

All events for this episode:

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>TZ.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
Totals:								0	0	0.00K	0.00K
ST MARTIN	COLE CO.	MO	01/29/2013	12:45	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
HOLTS SUMMIT	CALLAWAY CO.	MO	01/29/2013	13:00	CST-6	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
WILLIAMSBURG	CALLAWAY CO.	MO	01/29/2013	13:30	CST-6	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
ARGYLE	OSAGE CO.	MO	01/29/2013	14:20	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
BYRON	OSAGE CO.	MO	01/29/2013	14:30	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
JUDGE	OSAGE CO.	MO	01/29/2013	14:40	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
CONCORD HILL	WARREN CO.	MO	01/29/2013	15:14	CST-6	Tornado	EF1	0	0	0.00K	0.00K
FLINT HILL	ST. CHARLES CO.	MO	01/29/2013	15:29	CST-6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
CHAIN OF ROCKS	LINCOLN CO.	MO	01/29/2013	15:36	CST-6	Tornado	EF0	0	0	0.00K	0.00K
OLD MONROE	LINCOLN CO.	MO	01/29/2013	15:37	CST-6	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Probability of Future Occurrence

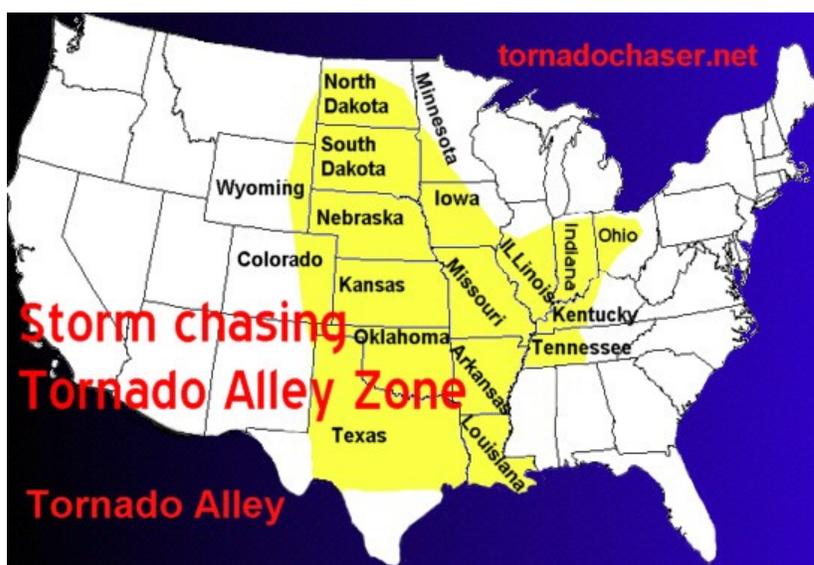
Using the NCDC data of 6 tornadoes between 1993 and 2016, the probability of a tornado striking Warren County is 2% in any given month. If we use the Tornado History Project data of 11 tornado events since July 1971, the likelihood of occurring is 2.2% in any given month.

Vulnerability

Vulnerability Overview

Warren County is located within a region of the U.S. with a high frequency of dangerous and destructive tornadoes referred to as “Tornado Alley”. The term first appeared in 1952 as the title of a research project focusing on severe weather in parts of Texas, Oklahoma, Kansas, North and South Dakota, Iowa, Missouri, New Mexico, Colorado, and Minnesota. It is a largely media-driven term.

Figure 3.33. Tornado Alley in the U.S.



Source: <http://www.tornadochaser.net/tornalley.html>

The state HMP vulnerability analysis measured the likelihood of future tornado impacts, average annual property loss ratio (total building exposure value divided by average annualized historic losses), population change (percent change), and housing change (percent change). Scales were created to rank these factors: likelihood (1-3), loss ratio with exposure as of 2012 (1-3), population change from 2000 - 2010 (1-3), housing change from 2000-2010 (1-3). The factor scores were added up for each county for the purposes of ranking the counties by total vulnerability. This approach attempts to identify where tornadoes could have the greatest impacts. Devastating tornadoes could still impact counties that ranked lower in this process.

For this reason, the low end of the risk is still considered Moderate and the top end Very High. Counties with a total risk score of 8 to 9 were considered to be at very high risk. Thirteen counties were identified as very high risk, including Warren County.

The rating values of all factors were then combined to determine the overall vulnerability rating.

The two-part table below, taken from the 2013 Missouri State Hazard Mitigation Plan, shows Warren County's total vulnerability as Very High. Warren County is one of the 5 fastest growing counties in the state which accounts for its total vulnerability being scored Very High. Note that the number of tornados and the percent likelihood of occurrence differ from either of the previously cited numbers. This is likely due to the range of years the state used for their calculations.

Table 3.44. Vulnerability Calculations from 2013 Missouri HMP

County	# of Tornados	Likelihood of Occurrence	Probability Rating	Total Exposure	Annualized Historic Loss	Loss Ratio
Warren	9	14.63%	1	\$3,105,665,000	\$445,000	0.014%

Loss Ratio Rating	Population Growth % Change	Pop. Change Rating	Housing % Change	Housing Ratio Rating	Total Vulnerability
1	32.6%	3	34.34%	3	Very High

Source: 2013 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

Warren County has a total exposure of over \$1B and an annualized historic loss of nearly a half million dollars making the county's vulnerability Very High.

Future Development

Future development is factored into the vulnerability rating above which accounts for a 32.6% population growth and a 34.34% increase in housing. These numbers are likely to be tempered due to a stagnant economy and slow housing market.

Hazard Summary by Jurisdiction

A tornado event could occur anywhere in the planning area, but some jurisdictions would suffer heavier damages because of the age of the housing or the high concentration of mobile homes.

Problem Statement

Tornados occur in Warren County and they are completely random, striking at will wherever they please. The risk of a tornado is the same in any part of the county but the likelihood of death, injury, and damage is most likely in more developed parts of the county.

3.3.9 Wild Fires

Hazard Profile

Hazard Description

Fire incident types for wild fires include; 1) natural vegetation fire, 2) outside rubbish fire, 3) special outside fire, and 4) cultivated vegetation fire (crop fire).

Most of Missouri fires occur during the spring season between February and May. The length and severity of both structural and wild land fires depend largely on weather conditions. Spring in Missouri is usually characterized by low humidity and high winds. These conditions result in higher fire danger. In addition, due to the recent lack of moisture throughout many areas of the state, conditions are likely to increase the risk of wildfires. Drought conditions can also hamper firefighting efforts, as decreasing water supplies may not prove adequate for firefighting. It is common for rural residents burn their garden spots, brush piles, and other areas in the spring. Some landowners also believe it is necessary to burn their forests in the spring to promote grass growth, kill ticks, and reduce brush. Therefore, spring months are the most dangerous for wildfires. The second most critical period of the year is fall. Depending on the weather conditions, a sizeable number of fires may occur between mid-October and late November.

Geographic Location

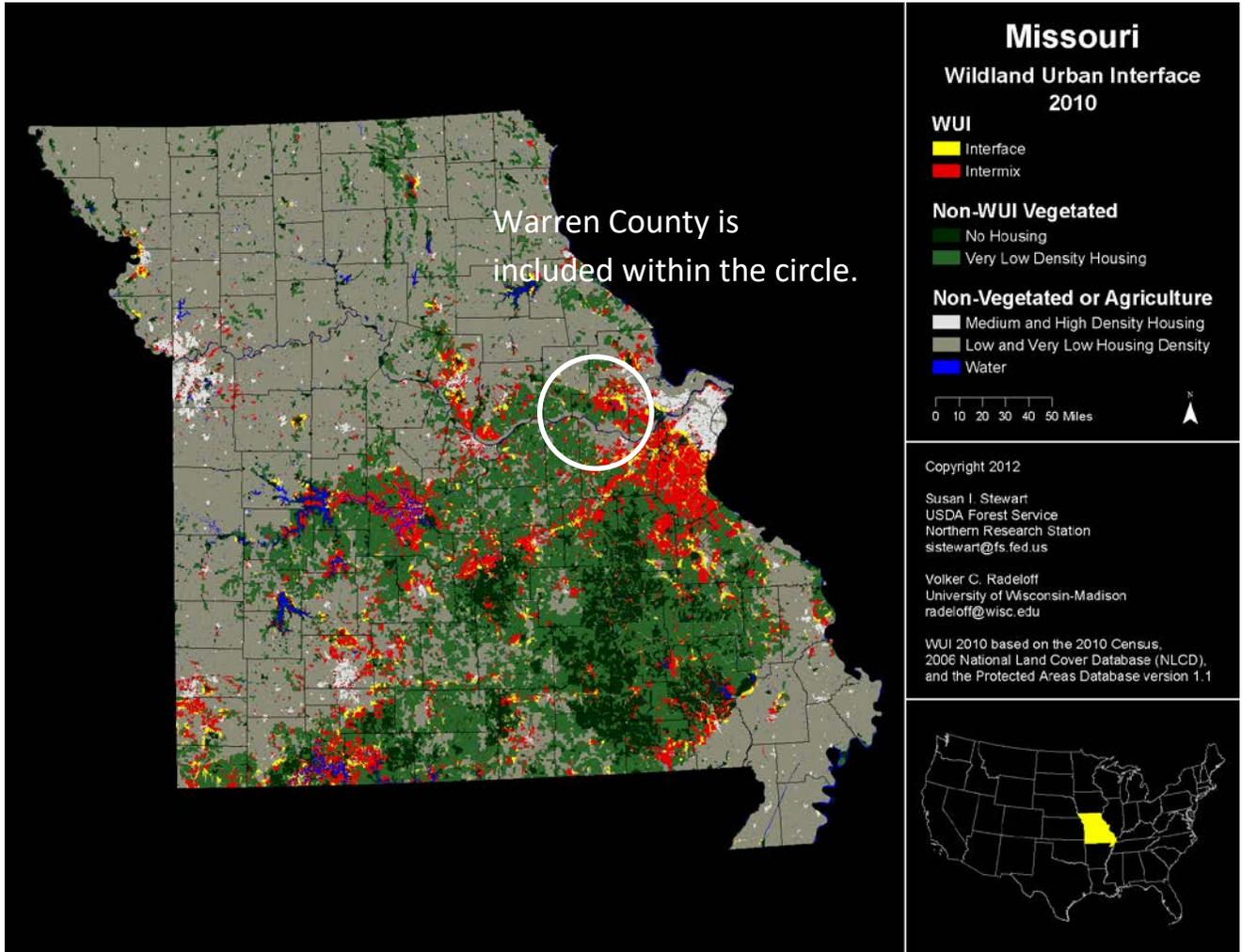
The risk of wild fires is higher in communities with more wildland–urban interface (WUI) areas. WUI refers to the zone of transition between unoccupied land and human development and needs to be defined in the plan. Within the WUI, there are two specific areas identified: 1) Interface and 2) Intermix. The interface areas are those areas that abut wildland vegetation and the Intermix areas are those areas that intermingle with wildland areas. The following figure shows the Wild Land / Urban interface for the State of Missouri, including Warren County, and the cities of Warrenton, Wright City, and Innsbrook.

Marthasville has a mix of high density interface, medium density interface, medium density intermix, and low density interface.

Innsbrook has a mix of medium density interface and medium density intermix. Warrenton has a mix of high density interface, medium density interface, medium density intermix, low density intermix, and low density intermix.

Wright City has medium density intermix.

Figure 3.34. Wild Land / Urban Interface of Warren County



Source: USDA Forrest Service

Severity/Magnitude/Extent

Wildfires damage the environment, killing some plants and occasionally animals. Firefighters have been injured or killed, and structures can be damaged or destroyed. The loss of plants can heighten the risk of soil erosion and landslides. Although Missouri wildfires are not the size and intensity of those in the Western United States, they could impact recreation and tourism in and near the fires. Wild fires in Missouri have been mostly a result of human activity rather than lightning or some other natural event. Wildfires in Missouri are usually surface fires, burning the dead leaves on the ground or dried grasses. They do sometimes “torch” or “crown” out in certain dense evergreen stands like eastern red cedar and shortleaf pine. However, Missouri does not have the extensive stands of evergreens found in the western US that fuel the large fire storms seen on television news stories.

While very unusual, crown fires can and do occur in Missouri native hardwood forests during prolonged periods of drought combined with extreme heat, low relative humidity, and high wind. Tornadoes, high winds, wet snow and ice storms in recent years have placed a large amount of woody material on the forest floor that causes wildfires to burn hotter and longer. These conditions also make it more difficult for fire fighters to suppress fires safely.

Often wildfires in Missouri go unnoticed by the general public because the sensational fire behavior that captures the attention of television viewers is rare in the state. Yet, from the standpoint of destroying homes and other property, Missouri wildfires can be quite destructive.

Previous Occurrences

According to SEMA, wildfires are most common in the southern districts of the state. However, it is possible for wildfires to occur in Warren County due to drought, debris burning, and incendiary fires. Debris burning is consistently the number one cause of wildfires. Incendiary fires, willfully set on another person's property, continue to rank second in the number of wildfires each year. Fires caused by natural ignition, like lightning, are rare despite 50 to 70 thunderstorm days per year.

According to the Missouri Division of Fire Safety (MDFS) website data, during the period of July 2002 through April, 2016; 153 wild fires burned 916 acres in Warren County. Fourteen residences were threatened, 2 residences damaged, 12 outbuildings were threatened and 2 outbuildings were damaged. Almost half the fires were attributed to debris burning, 41 were of unknown origins, 14 were classified as Miscellaneous, 10 were caused by smoking, and the remaining 13 fires were split between arson, children playing with matches, equipment burning, and lightning.

There are no records of schools being damaged or threatened by wild fires in Warren County.

Probability of Future Occurrence

Warren County experienced 153 wild fires over the period of 14 years for an average of 11 wild fires each year. The average acreage burned per fire is 5.9 acres while the number of acres that appears most frequently, the mode, is 1 acre.

Vulnerability

Vulnerability Overview

Most of Warren County is vulnerable to wild fire; however, damage to property has been minor and no human deaths or injuries can be attributed to them.

Potential Losses to Existing Development

There is no reason to believe that significant changes to wild fire vulnerability will take place.

Impact of Future Development

There is significant growth in unincorporated areas of the county increasing the exposure to wild fire damage. However, as stated earlier, the risk is low now and does not promise to increase significantly in the near term.

Problem Statement

Warren County will continue to experience wild fire events on a regular basis. However, the acreage burned is relatively small, no building have been destroyed, and there has been no loss of life. It is reasonably certain that wild fire will not be a significant contributor to hazards in the county.

3.3.10 Winter Weather / Snow / Ice / Severe Cold

Hazard Profile

Hazard Description

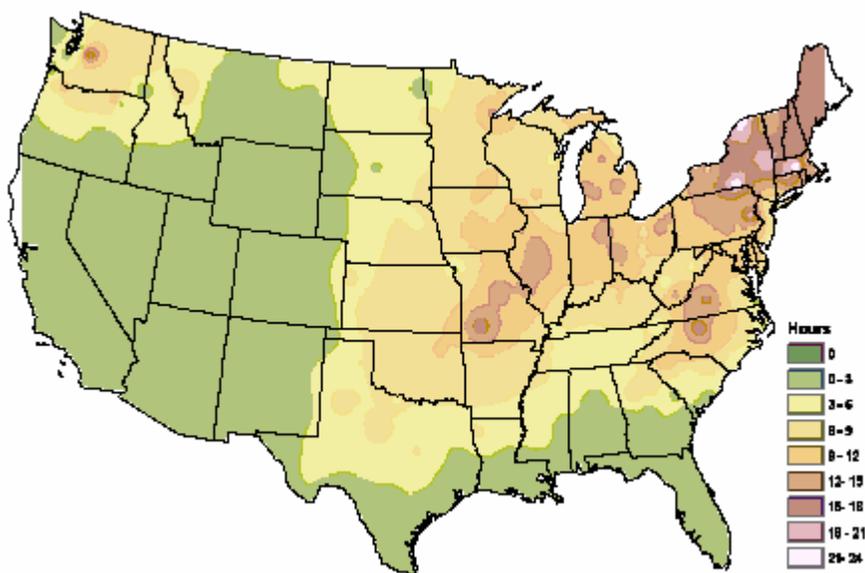
A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. The National Weather Service describes different types of winter storm events as follows.

- **Blizzard**—Winds of 35 miles per hour or more with snow and blowing snow reducing visibility to less than ¼ mile for at least three hours.
- **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 Squalls**—Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers**—Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain**—Measurable rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet**—Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

Geographic Location

The entire county is vulnerable to heavy snow, ice, extreme cold temperatures and freezing rain. The figure below shows the average number of hours per year the county receives freezing rain. In the case of Warren County the average number of hours per year is 16-18.

Figure 3.35. NWS Statewide Average Number of Hours per Year with Freezing Rain



Source: American Meteorological Society. "Freezing Rain Events in the United States." <http://ams.confex.com/ams/pdfpapers/71872.pdf>

Severity/Magnitude/Extent

Severe winter storms include extreme cold, heavy snowfall, ice, and strong winds which can push the wind chill well below zero degrees in the planning area. Heavy snow can bring a community to a standstill by inhibiting transportation (in whiteout conditions), weighing down utility lines, and by causing structural collapse in buildings not designed to withstand the weight of the snow. Repair and snow removal costs can be significant. Ice buildup can collapse utility lines and communication towers, as well as make transportation difficult and hazardous. Ice can also become a problem on roadways if the air temperature is high enough that precipitation falls as freezing rain rather than snow.

Extreme cold often accompanies severe winter storms and can lead to hypothermia and frost bite in people without adequate clothing protection. Cold can cause fuel to congeal in storage tanks and supply lines, stopping electric generators. Cold temperatures can also overpower a building's heating system and cause water and sewer pipes to freeze and rupture. Extreme cold also

increases the likelihood for ice jams on flat rivers or streams. When combined with high winds from winter storms, extreme cold becomes extreme wind chill, which is hazardous to health and safety.

The National Institute on Aging estimates that more than 2.5 million Americans are elderly and especially vulnerable to hypothermia, with the isolated elders being most at risk. About 10 percent of people over the age of 65 have some kind of bodily temperature-regulating defect, and 3-4 percent of all hospital patients over 65 are hypothermic.

Also at risk are those without shelter, those who are stranded, or who live in a home that is poorly insulated or without heat. Other impacts of extreme cold include asphyxiation (unconsciousness or death from a lack of oxygen) from toxic fumes from emergency heaters; household fires, which can be caused by fireplaces and emergency heaters; and frozen/burst pipes.

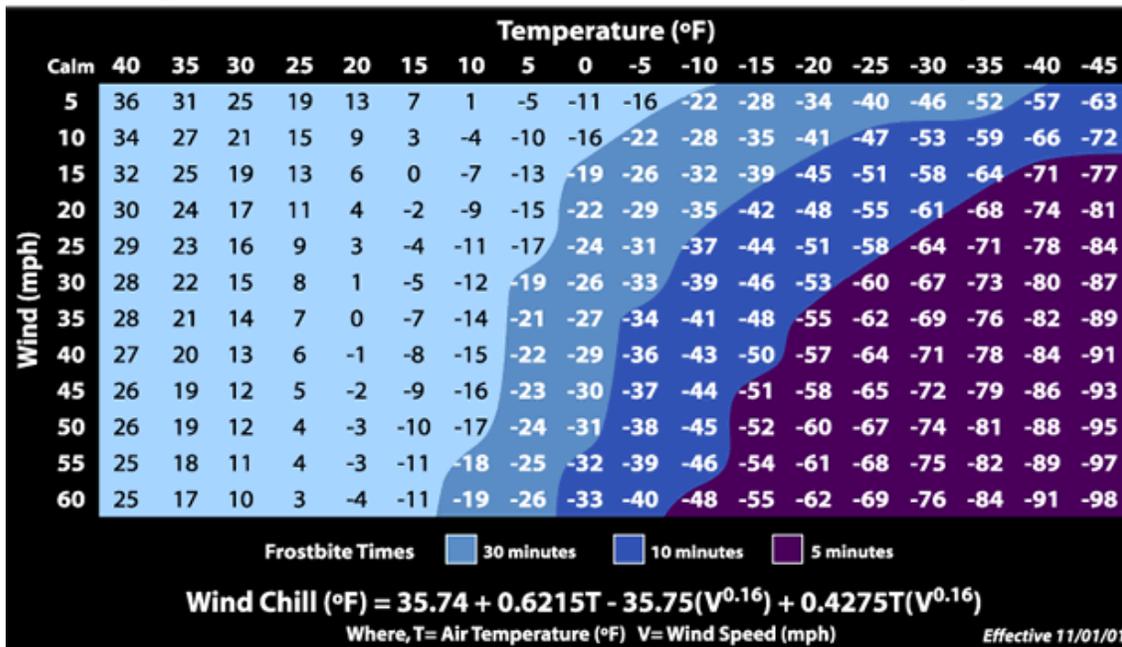
Buildings with overhanging tree limbs are more vulnerable to damage during winter storms when limbs fall. Businesses experience loss of income as a result of closure during power outages. In general heavy winter storms increase wear and tear on roadways though the cost of such damages is difficult to determine. Businesses can experience loss of income as a result of closure during winter storms.

Overhead power lines and infrastructure are also vulnerable to damages from winter storms. In particular ice accumulation during winter storm events damage to power lines due to the ice weight on the lines and equipment. Damages also occur to lines and equipment from falling trees and tree limbs weighted down by ice. Potential losses could include cost of repair or replacement of damaged facilities, and lost economic opportunities for businesses.

Secondary effects from loss of power could include burst water pipes in homes without electricity during winter storms. Public safety hazards include risk of electrocution from downed power lines. Specific amounts of estimated losses are not available due to the complexity and multiple variables associated with this hazard. Standard values for loss of service for utilities reported in FEMA's 2009 BCA Reference Guide, the economic impact as a result of loss of power is \$126 per person per day of lost service.

Wind can greatly amplify the impact of cold ambient air temperatures. Provided by the National Weather Service, the figure below shows the relationship of wind speed to apparent temperature and typical time periods for the onset of frostbite.

Figure 3.36. Wind Chill Chart



Source: National Weather Service, <http://www.nws.noaa.gov/om/winter/windchill.shtml>

Winter storms, cold, frost and freeze take a toll on crop production in the planning area. The table below shows the USDA’s Risk Management Agency payments for insured crop losses in Warren County as a result of cold conditions and snow for the past 10 years.

Table 3.45. Crop Insurance Claims Paid in Warren County as a Result of Cold Conditions and Snow, 2005 - 2015

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2005	Wheat	Cold Wet Weather	\$3,956
2005	Corn	Frost	\$2,902
2005	Soybeans	Other - Snow	\$712
2006	Soybeans	Cold Wet Weather	\$619
2007	Wheat	Freeze	\$16,270
2007	Wheat	Frost	\$31
2007	Corn	Cold Wet Weather	\$2,840
2008	Wheat	Cold Winter Weather	\$2,820
2009	Wheat	Cold Winter Weather	\$429
2009	Corn	Cold Wet Weather	\$3,006
2009	Soybeans	Cold Wet Weather	\$807
2010	Wheat	Freeze	\$8,084

Crop Year	Crop Name	Cause of Loss Description	Insurance Paid
2010	Wheat	Cold Wet Weather	\$12,330
2010	Corn	Other - Snow	\$424
2011	Wheat	Cold Wet Weather	\$6,663
2011	Corn	Cold Wet Weather	\$11,761
2011	Soybeans	Frost	\$9,853
2012	Wheat	Freeze	\$707
2012	Wheat	Cold Wet Weather	\$532
2012	Corn	Cold Wet Weather	\$3,518
2012	Corn	Other - Snow	\$237,709
2012	All Other Crops	Freeze	\$40,252
2013	Wheat	Cold Wet Weather	\$18,540
2013	Corn	Cold Wet Weather	\$4,525
2014	Wheat	Cold Winter Weather	\$13,495
2014	Wheat	Cold Wet Weather	\$1,947
2015	Wheat	Cold Winter Weather	\$51,328
2015	Wheat	Cold Wet Weather	\$287
TOTAL			\$456,347

Source: USDA Risk Management Agency, <http://www.rma.usda.gov/data/cause.htm>

Previous Occurrences

Since 2007, Warren County received 5 presidential major disaster declarations, and 4 USDA declarations for this hazard, listed in the table below.

Table 3.46. Disaster Declarations in Warren County Involving Winter Storm

Declaration Date	Description	Declaration Type	Disaster Number
January 30, 2009	Severe Winter Storms	Presidential- Major Disaster Declaration	FEMA 3303-DR
March 19, 2008	Severe Winter Storms	Presidential- Major Disaster Declaration	FEMA 1749-DR
December 27, 2007	Severe Winter Storms	Presidential- Major Disaster Declaration	FEMA 1736-DR

Declaration Date	Description	Declaration Type	Disaster Number
December 12, 2007	Severe Winter Storms	Presidential- Major Disaster Declaration	FEMA 3281-DR
January 14, 2007	Severe Winter Storms	Presidential- Major Disaster Declaration	FEMA 1676-DR
December 1, 2007	Winter Storms	USDA	M1676
December 6, 2007	Winter Storms	USDA	N1736
January 12, 2007	Winter Storms	USDA	N873
March 30, 2007	Winter Storms	USDA	S2532

Source: NCDC

The table below shows NCDC reported events and damages for the past 10 years.

Table 3.47. NCDC Warren County Winter Weather Events Summary, 2005 - 2016

Type of Event	Inclusive Dates	Magnitude	Injuries	Property Damages	Crop Damages
Blizzard	2/1/2011	NA	0	\$ -	\$ -
Cold/Wind Chill	2/1/2010	NA	0	\$ -	\$ -
Cold/Wind Chill	2/6/2014	NA	0	\$ -	\$ -
Extreme Cold/Wind Chill	NA				
Heavy Snow	12/15/2007	NA	0	\$ -	\$ -
Heavy Snow	1/19/2011	NA	0	\$ -	\$ -
Heavy Snow	3/24/2013	NA	0	\$ -	\$ -
Ice Storm	1/12/2007	NA	0	\$ 96,000	\$ -
Ice Storm	12/8/2007	NA	0	\$ -	\$ -
Sleet	2/21/2008	NA	0	\$ -	\$ -
Winter Storm	12/8/2005	NA	0	\$ -	\$ -
Winter Storm	11/30/2006	NA	0	\$ -	\$ -
Winter Storm	12/1/2006	NA	0	\$ -	\$ -
Winter Storm	1/31/2011	NA	0	\$ -	\$ -
Winter Storm	2/1/2011	NA	0	\$ -	\$ -
Winter Storm	2/21/2013	NA	0	\$ -	\$ -
Winter Storm	12/12/2013	NA	0	\$ -	\$ -

Type of Event	Inclusive Dates	Magnitude	Injuries	Property Damages	Crop Damages
Winter Storm	1/5/2014	NA	0	\$ -	\$ -
Winter Storm	2/4/2014	NA	0	\$ -	\$ -
Winter Storm	3/1/2014	NA	0	\$ -	\$ -
Winter Weather	2/11/2008	NA	0	\$ -	\$ -
Winter Weather	1/6/2010	NA	0	\$ -	\$ -
TOTAL			0	\$ 96,000	0

Source: NCDC, data accessed June 15, 2016

Probability of Future Occurrence

According to NCDC data above, Warren County has suffered 22 winter events during the past 10 years. This gives the county a 100% chance of receiving severe winter weather of some type during any given year. The average number of events per year is 2.2

Vulnerability

Vulnerability Overview

Severe Winter Weather including snow, ice, and severe cold has caused more damage for Missourians in recent years with five Presidential Declarations since 2007. The method used by the State of Missouri to determine vulnerability to severe winter weather across Missouri was statistical analysis of data from several sources: National Climatic Data Center (NCDC) storm events data (1993 to December 2012), FEMA's Public Assistance (PA) funds from DR-1672, DR-1736, DR-1748, DR-1822, and DR-1961, Crop Insurance Claims data from USDA's Risk Management Agency (1998-2012), total building exposure from HAZUS-MR4, U.S. Census Data (2000), and the USDA's Census of Agriculture (2007).

The following table provides the housing density, building exposure, crop exposure, total incidents, total property loss, and the total crop insurance paid. These are the common data elements for the analysis of severe winter weather. The total property loss column represents a combination of NCDC and FEMAPA funds. For declared events, the PA damage figures were used in lieu of NCDC data. NCDC damages

Table 3.48. Vulnerability of Warren County to Winter Weather

County	Housing Units/sq. mi.	Total Building Exposure (\$)	Crop Exposure (2007) (\$)**	Total Incidents	Total \$ Property Loss (\$)	Total Crop Insurance Paid (\$)
Warren	34.3	\$3,105,665,000	\$18,134,000	44	\$3,367,547	\$132,678

Source: 2013 Missouri State Hazard Mitigation Plan

Potential Losses to Existing Development

NCDC reflects property damage totaling \$3.4M over 10 years. Under-reporting and other data limitations may have caused this figure to be lower than it should, but the fact remains that most damages associated with winter weather involve automobile accidents and injuries incurred as people attempt to travel through the winter environment or compensate for low temperatures, rather than as a direct result of winter weather.

Future Development

Using the same vulnerability figures from the section on Tornadoes, where future development is factored into the vulnerability rating, a 32.6% population growth and a 34.34% increase in housing will likely drive increased exposure for the county. These numbers are likely to be tempered due to a stagnant economy and slow housing market.

Problem Statement

Warren County has some vulnerability to severe winter weather, particularly in regard to transportation. Excessive snowfall, sleet, freezing rain, and icing conditions can overwhelm road crews, hamper emergency response, and bring commerce to a temporary halt.

3.3.11 Hazardous Materials

Hazard Profile

Hazard Description

A hazardous material is any substance or material in a quantity or form that may pose a reasonable risk to health, the environment, or property. Per the updated 2013 State Hazard Mitigation Plan, the hazardous materials included are substances such as toxic chemicals, fuels, nuclear wastes and /or products, and other radiological and biological or chemical agents. In this section, hazardous materials incidents from fixed facilities and transportation accidents are addressed.

Geographic Location

Three major highways cross the county: I-70 (East-West), Hwy 47 North/South) and Hwy 94 (East - West along the Missouri River). One active railroad runs also East-West (Norfolk and Southern). Several facilities in Warren County manufacture, store and use hazardous substances. Three

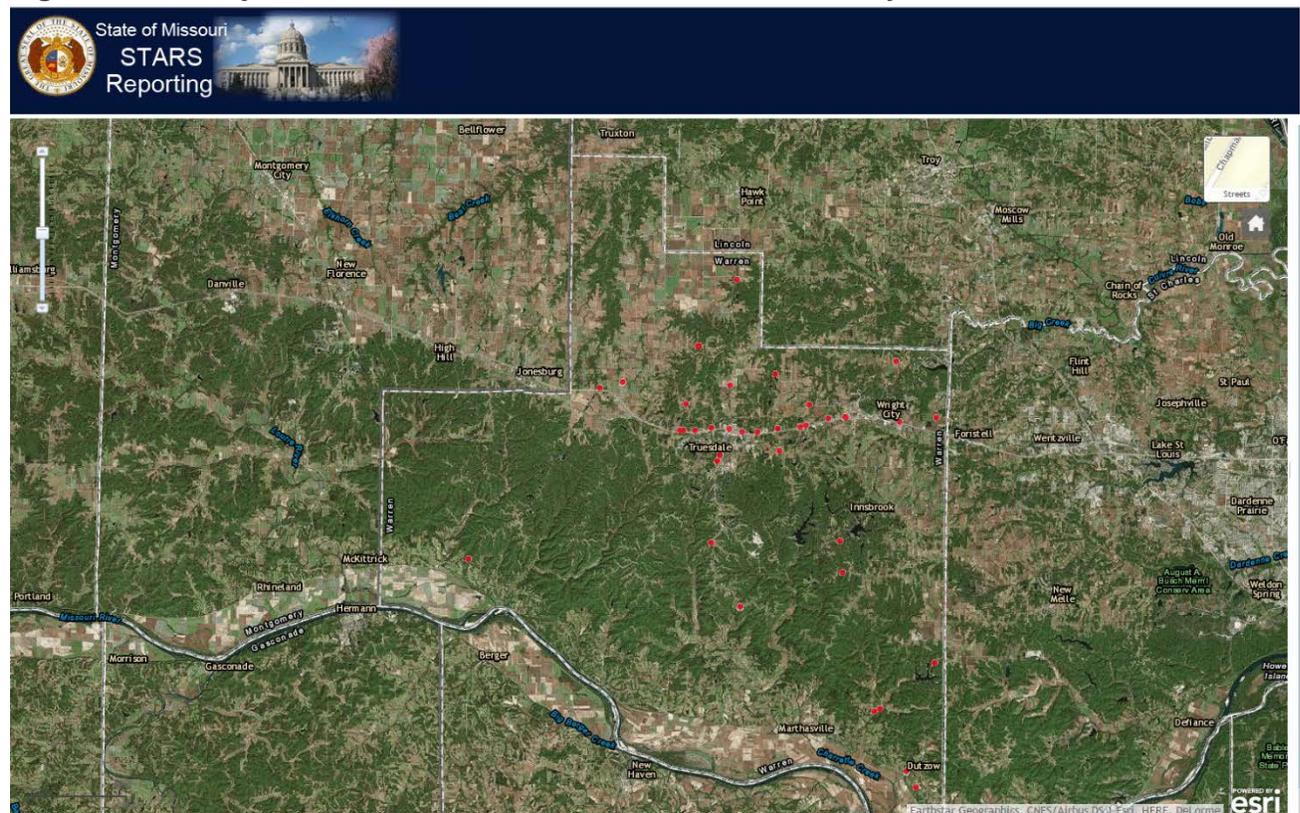
pipelines run through the county; one carries ammonia, the other two carry petroleum products. There are a number of fixed facilities in Warren County that use or store hazardous substances. The Southern parts of the county, including Hwy 47 & 94, are located within flood plains. Flooding in the past has resulted in run-off of agricultural chemicals and petroleum products into the Missouri River.

In the event of a serious hazardous materials incident in Warren County, most likely it will be a transportation-related accident. Hazardous materials are also transported daily over highways, rail, barge traffic, air, etc. A hazardous material incident would mostly likely occur on Interstate 70 or along the Norfolk Southern Railroad. Highway 47 and 94 could also be the site of a potential hazardous material incident, but to a lesser extent due to a lighter volume of truck traffic.

Transportation Accidents

According to the Missouri State Highway Patrol crash report, Warren County experienced 40 fatal accidents in 2010 through 2015. Some of these accidents contributed to hazardous material spills and road closures consisting of many hours. The figure below shows the locations where the accidents occurred; most along the I-70 corridor.

Figure 3.37. Major Roads Prone to Accidents in Warren County



Source: <http://www.mshp.dps.mo.gov>

Previous Occurrences

The years 2006 through 2008 contained 604 accidents in Warren County, including fatal, personal injury, and property damage. When all accidents are considered, MO-47 is added to I-70 as a high-accident corridor.

Probability of Future Occurrence

Given the already established high accident rate along the I-70 and MO-47 corridors in Warren County, the increased volume of traffic, and the deteriorating highway system; the probability of future occurrence is high.

Vulnerability

Vulnerability Overview

The high accident rate in Warren County overburdens first responders charged with servicing unincorporated areas of the county, and the Cities of Warrenton and Marthasville through which the high accident prone corridors run. In addition, long term road closures due to accidents and hazardous materials spills provide additional stress to local emergency responders.

Potential Losses to Existing Development

Losses to existing development are primarily due to the cost of jurisdictions responding to accidents within their boundaries.

Future Development

There is little expected increase due to future development.

Problem Statement

Because Warren County is bisected by two major highways, accidents will continue to be an issue, one aggravated by highways designed to carry far fewer vehicles.

3.3.12 Terrorism

Hazard Profile

Hazard Description

Federal Bureau of Investigation (FBI) defines Terrorism as “the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” Terrorism causes loss of life, injuries to people and properties, and disruptions in services. According to the State Hazard Mitigation Plan, potential terrorist actions include the following; Bombings, airline attacks, weapons of mass destruction (WMD) attacks, infrastructure attacks, cyberterrorism, agro-terrorism, arson, kidnappings, and assassinations.

Domestic terrorism is another form of threat which comes from white supremacists, black separatists, animal rights/environmental terrorists, anarchists, antiabortion extremists, and self-styled militia. According to FBI, international terrorism has been a major challenge for the United States. This threat can be categorized into three: loosely affiliated extremists operating under the radical jihad movement, formal terrorist organizations, and state sponsors of terrorism. The different types of foreign terrorist organizations are listed in the State Hazard Mitigation Plan 2013.

After the attacks on September 11, 2001, parts of 22 domestic agencies were consolidated into one department, the U.S. Department of Homeland Security (DHS), to protect the nation against future terrorist threats. Depending on the necessity communities may receive assistance from state and federal agencies operating within the existing Integrated Emergency Management System. FEMA is responsible for supporting state and local response to the consequences of terrorist attacks.

Warren County has potential targets for terrorist activities. These may include, but are not limited to:

- Federal, state, county and municipal government facilities and structures.
- Military installations.
- HAZMAT Facilities.
- Medical facilities.
- Religious facilities.
- Businesses and manufacturing centers.
- Airports, railroads, highways and navigable rivers.
- Pipelines; power plants; public utilities; landmarks; and large public gatherings.
- Agriculture.

There are twenty eight Homeland Security Response Teams that operate throughout the State of Missouri. Warren County is under Region C There are no terrorism incidents identified within the county.

Probability of Future Occurrence

Warren County has not received specific threats nor has it suffered an past incidents of terrorism; therefore, the probability of future occurrence is low.

Vulnerability

Vulnerability Overview

Warren County is no more likely to incur losses from utility disruptions than any other county in the state. Some citizens reside in highly rural areas where power restoration can take longer than for those in more populated areas.

Potential Losses to Existing Development

Depending on the type of terrorism employed, potential losses could be assumed to range from low to high. However, Warren County lacks the concentration of soft targets that could account for catastrophic losses of life and property.

Future Development

As the county grows it is possible that future development could put Warren County at greater risk.

Problem Statement

Although not a prime target for terrorism, Warren County (like the entire U.S. must remain vigilant and prepared respond to an attack by terrorists from within or without.

3.3.13 Transportation

Hazard Profile

Hazard Description

Per the State Hazard Mitigation Plan and for the purpose of this study, transportation is defined as the means, or system, that transfers large groups of individuals from one place to another. This hazard addresses only those accidents that involve passenger air or rail travel that results in accident death or injury.

Geographic Location

Three major highways cross the county: I-70 (East-West), Hwy 47 North/South) and Hwy 94 (East - West along the Missouri River). One active railroad runs also East-West (Norfolk and Southern). Several facilities in Warren County manufacture, store and use hazardous substances. Three pipelines run through the county; one carries ammonia, the other two carry petroleum products. Flooding in the past has resulted in run-off of agricultural chemicals and petroleum products into the Missouri River.

Previous Occurrences

The following table shows the fatality rates by Mode of Travel, 1990–2010 for highway vehicle occupants and transit passengers. There were about 148 fatal accidents in the State involving commercial vehicles. An action plan has been added which proposes to maintain an inventory of traffic incidents within the county.

Table 3.49. Transportation Fatalities by Mode: Select Years 1990-2010

Mode	1990	2000	2009	2010
Air (in aircraft and ground fatalities)				
Large U.S. air carrier	39	92	52	2
Commuter air carrier	6	5	0	0
On-demand air taxi	51	71	17	17
General aviation	770	596	478	450
Highway (in vehicle and non-occupants) ^a	44,599	41,945	33,883	32,885
Pipeline, gas and hazardous liquid	9	38	13	25
Railroad (on train and non-occupants) ^b	729	631	544	601
Transit ^c	235	208	224	215
Waterborne				
Vessel-related, commercial ship	85	53	49	41
Non-vessel related ^d , commercial ship	101	69	58	43
Recreational boating	865	701	736	672
<p>^a Includes fatalities at railroad crossings. ^b Incidents and accidents; includes commuter rail; excludes public highway-rail grade crossings involving motor vehicles. ^c All reportable incident and accident fatalities. ^d For example, a person on board stumbles falls overboard and drowns.</p>				
<p>SOURCES: <i>Air:</i> National Transportation Safety Board. <i>Highway:</i> U.S. Department of Transportation, National Highway Traffic Safety Administration. <i>Rail:</i> Highway-rail grade crossings: U.S. Department of Transportation, Federal Railroad Administration. Transit: <i>Highway-rail grade crossings:</i> U.S. Department of Transportation, Federal Transit Administration. <i>Water:</i> Vessel- and non-vessel-related: U.S. Department of Homeland Security, U.S. Coast Guard. <i>Recreational boating:</i> U.S. Department of Homeland Security, U.S. Coast Guard. <i>Hazardous liquid and gas pipeline:</i> U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration as cited in U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, National Transportation Statistics, table 2-1, available at http://www.bts.gov/publications/national_transportation_statistics/ as of December 2011.</p>				

Source: United States Department of Transportation

Probability of Future Occurrence

The probability of future occurrence is likely.

Vulnerability

Warren County is vulnerable to transportation related incidents due to it being bisected by a major commercial transportation routes.

Potential Losses to Existing Development

Potential losses to the existing infrastructure is not likely to be severe.

Future Development

As the area increases in population the exposure to life and property will increase accordingly.

Problem Statement

A major railroad, a major interstate highway, and a navigable river pass through or along the borders of Warren County. In addition, the county lies below the approach path to a major international airport. It is likely that emergency services personnel will continue to be required to respond to transportation related incidents.

3.3.14 Utility Interruptions and Power Failure

Hazard Profile

Hazard Description

This hazard may include electrical power, natural gas, public water supplies, and communications systems. Utility systems exist everywhere and are subject to damage from digging, fire, traffic accidents, and severe weather, including flooding, earthquake, and other day-to-day events.

Geographic Location

This hazard can occur anywhere in Warren County.

Previous Occurrences

On January 30, 2002, a severe ice storm struck portions of western and northern Missouri. This hazard was referred as the worst in Missouri's history which left devastated and darkened homes and businesses. Ice accumulations were over an inch and covered all the objects that were at or below freezing. Further, the weight of the ice broke utility poles, conductors, tree limbs and other objects that could not withstand the weight of the ice. The ice storm of 2005 with 2-6 inches snow caused 2 deaths.

Utility failures could be localized. These failures impact generally on the very young or elderly, who are more prone to health risks that are associated with resultant loss of heating/cooling systems and with the loss of medical equipment that requires a power source.

The threat of earthquakes has been of greatest concern to the County which obstructs the operability of the existing utilities.

Probability of Future Occurrence

Since utilities exist throughout the County and are vulnerable to interruptions or failures, there is a high probability that this hazard may occur at any time or anyplace throughout the state. The probability of future occurrence is “highly likely”

Vulnerability

Vulnerability Overview

In many respects rural areas of the state such as Warren County, are more dependent on electrical power and other utilities than more urbanized areas. Loss of electrical power, along with possible loss of cellular towers, televisions and radios can isolate emergency responders and citizens, especially those who are infirm or injured and require assistance. Loss of power also means people who rely of powered equipment to sustain their lives are in immediate need of power restoration. Healthcare facilities are also vulnerable to the loss of electrical power.

Potential Losses to Existing Development

Loss of power and/or utilities can adversely impact any populated area of the county without regard to density of population.

Future Development

Future development will only add to the exposure of the county.

Problem Statement

Warren County will continue to be vulnerable to loss of power and/or utilities such as telephone, cellular towers, and home and business healthcare equipment. Utilities continue to harden their infrastructure and businesses and residences should be encouraged to harden their assets as well.

3.3.15 Nuclear Power Plant Radiation Release

Hazard Profile

Hazard Description

There are two categories of nuclear reactors; research reactors and commercial nuclear power reactors. Research reactors cause hazard only to the personnel or others on-site at the facility. Therefore, these are not included in state radiological plans involving off-site emergency

preparedness. Commercial nuclear power reactors, a worst-case scenario involving a significant release of radioactive material could force the evacuation of the general population within a 10-mile radius of the facility. This would further contaminate food and water sources within a 50-mile radius.

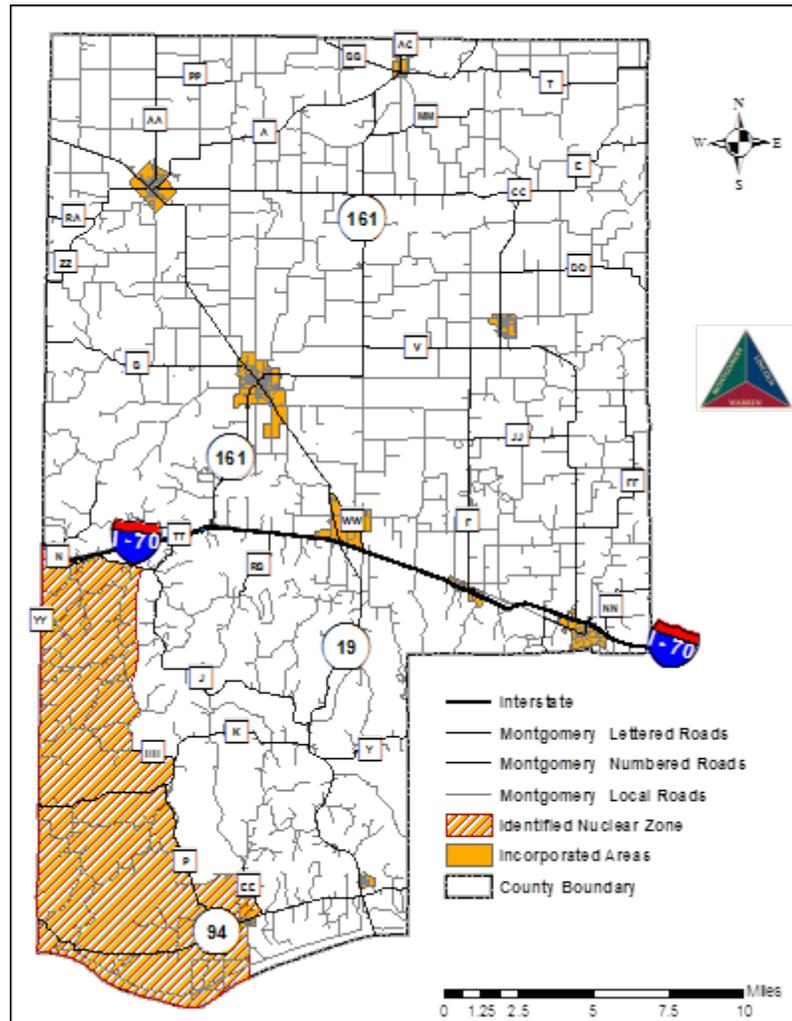
Geographic Location

The Callaway Nuclear Plant is located in Callaway County, Missouri. At its closest point, Warren County is about 19 miles due east of the plant and the city of Warrenton lies about 35 miles east northeast. Further, the plant is located 10 miles southwest of Fulton, 25 miles northeast of Jefferson City, 19 miles northwest of Hermann, 5 miles north of the Missouri River, and 80 miles west of St. Louis.

The Callaway Plant consists of one unit with a pressurized water reactor capable of providing 1150 megawatts of electricity. The plant is owned and operated by Ameren Electric of St. Louis and has recently had its operating license renewed by the Nuclear Regulatory Commission for service until 2044.

The population within the 2.5 mile radius of the plant is low (approximately 30 residents). Approximately 4,500 people reside within a 10-mile radius of the plant. The plume exposure pathway has been expanded beyond the 10-mile radius to include the City of Fulton (population 12,128). Thus, the population within the plume exposure pathway is approximately 16,000. Land within a five-mile radius of the plant site is rural, consisting of 60 percent forest, 20 percent farm / crop land, and 20 percent pasture.

Figure 3.38. Callaway Nuclear Power Plant, Callaway County, MO



The plant's Emergency Operating Procedures lists 5 emergency action levels that range from no public danger to a general emergency wherein radiation may be released beyond plant boundaries. In this event, appropriate city, county, and state agencies will begin the necessary steps for provide for the public safety.

Previous Occurrences

There have been no prior occurrences at the Callaway Plant.

Probability of Future Occurrence

The Reactor Safety Study, conducted by the Nuclear Regulatory Commission, rated the chances of a major nuclear disaster as very low – a probability of 1 in 1 million per plant operating year.

Vulnerability

Vulnerability Overview

Emergency Management Agencies from the at risk counties of Callaway, Gasconade, Montgomery, and Osage coordinate their Emergency Operations Plans with those of the Callaway Nuclear plant. Warren County is not included in the planning as it is considered to be outside the anticipated risk zone. However, if unforeseen circumstances require portions of Warren County to be evacuated due to a release of radiative material, Warren County is prepared to respond using its planned evacuation scenarios.

Potential Losses to Existing Development

There are no potential losses to existing development.

Future Development

There are no potential losses to future development based on Callaway's current business plan.

Problem Statement

There is no scenario under which Warren County is considered to be at risk of a radiation release from the Callaway Nuclear Plant. However, in the event of an unforeseen event, Warren County emergency personnel have plans in place that can be used to evacuate any at-risk citizens.

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4 MITIGATION STRATEGY

4	MITIGATION STRATEGY	1
4.1	<i>Goals.....</i>	<i>1</i>
4.2	<i>Identification and Analysis of Mitigation Actions.....</i>	<i>2</i>
4.3	<i>Implementation of Mitigation Actions</i>	<i>4</i>

44 CFR Requirement §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section presents the mitigation strategy updated by the Warren County Mitigation Planning Committee (MPC) based on the updated risk assessment. The mitigation strategy was developed through a collaborative group process. The process included review of the general goal statements to guide the jurisdictions in lessening disaster impacts as well as specific mitigation actions to directly reduce vulnerability to hazards and losses. The following definitions are taken from FEMA’s Local Hazard Mitigation Review Guide (October 1, 2012).

- **Mitigation Goals** are general guidelines that explain what you want to achieve. Goals are long-term policy statements and global visions that support the mitigation strategy. The goals address the risk of hazards identified in the plan.
- **Mitigation Actions** are specific actions, projects, activities, or processes taken to reduce or eliminate long-term risk to people and property from hazards and their impacts. Implementing mitigation actions helps achieve the plan’s mission and goals.

4.1 Goals

44 CFR Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

This planning effort is an update to Warren County’s existing hazard mitigation plan approved by FEMA on January 5, 2012. Therefore, the goals from the previous plan were reviewed to see if they were still valid, feasible, practical, and applicable to the defined hazard impacts. These goals are listed below.

Goal 1: Protect the lives and livelihoods of all citizens.

Goal 2: Employ sustainable principles and practices to enhance mitigation effectiveness.

Goal 3: Ensure continued operation of government and emergency functions during a disaster.

The MPC conducted a discussion during their kick-off meeting to review and update their plan goals. To ensure that the goals developed for this update were comprehensive and supported state goals, the previously approved plan goals were reviewed. It was determined by the team

that the broadly stated purposes were still valid for the 2016 update. The goals and actions/projects proposed in the 2016 plan also were formed pursuant to these principals stated below.

- To respond to the issues highlighted in the hazard risk and vulnerability sections of this plan.
- To recognize the capabilities, limitations, and resources available to each jurisdiction to implement the polices of this plan.
- To evaluate the broad range of alternative mitigation measures available.
- To adapt polices that most effectively respond to the hazard issues facing each community.
- To implement priority polices according to a 5-year action plan.

4.2 Identification and Analysis of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

During the remainder of the kick-off meeting, the results of the risk assessment conducted by the Warren County EMD and Boonslick RPC staff were presented to the MPC for review and the key issues were identified for specific hazards and discussed. The discussion included possible new mitigation actions, as well as actions from the previously approved plan. Actions from the previous plan included completed actions, on-going actions, and actions upon which progress had not been made. Changes in the risk since the adoption of the previously plan were discussed as well. The MPC discussed SEMA’s identified funding priorities and the types of mitigation actions generally accepted by FEMA.

The MPC reviewed the actions from the previously approved plan for progress made since the plan had been adopted, using worksheets included in the appendix. During the meeting, the list of actions was reviewed to determine the Action Status.

Completed Actions	Completion Details
1.1.1 – Identify geographic areas in need of warning systems and develop a plan to implement needed systems.	All incorporated areas of Warren County plus many areas included within villages and cities were identified as needing warning systems. A high-speed telephone and email notification system called Code Red is now in use by the county. All county residents within or without of a village or city are able to subscribe to receive a large range of alerts by land line, mobile phone, or email. While the original action is complete, the committee wishes to keep the action in continuing status to ensure that the system, or one like it, is funded annually. The cost is about \$4,500 per year.
1.2.2 – Target any remaining repetitive flood loss properties for buyout	All residential properties in the repetitive loss area have been bought out making this action complete. However, the MPC believes this action should continue to insure compliance of future development. The original cost was \$1.2M.

1.2.7 – NFIP – Monitor development in special flood hazard areas to ensure compliance with local floodplain management ordinances.	The floodplain manager works with USACE to review and adopt ordinances for special flood hazard areas to regulate the hazard areas. The action is complete; however, the MPC believes continued monitoring is required for sustainment. The cost is approximately \$12,000 per year for labor.
1.4.3 – Review and upgrade redundancies for the 911 Call Center and the EOC.	There are redundancies built into the 911 Call Center and the EOC to allow either entity to fall back to the other in the event of equipment failure. Hence, the MPC feels this action is complete. However, the equipment is nearing the end of its life cycle and plans should be made to ensure the equipment is upgraded in a timely manner. Therefore, the MPC wishes to keep this action in continuing status. Labor and material to replace the equipment is approximately \$4,000 plus \$500 per year for IT support.
1.8.1 – Utilize county road rights of way as firebreaks and snow storage.	Complete – the rights of way were reviewed and determined to meet current requirements for firebreaks and snow storage. However, the MPC wishes to keep this action in sustainment.

All goals and actions from the 2011 plan were carried forward, and new actions were added. Based on the status updates, there were 5 Complete - Sustainment actions, 0 deleted actions, 33 Continuing actions, and 5 actions Not Started. In addition, 3 new actions were added which are included in the Not Started status. Complete – Sustainment actions are those actions that are complete but the team felt they should remain open to ensure continued monitoring.

The first table below lists the status of completed action plans and the second table lists new actions added to the plan update. Continuing Actions are not listed in a table but may be found with the complete set of Action Plan Worksheets. The Action Plan Worksheets are arranged by number.

Table 4.1 provides a summary of the action statuses for each jurisdiction:

Table 4.1. Action Status Summary

The table below shows the three new actions that were added to address Public Health issues due to pandemics that occur independently, or in the aftermath of other hazards. These were added at the request of MPC members from Public Health and EMA.

Table 4.2. New Actions Added

New Actions Added	Action Details
1.3.5 – Identify public health issues and identify ways to promote healthy life style changes	Not yet started. Estimated cost is \$5,000 per year for labor and supply cost.

New Actions Added	Action Details
1.3.6 – Identify causes of disease and promote measures to control spread of disease in case of emergency such as ; reduce vectors, increase awareness of foodborne illness hazards due to spoilage and contamination.	Not yet started. Estimated cost is \$5,000 per year for labor and supply cost.
1.7.4 – Identify community health disparities and their effects on post disaster population health, i.e., access to care, messaging, translation services, and mental/behavioral health services.	Not yet started. Estimated cost is \$5,000 per year for labor and supply cost.

4.3 Implementation of Mitigation Actions

44 CFR Requirement §201.6(c)(3)(ii): The mitigation strategy shall include an action strategy describing how the actions identified in paragraph (c)(2)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefits review of the proposed projects and their associated costs.

During review and update of the STAPLEE by the Warren County EMD and Boonslick staff, emphasis was placed on the importance of a benefit-cost analysis in determining project priority. The Disaster Mitigation Act requires benefit-cost review as the primary method by which mitigation projects should be prioritized. The MPC decided to pursue implementation according to when and where damage occurs, available funding, political will, jurisdictional priority, and priorities identified in the Missouri State Hazard Mitigation Plan. The benefit/cost review at the planning stage primarily consisted of a qualitative analysis, and was not the detailed process required grant funding application. For each action, the plan sets forth a narrative describing the types of benefits that could be realized from action implementation. The cost was estimated as closely as possible, with further refinement to be supplied as project development occurs.

FEMA’s STAPLEE methodology was used to assess the costs and benefits, overall feasibility of mitigation actions, and other issues impacting project. During the prioritization process, the MPC used worksheets to assign scores. The worksheets posed questions based on the STAPLEE elements as well as the potential mitigation effectiveness of each action. Scores were based on the responses to the questions as follows:

- Definitely yes = 3 points
- Maybe yes = 2 points
- Probably no = 1
- Definitely no = 0

The following questions were asked for each proposed action.

- S: Is the action socially acceptable?
- T: Is the action technically feasible and potentially successful?
- A: Does the jurisdiction have the administrative capability to successfully implement this action?
- P: Is the action politically acceptable?
- L: Does the jurisdiction have the legal authority to implement the action?

E: Is the action economically beneficial?

E: Will the project have an environmental impact that is either beneficial or neutral? (score “3” if positive and “2” if neutral)

Will the implemented action result in lives saved? Will the implanted action result in a reduction of disaster damage?

The final STAPLEE score for each action are listed in the Action/Project Priority field on each of the Action Plan Worksheets below. The STAPLEE worksheets are attached to this plan in the appendix. Low priority action items were those that had a total score of between 0 and 24. Moderate priority actions were those scoring between 25 and 29. High priority actions scored 30 or above. A specimen STAPLEE worksheet is shown in Figure 4.1. A summary of the following STAPLEE scores shows 5 High Priority, 13 Medium Priority, and 20 Low Priority actions for Warren County.

Figure 4.1. Blank STAPLEE Worksheet

**XXXXXX COUNTY
MULTI-JURISDICTIONAL
LOCAL HAZARD MITIGATION PLAN**

Action Title:		Jurisdiction:	
Action ID:			
STAPLEE Criteria	Evaluation Rating Definitely YES = 3 Maybe YES = 2 Probably NO = 1 Definitely NO = 0	Score	
S: Is it Socially acceptable?			
T: Is it Technically feasible and potentially successful?			
A: Does the jurisdiction have the administrative capacity to execute this action?			
P: Is it Politically acceptable?			
L: Is there Legal authority to implement?			
E: Is it Economically beneficial?			
E: Will the project have either a neutral or positive impact on the natural environment? (score a 3 if positive impact, 2 if neutral impact)			
Will historic structures be saved or protected?			
Could it be implemented quickly?			
STAPLEE Score			

Mitigation Effectiveness Criteria	Evaluation Rating	Score
Will the implemented action result in lives saved?	Assign from 5-10 points based on the likelihood that lives would be saved.	
Will the implemented action result in a reduction of disaster damages?	Assign from 5-10 points based on the relative reduction of disaster damages.	
Mitigation Effectiveness Score		

Total Score (STAPLEE Score + Mitigation Effectiveness Score): _____

Priority Level: High (30+ points) Medium (25-29 points) Low (less than 25 points)

Completed by (name/title/phone #): _____

Figure 4.2. Action Plan Worksheets

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.1.1	Identify geographic areas in need of warning systems
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of early warning systems
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.1.1
Action or Project Description	Survey residents of unincorporated areas and unserved cities to determine need for early warning system
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Included in cost of CODE RED at \$4500 per year for Warren County. All residents of Warren County are covered. Innsbrook, Marthasville, Pendleton, Warrenton, Wright City, Truesdale costs are \$0
Benefits	Advance notice will reduce injuries and casualties
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Agency Director, Mayors of Innsbrook, Marthasville, Pendleton, Warrenton, Wright City, and Truesdale.
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan- Communications Section
Progress Report	
Action Status	Complete - Sustainment
Report of Progress	County utilizes Code Red, a high speed telephone notification system used to call homes and businesses to alert them during a variety of emergencies. Jurisdictions have their own tornado sirens to reach out to people. The Committee agreed to keep the action plan open to ensure that Code Red or similar system continues to be funded.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.1.2	Improve flood alerting system capabilities
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of flood warning systems
Hazard(s) Addressed	Floods and Flash floods
Action or Project	
Action/Project Number	1.1.2
Action or Project Description	To provide advanced flood warning for floodprone areas
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Included in cost of CODE RED at \$4500 per year for Warren County. All Warren County Residents are covered. Innsbrook, Marthasville, Warrenton, Wright City, Truesdale, Warren County R-III, Wright City R-II costs are \$0
Benefits	Advance notice will reduce injuries and casualties
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Mayors of Innsbrook, Marthasville, Warrenton, Wright City, Truesdale, and School District Administrators of Warren County R-III and Wright City R-II
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan, Boonslick Regional Planning Commission CDBG Planning Grant
Progress Report	
Action Status	Continuing
Report of Progress	County utilizes Code Red to issue flood warning to the residents. This remains ongoing with respect to new residents moving in and those residents that the jurisdictions couldn't reach out to already

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.1	Encourage property owners and occupants in hazard areas to participate in mitigation policy formulation
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R. III <input checked="" type="checkbox"/> Wright City R. II <input type="checkbox"/> Gasconade R. II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of public input related to floodplain management
Hazard(s) Addressed	Floods and Flash floods
Action or Project	
Action/Project Number	1.2.1
Action or Project Description	Work with floodplain manager and County assessor's office to identify properties that lie in a hazard area. Encourage citizens to attend zoning and long range plan meetings.
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$1,000 for backpack with camera, measuring wheel, and cell phones. Zero cost for other jurisdictions.
Benefits	Speeds up recovery claims for those affected by flooding.
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, County Assessor
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, Government programs
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan, Emergency Management Agency public outreach
Progress Report	
Action Status	Continuing
Report of Progress	Warren County participates in NFIP. EMD works with floodplain manager, county assessor's office, and residents to identify properties that lie in a hazard area. Recently, the county purchased backpacks for volunteers to assess the damages.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.2	Target any remaining repetitive flood loss properties for buyout
Jurisdiction	<input checked="" type="checkbox"/> Warren <input type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input type="checkbox"/> Warrenton <input type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R. III <input type="checkbox"/> Wright City R. II <input type="checkbox"/> Gasconade R. II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Flood loss of commercial and residential properties
Hazard(s) Addressed	Floods and Flash floods
Action or Project	
Action/Project Number	1.2.2
Action or Project Description	To work with residents in the floodplain areas
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Past costs were approximately \$1.3M administered through Warren County. Any additional costs will be minimal.
Benefits	Reduce injuries, loss of life, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, County Assessor, Mayor of Marthasville
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Government Buyout programs
Local Planning Mechanisms to be used in Implementation, if any	Warren County Hazard Mitigation Plan
Progress Report	
Action Status	Complete/Sustainment
Report of Progress	After the 1993 and 2009 floods vast majority of residential structures were brought out by FEMA. The remaining properties in the Missouri River floodplain are agricultural properties. The Committee agreed to keep the action plan open to ensure the floodplain ordinances are monitored and current.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.3	Promote environmentally-sound watershed and storm water practices to decrease flash flooding
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Community growth alters the watershed
Hazard(s) Addressed	Floods, Levee failure
Action or Project	
Action/Project Number	1.2.3
Action or Project Description	To develop an environmentally sound watershed plan
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Past cost of \$125,000 to replace 4 low water crossings. This was funded by FEMA disaster declaration HMG
Benefits	Reduce drownings due to low water crossings and property loss
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, School District Administrators of Washington, Gasconade R-I, Wright City R-II, Warren County R-III, Boards of Alderman of all jurisdictions above
Action/Project Priority	Medium
Timeline for Completion	5 years
Potential Funding Sources	FEMA Funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan, Emergency Management Agency public outreach
Progress Report	
Action Status	Continuing
Report of Progress	Replaced four low water crossings in the county. The county doesn't have any regulations in place.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.4	Review and revise flood-fighting plans as needed
Jurisdiction	<input checked="" type="checkbox"/> Warren <input type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input type="checkbox"/> Warrenton <input type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of levee district emergency operations plan
Hazard(s) Addressed	Floods, Levee failure
Action or Project	
Action/Project Number	1.2.4
Action or Project Description	Develop and implement emergency action plans
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$2,000 labor and travel to review emergency action plans of levee owners and assist the levee owners with updating plans. Marthasville: Zero Cost
Benefits	Reduce loss of life, personal injuries and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, and the following Levee Districts; Tri-County, Mo Valley, Tuque Creek, Three Creeks, Haid, Berger Bottoms
Action/Project Priority	Medium
Timeline for Completion	3 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Incorporate Levee District Plan into the Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	County continues to work with levee districts on the emergency action plans

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.5	Strengthen floodplain regulations as needed
Jurisdiction	<input checked="" type="checkbox"/> Warren <input type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input type="checkbox"/> Warrenton <input type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Floodplain regulations do not meet local, state, federal regulations
Hazard(s) Addressed	Floods
Action or Project	
Action/Project Number	1.2.5
Action or Project Description	Review and revise floodplain regulations to meet the state and federal regulation standards
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Approximately \$12,000/year for Warren County Labor. Zero cost for Marthasville.
Benefits	Protection of agricultural land, property and cash crops
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, School District Administrators, Marthasville Board of Alderman
Action/Project Priority	Low
Timeline for Completion	5 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Floodplain ordinance, Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	The floodplain manager works with residents that are in the floodplain. County participates in NFIP. It was determined that existing regulations meet local, state and federal regulations. EMA and floodplain manager meet regularly to review.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.6	Improve drainage of roadways in flashflood areas
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Roads are inundated with water during heavy rains
Hazard(s) Addressed	Floods, Flash floods
Action or Project	
Action/Project Number	1.2.6
Action or Project Description	Locate and prioritize roads inundated and improve them as necessary
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$125,000 to replace 4 low water bridges. Zero cost to above jurisdictions. There are approximately 25 additional crossings in the county that need replacement. County is interested in applying for more at approximately \$32K each.
Benefits	Reduce loss of life, personal injuries, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, School District Administrators of Gasconade R-I, Washington, Warren County R-III, Wright City R-II, Boards of Alderman of Innsbrook, Marthasville, Pendleton, Warrenton, Wright City, Truesdale.
Action/Project Priority	Low
Timeline for Completion	5 years
Potential Funding Sources	Local funds, FEMA Funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	Replaced four low water crossings in the county. Reduced number of roads inundated by heavy rains.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.2.7	NFIP- Monitor development in special flood hazard areas to ensure compliance with local floodplain management ordinance
Jurisdiction	<input checked="" type="checkbox"/> Warren <input type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input type="checkbox"/> Warrenton <input type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Development within flood hazard areas is not regulated
Hazard(s) Addressed	Floods, flash floods
Action or Project	
Action/Project Number	1.2.7
Action or Project Description	Identify special hazard flood areas and right regulations to govern development
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$12,000/year labor. Zero cost for Marthasville
Benefits	Reduce loss of life, personal injuries, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, Marthasville Board of Alderman
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, Government programs & private funding
Local Planning Mechanisms to be used in Implementation, if any	Floodplain ordinances, Warren County Emergency Operations Plan
Progress Report	
Action Status	Complete - Sustainment
Report of Progress	Floodplain manager worked with US Army Corps of Engineers, reviewed and adopted the ordinances for special flood hazard areas to regulate the hazard areas. Continue to monitor to ensure compliance with floodplain ordinance.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.1	Develop hazard area maps and promote use by the public
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	The public is not aware of all hazard areas
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.3.1
Action or Project Description	Increase the awareness
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year labor. Zero cost for other jurisdictions
Benefits	Reduce loss of life, personal injuries, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, School District Administrators, Boards of Alderman, Fire and Ambulance Districts
Action/Project Priority	High
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, Government programs & private funding
Local Planning Mechanisms to be used in Implementation, if any	Warning coverage maps, Hazard mitigation plan, Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	Public has access to all Warren County hazards including dam inundation maps and floodplain maps through the EMA website. The EMD communicates information available on the website regularly at various public events and through their Facebook page.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.2	Consider additional professional development and disaster mitigation training for emergency management personnel
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of training on dealing with mitigation preparedness
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.3.2
Action or Project Description	Staff attends applicable online training from SEMA
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Approximately \$5,000/year for tuition, labor and travel for all jurisdictions named above.
Benefits	Mitigates loss of life, personal injury, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, Gasconade R-I, Washington, Wright City R-II, and Warren County R-III School Districts Administrators, plus Boards of Alderman, Police Chiefs, Fire and Ambulance Districts of each of the above name jurisdictions
Action/Project Priority	Medium
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, SEMA/FEMA Government programs
Local Planning Mechanisms to be used in Implementation, if any	Cognizant training plans for Warren County and each named jurisdiction.
Progress Report	
Action Status	Continuing
Report of Progress	All first responders attend professional development training as needed.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.3	Identify ways to promote FEMA safety tips and mitigation techniques
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of public awareness of public safety
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.3.3
Action or Project Description	Implement public education program that addresses hazard safety planning.
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$2,500/year for labor plus \$1,000 per year for website and Facebook updates. Zero cost for all other jurisdictions.
Benefits	Reduces loss of life, personal injury, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Warren County Floodplain Manager, School District Administrators, Boards of Alderman
Action/Project Priority	Medium
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, Government programs & private funding
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	FEMA safety tips and mitigation techniques are posted on the EMA website and social media.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.4	To provide earthquake preparedness and safety literature every year in the school districts
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of earthquake preparedness
Hazard(s) Addressed	Earthquakes
Action or Project	
Action/Project Number	1.3.4
Action or Project Description	Provide earthquake preparedness and safety literature for school districts
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	\$200/attendee per each event for training plus labor and travel. This cost is borne by each jurisdiction sending personnel to training. Promotion materials are provided by the state
Benefits	Reduce loss of life, personal injury, and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, School District Administrators, Boards of Alderman, Police Chiefs, Fire and Ambulance Districts
Action/Project Priority	High
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, SEMA/FEMA Training Funds, Homeland Security CERT funding
Local Planning Mechanisms to be used in Implementation, if any	Emergency management training mechanisms, Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	School districts regularly participate in the statewide earthquake drills. There is literature available that the county displays and shares at several events

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.5	Identify public health issues and identify ways to promote healthy lifestyle changes
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Pandemics
Hazard(s) Addressed	No specific hazard
Action or Project	
Action/Project Number	1.3.5
Action or Project Description	Identify public health issues and identify ways to promote healthy lifestyle changes
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year for labor and printing. Zero cost for all other above named jurisdictions.
Benefits	Disease control
Plan for Implementation	
Responsible Organization/ Department	Warren County Health Department
Action/Project Priority	Medium
Timeline for Completion	New
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, If any	Warren County Pandemic Influenza Response Plan
Progress Report	
Action Status	Not Started
Report of Progress	New Action as of this plan update

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.3.6	Identify causes of disease and promote measures to control spread of disease in case of emergency such as: reduce vectors, increase awareness of foodborne illness hazards due to spoilage and contamination
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Pandemics
Hazard(s) Addressed	No specific hazard
Action or Project	
Action/Project Number	1.3.6
Action or Project Description	Identify causes of disease and promote measures to control spread of disease in case of emergency such as: reduce vectors, increase awareness of foodborne illness hazards due to spoilage and contamination
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year for labor and printing. Zero for all others
Benefits	Disease control
Plan for Implementation	
Responsible Organization/ Department	Warren County Health Department
Action/Project Priority	Medium
Timeline for Completion	New
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Pandemic Influenza Response Plan
Progress Report	
Action Status	New
Report of Progress	New Action as of this plan update

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.4.1	Review and upgrade policies to identify and budget additional emergency equipment for health and medical services, mass care agencies, and public information
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Some emergency equipment is no longer adequate
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.4.1
Action or Project Description	To identify weaknesses and gaps in equipment by doing tabletop exercises and full scale planning exercises
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Zero cost to Warren County jurisdictions. Cost incurred by the state to review local EOP
Benefits	Increases readiness of equipment to respond
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, School District Administrators, Boards of Alderman, Police Chiefs, Fire and Ambulance Districts, Warren County Health Department
Action/Project Priority	High
Timeline for Completion	Continuing
Potential Funding Sources	Federal Homeland Security funding, Assistance to firefighter grants, Local emergency planning committee
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing

Report of Progress	The Threat and Hazard Identification and Risk Assessment (THIRA) is performed annually to identify gaps in emergency response. The policies to identify and budget additional emergency equipment for health and medical services, mass care agencies, and public information are in place. This action is performed every other year.
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Goal 1	Protect the lives and livelihoods of all citizens
Action 1.4.2	Execute and maintain mutual aid agreements with all relevant agencies
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of mutual aid agreement with surrounding counties
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.4.2
Action or Project Description	Sign mutual aid agreements with surrounding counties and jurisdictions within the county
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$1200/year for labor and travel. Zero for all others
Benefits	Increases readiness of first responders
Plan for Implementation	
Responsible Organization/ Department	Warren County EMD
Action/Project Priority	Medium
Timeline for Completion	Continuing
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan
Progress Report	
Action Status	Continuing
Report of Progress	The mutual aid agreements with surrounding counties and jurisdictions are in place. Anticipate to maintain current.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.4.3	Review and upgrade redundancies for the 911 Center/EOC
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	There is no backup for the 911 Center & the Emergency Operations Center (EOC) in the event of an equipment failure
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.4.3
Action or Project Description	Redundant equipment to be installed in both facilities to allow for back up
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	All costs were borne by Warren County. \$4,000 total cost of equipment plus \$1,000 labor for project management. In addition, \$500/year maintenance costs are borne by Warren County. Zero for all others
Benefits	Reduce loss of life, personal injury and property damage by increasing readiness of EOC and 911 Center
Plan for Implementation	
Responsible Organization/ Department	Warren County EMA, 911 Center
Action/Project Priority	High
Timeline for Completion	Continuing
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Local memos of understanding
Progress Report	
Action Status	Complete - Sustainment

Report of Progress	The county has an emergency operations center set up in the new Warren County Administration building that allows 911 Operators to continue receiving and dispatching calls from the EOC in the event the 911 Center is down. Conversely the 911 Center is equipped to serve as the EOC in the event it is down. The equipment needs to be updated routinely to remain robust and staff needs to be trained on new equipment.
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Goal 1	Protect the lives and livelihoods of all citizens
Action 1.5.1	Decrease wildfire risk areas where development is adjacent to forests or grasslands by incorporating buffer zones into subdivision regulations
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Some areas have the risk of wildfire
Hazard(s) Addressed	Wildfires
Action or Project	
Action/Project Number	1.5.1
Action or Project Description	Educate public to dangers of wildfire and promote buffer zones between grassland and developments
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$1500/year to maintain the website. Zero for all others
Benefits	Reduces risk of property loss, injuries, and death due to wild fires.
Plan for Implementation	
Responsible Organization/Department	Warren County Planning and Zoning, Warrenton Fire Protection District, Marthasville Fire Protection District, Wright City Fire Department (Innsbrook)
Action/Project Priority	Low
Timeline for Completion	5 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Planning and Zoning regulations
Progress Report	
Action Status	Continuing
Report of Progress	Fire districts have adopted ordinances on no burns and do public outreach on the dangers of wildfires. The county posts on the website and facebook when it is windy and dry conditions and any precautions to be taken.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.5.2	Promote environmentally-sound, fire-resistant materials for homes
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Current construction materials prone to catch fires
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.5.2
Action or Project Description	Adopt building codes that adopt fire safety techniques, encourage developers to promote sound safety practices
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	\$3,000/year for labor and printing for each of the following; Warren County, Innsbrook, Marthasville, Warrenton, and Wright City.
Benefits	Increased awareness among city governing bodies
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Boards of Alderman of Innsbrook, Marthasville, Warrenton, and Wright City
Action/Project Priority	Low
Timeline for Completion	5 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County Emergency Operations Plan, Planning and Zoning regulations
Progress Report	
Action Status	Continuing
Report of Progress	The county doesn't have any ordinances for unincorporated areas.

Action or Project	
Action/Project Number	1.5.3
Action or Project Description	Identify properties that lie in floodplain and seismic zones and develop community education program for public lending institutions, real estate agencies and insurance agents
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$2500/year for labor, \$500 per year for printing. Zero cost for all other jurisdictions
Benefits	Increases public awareness of NFIP insurance
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director
Action/Project Priority	Low
Timeline for Completion	3 years
Potential Funding Sources	Local Funds
Local Planning Mechanisms to be used in Implementation, if any	Public awareness events
Progress Report	
Action Status	Continuing
Report of Progress	Currently county is working to work with residents/lending institutions and real estate agents on developing community education programs

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.6.1	Consider known hazards when identifying a site for new facilities and systems
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input type="checkbox"/> Warren County R III <input type="checkbox"/> Wright City R II <input type="checkbox"/> Gasconade R II <input type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	New facilities and systems are frequently constructed in hazard prone areas
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.6.1
Action or Project Description	Develop educational materials and processes to guide planners and builders in assessing risk in their proposed construction sites
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year for labor and printing, zero cost for all other jurisdictions.
Benefits	Reduction in the number of injuries, deaths and structure damages
Plan for Implementation	
Responsible Organization/ Department	Warren County Commissioners, County Planning and Zoning Commission, Boards of Alderman of all jurisdictions
Action/Project Priority	Low
Timeline for Completion	5 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	A directive from cognizant agencies authorizing work be done
Progress Report	
Action Status	Continuing
Report of Progress	Planning and Zoning for the cities and the county are responsible for reviewing and issuing permits.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.6.2	Encourage tornado safe rooms in new construction.
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Many homes do not have a safe place to endure a tornado
Hazard(s) Addressed	Tornadoes and Severe Storms
Action or Project	
Action/Project Number	1.6.2
Action or Project Description	To organize a a team consisting of cities, County EMA, planning and zoning to develop a plan to educate the general public and builders on the importance of safe rooms
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year for labor. Zero for all others
Benefits	Reduce loss of life and personal injuries
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, Planning and Zoning Commission, Building Commission
Action/Project Priority	Low
Timeline for Completion	Not started
Potential Funding Sources	Local funds, FEMA
Local Planning Mechanisms to be used in Implementation, if any	Building ordinances, Planning and Zoning, EMA website and Facebook
Progress Report	
Action Status	Not Started
Report of Progress	Not started but would plan on identifying existing structures and or population bases that would benefit by the construction of tornado safe rooms. Would anticipate implementing building codes for safe rooms for future construction.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.6.3	Encourage up to date commercial/industrial disaster plans that are coordinated with county/city disaster plans
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Many commercial and industrial plants have no disaster plans and business continuity plans.
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.6.3
Action or Project Description	Make businesses aware of the importance of disaster planning and business continuity
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	All costs are for Warren County: \$1000/year for website; \$1500 for labor, \$1000 for printing costs. Zero for all others
Benefits	Reduces risk of revenue stream loss/tax loss for businesses and loss of income for employees
Plan for Implementation	
Responsible Organization/ Department	Warren County Emergency Management Director, all above named School District Administrators and Boards of Alderman
Action/Project Priority	Medium
Timeline for Completion	5 years
Potential Funding Sources	Local funds, Government programs
Local Planning Mechanisms to be used in Implementation, if any	Business continuity plans, Disaster recovery plans
Progress Report	
Action Status	Continuing
Report of Progress	Currently encouraging businesses to have business continuity plans. Churches have safety plans in place

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.7.1	Maintain inventory of special needs population, equipment & ADA shelters
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	A significant segment of the county's population has special needs that are not addressed fully
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.7.1
Action or Project Description	To identify special needs population within the county
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$1500/year labor to build and maintain the database. Zero for all others
Benefits	Reduce loss of life, personal injury and property damage
Plan for Implementation	
Responsible Organization/ Department	Warren County EMA and Health department
Action/Project Priority	Low
Timeline for Completion	3 years
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County EOP
Progress Report	
Action Status	Continuing
Report of Progress	Warren County emergency management agency and health department is working with other special agencies to identify special needs population.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.7.2	Enhance warning systems and notifications for special populations
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	There is lack of early warning for existing special needs facilities
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.7.2
Action or Project Description	Develop an early warning system for special needs facilities
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County pays all costs of CODE RED emergency notification system at \$4500 per year. Zero for all others
Benefits	Reduce loss of life and personal injury.
Plan for Implementation	
Responsible Organization/ Department	Warren County EMA and Health Department
Action/Project Priority	Medium
Timeline for Completion	Continuing
Potential Funding Sources	Local funds
Local Planning Mechanisms to be used in Implementation, if any	Warren County EOP
Progress Report	
Action Status	Continuing
Report of Progress	County uses CODE RED for notifying special populations. The agencies mentioned that it is hard to maintain the special populations database unless they would like to reveal the information willingly.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.7.3	Identify and provide mass care shelters
Jurisdiction	<input checked="" type="checkbox"/> Warren <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of shelters for special needs population
Hazard(s) Addressed	All hazards
Action or Project	
Action/Project Number	1.7.3
Action or Project Description	Establish sheltering facilities for special needs population
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$500/year to maintain the shelters. Zero cost for all other jurisdictions
Benefits	Reduces loss of life and personal injury
Plan for Implementation	
Responsible Organization/ Department	Warren County EMA and Health department
Action/Project Priority	Low
Timeline for Completion	Continuing
Potential Funding Sources	Local funds, Government programs
Local Planning Mechanisms to be used in Implementation, if any	Warren County EOP
Progress Report	
Action Status	Continuing
Report of Progress	Mass care shelters in the county are identified. Agreements with Red Cross are already in place.

Goal 1	Protect the lives and livelihoods of all citizens
Action 1.7.4	Identify community health disparities and their effects on post disaster population health i.e. access to care, messaging, translation services, mental/ behavioral health services.
Jurisdiction	<input checked="" type="checkbox"/> Warren County <input checked="" type="checkbox"/> Innsbrook <input checked="" type="checkbox"/> Marthasville <input checked="" type="checkbox"/> Pendleton <input checked="" type="checkbox"/> Warrenton <input checked="" type="checkbox"/> Wright City <input checked="" type="checkbox"/> Truesdale <input checked="" type="checkbox"/> Warren County R III <input checked="" type="checkbox"/> Wright City R II <input checked="" type="checkbox"/> Gasconade R II <input checked="" type="checkbox"/> School District of Washington
Risk/Vulnerability	
Problem being mitigated	Lack of post disaster healthcare
Hazard(s) Addressed	No specific hazard
Action or Project	
Action/Project Number	1.7.4
Action or Project Description	Identify community health disparities and their effects on post disaster population health i.e. access to care, messaging, translation services, mental/ behavioral health services.
Applicable Goal Statement	Protect the lives and livelihoods of all citizens
Estimated Cost	Warren County: \$5,000/year for meetings and collateral. Zero cost for all other jurisdictions.
Benefits	Post disaster care
Plan for Implementation	
Responsible Organization/ Department	Warren County Health Department
Action/Project Priority	High
Timeline for Completion	New
Potential Funding Sources	Local funds, Government programs, Homeland Security CERT funding
Local Planning Mechanisms to be used in Implementation, if any	Warren County Pandemic Influenza Response Plan
Progress Report	
Action Status	New
Report of Progress	New Action as of this plan update