

Executive Summary

The Cooper County Natural Hazard Mitigation Plan is a multi-jurisdictional plan prepared and written with the participation of Cooper County government and the following Cooper County communities: **Boonville, Bunceton, Otterville, Pilot Grove, and Wooldridge.**

The communities of Blackwater, Prairie Home, and Windsor Place were notified of the planning process and invited to meetings but have chosen not to participate. The following special districts participated in all aspects of the planning process but have not formally adopted the plan at this time: **Linneman-Weekly Levee District, Overton-Wooldridge Levee District, and Prairie Home R-V School District.** All other school districts in Cooper County were also notified and invited to meetings, but have chosen not to participate.

The plan profiles twelve natural hazards (dam failure, drought, earthquake, extreme heat, flood, levee failure, land subsidence/sinkhole, severe winter weather, wildfire, windstorm, tornado, and hailstorm) which threaten lives and/or property in some, or all, of the participating jurisdictions. All hazards were evaluated with regard to previous occurrence, probability and severity of future occurrence, existing mitigation strategies, and the potential impact on each jurisdiction.

An overall mitigation strategy was developed through the consideration of potential threats, resources, and willpower available to mitigate their effects. The goals of this mitigation strategy are:

- Goal 1: Mitigation Planning - Mitigate effects of future natural hazards through public and private cooperation. **(Need to add specific planning goals.)**
- Goal 2: Mitigation Policy - Develop policies that limit the impact of natural hazards on lives and property. **(Need to add specific policy goals.)**
- Goal 3: Mitigation Programs - Implement cost effective and feasible mitigation programs to protect lives and property. **(Need to add specific program goals.)**
- Goal 4: Public Awareness - Increase public awareness of natural hazards. **(Need to add specific public awareness goals.)**
- Goal 5: Future Development - Promote hazard-proof development. **(Need to add specific future development goals.)**

Specific mitigation actions have been developed and prioritized to further the goals of the overall mitigation strategy in each participating jurisdiction.

The Cooper County Natural Hazard Mitigation Plan will be formally adopted by each of the participating jurisdictions after a final draft is approved by FEMA. Participation in, and formal adoption of, the plan qualifies a jurisdiction to apply for Federal Emergency Management

Agency (FEMA) pre-disaster mitigation grants and the mitigation portion of post-disaster mitigation grants.

The plan will be updated in five years, as required by FEMA. It will be evaluated and maintained on an annual basis prior to this update. More information on the maintenance process can be found in Section 5.

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Prerequisites

Multi-Jurisdictional Plan Adoption

<i>Requirement §201.6(c)(5):</i>	<i>For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.</i>
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Adoption resolutions for the participating jurisdictions are included in Appendix A.

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Log of Post-Adoption Changes To Plan

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List of Major Acronyms Used In Plan

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Section 1: Introduction and Planning Process

1.1 Purpose

The Cooper County Hazard Mitigation Plan is designed as a resource for county and municipal governments, residents, developers, organizations, and others interested in controlling the potentially disastrous effects of natural hazards in Cooper County. Each year natural hazards take a great toll in the United States. Cooper County is not immune; it is subject to numerous natural hazards which can threaten life and property. A well-conceived mitigation strategy, developed through an inclusive and thoughtful planning process, is an important step in protecting citizens and reducing loss.

The Federal Emergency Management Agency (FEMA) defines mitigation as “sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects.” A 2006 study by the Institute for Building Science found that \$4 was saved in post-disaster response and recovery for every \$1 spent on pre-disaster mitigation.

The Cooper County Hazard Mitigation Plan was developed by the communities and citizens of Cooper County, their elected officials and public servants. The process was carried out by identifying the natural hazards that impact Cooper County and its residents, assessing the probability of occurrence and severity posed by each hazard, identifying the most vulnerable areas, and evaluating all possible mitigation actions which might be effective. Potential mitigation actions were assessed and prioritized based on the perceived need, probable outcome, potential for being executed, and benefit related to cost.

The plan was developed in accordance with FEMA’s Mitigation Planning regulations under Code of Federal Regulations (CFR), Title 44, Part 201.6, *Local Mitigation Plans*. Relevant requirements from CFR §201.6 are highlighted throughout the plan.

Multiple jurisdictions within Cooper County participated in the development of this plan. Having a current and approved hazard mitigation plan makes each of the participating jurisdictions eligible to apply for FEMA pre-disaster mitigation grants and the mitigation portion of post-disaster mitigation grants.

1.2 Background

Responding to and mitigating for natural disasters has been a subject of increasing focus for the federal government in the past decades.

The process for declaring Presidential Disasters was established with the passage of the Disaster Relief Act of 1974. In 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act created the organizational framework through which funds and assistance would be provided after a Presidential Disaster Declaration; FEMA was designated to coordinate the relief efforts.

In 1993, FEMA created the Mitigation Directorate to oversee hazard mitigation. This established mitigation as the cornerstone of emergency management.

The Disaster Mitigation Act of 2000 further defined activities related to disaster relief and mitigation; one of its provisions encourages development of hazard mitigation measures, including land use and construction regulations.

1.3 History of the Cooper County Hazard Mitigation Plan

In November 2003, a “current and approved” hazard mitigation plan became a FEMA eligibility requirement for local jurisdictions applying for pre-disaster mitigation grants and the mitigation portion of post-disaster grant funds.

Due to this change in FEMA grant requirements, the Missouri State Emergency Management Agency (SEMA) contracted with the Missouri Council of Governments for the Regional Planning Commissions to direct hazard mitigation planning for interested counties within their respective regions. Cooper County, a member of the Mid-Missouri Regional Planning Commission (Mid-MO RPC), contracted with the Mid-MO RPC to facilitate the development of a hazard mitigation plan for the county.

A Project Steering Committee was formed to oversee the planning and writing of the original Cooper County Hazard Mitigation Plan in (2005). The plan was approved by FEMA and adopted by the participating jurisdictions on **April 26, 2012**.

Maintenance of Hazard Mitigation Plan 2012 - 2017

The Cooper County Hazard Mitigation Plan 2012 was written to be a working document to guide participating jurisdictions in the county in the work of mitigating potential hazards. To this effect, the plan has been publicly available on the website of the Mid-MO RPC (www.mmrpc.org) since it was approved and adopted in 2012.

During the ensuing years, the Mid-MO RPC has kept the jurisdictions informed of mitigation grant opportunities through letters, the RPC’s monthly newsletter (*The Current*), the Mid-Mo RPC website, and announcements at meetings of the RPC.

Ten of the mitigation actions decided upon in the original plan have been completed at this time (see Figure 1.3.1). Several other actions are currently being implemented and were retained for the 2017 plan. A full review of the 2017 mitigation actions is included in Section 5.1 of this plan.

The maintenance plan in the original document called for an annual review of the plan by the Cooper County Hazard Mitigation Steering Committee, facilitated by the Mid-MO RPC. These annual reviews did not take place; lack of a defined time table for the reviews, shortage of time and personnel, and personnel changes all played a role in this omission.

This plan update lays out a clearly defined maintenance process with a timetable for review and concrete tools to be employed in the review. This process is found in Section 5 of the plan.

Figure 1.3.1
Mitigation Actions Completed from Cooper County Hazard Mitigation Plan 2012

	Actions	Priority Rank/ Target Date	Outcome
1.10	Create, Revise, and update Flood Insurance Rate Maps (FIRM)	Medium/2008	New DFIRM 2011
1.16	Update staff knowledge of earthquake safety	Medium/2007	County staff attended classes and training
1.22	Encourage Utility Companies to maintain right of ways	High/Continuing	Agreements in place
1.28	Develop short-term agreements with local shelters	High/2007	Agreements in place
1.30	Develop public education hazard awareness program	High/2006	Program is in in place
1.31	Establish educational materials for public regarding earthquakes in Missouri	Medium/2007	Materials available through EMA
1.33	Provide public education materials concerning the dangers of icy roads	High/Continuing	Materials available through EMA
1.34	Provide educational materials for outdoor workers and school athletic organizations on the dangers of excessive heat exposure	Medium/2007	Materials available through EMA
2.11	Review emergency access /evacuation routes and mitigate any problem areas.	Medium/ 2004 (annually)	Program overseen by EMA
3.22	Develop long-term agreements with local shelters	High/2006	Agreements in place

1.4 Participating Jurisdictions

**Requirement
§201.6(a)(3):**

Multi-jurisdictional plans...may be accepted, as appropriate, as long as each jurisdiction has participated in the process....Statewide plans will not be accepted as multi-jurisdictional plans.

The Cooper County Hazard Mitigation Plan is a multi-jurisdictional plan. Planners from the Mid-MO RPC (Plan Author) developed the following criteria for a jurisdiction to qualify as a participating jurisdiction:

1. Submission of information regarding capabilities, vulnerable assets, and future development within the jurisdiction
2. Review of a draft of the plan and provision of feedback, if warranted
3. Review of mitigation actions suggested by the Technical Steering Committee for the jurisdiction; prioritization of actions deemed feasible for the jurisdiction based on benefit/cost and time/resources available for implementation and administration
4. Formal adoption of the plan by resolution

The participating jurisdictions in the original plan (2005) and those participating to any degree in the updated plan (2017) are shown in Figure 1.1.1. The chart also tracks the completion of the criteria for inclusion as a participating jurisdiction in the plan. The column on the far right of the chart in Figure 1.1.1 (“2017 Participating Jurisdictions”) indicates those jurisdictions which have completed the above requirements and are requesting approval of the plan prior to formal adoption.

The communities of Blackwater, Prairie Home, and Windsor Place were notified of the planning process and invited to meetings, but have chosen not to participate. All school districts in Cooper County were also notified and invited to meetings, but Prairie Home R-V was the only district that participated in the planning process.

The term “planning area” is used in the plan to indicate, as a whole, all of the jurisdictions which participated in the planning process to any degree.

Figure 1.4.1

Multi-jurisdictional Plan Participants

Jurisdiction	2012 Participating Jurisdiction Criteria						2017 Participating Jurisdiction
	2005 Participating Jurisdiction	2011 Planning Participation	Survey Completed	Review of Draft	Mitigation Actions	Formal Adoption	
Cooper County	X	x	x	x	x	x	X
Blackwater	X						X
Boonville	X	x	x	x	x	x	X
Bunceton	X	x	x	x	x	x	X
Oterville	X	x	x	x	x	x	X
Pilot Grove	X	x	x	x	x	x	X
Prairie Home	X						X
Windsor Place							X
Wooldridge	X	x	x	x	x	x	X
Prairie Home R-V Schools		x	x	x	x		X
Linneman-Weekly Levee District		x	x	x	x		X
Overton-Wooldridge Levee District		x	x	x	x		X

1.5 The Update Process

Requirement §201.6(c)(1):	<i>[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.</i>
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A Hazard Mitigation Plan must be updated and adopted by the participating jurisdictions every five years to be considered current. The update process for the current plan commenced in **March 2017**; the update was coordinated by planners from Mid-MO RPC (Plan Author) as specified by contract with Cooper County.

Mid-MO RPC planners met and decided on the following general planning process for the update:

1. Initial update of technical data in charts and graphs (e.g. storm history events, population statistics, etc.) by Mid-MO RPC staff
2. Formation of a Technical Steering Committee to prepare preliminary draft of the update and provide input throughout the update process
3. Meetings with Technical Steering Committee to prepare update including decision on/prioritization of mitigation actions for the participating jurisdictions
4. Initial SEMA review of preliminary draft
5. Continuing work by Technical Steering Committee on update of the plan
6. Information gathering from potential participating jurisdictions regarding risks/vulnerabilities in the jurisdictions
7. Incorporation of jurisdictional information into update draft
8. Presentation of update draft to officials of participating jurisdictions, neighboring jurisdictions, the public, interested agencies, businesses, and non-profits
9. Feedback from participating jurisdictions on mitigation actions which they intend to pursue in their jurisdictions
10. Ongoing incorporation of feedback into update draft with continuing review by the Technical Steering Committee
11. Presentation of final draft for public comment before SEMA/FEMA final approval
12. Presentation of the approved plan for participating jurisdictions' approvals

Technical Steering Committee

The Technical Steering Committee was formed with the intention of having a diversity of members who would represent the interests of all participating jurisdictions. Planners from the Mid-MO RPC, which works with communities throughout Cooper County, initiated the formation of the committee and participated in the committee meetings.

The Technical Steering Committee was formed with representatives of Cooper County, city governments, and two levee districts. Four of the five incorporated communities had direct representation on the committee. Additionally, the community of Wooldridge participated in the

planning process by submitting a survey, reviewing their mitigation goals and actions, and reviewing a draft of the plan.

The Technical Steering Committee consisted of the following individuals:

Cooper County Tom White (EMD), Candy Sorrell (Asst. EMD), Commissioner Paul Davis, Commissioner Ernie Walther, Commissioner Eddie Brickner

Boonville Tim Carmichael (Boonville Fire)

Bunceton Wendell Cunningham (Bunceton Fire)

Oterville Traci Schoen (Clerk), Brenda Turpin (Mayor)

Pilot Grove Pete Busalacki (Pilot Grove Police Department)

Wooldridge Kelly Murphy (Chairman of the Board of Trustees)

**Overton-Wooldridge
Levee District** Art Schnuck (Vice-President)

**Linneman-Weekley
Levee District** Jason Linneman (President)

**Prairie Home R-V
School District** Jason Stanoch (Principal)

Other key participants in the area contributed to the planning process. The information received from these participants was invaluable to the update of the Cooper County Natural Hazard Mitigation Plan. These participants include:

- Tom Watring, Cooper County Road and Bridge
- David Gehm, Cooper County Fire Protection District
- Melanie Hein, Cooper County Health Department

Requirement §201.6(b):	<i>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;</i>
Requirement §201.6(b):	<i>In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (2) An opportunity for neighboring communities, 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;</i>

Public Meetings for Comment and Input

Two meetings were held for public comment and input on the update of this plan. The first meeting was held during the drafting stage and the second prior to the plan being submitted for approval by FEMA. Public notice was given for the meetings in accordance with Missouri’s “Sunshine Law” (Revised Statutes of Missouri 610.010, 610.020, 610.023, and 610.024.) The meetings were also announced through various media outlets.

First Public Meeting

The first public meeting was held on August 18th, 2011 at the Emergency Operations Center in Boonville, MO. The public was invited to attend and provide input and discussion in the update process. A presentation was given on the process of the update and the importance of Hazard Mitigation planning. Another presentation was given on the plan itself, with information on where to read a copy of the draft and how to contact the Mid-MO RPC planners. An agenda sample, sign-in sheets, and meeting announcement sample are located in Appendices C, D, and E respectively.

Media releases and announcements were posted through the following outlets:

- KWRT 1370 AM – Announcement of public meeting was posted August 11th, 2010.
- Boonville Daily News Community Events Calendar - Announcement of public meeting was submitted to be included in the weekend edition prior to the meeting date.
- Mid-Missouri Regional Planning Commission office - Announcement of public meeting was posted for public viewing on August 11th. The announcement was visible to all public traffic in accordance with Missouri’s “Sunshine Law”.

- Announcements were sent to all participating jurisdictions to distribute and post in their respective communities and departments including:
 - Cooper Emergency Management
 - Cooper County Commission
 - Cooper County Public Health Department
 - Cooper County Road and Bridge Department
 - Prairie Home R-V School District
 - Boonville R-I School District
 - Blackwater R-II School District
 - Cooper County R-IV School District
 - Otterville R-VI School District
 - City of Pilot Grove
 - Village of Wooldridge
 - City of Boonville
 - City of Blackwater
 - City of Bunceton
 - City of Otterville
 - City of Pilot Grove
 - City of Prairie Home
 - Village of Windsor Place
 - Village of Wooldridge
 - Overton-Wooldridge Levee District
 - Linneman-Weekly Levee District

- Announcements were also sent to all Region F RHSOC (Regional Homeland Security Oversight Committee) Emergency Management Directors (EMD) and Coordinators (EMC). This announcement included a news release for posting and a letter stating the upcoming planning process that would be coming to those counties in the future. The following county's EMDs received the announcement:
 - Audrain County
 - Boone County
 - Callaway County
 - Camden County
 - Cole County
 - Cooper County
 - Gasconade County
 - Howard County
 - Miller County
 - Moniteau County
 - Montgomery County
 - Morgan County
 - Osage County

Second Meeting/Open House for Public Comment and Input

The second public meeting was held on November 10th, 2011 at the Emergency Operations Center in Boonville, MO. The public was invited to attend and provide input and discussion in the update process. A presentation was given on the process of the update and the importance of Hazard Mitigation planning. Another presentation was given on the plan itself, with information on where to read a copy of the draft and how to contact the Mid-MO RPC planners. An agenda sample, sign-in sheets, and meeting announcement sample are located in Appendices C, D, and E respectively.

Media releases and announcements were posted through the following outlets:

- KWRT 1370 AM – Announcement of public meeting was posted November 2, 2011.
- Boonville Daily News Community Events Calendar - Announcement of public meeting was submitted to be included in the weekend edition prior to the meeting date.
- Mid-Missouri Regional Planning Commission office - Announcement of public meeting was posted for public viewing on November 2, 2011. The announcement was visible to all public traffic in accordance with Missouri's "Sunshine Law".
- Announcements were sent to all participating jurisdictions to distribute and post in their respective communities and departments including:
 - Cooper Emergency Management
 - Cooper County Commission
 - Cooper County Public Health Department
 - Cooper County Road and Bridge Department
 - Prairie Home R-V School District
 - Boonville R-I School District
 - Blackwater R-II School District
 - Cooper County R-IV School District
 - Otterville R-VI School District
 - City of Pilot Grove
 - Village of Wooldridge
 - City of Boonville
 - City of Blackwater
 - City of Bunceton
 - City of Otterville
 - City of Pilot Grove
 - City of Prairie Home
 - Village of Windsor Place
 - Village of Wooldridge
 - Overton-Wooldridge Levee District
 - Linneman-Weekly Levee District

- Announcements were also sent to all Region F RHSOC (Regional Homeland Security Oversight Committee) Emergency Management Directors (EMD) and Coordinators (EMC). This announcement included a news release for posting and a letter stating the upcoming planning process that would be coming to those counties in the future. The following county's EMDs received the announcement:

- Audrain County
- Boone County
- Callaway County
- Camden County
- Cole County
- Cooper County
- Gasconade County
- Howard County
- Miller County
- Moniteau County
- Montgomery County
- Morgan County
- Osage County

Technical Steering Committee Meetings

Regular meetings of the Technical Steering Committee were held from March 2011 thru November 2011. A brief summary of each meeting is shown in Figure 1.1.2. Sign-in sheets for each meeting are included in Appendix D.

Figure 1.1.2		
Technical Steering Committee Meetings		
Meeting	Agenda	Meeting Date
Meeting No. 1	This meeting was the initial meeting for the plan update. The group was given a presentation by Mid-MO RPC Staff about the update process. The group discussed possible changes to goals, objectives, and actions. Actions related to specific hazards will be discussed at subsequent meeting.	3/24/2011
Meeting No. 2	Review and editing of mitigation actions pertaining to Flood and Levee Failure. Overview of NFIP. Committee was introduced to the STAPLEE prioritization method and Benefit/Cost. Probability and Severity was assessed by guidance from the State Hazard Mitigation Plan.	4/7/2011
Meeting No. 3	Review and editing of mitigation actions pertaining to Dam Failure, Earthquake, and Land subsidence/Sinkholes. Committee rated actions using the STAPLEE prioritization method and Benefit/Cost. Probability and Severity was assessed by guidance from the State Hazard Mitigation Plan.	4/21/2011
Meeting No. 4	Review and editing of mitigation actions pertaining to Severe Winter Weather, Tornado, Hailstorm, and Windstorm. Committee rated actions using the STAPLEE prioritization method and Benefit/Cost. Probability and Severity for each hazard was assessed by guidance from the State Hazard Mitigation Plan.	5/19/2011
Meeting No. 5	Review and editing of mitigation actions pertaining to Drought, Extreme Heat, and Wildfire. Committee rated actions using the STAPLEE prioritization method and Benefit/Cost. Probability and Severity was assessed by guidance from the State Hazard Mitigation.	6/2/2011
Educators Meeting	All School districts in Cooper County were invited to a special meeting to review their options in regard to participation in the planning process. Representatives will communicate via email and phone on the creation of any new actions.	7/16/2011

Summary of Update of the Plan

The Technical Steering Committee decided that each section of the original plan needed to be updated. The original plan was written early in FEMA's interpretation of the requirements for Hazard Mitigation Plans. The current guidance, *Local Multi-Hazard Mitigation Planning Guidance*, was published in **July 2008**. A restructuring of the plan seemed appropriate to fulfill the current interpretation of FEMA requirements in a clear and cohesive manner.

The Technical Steering committee also changed the name of the plan to be in accordance with other county documents and plans.

Given the structural changes, the updated plan's organization is:

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Section 3: Risk Assessment
Section 4: Mitigation Strategy
Section 5: Plan Maintenance Process
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The plan was also restructured from its original organization to promote readability and flow. A general description of changes and updates made to the plan are shown in Figure 1.1.3.

Figure 1.1.3		
General Review and Update of Plan by Section		
Description	Revised	Pages (Original Plan)
<p>Section 1: Introduction Moved some material from Section 1 to more appropriate sections in the plan. Added some material and reorganized according to the following subsections: Purpose, Background, History of the Cooper Natural Hazard Mitigation Plan, Participating Jurisdictions, and The Update Process. Material on Plan Monitoring was moved to a new Section in updated plan (Section 5: Plan Maintenance Process).</p>	Yes	5-15
<p>Section 2: Community Profile Removed and updated community profiles. Updated all charts and graphs to reflect more recent data. Historic properties and the NFIP information were moved to Section 3. Subsection titles were changed and some were merged and/or eliminated.</p>	Yes	16-34
<p>Section 3: Risk Assessment Reviewed all charts and graphs and updated with current information, as necessary; edited text to reflect new information; changed rating system of each natural hazard to "Measure of Probability and Severity" using the same rating system as in the Missouri State Hazard Mitigation Plan 2010. Reorganized hazard profiles and made specific changes to each hazard profile to make the plan a more relevant and useful document. Removed all vulnerability assessment charts to update data and reformat per FEMA guidelines.</p>	Yes	35-99
<p>Section 4: Capability Assessment Section removed entirely: Capability Assessment moved to Section 2.</p>	Yes	122-134
<p>Section 5: Mitigation Goals and Strategies Updated the Mitigation Goals, Objectives, and Actions to reflect decisions made by the Technical Steering Committee and participating jurisdictions; added documentation of changes to Mitigation Actions; added mitigation action matrix for each participating jurisdiction. This section is Section 4 in the update.</p>	Yes	135-149
<p>Section 6: Plan Maps Removed all maps; numerous new maps created and placed in the new Section 2.</p>	Yes	150-158
<p>Appendices Replaced appendices with appropriate ones for update.</p>	Yes	157-181

**Requirement
§201.6(b):**

***In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.***

Many existing plans, studies, and reports were consulted in the development of this plan. These include:

- Missouri State Hazard Mitigation Plan (2010), State Emergency Management Agency (SEMA)
- SEMA Situation Reports (<http://sema.dps.mo.gov/SitReps/Situation%20Reports.htm>)
- Comprehensive Economic Development Strategy for the Mid-MO Region (2009)
- Long Range Transportation Plan (LRTP), Missouri Department of Transportation
- Regional Transportation Plan (2009), Mid-MO Regional Planning Commission
- Atlas of Missouri Ecoregions, Missouri Department of Conservation
- Missouri Drought Plan (2002), Missouri Department of Natural Resources