee valuerability assessments for these areas.	2010	Oligoling	Подини	0113	111611	Oligoliig	mitigation chorts.	WOLKS	LOW	Stan Time
							Free program that			
**Partner with FEMA in the Cooperating Technical Partners (CTD)							can increase			
**Partner with FEMA in the Cooperating Technical Partners (CTP)			L and Di					alamaia d 0 mulalia		Lead Dudgeted Funda and
Program to increase local involvement in, and ownership of, the flood	0040	0	Local Pla		L P. al.	0	floodplain	planning & public		Local Budgeted Funds and
mapping process.	2010	Ongoing	Regulati	ons	High	Ongoing	management.	works	Low	Staff Time
Improve outdoor warning capability	1	1	Camination			I	Marilla marriage	1	1	<u> </u>
			Structur				Will ensure			I I B . I a I E I I
	0045	Harda Namaria and	Infrastru				continued ability to		M	Local Budgeted Funds and
Add additional outdoor siren as city develops.	2015	Undetermined	Projects		Low	Ongoing	alert citizens.	management	Medium	Staff Time
Improve public alert and warning systems.	l	1		ı			II.	1	1	
							Low/no cost			
			Structur				mechanism to			
Continue to develop mass notification systems to the community-			Infrastru				increase public	emergency		Local Budgeted Funds and
Upgrade capabilities	2015	ongoing	Projects		Medium	Ongoing	safety.	management	Low	Staff Time
Integrate flood mitigation strategies with projects and activities design	ed to (1) prote	ect, restore or enhan	e ecosystems and the environment	and/or (2) crea	te recreation	al opportuniti	es for the community	J .		

		1			1	1	1	1	ı	
Consider the construction of detention basins, small lakes and greenways				Structure and			Will prevent			
or riparian corridors in areas of new development to channel and catch				Infrastructure			flooding for			
storm water, thereby reducing the likelihood of flooding.	2010	Ongoing		Projects	Medium	Ongoing	moderate costs	Planning	Low	HMGP, BRIC
Reduce flood-related damage to public, residential and commercial pro	perty in flood	-prone areas through	structural and nonstructur	al retrofits or removal	of property.					
				Structure and						
**As funding allows, repetitive flood loss properties and structures will be				Infrastructure						
targeted for buyout.	2010	Ongoing		Projects	Medium	Ongoing	Medium	floodplain manager	High	HMGP, BRIC
							Requires			
							cooperation of			
							landowners to			
							implement, but			
							ultimately			
							beneficial as will			
Engage and humanian and husinesses in flood property areas to alcuste				Ctrusture and						
Encourage homeowners and businesses in flood-prone areas to elevate				Structure and			greatly reduce			l
mechanical systems (i.e., furnaces, hot water heaters, electrical panels,				Infrastructure			recovery costs and			Local Budgeted Funds and
etc.).	2010	Ongoing		Projects	High	Ongoing	insurance rates.	floodplain manager	Low	Staff Time

Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Cost/Benefit Review	Primary Agency Responsible for Implementation/Administr ation	Estimate of Cost (\$)	Funding Source
		,,,,,						(1)	
Tornadoes Tornadoes									
mprove tornado preparedness									
				Structure &		Will provide safe			
Construct tornado shelter	2015	Ongoing		infrastructure	High	refuge for residents.	city	High	Apply for HMGP grant
			work with county to identify						
			possible steps to increase			Will provide warning			
nstall tornado outdoor warning siren.	2015	Ongoing	warning systems	Unspecified	High	capability to residents	city	Med	Apply for HMGP grant
Floods									
					T			1	T
						High cost will offset			
mprove flooding preparedness Review need for levees or other flood control				Local plans and		recovery and cleanup			TBD as grants
mprove flooding preparedness Review need for levees or other flood control	2025	new		Local plans and regulations	High	recovery and cleanup costs from flooding.	city	Medium	TBD as grants available
mprove flooding preparedness Review need for levees or other flood control mprovements along rivers in and through the city	2025	new		· ·	High	recovery and cleanup costs from flooding. High cost will offset	city	Medium	available
mprove flooding preparedness Review need for levees or other flood control mprovements along rivers in and through the city Design and install improvements to city				regulations		recovery and cleanup costs from flooding. High cost will offset recovery and cleanup			available Seek FEMA HMGP
mprove flooding preparedness Review need for levees or other flood control mprovements along rivers in and through the city Design and install improvements to city	2025 2015	new Ongoing		· ·	High	recovery and cleanup costs from flooding. High cost will offset recovery and cleanup	city	Medium High	available
teview need for levees or other flood control improvements along rivers in and through the city design and install improvements to city tormwater system.	2015	Ongoing		regulations		recovery and cleanup costs from flooding. High cost will offset recovery and cleanup			available Seek FEMA HMGP
mprove flooding preparedness Review need for levees or other flood control mprovements along rivers in and through the city Design and install improvements to city stormwater system.	2015	Ongoing	ment programs.	regulations		recovery and cleanup costs from flooding. High cost will offset recovery and cleanup			available Seek FEMA HMGP
Review need for levees or other flood control improvements along rivers in and through the city design and install improvements to city stormwater system.	2015	Ongoing	ment programs.	regulations		recovery and cleanup costs from flooding. High cost will offset recovery and cleanup			available Seek FEMA HMGP
Review need for levees or other flood control improvements along rivers in and through the city Design and install improvements to city stormwater system. Participate in, and ensure compliance with, floo Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain map	2015	Ongoing	ment programs.	regulations Unspecified		recovery and cleanup costs from flooding. High cost will offset recovery and cleanup costs from flooding. Low cost mechanism			available Seek FEMA HMGP
Review need for levees or other flood control mprovements along rivers in and through the city Design and install improvements to city stormwater system. Participate in, and ensure compliance with, floodbtain the latest copies of flood insurance rate	2015 d mitigation and	Ongoing floodplain manage	ment programs.	regulations Unspecified Local plans and	High	recovery and cleanup costs from flooding. High cost will offset recovery and cleanup costs from flooding. Low cost mechanism	city	High	available Seek FEMA HMGP grant

	1	I			1			Primary Agency		T
				Type of				Responsible for		
				Mitigation		Date of	Cost/Benefit	Implementation/	Estimate of Cost	
2025 City of Weatherby Lake, MO Mitigation Strategy	Plan Year	Status of Project	Status Explanation	Activity	Priority	Completion	Review	Administration	(\$)	Funding Source
Tornadoes				-						
Adopt ordinances requiring the underground placement of new electric and t	elecommunica	tion transmission lir	nes.							
	New,									
This would increase the resilience of the communication and data lines in	reviewed in			Local Plans and						Local Budgeted Funds
the city with little or no cost.	2025	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Anchor and strengthen above ground transmission lines, poles, and similar s	tructures.							,		
	New,			Structure and						
	reviewed in			Infrastructure						
Strengthen existing telecommunication and electric lines.	2025	Ongoing		Projects	Medium	Ongoing	Medium	Planning	Low or No Cost	HMGP, BRIC
Assess the existing facilities for storm shelter suitability and confirm they are	1	I. Provide communi	cation to inform visitors		the locations.	T		<u> </u>	<u> </u>	,
	New,			Structure and						
	reviewed in			Infrastructure	.			Di .		Local Budgeted Funds
	2025	Ongoing		Projects	Medium	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Develop and distribute to residents and developers information on safe room		emergency manage	ment and trade organiza		ate room semi	nars.				
Dovolon and distribute information metaviole on the use and acceptance	New,			Education and						Local Budgetad Frank
Develop and distribute information materials on the use and construction of	reviewed in	Ongoing		Awareness	Low	Ongoin	Modium	Emorgone	Lower No Cost	Local Budgeted Funds
safe rooms.	2025	Ongoing		Programs	Low	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Require the use of tempered or shatter-resistant glass in the windows of new	New,	nere targe numbers	or people may congreg	Structure and	g racillues.	T T				
	reviewed in			Infrastructure						
While this may increase building cost, it will lead to greater occupant safety.		Ongoing		Projects	Medium	Ongoing	Medium	Planning	Low/No Cost	HMGP, BRIC
Retrofit or add storm shelters to existing public facilities with inadequate pro			1	Frojects	Mediaiii	Ongoing	Medium	Flaiiiiiig	LOW/NO COSt	INMOF, BRIC
neuron or and storm shelters to existing public facilities with madequate pro	New,	nadocs of flight wille		Structure and	l					
	reviewed in			Infrastructure						
Review current shelter needs.	2025	Ongoing		Projects	Medium	Ongoing	Medium	Planning	Low or No Cost	HMGP. BRIC
Review and enhance regulations related to design and installation of architecture.			mize the creation of wind		i iodidiii	1011801118	i i daiaii	i taning	2011 01 110 0001	
	New,									
	reviewed in			Local Plans and						Local Budgeted Funds
Low to no cost to increase public safety	2025	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low/No Cost	and Staff Time
Work with trade organizations to inform builders and developers of construct			may minimize tornado a					<u>, </u>		
	New,			0						
	reviewed in			Local Plans and						Local Budgeted Funds
Low or no cost mechanism to increase public safety.	2025	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low or no cost	and Staff Time
Floods			·				·	·	<u> </u>	
Adopt ordinances prohibiting structure development in flood plains or flood-	prone area.									
	New,									
Adopt an ordinance to participate in the National Flood Insurance Program	reviewed in			Local Plans and						Local Budgeted Funds
and legal mechanism to enforce flood plain management.	2025	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Consider participation in the National Flood Insurance Program (NFIP) and the	ne Community I	Rating System (CRS)								
			This would help to							
			provide reduced flood							
			insurance rates for							
	New,		homeowners and							
	reviewed in		assist in controlling	Local Plans and						Local Budgeted Funds
	2025	Ongoing	recovery costs.	Regulations	Medium	Ongoing	Medium	Planning	Low	and Staff Time

Consider the construction of detention basins, small ponds, and greenways of	or rinarian corri	dors in areas of new	development to chann	el and catch storm	water This wo	ould help mitig	ate damage if a flo	and event accurs		
oblished the construction of actention basins, small ponds, and greenways t	I inparian com	dors in areas or nev	This will help to	Ct and cater storm	Water. This wo	dia neip minge	Tite damage ii a iit	Toda evenit occurs.	T	
	New,		mitigate damage in	Structure and						
	reviewed in		the event of a flood for							
	2025	Ongoing	moderate costs.	Projects	Medium	Ongoing	Medium	Planning	Medium	HMGP. BRIC
Develop a strategy for acquiring flood prone property for use as green space of				i rojecto	riculani	Oligoling	riculaiii	i tulling	riculani	TITIOT, BINO
Develop a strategy for asquiring resea profile property for asset as green space of	New,	and guidelines of ed	Trent tana ase ptans.				T			
	reviewed in			Local Plans and						Local Budgeted Funds
	2025	Ongoing			Low	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Develop and implement procedures to quickly analyze and disseminate infor			s to the public.	riogatationio	12011	0.180.118	. iouium	r turring	2011 01 110 0001	and starr mile
			This will ensure							
	New,		citizens are prepared	Education and						
	reviewed in		in the event of an	Awareness						Local Budgeted Funds
	2025	Ongoing	imminent flood.	Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Develop or amend comprehensive and/or land use plans to specifically addre								1	111111111111111111111111111111111111111	
	New,				J J J					
	reviewed in			Local Plans and						Local Budgeted Funds
This will reduce future vulnerability to fllooding.	2025	Ongoing		Regulations	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Encourage home owners and businesses to purchase flood insurance.		1	<u> </u>			1 .00		1	1	1
	New,			Education and	1					
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing			Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Encourage utility providers to assess their facilities, distribution systems, and			flooding and, if necessa			1				
2.100 at a Barrier of the decease and in the attention of the state of	New,	lor rumorubinty to		Structure and						
	reviewed in			Infrastructure						Local Budgeted Funds
	2025	Ongoing			Low	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Obtain brochures and related publications on flood mitigation, preparedness			A. SEMA. Red Cross, an							
Standard and related publications on Nood Integration, proper cancer	New.		,, 52. 11 ,, 1164 61666, 411	Education and				Tacinococci in recou pr		
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Low	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Obtain parcel data (assessed value) for flood boundary areas and enhance vi			area.	i i ogranio	12011	0.180.118	. iouium	zmergeney riga	2011 01 110 0001	and starr mile
			Data that is readily	1			T		I	
			available and can be							
			imported to identify							
	New,		potential areas for							
	reviewed in		increased mitigation	Local Plans and						Local Budgeted Funds
	2025	Ongoing	efforts.	Regulations	Low	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Obtain the latest copies of flood rate maps, also known as FIRMS, flood plain			5.10.10.		1-5.0	10.1801118	ouiuiii	1. ca.ming	20.7 01 110 0001	and stair rinic
Damin and talest supplies of flood falls flagg, also known as I fill to, flood plain	New,	na. accaments.								
	reviewed in			Local Plans and						Local Budgeted Funds
	2025	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low or No Cost	and Staff Time
Work with local governments and jurisdictions to share data from flood warni		BoB			1-311	Langoing	I. Iodiaili	J. 301111116	2517 01 140 0031	and ottain finite
THE REPORT THE COURT SECTION OF THE PROPERTY O	ng ayatama.	<u> </u>	Sharing data will	1			T			
	New,		improve county							
	reviewed in		floodplain	Local Plans and						Local Budgeted Funds
	2025	Ongoing			Medium	Ongoing	Medium	Emergency Mgt	Low or No Cost	and Staff Time
Severe Thunderstorms	2020	Ongoing	management.	negulations	i-icululli	Ongoing	ricululli	Emergency Mgt.	LOW OF IND COST	and Stall fille
Continue to monitor and maintain the tornado warning sirens located in the c	ity									
Continue to monitor and maintain the tornado warning siteris tocated in the c	ıty.									

	1					1				
	New,			Structure and						
The sirens are tested once a month by the county and the local jurisdictions	reviewed in			Infrastructure						Local Budgeted Funds
report the status.	2025	Ongoing		Projects	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Provide information and education to the residents on the ways to access em	ergency weath	er information. This w	vould include the use o	of the internet, soci	al media, and v	veather radios.				
	New,			Education and						
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Provide information to residents on the benefits of registering for TextCaster emergency and civic information texts and emails.										
	New,			Education and						
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Severe Winter Weather				_						
Obtain pamphlets and information handouts on safety measures and coping	with severe wir	ter weather. This info	ormation will be provid	ed and distrubuted	I to city residen	ts				
	New,			Education and						
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Extreme Heat					,					
Collect pamphlets and written information on coping with severe heat events	. Disseminate t	his information to the	e residents of the city.							
	New,		-	Education and						
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Low	Ongoing	Medium	Emergency Mgt.	Low or No Cost	and Staff Time
Encourage residents to register for TextCaster notices to provide safety inform	nation during e	cessive heat events.							<u>'</u>	
	New,			Education and						
	reviewed in			Awareness						Local Budgeted Funds
	2025	Ongoing		Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	and Staff Time
Partner with FEMA, SEMA, MARC and other civic organizations to identify cool	ling stations for	residents in need du	ıring excessive heat ev	ents.					<u>'</u>	
	New,									
	reviewed in			Local Plans and						Local Budgeted Funds
	2025	Ongoing		Regulations	Low	Ongoing	Medium	Emergency Mgt.		and Staff Time
Partner with FEMA, SEMA, MARC, and other civic and emergency managemen			uch as water, ice, first		material in the		ere heat event.			
	New,									
	reviewed in			Local Plans and						Local Budgeted Funds
	2025	Ongoing		Regulations	Low	Ongoing	Medium	Emergency Mgt.		and Staff Time
	1	. 56			1	00	1		1	

Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/Administ	Estimate of Cost (\$)	Funding Source
ornadoes										
courage building practices and the use of materials that redu	ce the damaging e	ffects of tornadoes.								
opt current edition of a model building code to address							Low/no cost machanism to			
ructural and architectural issues related to tornadoes and high nd events.	2010	Ongoing		Unspecified	High	3/1/2015	Low/no cost mechanism to increase public safety.	planning & zoning	Low	Unknown
equire the use of tempered or snatter-resistant glass in the	2010	Ongoing		Ulispecilleu	півіі	3/1/2013	increase public salety.	planning & Zuning	LOW	Olikilowii
ndows of new public/private facilities where large numbers of							While may increase building costs,			
ople may congregate. Retrofit existing facilities.	2010	Ongoing		Unspecified	High	TBD		planning & zoning	Low	Unknown
view and enhance (if necessary) regulations related to design					0					
d installation of architectural features on buildings to minimize							While may increase building costs,			
e creation of windborne debris.	2010	Ongoing		Unspecified	High	TBD	will lead to greater occupant safety	planning & zoning	Medium	Unknown
ork w/ trade orgs to inform builders/ developers of construction										
chniques and materials that may minimize tornado/ high wind							Low/no cost mechanism to			
mage to residential/ commercial structures.	2010	Ongoing		Unspecified	High	Ongoing	increase public safety.	planning & zoning	250	General Fund
ourage construction of community tornado shelters in office isider adopting ordinances or regs requiring the construction prinado shelters in new buildings where people live, work or	o comprexes, racte	apt comptexes	, somotis mosn	punto, stud	ams, and ou	ler targe popula	Low/no cost mechanism to			
ngregate.	2010	Ongoing		Unspecified	High	Ongoing	increase public safety.	planning & zoning	Low	Unknown
fer residential/ commercial builders/developers tax incentives					0	0.0	Tax incentives could defray			
construct safe rooms/community shelters in new public							otherwise high costs for developing			
cilities.	2010	Ongoing		Unspecified	Medium	12/1/2015	safe rooms and will likely lead to	planning & zoning	500	General Fund
ork with chambers of commerce, school districts,	2012	0			LC at	0	Low/no cost mechanism to	emergency	1	Halman
rporations, etc. to promote benefits of safe rooms.	2010	Ongoing		Unspecified	High	Ongoing	increase public safety.	management	Low	Unknown
courage electric and telecommunications utilities to protect	their existing infra	structure from the e	ffects of tornad	loes and high winds	_					
							Would reduce recovery costs and			
chor or strengthen above-ground transmission lines, poles and							better limit damage/interruption to			
nilar structures.	2010	Ongoing		Unspecified	High	TBD	electrical and communications	local utility	High	utility companies
sure public facilities have shelters to accommodate staff and	visitors during to	rnagoes/natural haz	aras.	1			<u> </u>		l	
sess existing facilities for shelter suitability. Mark clearly and							Low/no cost mechanism to	emergency		
orm visitors/employees of locations.	2010	Ongoing		Unspecified	Medium	Ongoing		management	0	City budget
		1 30		1		100	a control parameters.			, ,
rease public awareness and understanding the benefits of "s	afe rooms."									
			l	İ		1	Low/no cost mechanism to	emergency		
evelop, distribute informational materials on safe rooms.	2010	Ongoing		Unspecified	Medium	42095	increase public safety.	management		General Fund

Г		1				<u> </u>	1		1
Look for grants to purchase updated sirens	2015	Ongoing	Local Plans Regulations		Spring 2017	Would ensure primary outdoor alerting system is functional.	emergency management	Medium	Unknown
Floods									
Tioous									
Discourage new development in fleeduleine and fleed areas expenses									
Discourage new development in floodplains and flood-prone are	dS.							<u> </u>	
**Adopt ordinances prohibiting residential and commercial						Will provide legal mechanism to			
development in flood plains or flood-prone areas. **Develop or amena comprenensive and/or land use plans to	2010	Ongoing	Unspecified	High	Ongoing	enforce floodplain management.	planning & zoning	Low	City of Weston
specifically address development in flood-prone areas and						Will reduce future vulnerability to			
recommend strategies for decreasing the jurisdiction's	2010	Ongoing	Unspecified	High	Ongoing	flood.	planning & zoning	Low	City of Weston
Enhance public awareness and education efforts related to floor	ding.								
Encourage home owners and businesses to purchase flood						Will reduce recovery costs and			
insurance.	2010	Ongoing	Unspecified	High	Ongoing	ensure compliance with NFIP.	floodplain manager	Low	City of Weston
Obtain prochures and related publications on flood mitigation,						No floor			
preparedness, response and recovery from FEMA, SEMA, the American Red Cross and other organizations and provide them to	2010	Ongoing	Unspecified	High	Ongoing	No/low cost mechanism to	emergency	Low	City of Weston
Partner with emergency services, public health, human services	2010	Ongoing	Onspecified	Ligii	Ongoing	encourage flood preparedness.	management	Low	City of Weston
organizations, appropriate state and federal agencies and the						No/low cost mechanism to	emergency		
business community to conduct special public education events,	2010	Ongoing	Unspecified	High	Ongoing	encourage flood preparedness.	management	Low	City of Weston
Examine repetitive flood loss properties in each county and dete	rmine feasible an	nd practical mitigation	n options.						
						Preventing Tuture Tlooding of			
Identify potential funding opportunities to implement mitigation	0010	Ongoing		Madione	0-4-1-4	properties that have had history of	alamina 0 manina		Oit. of Works
options for repetitive flood loss properties. With stakeholders, explore incentive options to encourage	2010	Ongoing	Unspecified	Medium	Ongoing	flood damage Preventing future flooding of	planning & zoning	Low	City of Weston
property owners to take action to prevent or reduce future flood						properties that have had history of			
losses Work with owners of repetitive flood loss properties to identify	2010	Ongoing	Unspecified	High	Ongoing	flood damage	planning & zoning	Low	City of Weston
feasible mitigation strategies and potential opportunities;						ways to prevent damages to			
determine property owners' interest in specific mitigation	2010	Ongoing	Unspecified	Unspecified	Ongoing	residential properties	floodplain manager	Low	City of Weston
, , ,		, , ,	<u> </u>	<u> </u>			, ,		,
Implement or improve fleed warning systems									
Implement or improve flood warning systems. Develop and implement procedures to quickly analyze and							1		
disseminate information from flood warning systems to the						Will ensure that citizens are			
public.	2010	Ongoing	Unspecified	High	Ongoing	prepared real time for flood events.	public works	Low	City of Weston
Work with local governments and other stakeholders to share						Sharing of data will improve county	emergency		
data from flood warning systems in multiple jurisdictions.	2010	Ongoing	Unspecified	Medium	Ongoing	floodplain management.	management	50	00 General Fund
			, ·	,					
Improve flood hazard assessments and flood mapping.									
** Obtain parcel data (assessed valuation and other information) for flood boundary gross and enhance vulnerability assessments						Most data readily available and can			
for flood boundary areas and enhance vulnerability assessments for these areas.	2010	Ongoing	Unspecified	High	Ongoing	be easily imported to identify potential areas for increased	public works	Low	City of Weston
Partner with FEMA in the Cooperating Technical Partners (CTP)	2010	Ongoing .	Onspecified	111611	CHECHIE	potential areas for increased	public Works	2000	Only of Weston
Program to increase local involvement in, and ownership of, the						Free program that can increase			
flood mapping process.	2010	Ongoing	Unspecified	High	Ongoing	floodplain management.	public works	Low	City of Weston

Integrate flood mitigation strategies with projects and activities	designed to (1) p	rotect, restore or en	hance ecosyste	ms and the envir	onment and/or	(2) create recr	eational opportunities for the commi	unity.		
Consider alternative uses for floodplains and flood-prone areas,							Will reduce floodplain vulnerability			
such as sports fields, parks, wildlife habitats, etc.	2010	Ongoing		Unspecified	Medium	12/1/2015	and increase city greenspace.	planning & zoning	500	General Fund
Consider the construction of detention basins, small takes and							M/III manage and file and in or few area of a contra			Oit of Master and
greenways or riparian corridors in areas of new development to	2010	Ongoing		l la ana aidia d	l II de	0	Will prevent flooding for moderate		M = ali	City of Weston and
channel and catch storm water, thereby reducing the likelihood Develop partnerships between regional emergency	2010	Ongoing		Unspecified	High	Ongoing	costs Low cost mechanism to improve	planning & zoning	Medium	contractors
management, floodplain management and environmental groups							floodplain management on local			
to educate one another and the public of the benefits of	2010	Ongoing		Unspecified	High	Ongoing	and regional levels.	planning & zoning	Low	City of Weston
Identify funding sources for the acquisition of flood-prone land for							No/ or low cost to implement and			
environmental, recreational and flood mitigation uses.	2010	Ongoing		Unspecified	Medium	12/1/2015	require little staff support.	planning & zoning	500	General Fund
in concert with existing comprehensive and tand use plans, develop a strategy for acquiring flood-prone property for use as							Will reduce floodplain vulnerability			
open space or park land.	2010	Ongoing		Unspecified	Medium	12/1/2015	and increase city greenspace.	planning & zoning	500	General Fund
Obtain the latest copies of flood insurance rate maps (FIRMs),							current FIRM map editions will			
Participate in, and ensure compliance with, flood mitigation and	floodplain mana	gement programs.								
Obtain the latest copies of flood insurance rate maps (FIRMs),							current FIRM map editions will			
floodplain maps and similar documents.	2010	Ongoing		Unspecified	High	Ongoing	allow for most accurate review of will ensure reduced insurance	floodplain manager	Low	City of Weston
							rates for homeowners and			
Participate in the National Flood Insurance Program (NFIP).	2010	Ongoing		Unspecified	High	Ongoing	businesses while controlling	floodplain manager	Low	City of Weston
- and operation and read moderation regularity in the property of the property	2010	0808		enopeemea	18	0.180.118	zacinococo mino controlania	посирантниниво	12011	only of models
Reduce flood-related damage to public, residential and commerc	cial property in fl	ood-prone areas thi	ough structural	and nonstructura	al retrofits or re	moval of prope	ertv.			
	, , ,						While initial cost is high, will			
**Elevate public facilities in flood-prone areas. Encourage home							reduce recovery and replacement			
owners and businesses to elevate their structures. Encourage nomeowners and businesses in tlood-prone areas to	2010	Ongoing		Unspecified	High	Ongoing	costs. Requires cooperation of	public works	Medium	City of Weston
elevate mechanical systems (i.e., furnaces, hot water heaters,							landowners to implement, but	emergency		
electrical panels, etc.).	2010	Ongoing		Unspecified	High	Ongoing	· ·	emergency management	Low	City of Weston
Encourage utility providers to assess their facilities, distribution	2010	Oligonia	+	Onspecified	Ingn	Oligoling	White initial cost may be high, will	пападешеш	LOW	Oity of Weston
systems, etc. for vulnerability to flooding and, if necessary,							reduce recovery and replacement	emergency		
retrofit or modify them to decrease vulnerability.	2010	Ongoing		Unspecified	High	Ongoing	costs.	management	Low	City of Weston
Encourage water and wastewater districts to elevate vulnerable		1					While initial cost is high, will	_		
equipment, electrical controls and other equipment at							reduce recovery and replacement	emergency		
wastewater treatment plants, potable water treatment plants	2010	Ongoing		Unspecified	High	Ongoing	costs.	management	Medium	City of Weston

2025 Ray County Mitigation Strategy							T			
Mitigation Goals and Action Steps	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost	Funding Source
Tornadoes										
Encourage building practices and the use of materials that reduce the dam	aging effects of to	ornadoes.	T		<u> </u>	T	T			
Adopt current edition of a model building code to address structural and		Completed 2015		Local Plans and			Low/no cost mechanism to increase public			
architectural issues related to tornadoes and high wind events.	2025	version		Regulations	Low	Completed	safety.	county commission	Low	County Revenue
Encourage identification of existing shelters or construction of new commi				negulations	ILOW	Completed	Salety.	county commission	LOW	County Neverlue
Work with cities, fire protection districts, school districts, faith-based	I I I I I I I I I I I I I I I I I I I	l	l	Education and	<u> </u>		Businesses will			
organizations, businesses and others to identify existing buildings that could				Awareness			develop safe			FEMA HMP or
be designated as emergency shelters.	2025	New		Programs	Medium	New	rooms.	county commission	Medium	BRIC grant
Work with cities, fire protection districts, school districts, faith-based	2020	11011		rograms	ricalani	TTOW .	Identification	county commission	riculani	Dino grant
organizations, businesses and others to identify opportunities for the				Education and			would be			1
construction of new shelters, either as part of a new building or a stand-alone				Awareness			beneficial at low			FEMA HMP or
shelter building.	2025	New		Programs	Medium	New	cost.	county commission	High	BRIC grant
Review tornado and other emergency warning systems used throughout the			sirens and/or syst				10000		10	grani
Work with cities and other public organizations to evaluate existing warning				Structure and						
systems and develop plans to add sirens and/or other warning systems in the				Infrastructure						FEMA HMP or
county	2025	New		Projects	High	New	Could save lives	county commission	High	BRIC grant
Floods										- me gram
Update GIS and other mapping resources to identify flood-prone areas										
							Low cost			
Update GIS and other mapping layers including updated FIRM maps to help							mechanism to			Local Budgeted
cities, the county and the public identify floodprone properties to avoid				Local Plans and			increase public			Funds and Staff
development in those areas.	2025	New		Regulations	High	Ongoing	safety.	P&Z administrator	Low	Time

	1		1	1		ı			I	
2025 City of Richmond, MO Mitigation Strategy	Plan Year	Status of Project	Status Explanation	Type of Mitigation Activity	Priority	Date of Completion	Cost/Benefit Review	Primary Agency Responsible for Implementation/ Administration	Estimate of Cost (\$)	Funding Source
Tornadoes Educate and raise awareness about the variety of roles and responsibilities needed by	efore and after a	tornado.								
Provided opportunities like workshops and exercises to inform city staff and	2015	Ongoing		Education and	Low	Ongoing	Modium	Emergency Mgt	Low	Richmond City
volunteers about the different roles and responsibilities needed after a tornado. Encourage building practices and the use of materials that reduce the damaging effe		Ongoing		Awareness Programs	Low	Ongoing	Medium	Emergency Mgt.	Low	Budget
Adopt current edition of the model building code to address structural and	cts of torriadoes.		Adopted 2015 IBC in November,	Local Plans and					I	Richmond City
architectural issues related to tornadoes and high wind events.	2010	Completed	2018	Regulations	Medium	Nov-18	Medium	Planning	Low	Budget
Inform builders/developers of construction techniques and materials that may				Local Plans and						Richmond City
minimize tornado/high wind damage to residential/commercial structures.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Paguiro the use of tempored or chetter resistant close in the windows of new				Structure and						
Require the use of tempered or shatter-resistant glass in the windows of new public/private facilities where large numbers of people may congregate.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	Planning	High	HMGP, BRIC
public/private racidities where targe numbers of people may congregate.	2010	Oligoling		minastructure i rojects	riculani	Oligoliig	riculani	i tailing	i iigii	TIPIOT, BINIC
Review and enhance (if necessary) regulations related to the design and installation			Adopted 2015 IBC in November	Local Plans and						Richmond City
of architectural features on buildings to minimize the creation of windborne debris.	2010	Completed	2018.	Regulations	Medium	Completed	Medium	Planning	Low	Budget
Encourage electric and telecommunications utilities to protect their existing infrastru								1		
Adopt ordinances or regulations requiring the underground placement of new			Ordinance requires underground	Local Plans and						Richmond City
electric and telecommunications transmission lines.	2010	Ongoing	electric for new development.	Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Increase the public's awareness and understanding of weather conditions that can				Education and						Richmond City
produce tornadoes and steps that can be taken to keep safe during a tornado.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Budget
Offer financial or other incentives to utility providers to replace existing above-				Local Plans and					l.	Richmond City
ground utility lines with underground utility lines.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Ensure public facilities have shelters to accommodate staff and visitors during torna	does/naturat naz	arus.			ı	I	T		1	_
			New businesses are encouraged							
			to develop emergency tornado							
			plans for safe room locations							
Assess existing facilities for shelter suitability. Mark clearly and inform			and post in visible locations for	Local Plans and						Richmond City
visitors/employees of locations.	2010	Ongoing	visitors and employees.	Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
		0 0		Ü				3		
			New businesses are encouraged							
			to develop emergency tornado							
			plans for safe room locations							
Assess existing facilities for shelter suitability. Mark clearly and inform			and post in visible locations for	Local Plans and						Richmond City
visitors/employees of locations.	2010	Ongoing	visitors and employees.	Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
	1		New businesses are encouraged							
	1		to develop emergency tornado							
Access aniching for illaine for abolism anikabilite. Most of control of foreign			plans for safe room locations	Lead Diens and						Diahana - d Ott
Assess existing facilities for shelter suitability. Mark clearly and inform	2010	Ongoing	and post in visible locations for	Local Plans and	Madium	Ongoing	Madium	Dlanning	1	Richmond City
visitors/employees of locations.	2010	Ongoing	visitors and employees.	Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Consider adopting ordinances or regulations requiring the construction of tornado				Local Plans and						Richmond City
shelters in new buildings where people live, work, or congregate.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Consider adopting policies requiring incorporation of safe rooms/shelters in new	2010	50mb		Local Plans and	ouium	gomg	suiuiii			Richmond City
public facility construction.	2010	Ongoing		Regulations	Low	Ongoing	Medium	Planning	Low	Budget
abile racincy construction.	2010	Oligonia	L	nogutation3	LOW	Oligonia	i icuiuiil	I willing	E-CAA	Dauget

										$\overline{}$
Encourage residential/commercial builders/developers to construct safe				Structure and						
rooms/community shelters in new public facilities.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	Planning	Low	HMGP, BRIC
		0.0		,,,,,,		- 0 0				+
			Fire Department is researching							
Retrofit or add shelters to existing public facilities with inadequate protection from			funding and grant opportunities	Structure and						
tornadoes and high wind.	2010	Ongoing	from public tornado shelters.	Infrastructure Projects	Medium		Medium	Planning	High	HMGP, BRIC
3		, ,	·	<i>'</i>				Ü		
Work with chambers of commerce, school districts, corporations, etc. to promote				Education and						Richmond City
benefits of safe rooms.	2010	Ongoing		Awareness Programs	Medium	Ongoing	Medium	Emergency Mgt.	Low	Budget
Update plans to ensure that current resources and information is included for quick	and effective res	ponse to a tornado.								
Update the Local Emergency Operations Plan to include current shelter and city staff	f			Local Plans and						Richmond City
contact information.	2015	Ongoing	Update in progress.	Regulations	Medium	Ongoing	Medium	Emergency Mgt.	Low	Budget
Floods										
Improve flood hazard assessments and flood mapping.										
Conduct an in-depth flood risk analysis utilizing HAZUS data and create detailed				Local Plans and						Richmond City
maps based on GIS technology to identify areas at risk from flooding.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Coordinate the collection of demographic, economic, watershed, land use, and				Local Plans and						Richmond City
other data required by the HAZUS-Flood software program and/or GIS systems.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Obtain parcel data (assessed valuation and other information) for flood boundary				Local Plans and						Richmond City
areas and enhance vulnerability assessments for these areas.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Integrate flood mitigation strategies with projects and activities designed to (1) prote	ct, restore, or en	hance ecosystem, a	nd the environment and/or (2) crea	te recreational opportur	ities for the con	nmunity.				
Consider alternative uses for floodplains and flood-prone areas, such as sports				Structure and						Richmond City
fields, parks, wildlife habitats, etc.	2010	Ongoing		Infrastructure Projects	Medium	Ongoing	Medium	Planning	Medium	Budget
Participate in, and ensure compliance with, flood mitigation and floodplain managen	nent programs.									
Obtain the latest copies of flood insurance rate maps (FIRMs), floodplain maps, and	1			Local Plans and						Richmond City
similar documents.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Participate in the National Flood Insurance Program (NFIP) and consider joining the				Local Plans and						Richmond City
Community Rating System (CRS).	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Low	Budget
Reduce flood-related damage to public, residential, and commercial property in flood-prone areas through structural and nonstructural retrofits or removal of property.										
Identify incentives to offer homeowners and businesses to remove or retrofit their				Local Plans and						Richmond City
structures in flood-prone areas.	2010	Ongoing		Regulations	Medium	Ongoing	Medium	Planning	Medium	Budget
Severe Thunderstorms										

Chapter 6: Plan Maintenance

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Chapter 6: Plan Maintenance

Requirement [The plan maintenance process **shall** include a] section describing

§201.6(c)(4)(i)): the method and schedule of monitoring, evaluating, and updating the plan

within a five-year cycle.

6.1 Monitoring, Evaluating and Updating the Plan

This plan will be reviewed and evaluated annually or following a disaster to determine the effectiveness of planned mitigation actions; reflect changes in laws, regulations and/or policies; reprioritize mitigation actions, if necessary, and consider other issues affecting hazard mitigation in the Kansas City metropolitan area. The Metropolitan Emergency Managers Committee (MEMC) has included this review as part of its annual work program. The MEMC covers the five counties included in this plan in addition to four Kansa counties – Johnson, Leavenworth, Miami and Wyandotte. Beginning in 2021, the MEMC will review both the plan adopted for the Kansas counties and this Plan for updates. The Hazard Mitigation Plan Steering Committee will meet with Kansas representatives to discuss coordination of hazard mitigation planning efforts in 2025.

The MEMC/Planning Team, in accordance with the roles and responsibilities outlined in Attachment 1, will be responsible for coordinating annual reviews of the plan for their represented jurisdictions. The annual review process shall include an evaluation of the plan's effectiveness for the area. Criteria used to evaluate the plan includes:

- The goals and objectives address current and expected conditions
- The nature, magnitude and/or types of risk have changed
- The current resources are appropriate for implementing the plan
- There are implementation problems, such as technical, political or legal or there are coordination issues with other agencies
- The outcomes have occurred as expected
- The agency and partners participated as originally proposed

During these reviews, mitigation goals and actions will be reevaluated and updated to reflect current status as appropriate. Jurisdictions wishing to add new mitigation goals and actions will work with the Planning Team/MEMC to determine steps necessary to incorporate changes into the adopted 2025 Plan. Those jurisdictions submitting new goals and actions should develop a planning process narrative in accordance with the requirements for mitigation strategies outlined in this plan. The narrative should be submitted to the jurisdiction's respective Planning Team member for review, who will forward to MARC for formatting and incorporation into this plan. MARC will continue to provide administrative support in accordance with the roles and responsibilities of Plan Author as defined in Attachment 6.1.

In order for mitigation efforts to become more fully incorporated into regional planning efforts for the Kansas City metropolitan area, the review of the Hazard Mitigation Plan, and the mitigation strategies will be reviewed by the Metropolitan Emergency Managers Committee. The Metropolitan Emergency Managers Committee, a committee coordinated by Mid-America Regional Council, serves as a forum for local emergency managers to discuss and resolve regional issues, problems, projects and activities related to all-hazards emergency management. In addition, the 2025 Plan will be reviewed by representatives from Climate Action KC. Climate Action KC, a nonprofit regional compact made up of

more than 100 local and state elected officials, working to organize strategies to draw down greenhouse gases and improve climate resilience.

For this update, participating jurisdictions appointed a responsible party to act as a central point of contact and coordinate the update process for their community. These individuals are listed in Attachment 6.2. During the yearly reviews, MARC will contact these individuals and ask for their review and update of information about their jurisdiction. For each action proposed by the participating jurisdiction there is a "Primary Agency Responsible" designated for implementing mitigating goals and actions. These agencies shall provide the status of their mitigation projects to their community's responsible party, as listed in Attachment 6.2. If a community's responsible party changes, they are asked to notify their Planning Team/MEMC representative of the change.

Every five years, the Planning Team/MEMC will conduct a comprehensive review of the *Regional Multi-Hazard Mitigation Plan* and document the actions taken, changing conditions regarding the risks faced by the region from natural hazards and revisions to hazard mitigation actions representing a full update to the plan. The model used for this update process will continue to be used for future updates; the roles and responsibilities outlined in Attachment 6.1 will be maintained. The following generic timeline should be used to guide the five-year plan update process. All dates are listed as time remaining (T-) until plan expiration:

T-22 months:

- 1.) *MARC*: Notify Planning Team, participating and potential new jurisdictions of upcoming update process.
- 2.) *MARC*: Request authorizations from MEMC and MARC Board and/or participating jurisdictions for MARC to act as Plan Author on jurisdiction's behalf (if desired).

T-21 months:

- 1.) MARC: Apply for grant funding through SEMA.
- 2.) *MARC/Planning Team*: Confirm participation requirements, desired updates, changes in regulations. Begin full review of plan. Set kickoff meeting dates and times.
- 3.) *MARC/Planning Team:* Begin collecting contact information for all potential jurisdictions and organizations to ensure that all potential participants receive the initial invitation to be involved.

T-19 months:

- 1.) MARC/Planning Team: Complete full review of plan, confirm required updates
- 2.) *MARC*: Begin research on any changes to the hazard profiles and recent hazard events. Create materials for kick off meetings.
- 3.) MARC: Form Hazard Mitigation Plan Steering Committee
- 4) *MARC*: Begin advertising meeting date for kick off meeting for representatives from participating jurisdictions and other parties interested in contributing to the update process.

T-16 months:

- 1.) MARC/Planning Team/Participating Jurisdictions/Other interested parties: Begin kickoff meeting to review process for update, review historical and recent occurrences of the various hazards, and review data collection and plan participation requirements. Hold follow-up meetings as necessary.
- 2.) *Participating jurisdictions:* Begin submitting required information about hazard risks and capabilities (Community Profile information) to MARC.

3.) MARC: Analyze and assess the information received through the Community Profile submission. Develop materials for public meetings to explain hazards and the capabilities on hand. Incorporate information received into draft update.

T-14 months:

1.) MARC/Planning Team/Participating Jurisdictions: Disseminate and collect surveys from stakeholders and the public for input to the HMP. Publish information on MARC website and through MARC enewsletters.

T-12 months:

- 1.) Participating Jurisdictions: Status report on past mitigation strategies and development of new mitigation strategies. Participating jurisdictions and organizations will consider the hazards that are likely to impact their constituents and the tools/capabilities available to address the hazards and they will create goals and actions to continue building upon the capabilities already in place.
- 2.) MARC: MARC staff will collect the mitigation strategy information for past and future goals and actions and incorporate the information into the draft update.

T-6 months:

- 1.) MARC: Complete first draft, submit to Planning Team for review and approval
- 2.) Planning Team: Review/Approve first draft

T-5 months:

- 1.) MARC: Submit first draft to SEMA.
- 2.) MARC: Make corrections to draft.
- 3.) MARC/Planning Team/Participating Jurisdictions: Advertise and conduct final public review and comment period.
- 4.) Planning Team: Review/Approve corrections to draft.

T-3 months:

- 1.) MARC: Submit final draft to SEMA for forwarding to FEMA
- 2.) *MARC:* Make any corrections from FEMA. Submit to Planning Team for review/approval and resubmittal to FEMA.
- 3.) *MARC/Planning Team/Participating Jurisdictions:* Once FEMA approves, participating jurisdictions adopt by formal resolution, and forward to FEMA.
- 4.) MARC: Begin collecting local resolutions demonstrating local jurisdictions have adopted the plan.

A number of data deficiencies were identified through this update to be addressed prior to the next update to extent possible –pending available information. Table 6.1 identifies these deficiencies, These data deficiencies are from the 2015 Plan. The list must be evaluated, and deficiencies can be added or deleted. Where progress has been made on addressing each data deficiency, the status should also be updated in Table 1.2 in the Introduction and Planning Process section.

Table 6.1 D	ata Deficiencies identified [From the 20	20 Plan]
Data Deficiency	Action to Be taken	Responsible Party
1. Dam inundation pathways still in process of being shared with local officials or not yet available	Continue to work the MDNR and local dam owners to obtain information/maps showing dam failure inundation pathways as part of EAP update/completion process	Planning Team
2. Levee failure analysis information largely unavailable	Continue to work with USACE and other entities to obtain levee failure analysis information as it becomes available	Planning Team
3. Future land use data unavailable for Ray County	MARC has incorporate future land use maps for Ray County into the 2025 Plan.	Ray County Planning Team representative, MARC
4. Various data collection/interpretation deficiencies were noted for winter weather, heat wave, drought, HazMat and infectious disease due to certain inherent limitations	Continue to reassess hazards and data collection methods for next update. As new collection methods and interpretation techniques become available, incorporate into plan update	Planning Team, MARC
5. Utility infrastructure - Research Services of MARC does not have access to this data at present	MARC continues to work with local jurisdictions and utility companies are working to address this.	Planning Team, MARC
6. Data regarding homes without basements –	MARC has asked for this information; some jurisdictions have their GIS files able to support this type of analysis, but a number of jurisdictions do not. MARC will continue to seek this information	MARC
7. Building counts – not all jurisdictions maintain a GIS layers of building points or building outlines. MARC digitized many buildings by hand as part of a SOLAR grant and has worked to make updates.	As jurisdictions develop GIS capabilities this information will be incorporated in future updates.	Participating Jurisdictions
8. Critical facilities – don't have measures of size or capacity or capabilities for most of	As jurisdictions continue to implement HAZUS software this information become more accessible.	Participating jurisdictions, MARC

Table 6.1 Data Deficiencies identified [From the 2020 Plan]								
Data Deficiency	Action to Be taken	Responsible Party						
them. This information would help produce more meaningful maps and visualizations.								
9. Addresses of repetitive flood loss properties would have been helpful in mapping the general locations where flooding occurs that is more likely to damage property.	Continue to work with jurisdictions and the State Emergency Management Agency to determine options for obtaining this type of information.	Participating jurisdictions, MARC						

Minor data limitations continue to exist for estimating probability of future occurrence and potential damages for drought, heat waves and severe winter storms. Specific limitations are discussed in each hazard profile.

6.2 Incorporation into Existing Planning Mechanisms

Incorporation of the mitigation strategies, goals, and actions into other planning mechanisms, as identified by each jurisdiction, is discussed in full in Section 3. The planning process used to update the plan will continue to tie hazard risk assessment for each jurisdiction to the capabilities and resources that the jurisdictions have available. Through Community Profile, jurisdictions and organizations identify the hazards that for which their jurisdictions are most at risk. In addition, the jurisdictions and organizations report on the administrative, technical, financial, and programmatic (education and outreach) resources that they have in place. Participating jurisdictions and organizations are encouraged to consider this information as they identify mitigation goals and actions. In the end, the goal is to establish a cycle where the Hazard Mitigation Plan update process drives changes and improvements in the local planning mechanisms and capabilities and also, local planning processes will ultimately identify projects and initiatives that can be supported in the Hazard Mitigation Plan.

6.3 Continued Public Involvement

Public involvement in the mitigation planning process — from plan development through implementation of mitigation actions and plan review, evaluation and revision — is important to the success and sustainability of a community's (and the region's) mitigation efforts. As stakeholders in the mitigation process, the public should be given the opportunity to influence the policy decisions that will affect their communities.

The residents of participating jurisdictions that have adopted this plan will be encouraged to participate in the plan maintenance and review process.

Copies of the plan will be available for review through MARC's website and shared through participating jurisdictions to help the public with information and to respond to questions. Contact information and the method for submitting comments and suggestions regarding the plan (i.e., e-mail, social media addresses, etc.) will also be posted on the MARC website. The availability of this plan will also be publicized in MARC's printed, online and electronic newsletters and through MARC's social media. Participating jurisdictions will also publicize the availability of this plan in community newsletters and related publications or on their websites. All information regarding plan availability will continue to be posted in accordance with the provisions of the Missouri Sunshine Law. Additional information regarding Missouri's Sunshine Law can be found on the Web site of Missouri's Attorney General at https://ago.mo.gov/missouri-law/sunshine-law.

During the yearly reviews, the Planning Teams will use PrepareMetroKC.org website and other means to direct the public to the plan's availability and again solicit information on topics of mitigation concern to the community. Specific information regarding public involvement efforts as part of the planning process can be found in **Section 1.3.5.** Additional media outlets for potential advertising are found **in Section 2.6.**

6.4 Attachments

Attachment 6.1: Hazard Mitigation Steering Committee (HMSC) Members Roles and Responsibilities

I. Roles

A. Planning Team:

Justin Crane, Director, Cass County Emergency Management Representing the following Cass County communities:

- Belton Claire Canaan, Emergency Management
- Harrisonville
- Lake Winnebago Ken Smith, Emergency Management
- Peculiar
- Pleasant Hill
- Raymore
- Archie R-V School District
- Belton School District
- Harrisonville School District
- Pleasant Hill School District
- Raymore-Peculiar School District
- Sherwood-Cass R-8 School District

Anne Poelzl, Emergency Management, Sheriff's Office, Clay County **Grace Wineinger**, Emergency Management, Sheriff's Office, Clay County Representing the following Clay County communities:

- Excelsior Springs
- Gladstone
- Kearney
- Lawson
- Liberty
- North Kansas City Dan Williams, NKC Fire Department
- Smithville
- Excelsior Springs School District
- Lawson School District
- Liberty School District
- North Kansas City School District
- Smithville R-II School District

Troy Schulte, Manager, Jackson County (replaced by Brian Gaddie) **Randy Diehl**, Public Works Department

Representing the following Jackson County communities:

- Blue Springs
- Greenwood

- Grandview
- Independence Dante Gliniecki and Janelle Scofield, Emergency Management
- Lee's Summit Benjamin Hicks
- Levasy Kimberlyn Dyer
- Kansas City, MO Christopher Carroll, Emergency Management
- Oak Grove Mark Sherwood
- Raytown Dyon Harper
- Central Jackson Co Fire Protection District Jason Bonney
- Sni-Valley Fire Protection District Mark Sherwood
- Blue Springs R-IV School District
- Fort Osage School District
- Grain Valley School District
- Independence School District
- Kansas City School District
- Lee's Summit R-VIII School District
- Oak Grove R-VI School District
- Metropolitan Community Colleges

Jason Phelps, Deputy Assistant Emergency Management Coordinator, Platte County Sheriff's Department

Capt. Daniel Gates, Emergency Management Coordinator, Platte County Sheriff's Department

Representing the following Platte County communities:

- Farley
- Lake Waukomis
- Northmoor
- Parkville
- Platte City
- Platte Woods
- Riverside
- Tracy
- Weatherby Lake
- Weston
- Northland Regional Ambulance District (NRAD)
- West Platte Fire District
- Park Hill School District
- Park University
- Platte County R-III School District
- West Platte R-II School District

Presiding Commissioner Sheila Tracy, Ray County

Representing the following Ray County Jurisdictions:

City of Richmond

Community Organization Stakeholders

Carol Ayers, Community Disaster Resiliency Network Ryan Hicks, Life Unlimited Sharon White-Lewis, Medical Reserve Corps Victor Webb, Housing Authority of Kansas City, MO

State and Federal Officials

Gloria Brandenburg, SEMA Jonathan Kurz, National Weather Service

B. Plan Production and Coordination, Mid-America Regional Council (MARC):

Melinda Cheney, Exercise and Planning Manager

Marlene Nagel, Community Development Director

• Project manager, process facilitator, co-author and researcher

John Davis, Emergency Services Administrative Support

• Data management and document design

Erin Lynch, Emergency Services and Homeland Security Program Director

• Editor and project oversight

Jay Herrmann, GIS Manager

Research and GIS lead

Madeline Wetta, Data Librarian

• Research and data lead

Jakob Goldman, GIS Specialist II

GIS mapping, coordination and research

Sara Hintze, Database Analyst

Developed online planning tools

Catherine Couch, Public Affairs Coordinator

Lead graphic designer; marketing coordinator

Daiko Abe, ISC Consultants

- Provided guidance to ensure FEMA requirements are met within the plan
- Drafted Chapter 4 Hazard Analysis

II. Responsibilities

A. Plan Coordination

- 1. Provide administrative support for the update process to include, but not limited to:
 - a. Organize meetings, send mailings, draft and incorporate plan revisions, conduct research, etc.
 - b. Provide the Planning Team with recommendations and advice on plan requirements as well as electronic and/or hard copies of updates to the plan as they are drafted for review and comment
 - c. Assist in the development of mitigation strategies.
 - d. Provide monthly updates and other information as requested to SEMA in accordance memorandum of agreement.
 - e. Compile comments, revisions, evaluations, etc., from future reviews and updates and integrate into plan.

B. Planning Team

- 1. Oversee the update process to include, but not limited to:
 - a. Determine requirements for satisfactory participation.
 - b. Review and approve all revisions to the hazard mitigation plan.
 - c. Provide locations to host meeting opportunities.
 - d. Work with represented jurisdictions to assist in gathering required information and developing mitigation strategies.
 - e. Organize yearly reviews of the plan for represented jurisdictions. Review all new information submitted and forward to Plan Author for incorporation.

C. Participating Jurisdictions

- 1. Inform the update process by accomplishing the following:
 - a. Complete all requirements for satisfactory participation as determined by the Planning Team.
 - b. Review and comment on the plan as drafts become available. Formally adopt the completed plan by resolution.
 - c. Participate in yearly reviews of the plan and subsequent five-year updates. Submit changes as necessary to Planning Team representative for review and forward to Plan Author.
 - d. Designate a responsible party to coordinate the above and notify Planning Team representative of designee by name, job title, organization or any other satisfactory method upon appointment or when a change occurs. Responsible parties for participating jurisdictions shall be listed in Attachment 2 to this section.

Attachment 6.2: 2025 Participating Jurisdictions' Designated Responsible Parties

Jurisdiction	Responsible Party (Name)	Title
1. Cass County	Justin Crane	Emergency Management Director
2. Clay County	Will Akin/Anne Poelzl	Emergency Management Director
3. Jackson County	Brian Gaddie	Public Works Director
,		Deputy Asst. Emergency Management
	Deputy Jason Phelps	Coordinator
	Capt. Daniel Gates	Emergency Management Coordinator
4. Platte County	Daniel Romig	Asst. Emergency Management Coord.
E. Pay County	Presiding Commissioner Sheila Tracy	Prociding County Commissioner
5. Ray County	,	Presiding County Commissioner
6. Belton	Claire Canaan	Director of Emergency Management
7. Blue Springs	Michael Mallon	Senior Director of City Development
8. Central Jackson Co Fire Protection District	Jason Bonney	Assistant Chief of Emergency Management
	Joe Maddick	Fire Chief
9. Excelsior Springs		Chairman of the Board of Aldermen
10. Farley	Kathy O'Neal	Emergency Management Director/Fire
11. Gladstone	Mike DeSautels	Chief
12. Grain Valley	Ken Murphy	City Administrator
13. Grandview	Emily Spittler	Planner
14. Greenwood	Mitchell Armer	Chief of Police
15. Harrisonville	Rusty Sullivan	Emergency Services Director
16. Independence	Dante Gliniecki	Emergency Management Director
17. Kansas City, Mo	Christopher Carroll	Emergency Manager
18. Kearney	David Pavlich	Community Development Director
19. Lake Annette	Angela Hansen	Mayor
20. Lake Waukomis	Rick Zelfer	Emergency Management Director
21. Lake Winnebago	Kenneth Smith	Emergency Management Director
	Stan Dobbins	City Administrator
22. Lawson	Bruce Summa	Chief of Police
23. Lee's Summit	Benjamin Hicks	Assistant Chief
24. Levasy	Kim Dyer	Mayor
25. Liberty	Chris Young	Fire Chief
26. North Kansas City	Dan Williams	Fire Chief/EMD
27. Northland Regional Ambulance		
District	Jason James	Executive Director
28. Northmoor	Julie Rowden	City Clerk
29. Oak Grove	Mark Sherwood	Emergency Management Director
30. Parkville	Jon Jordan	Captain
31. Peculiar	Don Shepard	Police Chief, Interim City Administrator
32. Platte City	Joe Wellington	Chief of Police

Jurisdiction	Responsible Party (Name)	Title
33. Platte Woods	Jim Kerns	Emergency Management Director
34. Pleasant Hill	Tommy Wright	Police Chief/Emergency Manager
35. Pleasant Valley	Jared McGinley	Chief of Police
36. Raymore	Tim Baldwin	Emergency Management Coordinator
37. Raytown	Dyon Harper	Police Captain
38. Richmond	Mark Sowder	Fire Chief/EM Director
39. Riverside	Keith Payne	Emergency Manager/Police Chief
40. Sni Valley Fire Protection District	Mark Sherwood	Emergency Management Director
41. Smithville	Jason Lockridge	Chief of Police
42. Tracy	Barbara Stewart	City Clerk/Collector
43. Weatherby Lake	Donnie Hachman	Chief of Police
44. Weston	Kelly Clark	Chief of Police
45. Archie R-V School District	Michelle Witzk	Superintendent
46. Blue Springs R-IV School District	Mike Russell	Director, Public Safety
47. Excelsior Springs School District	Jarent Tomlinson	Superintendent
48. Fort Osage R-I School District	Steve Morgan	Assistant Superintendent
49. Grain Valley School District	Nicholas Gooch	Assistant Superintendent
50. Harrisonville School District	Josh Chastain	Superintendent
51. Independence School District	Greg McGhee	Director of Facilities
52. Kansas City School District	Linda Quinley	Assistant Superintendent/COO
53. Lawson School District	Michael Stephenson	Superintendent
54. Lee's Summit R-VIII School District	Ryan Hall	Supervisor of Safety & Environmental Services
55. Liberty School District	Gary Majors	Director of Safety and Security
56. North Kansas City School District	Mitzi Boydston	Director of Safety & Security
57. Oak Grove R-VI School District	Tracy Kemp	Superintendent
58. Park Hill School District	Chad Phillips	Director of Safety and Security
59. Platte County R-III School District	Devin Doll	Executive Director of Operations
60. Pleasant Hill School District	Wayne Burke Mike Clevenger	Superintendent Director of Facilities
61. Raymore-Peculiar School District	Bryan Pettengill	Assistant Superintendent
62. Richmond School District	Trey Cavanah	Assistant Superintendent

Jurisdiction	Responsible Party (Name)	Title
63. Sherwood-Cass School District	Morris Jeffries	Director of Facilities
64. Smithville R-II School District	Ian Saxton	Executive Director of Operations
65. West Platte R-II School District	Brock Dover	Superintendent
66. Metropolitan Community Colleges	Andrea Schatz	Chief Legal Counsel
67. Park University	Jeff Hurley	Director of Campus Safety