Contents: Webster Electric

Section 1: Introduction

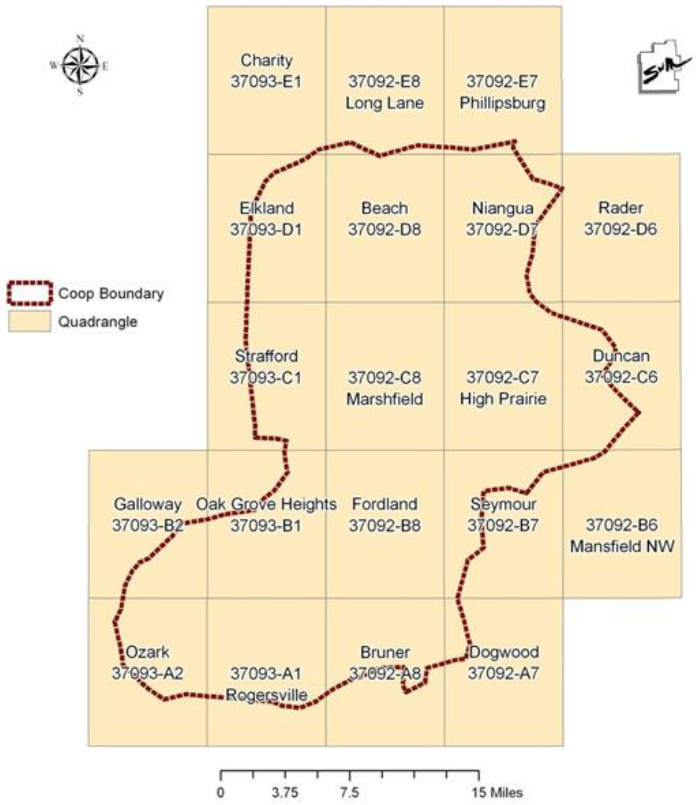
Webster Electric Cooperative (WEC) was established in 1946 to provide electric service to the rural areas of southwest Missouri. A Touchstone Energy Cooperative, Webster Electric Cooperative is a locally owned and governed not-for-profit cooperative based in Marshfield, Missouri. WEC currently serves over 18,000 member-owners in its seven-county service territory. To keep up with the changing times and the changing needs of its members, in 2000 Webster Electric Cooperative's Mission Statement evolved to the following:

> *"Webster Electric Cooperative exists to provide reliable electric service at the most economical cost, enrich the life of the community, educate members concerning the benefits of membership, and encourage member participation in the Cooperative."*

WEC's service boundaries within the state of Missouri include portions of Webster, Greene, Christian, Dallas, Laclede, Wright, and Douglas counties in southwest Missouri. The cooperative owns 1,957 miles of overhead service line and 180 miles of underground line within its service area which covers 572 square miles. *(Map sources: www.usgs.gov, Association of Missouri Electric Cooperatives, Webster Electric Cooperative.)*

Figure 1 *Service Area Map*

Figure 1: Webster Electric Service Area Quadrangle
USGS Code Map



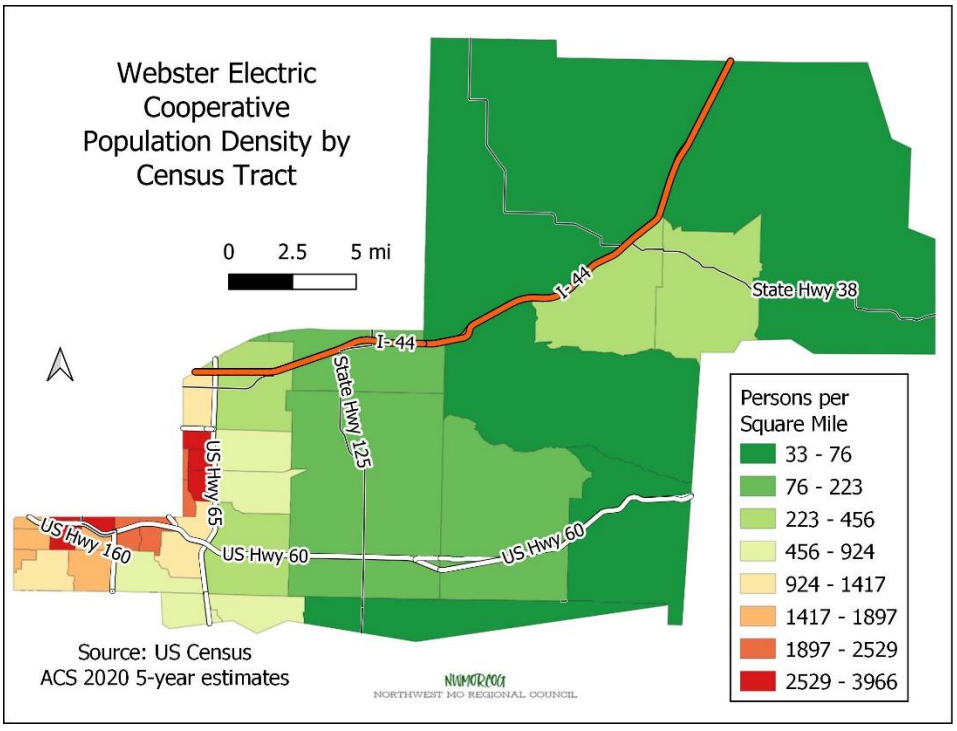
The customer base of WEC currently is comprised of 17,000 members. The majority of WEC customers are in Webster County, Missouri. Webster Electric cooperative provides electric service to the municipalities of Marshfield, Rogersville, Fordland, Niangua, and Diggins in Webster County. In addition to all government owned buildings within its service area, WEC provides electric service to all vulnerable and critical facilities. WEC provides service to facilities in five school districts, 8 Red Cross emergency shelters, 8 childcare facilities and 7 medical clinics. Table 1 provides the summary of meters by Missouri County.

Table 1 *Meters by Missouri County*

County	Number of Meters
Webster	15,710
Greene	3,140
Christian	2,400
Dallas	330
Laclede	45
Wright	14
Douglas	10
Total	21,778

The average member usage for WEC is 1,470 kilowatt-hours (kWh) per month. Total usage for 2020 was 372,528,236 kWh. Population density for the cooperative service area is depicted in Figure 2 (*Map source: U.S. Census 2020*).

Figure 2 *Population Density Map*



Critical Facilities

It is important in mitigation planning for the Electric Cooperatives to identify the critical facilities in each area and to be able to prioritize reconnection and back-up power needs. In addition to all government owned buildings within its service area, WEC provides electric service to vulnerable and critical facilities. WEC provides service to facilities in five school districts, 8 Red Cross emergency shelters, 8 childcare facilities and 7 medical clinics. In addition to all government owned buildings within its service area, WEC provides service to 7 medical clinics, 4 residential care facilities, 8 fire districts, 4 ambulance/paramedic stations, 18 public school buildings in 5 school districts and industrial centers within its service area.

Future Development

Webster Electric serves the towns for Marshfield and Rogersville and there is currently great demand for housing in these areas and developers are working feverishly on adding new lots. Table 2 below illustrates the population trend for the counties served by WEC.

Table 2 *County Population Trend, 1990-2030*

County	1990	2000	2010	2020	2030 Projected
Christian	32,644	54,285	77,422	90,655	131,066
Dallas	12,646	15,661	16,777	17,219	22,172
Douglas	11,876	13,084	13,684	13,344	13,934
Greene	207,949	240,391	275,174	294,997	329,825
Laclede	27,158	32,513	35,571	35,895	44,318
Webster	23,753	31,045	36,202	39,859	53,282
Wright	16,758	17,955	18,815	18,325	19,963
Source: U.S. Census Data					

Planning Process

Since the planning process is the same for each of the electric cooperative plans, the details of the planning process are presented in the Statewide Summary section of the plan.

Appendices

Three appendices are included at the end of each plan:

Appendix A contains the Adoption Resolution; a document signed by the Cooperative's governing official showing that the Board of Directors has adopted the mitigation plan.

Appendix B contains the Documentation of Participation; copies of press releases, website postings and other public outreach that was made to request public comment.

Appendix C contains the Surveys; the Data Survey that is the source of data for the 2023 plan update; the Goals and Actions Survey is the updated review of the mitigation strategies.

Section 2: Asset inventory

Webster Electric Cooperative has a wide variety of assets by type. Real estate owned by the company includes office buildings, warehouses, garages, and other outbuildings throughout the service area. Twenty vehicles provide access to customers and infrastructure. Table 3 provides information concerning total asset valuation.

Table 3 *Webster Electric Asset Inventory Valuation Summary*

Asset	Total Replacement Cost	Cost breakdown
Total WEC Assets	$188,274,113	Buildings and vehicles - $10,730,500 Overhead assets - $161,121,004 Underground assets - $16,422,609
Distribution Lines	OH $88,195,060 UG $10,524,024	OH Single-phase lines - $71,1179,540.8 UG Single-phase lines - $9,269,568 OH Three-phase lines - $17,495,520 UG Three-phase lines - $1,462,776
Supporting Infrastructure	OH $72,925,943 UG $5,746,125	Meters - $3,462,055 Poles - $45,261,216 OH Transformers - $8,751,624 UG Transformers - $5,746,125 Guys/Anchors - $10,097,535 Cross-arms - $3,414,757 Regulators - $1,126,125 SP Oil-Circuit Reclosures - $629,764 3phase Oil-Circuit Reclosures - $128,359 Capacitors - $46,200
Office Buildings	$6,000,006	
Warehouses	$1,430,000	
Vehicles	$3,938,550	
Source: Internal Webster Electric Accounting and Insurance records, 2020		

Ensuring quality distribution to its customers, Webster maintains not only distribution lines, but also the supporting infrastructure as well.

Table 4 includes a list of asset types, emergency replacement cost per unit or mile, the asset inventory by county of service, and total infrastructure numbers.

Table 4 *Webster Electric Asset Inventory by Service County*

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: WEBSTER	Number of units or miles: GREENE	Number of units or miles: CHRISTIAN	Number of units or miles: DALLAS
Meter	$200/unit	16,485	2,983	2087	350
Pole	$1,600/unit	40,788	6,897	5,118	862
SP*** Distribution line	$35,000/mile OH ($7/foot OH) $58,000/mile UG ($10/foot UG)	1,394 OH 126 UG	230 OH 22 UG	170 OH 16 UG	30 OH 2.5 UG
TP**** distribution line	$75000/mile OH $125,000/mile UG	161 OH 1.5 UG	29 OH 1.5 UG	24 OH 1 UG	3 OH 0 UG
Transformers	$1,000/OH $1,500/UG	2,350 OH 1,506 UG	2,088 OH 255 UG	1,550 OH 189 UG	261 OH 32 UG
Guys/anchor	$500/unit	28134	3700	2710	461
Cross-arms	$250/unit	11,250	1,700	1,500	250
Regulators	$8,000/unit	150	30	24	6
Oil Circuit Reclosures	$1,200/unit	561	80	75	20
Capacitors	$500/unit	100	25	20	5
Total Replacement Value by County	OH* UG**	$118,966,544 $11,550,000	$22,155,126 $2,199,876	$16,510,165 $1,521,181	$2,762,758 $214,368

Table 4 continues on the next page.

WEBSTER ELECTRIC COOPERATIVE

Asset Inventory by Service County (Continuation of Table 4)

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: LACLEDE	Number of units or miles: WRIGHT	Number of units or miles: DOUGLAS	Total number of units or miles in all counties:
Meter	$200/unit	51	16	12	21,981
Pole	$1500/unit	119	51	47	53,882
SP*** distribution line	$35,000/mile OH ($7/foot OH) $58,000/mile UG ($10/foot UG)	1 OH* 0 UG*	1 OH 0 UG	1 OH 0 UG	1,832 OH 167 UG
TP**** distribution line	$75,000/mile OH $125,000/mile UG	3 OH 8 UG	0 OH 0 UG	0 OH 0 UG	220 OH 14 UG
Transformers	$1,000/OH $1,500/UG	46OH 4UG	13 OH 2 UG	7 OH 1 UG	6,945 OH 7 UG
Guys/anchor	$500/unit	62	26	24	38,467
Cross-arms	$250/unit	26	11	10	13,007
Regulators	$8,000/unit	4	0	0	130
Oil Circuit Reclosures	$1,200/unit	5 SP TP	2 SP TP	2 SP TP	727 SP 16 TP
Capacitors	$500/unit	0	0	0	84
Total Replacement Value by county	OH* UG**	$491,937 OH $897,540 UG	$119,785 OH $5,302 UG	$113,485 OH $66,759 UG	$161,121,004 OH $16,479,309 UG

*OH = overhead **UG = underground ***SP = Single phase ****TP – Three phase

Source: Internal Webster Electric Accounting and Maintenance records

Section 3: Risk Assessment

Risk Assessment Methodology

The risk assessment methodology used in the following section was utilized for both the statewide aggregation as well as for each individual cooperative chapter. Section 4 of the Statewide Summary details this methodology. Some variation in the availability of data exists between the electric cooperatives as each utilizes a different system of recording the impact of natural disasters. Any differentiation from the process below is explained in the individual cooperative's chapter as necessary.

For the purpose of this risk assessment, the identified hazards for the WEC service area have been divided into two categories: **historical and non-historical hazards**. Based on the data collected for the update, the hazards have been reclassified to reflect the actual data available and those hazards with no data available have been reclassified as non-historical. This does not mean that a non-historical hazard will never cause damage; it just means there have been no impacts prior to this report. The potential still exists, but the probability of the occurrence is numerically near zero. For the analysis in this plan non-historical hazard probability is stated as less than one.

> **Historical Hazards** are those hazards with a measurable previous impact upon the service area. Damage costs per event and a chronology of occurrences are available. The associated vulnerability assessments utilize the number of events and cost of each event to establish an average cost per incident. For WEC, hazards with historical data include tornadoes, severe thunderstorms/high wind/hail, flood/levee failure and severe winter weather.
>
> **Non-historical Hazards** are hazards with no previous record of impact upon the local service area. As such, the associated vulnerability assessments for each of these hazards will have an occurrence probability of less than 1% in any given year, but the extent of damage will vary considerably. For WEC, hazards without historical data include wildfire, earthquakes, land subsidence and dam failure.

Each hazard has a unique impact upon the service area, requiring each hazard to utilize a different valuation amount depending upon the level of impact. Non-historical hazards assume damage to all general assets. For Historical Hazards, assets were divided into two groups based upon historical impact which were utilized in the hazard damage analysis:

- Overhead infrastructure assets and buildings
    - Used for:
        - Tornado damage assessments
            - Valued at $171,851,504
- Overhead infrastructure assets only
    - Used for:
        - Severe Thunderstorm / High Wind / Hail
        - Flood
        - Severe Winter Weather
            - Valued at $161,121,004

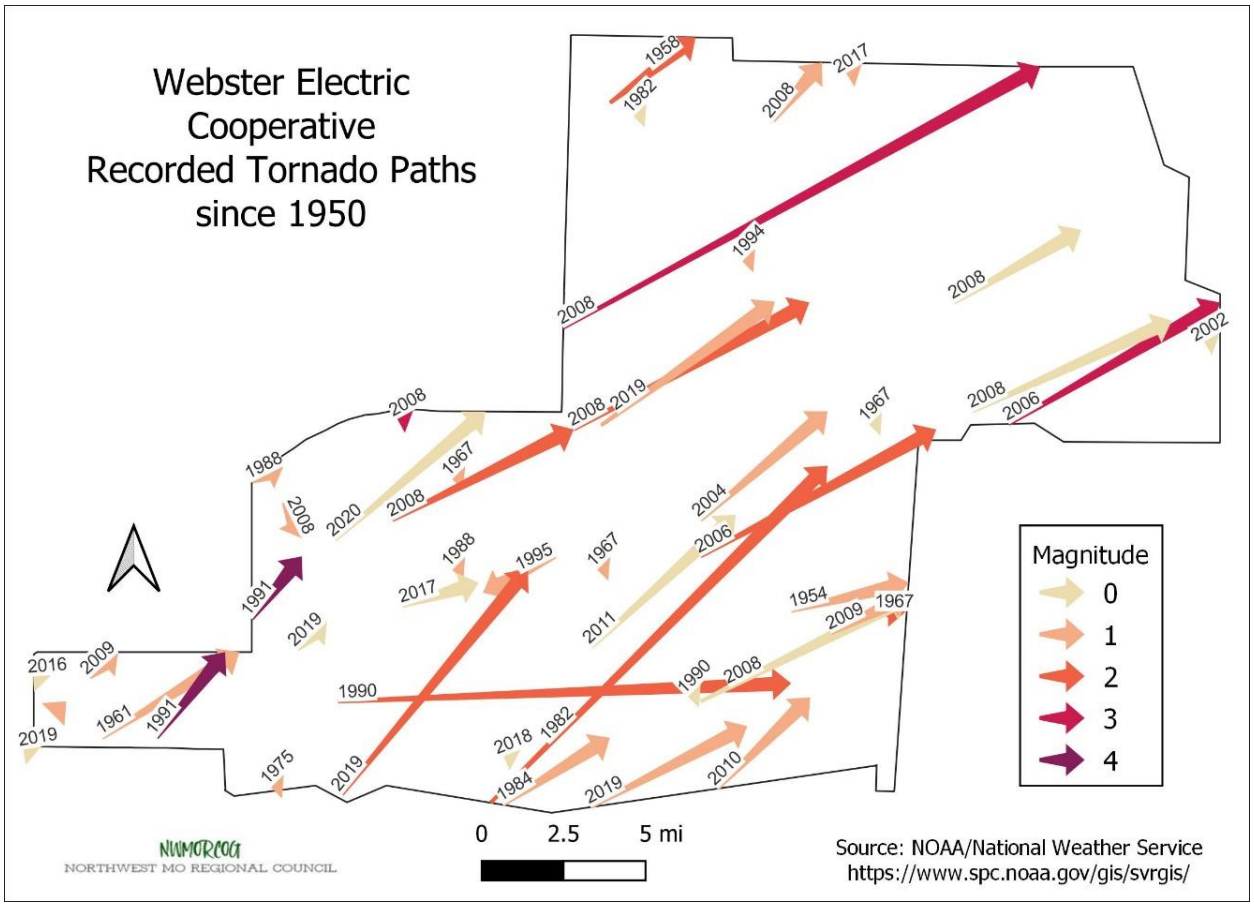
A. Historical Hazards

Tornadoes

Previous Occurrences

From 1950 through 2020, 45 tornadoes have been reported within the Webster cooperative boundaries. Figure 3 provides a pictorial representation of all recorded tornado touchdown sites and recorded paths. *(Data for map collected from National Oceanic and Atmospheric Administration, NOAA.)*

Figure 3 *Tornado Map*



A data insufficiency exists between NOAA records and cooperative records concerning damage estimates and outages. For the purpose of this assessment, the years for which records exist for both data sets have been used. From 2000-2016, Webster's service area within the state of Missouri has experienced a total of 25 tornado events.

Probability of Future Occurrence and Vulnerability

Using the 71-year period of 45 tornadoes, the probability of a tornado occurring within the WEC boundaries is 63% in any given year. Estimated cooperative material damages associated with each of these events were compiled by WEC staff. Five occurrences since 2000 caused damage to cooperative

assets during the years existing in cooperative records. There is a 22.7% probability that a damaging tornado will occur in any given year.

Table 5 provides a summary of event dates, EF-scale ratings, damage cost estimates and outages reported.

Table 5 *WEC Tornadic Event Summary*

Date of Event	EF Scale Rating	Damage Estimates	Outages Reported
11/1/2004	F1	$3,600	350
3/12/2006	F3	$3,500	2,150
1/7/2008	F3	$7,600	5,500
1/8/2008	F0	$6,400	850
5/8/2009	F1	$2,000	200
	Totals	$23,100	9,050
Data provided based on internal WEC records which reflect cost from the referenced event year.			

Based upon the last 22 years of historical event records, tornado events will cause an average annual damage of $1,050. This averaged amount accounts for less than 0.01% of Webster's total overhead assets and building valuation of $171,851,504

An average annual of 411 outages were recorded during tornadoes since 2000. When compared with the total number of meters served by WEC, it can be projected that 4.5% of all meters may experience outages during any given year due to a tornadic event.

Problem Statement

Tornadoes are potentially such violent events that it is cost prohibitive to build an infrastructure that can withstand such powerful winds. Strategies could be developed or improved, if already in place, to ensure that employees are warned of approaching storms when in the field. Procedures to restore power after outages should be reviewed regularly to ensure that power is restored to critical facilities as quickly as possible.

Severe Thunderstorms, High Wind, and Hail

Previous Occurrences

From 2000-2016, Webster's service area within the state of Missouri has experienced 175 days of hail events. NOAA reports that $510,000 in estimated damages to individual and business property occurred during this period due to hailstorms for the Counties of Webster and Greene. The largest diameter hail stones of three inches were recorded in January of 2008. During this same time frame, there were 190 days of thunderstorm/high wind events. Wind gusts up to 100 mph were recorded on August 8, 2015. The damage estimates for the area residents and businesses for this period are over $17 million.

For this update, it was possible to look at the bounds of the Webster Electric Cooperative using GPS, finding 267 hail events and 283 high wind/thunderstorm events from 1955-2020.

Probability of Future Occurrence and Vulnerability

The average annual number of hailstorms is 4.0 events for this 22 year period. Estimated material damages associated with each of these events were compiled by WEC staff. A data insufficiency exists between historical records and cooperative records for hail events. It may be possible that hail events have caused damages to the system and outages; however, the WEC records do contain any damages or outages associated with hail events. For the purpose of the risk assessment for hail events, the probability of damages and outages due to hail are difficult to assess.

Based upon historical records, the average annual damage cost to WEC is $0. However, with the large number of hail events each year, part of the overhead assets of Webster Electric are at risk. Even though the average annual reported outages due to hail from 2000-2021 is zero, the potential for outages of 10% or greater of total Webster Electric customers is a possibility.

The average annual number of days with thunderstorm/high wind events is 4.3 for the 22-year period of records. Table 6 provides information for thunderstorm/high wind events. Thirty-one events damage was caused to cooperative assets during the years existing in cooperative records. The annual average number of times that WEC will sustain damage from high winds in any given year is 1.4.

Table 6 *WEC Thunderstorm/High Wind Event Summary*

Event Date	Damage Estimates	Outages Reported
4/20/2000	$200	54
4/11/2001	$210	147
6/14/2001	$150	27
7/5/2001	$1,875	17
5/8/2002	$150	25
5/12/2002	$200	164
7/6/2002	$250	237
8/19/2002	$125	174
5/6/2003	$375	125
8/2/2003	$5,400	1164
11/23/2003	$1,750	148
9/14/2004	$1,150	329
6/13/2005	$250	78
6/30/2005	$500	291
8/13/2005	$200	96
9/13/2005	$650	67
4/24/2007	$150	180
8/24/2007	$600	215
10/17/2007	$200	123
1/7/2008	$250	98
1/8/2008	$250	180
7/6/2008	$275	187
7/22/2008	$800	75
12/27/2008	$320	112
4/9/2009	$1,050	475

Event Date	Damage Estimates	Outages Reported
5/13/2009	$340	146
6/10/2009	$750	219
7/16/2009	$150	175
5/13/2010	$1,250	340
7/16/2010	$920	400
10/26/2010	$275	115
Totals	$21,015	6,183
Data provided based on internal WEC records which reflect cost from the referenced event year.		

Based upon historical records, thunderstorm/high wind events will cause an average annual damage of $955. This averaged amount accounts for less than 0.01% of WEC's overhead asset valuation of $161,121,004.

An average annual of 281 outages were recorded during thunderstorm/ high wind events since 2000. When compared with the total number of meters served by WEC, it can be projected that 1.3% of all meters may experience outages during any given year due to a thunderstorm/high wind event.

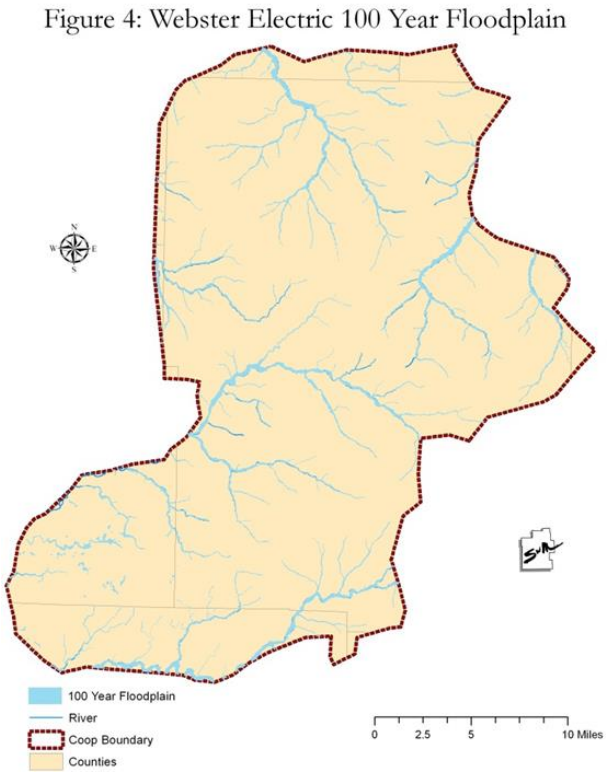
Problem Statement

Although there is strong chance of a potentially damaging hailstorm in any given year, no damages have been recorded by WEC for this hazard. The damages experienced due to high winds have been consistent, with the exception of the past six years. If the strategies employed after the last mitigation plan are responsible for this elimination of damages, then they should definitely be continued.

Flood and Levee Failure

Riverine and flash flooding is an ongoing potential threat to the existing infrastructure of the Webster Electric Cooperative. Approximately 5% of the Webster Electric service area is located directly within the 100-year floodplain. Flash flooding accounts for the majority of flood events in southwest Missouri and most often occurs in the spring. Rate of precipitation, duration and saturation in low lying areas is the most pernicious threat to cooperative assets due to flooding. Figure 4 below depicts the 100-year floodplain in relation to the cooperative's boundaries. *(Map sources: FEMA HAZUS-MH; FEMA National Flood Hazard Layer; Missouri Office of Administration, and Association of Missouri Electric Cooperatives.)*

Figure 4 *100 Year Floodplain Map*



Previous Occurrences

From 2000-2016, Webster's service area has experienced 152 days flooding events, which included both flash floods and riverine floods. Property damage in Webster and Greene Counties was over $39 million during this period with two fatalities recorded. *(Source: NOAA)*

To update this data, NCEI reported 78 flood events occurring during the past five years in the area. WEC did not report any additional damages or outages since the last update.

Probability of Future Occurrence and Vulnerability

The average annual number of days with a flooding event is 15.6 for the previous 5-year period. To date, there have been no instances of flooding which have affected cooperative assets or has resulted in any outages, resulting in an average annual damage amount of $0.

As there are no recorded instances of flooding affecting cooperative assets or outage reporting, it is difficult to assess the risk of floods for the WEC service area. However, there must remain the possibility that this hazard will impact WEC assets and customers. For the purpose of this risk assessment damage to cooperative assets are assumed to be less than 1%.

There are no customers-reported outages during recorded flooding events since 2000. However, for the purpose of this risk assessment, when compared with the total number of customers served by WEC, it can be projected that less than 1% of all customers may report outages during any given flooding event.

Problem Statement

WEC should continue placement of assets outside of flood-prone areas.

Severe Winter Weather

Previous Occurrences

From 1992-2016, Webster's service area has experienced 38 days of severe winter weather events, including blizzards, heavy snowfall, and ice storms. Like so many of Missouri's electric cooperatives, WEC was hard hit by the ice storm of 2007. To update this data, NCEI reported 3 winter weather events occurring during the past five years in the area. WEC did not report any additional damages or outages since the last update.

Probability of Future Occurrence and Vulnerability

The probability of a severe winter weather event is 60%. WEC does maintain records associated with severe winter weather from 1992. Estimated material damages associated with each of these events were compiled by WEC staff. Table 7 provides a summary of event dates, types, associated damage estimates, and reported outages.

Table 7 *WEC Severe Winter Weather Event Summary*

Event Date	Event Type	Damage Estimates	Outages Reported
11/24/1996	Ice storm	$350,000	6,000
1/3/05	Ice storm	$650,000	9,000
1/12/2007	Ice storm	$1,700,000	14,400
	Totals	$2,700,000	29,400
Data provided based on internal WEC records which reflect cost from the referenced event year.			

Three occurrences caused damage to cooperative assets during the years existing in cooperative records. There is a 10% probability that a damaging storm will occur in any given year. Based upon these historical records, severe winter weather events will cause an average annual damage of $90,000. This averaged amount accounts for less than 0.1% of WEC's total overhead asset valuation of $161,121,004.

An average annual of 980 outages were recorded during severe winter weather events since 1992. When compared with the total number of meters served by WEC, it can be projected that 4.5% of all meters may experience outages during any given year due to a severe winter weather event.

Problem Statement

Underground placement of assets remains the best protection against damage from ice storms.

B. Non-historical Hazards

Wildfire

Previous Occurrences

The incidence of wildfire in the WEC service area presents a unique risk assessment. Wildfire events have occurred in each of the seven counties. Since over 98% of WEC meters are within the Counties of Christian, Greene and Webster, data from the other four counties will not be used in this assessment. Table 8 summarizes the incidences of wildfire within the three counties. It is not realistic to assume these totals apply solely to the WEC service area since it covers only portions of the seven counties of service.

Table 8 *Wildfire Summary by County*

County	# of Wildfires, 2004-16	Average Annual # of Wildfires	Acres Burned	Average Annual Acres Burned
Christian	290	22	2,550	196
Greene	936	72	4,875	375
Webster	684	53	5,700	428
Totals	1,910	147	13,125	999
Source: Missouri State Hazard Mitigation Plan, 2018				

Probability of Future Occurrence and Vulnerability

The potential extent of damage caused by wildfire is difficult to determine. Like earthquakes and dam failure, wildfires have had no measurable impact upon the WEC service area. WEC sustained no damage related to wildfires in its service area during this time period. Cooperative assets are located throughout the service area rather than being located at a single central site. With an average annual of 999 acres burned and the WEC service containing 366,080 acres; it is very unlikely that infrastructure damage would exceed 0.2% or $359,747 based upon asset location and unlikeliness of an uncontrollable wildfire.

No customers have reported outages during recorded wildfires between 2004 and 2016. When compared with the total number of customers served by WEC, it can be projected that less than 1% or about 200 of all customers may report outages during any given wildfire event.

Problem Statement

Further study will be required to create a model for damage assessments related to wildfire.

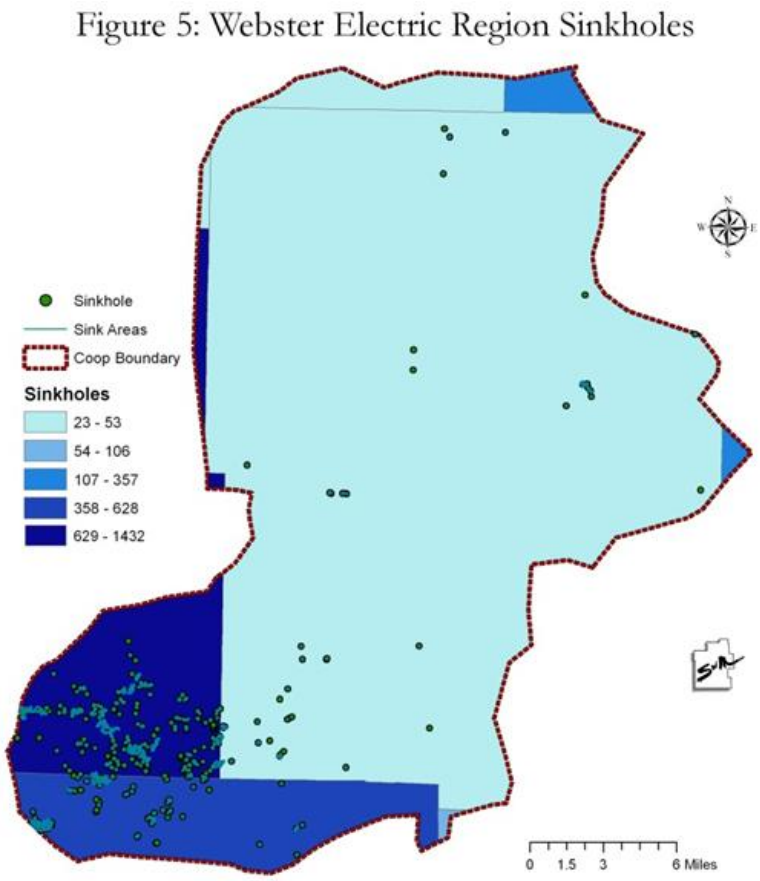
Severe Land Subsidence (Sinkholes)

Previous Occurrences

Webster Electric service area is underlain primarily by carbonate rocks containing mainly limestone and some dolomite bedrock. These types of bedrock are extremely sensitive to water dissolution along joints and fractures within the rock. Areas along natural drainage paths tend to be more susceptible to sinkhole

formation as well, due to increased water flow into the subsurface. There are 293 known sinkholes within the Webster Electric service area. Figure 5 shows the location of the sinkholes within Webster Electric's service area. *(Map sources: www.msdis.missouri.edu.)*

Figure 5 *Location of Sinkholes Map*



Probability of Future Occurrence and Vulnerability

Formation of sinkholes can and will affect Webster Electric. However, the impact of past sinkholes is statistically negligible. Since sinkhole formation occurs on a localized scale, property damage is negligible depending on structures immediately within or adjacent to the sinkhole area. However, for the purposes of this assessment, sinkholes and their associated impacts cannot be eliminated from the realm of possibility. In order to allow for a risk assessment, the probability of this event's impact on WEC has been included as less than 1% of the total asset's valuation of $161,121,004.

Determining the potential extent of impact in terms of reported outages due to sinkhole formation is difficult to pinpoint; however, is very unlikely such an event would result in more than 1% or 200 meters in the system experiencing outages.

Problem Statement

The fact that WEC does extensive engineering and environmental impact studies prior to construction of infrastructure reduces the potential threat of damage from land subsidence. If an incident of land subsidence occurred, it would be localized to a relatively small area which would further limit its impact on the cooperative.

Earthquakes

Previous Occurrences

One source of earthquake risk in southwest Missouri is the Nemaha Fault, which runs roughly from Oklahoma City, Oklahoma north to Lincoln, Nebraska. In 1993, the Nemaha fault produced an earthquake measuring a 2.9 magnitude on the Richter scale. Additional quakes took place February 11, 1995 (3.1 magnitude); July 16, 2004 (3.5 magnitude); March 23, 2003 (3.1 magnitude). More recently, an earthquake of magnitude 3.6 was recorded on December 17, 2009. Although a relatively quiet fault system, the Nemaha fault has the potential to produce a damaging earthquake, profoundly impacting the Webster Electric Cooperative. On November 24, 2013, a magnitude 2.4 earthquake occurred in Webster County which produced no reported damage.

The region is also subject to effects of the New Madrid Fault located in extreme southeast Missouri, which has, according to many experts, the potential to produce the largest earthquakes in North America. Undoubtedly, this fault has the potential to affect the WEC service area in its entirety. In addition, there have been several small, virtually undetectable earth movements in the region in recent history, which may or may not be attributed to the aforementioned fault lines or other, very small faults located nearby.

Probability of Future Occurrence and Vulnerability

While the Nemaha fault is geographically closer and geologically active, C.E.R.I. records demonstrate the limited impact of said earthquakes, with no quakes to date exceeding a 5.5 on the Modified Mercalli Scale. Its cascading effects have been largely restricted to more localized regions, but even then the damage caused has been minimal. By contrast, the New Madrid fault has the potential to cause damage throughout the state of Missouri, including the WEC service area. Scientists from the U.S. Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis have estimated the probability of a magnitude 6.0 or greater earthquake from the New Madrid Fault is 25-40 percent through the year 2053.

The projected earthquake intensity ratings for the cooperative region changes based upon the Modified Mercalli Scale. Given a New Madrid earthquake with a 6.7 magnitude, the region would experience Level V intensity characteristics. In the event of an earthquake with a 7.6 magnitude, the region would experience Level VI intensity characteristics while an earthquake with an 8.6 magnitude would most likely cause Level VII intensity characteristics.

In the event of an earthquake with a 7.6 magnitude, the WEC service area would most likely experience minor building damage as well as damage to the electrical distribution system. This damage, however, would most likely be relatively minimal and localized when compared with the southeast corner of the

state. Distribution lines overhead and underground could become disconnected or severed, and transformers could be damaged

Based upon information from CERI, FEMA, and SEMA, it may be estimated that 1,875 customers could report outages related to an earthquake event. When compared with the total number of customers served by WEC, it can be projected that up to 10% of all customers may report outages during any given seismic event.

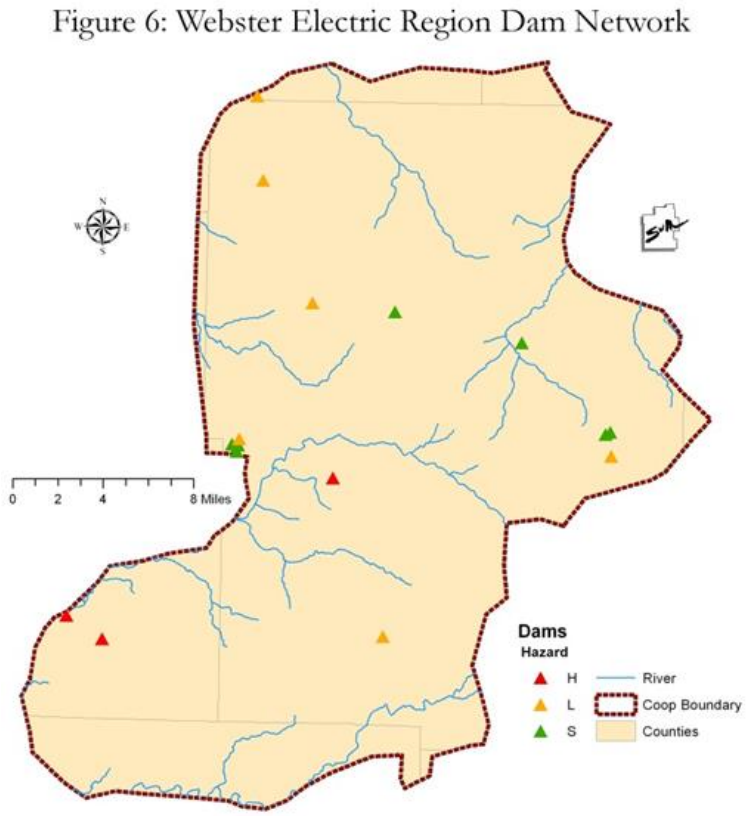
Problem Statement

Webster Electric Cooperative should strive to meet seismic design standards for electrical substation equipment and other overhead assets susceptible to damage from earthquake events.

Dam Failure

Like earthquakes, dam failures have had no measurable impact upon the WEC service area to date. According to Missouri DNR's Dam Safety Division, 16 dams currently exist within the cooperative boundaries: one in Dallas County, two in Greene County, and 13 in Webster County. Of these dams, one in Greene County and two in Webster County are regulated by the state due to the fact that they are non-agricultural, non-federal dams which exceed 35 feet in height. Figure 6 shows the locations of all known dams located within Webster's service area. *(Map sources: www.msdis.missouri.edu; www.dnr.mo.gov/env/wrc.)*

Figure 6 *Location of Dams Map*



Previous Occurrences

The 2018 Missouri State Hazard Mitigation plan states “For the 42-year period from 1975 to 2016 for which dam failure statistics are available, 19 dam failures and 68 incidents are recorded. According to this data, annual probability calculates to a 45 percent annual probability of a dam failure somewhere in the state and a 100 percent annual probability of dam incidents. In should be noted that historical dam failures and incidents include events from all hazard classes and all dams (whether regulated or un-regulated). Failures and incidents for regulated dams that have higher inspection frequencies should be less probable. The probability of future events is 45%." However, no such event has occurred within or near the cooperative’s boundaries. For the purposes of this assessment, dam failure and its associated impacts cannot be eliminated from the realm of possibility.

Probability of Future Occurrence and Vulnerability

In order to allow for a risk assessment, the probability of this event has been included as less than 1%. Determining the potential extent of dam failure is currently impossible due to a lack of data concerning inundation zones. This assessment assumes a limited impact upon downstream electric distribution infrastructure of less than 1% for both infrastructure damage and service interruption.

Problem Statement

Further study concerning existing dams and the impact of their failure is required to make a more comprehensive assessment of potential damages and mitigation strategies to address this potential damage.

C. Risk Assessment Summary

Most of the historical hazards have had an impact on the electric cooperatives. Table 9 below shows the annual damages associated with each hazard for WEC. The table is ranked by the highest Average Annual Damages which is an indication of the vulnerability to each hazard.

Table 9 *WEC Hazard Risk Summary*

Hazard	Average Annual Damages
Severe Winter Weather	$90,000
Tornadoes	$1,050
Severe Thunderstorms, and High Winds	$955
Flood and Levee Failure	$0
Hail	$0
Wildfire	$0
Dam Failure	$0
Earthquakes	$0
Severe Land Subsidence (Sinkholes)	$0

Hail- producing Thunderstorms and Floods/Levee Failure along with the non-historical hazards, Wildfire, Land Subsidence, Earthquakes and Dam Failure, have the potential for causing catastrophic damages in any given year. To date there have been zero reported damages to the assets of the Webster Electric Cooperative from these events. Nonetheless, this set of hazards should be included in mitigation strategies because of the damage potential.

Section 4: Mitigation Strategies

Previous Mitigation Efforts

For organizations like WEC, mitigation is considered to be part of prudent business operations. In order to ensure the delivery of a quality product and minimize service interruptions, a number of mitigation strategies are continually utilized. Routine maintenance and upgrades to existing equipment are completed as part of daily tasks. Vegetation management is utilized to limit the cascading effects of natural hazards. Safety and reporting information are disseminated to the public through various types of media. Mutual aid agreements and partnerships create relationships which provide for future support in the event of a natural disaster.

Additionally, mitigation is considered prior to any expansion of service into special hazard areas. Before any service is built, it is first "staked out" in coordination with local builders and property owners. This process, completed by the Line Superintendent and contracted engineers, identifies and addresses foreseeable hazards and safety issues before any new service lines area constructed. USDA-RUS specifications regarding operation and safety are utilized in every step of the process. Steps are taken to practically minimize the exposure of equipment to loss due to foreseeable hazards, particularly flooding. Customers who reside in the floodplain are not charged for repairs or losses associated with flooding unless they purposefully destroy or restrict the cooperative from protecting their distribution system assets.

Existing and Potential Resources

As stated above, mitigation is a key component of good business practices. Webster Electric Cooperative includes mitigation strategies as part of regular work activities to ensure service with minimal interruptions. Funding for these activities is provided through the cooperative's normal budgetary process for maintenance. In order to expand mitigation efforts beyond normal maintenance, it is likely that WEC will need to seek outside funding sources. These may include private, state, or federal programs which provide grant and loan funding. Upon passage of this plan, WEC will be eligible for funding through FEMA in the following categories:

- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program
- Pre-Disaster Mitigation Program
- 406 Stafford Act
- USDA Economic Development Grants

Review of Goals and Actions

To focus on the mitigation actions for the 2023 update to this plan, it was decided to reach consensus on four goals that would address the needs of every cooperative member of AMEC and eliminate the objectives from previous updates. The WEC mitigation staff reviewed these goals and the actions from the previous update which addressed hazard mitigation issues. They evaluated each action to decide if it was completed, will be continued, or should be deleted. There also was the opportunity to add new actions.

The staff considered which type of actions will maximize benefits and minimizes costs, how mitigation strategies will be implemented, and how the plan will be maintained and updated. Table 10 lists the goals as reviewed in the 2023 plan update.

Table 10 *Webster Electric Cooperative Goals 2023*

Identified Goals	Reassessment of the Goal 2023
Goal 1: Protect the health and safety of the community.	Accept, as is
Goal 2: Reduce future losses due to natural hazard events.	Accept, as is
Goal 3: Improve emergency management capabilities and enhance local partnerships.	Accept, as is
Goal 4: Continue to promote public awareness and education.	Accept, as is

Traditionally, the STAPLEE (Social, Technical, Administrative, Political, Legal, Environmental, and Economic) method is used to prioritize mitigation actions. These categories, however, do not necessarily align with the private sector in the same way they are applicable to governmental agencies. Several action items could be included with multiple goals, for example. As a result, the cooperatives chose to use a different method to prioritize their mitigation strategy.

The chosen method of reviewing the proposed and existing mitigation strategies was to perform a cost-benefit analysis of all mitigation actions. The analysis was based on past experiences of performing certain actions and the potential number of beneficiaries. The following matrix, Table 11, was used to rate each mitigation action. Cooperative staff was asked in the Goals and Actions Survey to review the cost-benefit rating and change if necessary.

Table 11 *Cost Benefit Matrix*

COST	BENEFIT		
	High	Medium	Low
High	7	4	1
Medium	8	5	2
Low	9	6	3

The following tables represent the completed review of current and potential mitigation strategies. Each strategy has assigned a cost benefit score assigned by the cooperative staff based on prior experience and professional opinions. Table 12 shows review the actions and the results of the cost-benefit analysis. The table has been updated through the Goals and Actions Survey that was sent to facilitate the staff update review. The Survey can be found in Appendix C. Staff members reviewed each item on the original tables and determined the status of the item.

WEBSTER ELECTRIC COOPERATIVE

Table 12 *Prioritized Mitigation Actions for Webster Electric Cooperative – 2023*

Goal-Action #	Action Item	Status Update	Progress on Continued Actions	Hazards Addressed	Completion Date	Cost/ Benefit
1-1	Research and employ when feasible the use of organic or ecologically neutral herbicides for use in vegetation management programs.	Continue (In-progress)	We continue to use and research herbicides that do the least amount of damage	Flooding Thunderstorms Tornado Winter Weather	Annually	4
1-2	Continue to employ and develop GIS technology and applications to identify system failures and reduce response time for outages.	Continue (In-progress)	We are always adding new services or updating existing ones and the GIS system is a core tool used in this process.	Flooding Thunderstorms Tornado Winter Weather	Annually	9
2-1	Install vibration dampeners and air foils to prevent galloping of conductor spans during high wind events.	Continue (Not started)	Have not identified any spans where this type of action needs to be taken.	Thunderstorms Tornado Winter Weather	Annually	5
2-2	Install additional poles to support transformers, as mid-span poles, or to shorten spans to no greater than 300 feet.	Continue (In-progress)	All new construction this is accomplished, as we reconductoring or convert existing lines we respond to meet this criterion.	Flooding Thunderstorms Tornado Winter Weather	Annually	7
2-3	Replace damaged poles with higher-rated poles of the same or different material with laminated coatings	Continue (In-progress)	This always part of our continuous improvement process.	Flooding Thunderstorms Tornado Winter Weather	Annually	7
2-4	Enforce existing easements and expand inferior easements through cooperative efforts and eminent domain.	Continue (In-progress)	This always part of our continuous improvement process.	Flooding Land subsidence Thunderstorms Tornado Winter Weather	Annually	9
2-5	Monitor developments in data availability concerning the impact of dam failure, wildfire and sinkholes upon the WEC service area through local, state, and federal agencies.	Continue (In-progress)	This is something that we do continuously when we are in the middle of an event of this nature described.	Dam Failure Flooding Thunderstorms Tornado Wildfire Winter Weather	Annually	2

WEBSTER ELECTRIC COOPERATIVE

Goal-Action #	Action Item	Status Update	Progress on Continued Actions	Hazards Addressed	Completion Date	Cost/ Benefit
3-1	Coordinate with local emergency managers to be included in emergency stakeholder groups and exercise participation.	Continue (In-progress)	This always part of our continuous improvement process.	Flooding Thunderstorms Tornado Winter Weather	Annually	6
3-2	Maintain looped distribution service and other redundancies to critical facilities and key communication infrastructure.	Continue (In-progress)	This always part of our continuous improvement process.	Thunderstorms Tornado Winter Weather	Annually	7
4-1	Provide safety and reporting information to the general public through company websites, social media, local newspapers, presentations, and publications.	Continue (In-progress)	This always part of our continuous improvement process.	Flooding Thunderstorms Tornado Winter Weather	Annually	6
4-2	Ensure that critical and vulnerable facilities served are provided outreach and education on best practices for generation use, alternate wiring, and transfer switching that are compatible with standard specifications and design and power delivery.	Continue (In-progress)	We make yearly contact with these organizations to ensure we are all on the same page.	Flooding Thunderstorms Tornado Winter Weather	Annually	9

After review, all actions are continued in the plan update. There were no actions reported completed or deleted and are no additional actions added to the 2023 plan.

Section 5: Plan Implementation and Maintenance

Plan Incorporation

The goals and actions of the previous section identify both ongoing efforts at mitigation and potential methods for expanding efforts. The plan has been reviewed and adopted by the Board of Directors as part of the company's operations policy. This mitigation plan necessitates involvement from every Webster Electric Cooperative employment level as the organization strives to ensure quality service to their customers.

Local Planning Capabilities

Some internal planning capabilities do exist at Webster. The Hazard Mitigation Plan can be considered and/or incorporated into regular budgetary planning, the four-year work plan for capital improvements, and the maintenance planning policy. Planning capabilities per se for the electric cooperatives are limited. What is important is that the Action Items developed through the mitigation planning process are incorporated into the daily activities of the cooperative.

The four-year work plans embrace the mitigation efforts that are in the mitigation plan. The electric cooperatives across Missouri are always working to strengthen their systems. This would include installing stronger/larger poles when smaller ones need to be changed out, installing stronger/larger conductors that can carry more weight and decreasing span lengths between poles, installing larger anchors, relocating structures out of flood plains, and installing structures to stop cascading during ice storms.

Other capabilities are unique to the electric cooperative's business of providing reliable electricity to their members. Many of the Action Items listed in the plan include tree trimming plans, use of GPS to locate outages, service upgrades to lines and poles, warning systems and use of weather radios, collection of GIS data and utility specific software for locating and rerouting outages to restore power, all contribute to local capabilities. Integration of Webster's planning with local law enforcement, mutual aid agreements, and partnerships with local emergency management resources ensures power to critical facilities during a hazard event. This coordination and cooperation broaden the capabilities of the local cooperative.

Beyond the Webster Electric Hazard Mitigation Plan, regional planning capabilities exist at the local level. The Missouri counties of Webster, Greene, and Christian each have a FEMA-approved Natural Hazard Mitigation Plan in place. County emergency management directors have Local Emergency Operations Plans which seek to mitigate the same hazards for residents. These same counties are also included in the Regional Transportation Plan (RTP) as well as a Comprehensive Economic Development Strategy (CEDS). WEC's plan can be easily incorporated into these local plans and allow for coordination across agencies in the event of an emergency.

WEC is located within the rural portions of many third-class counties which are prohibited from enforcing building codes and zoning by the state of Missouri. However, Greene and Christian counties are first and second class, respectively. These counties have comprehensive plans, planning and zoning commissions, subdivision regulations and building codes. WEC does provide service to all municipalities within its service area. Comprehensive plans and Capital Improvement plans exist for these entities. The

Webster Electric Natural Hazard Mitigation Plan can easily be incorporated into future updates of these plans.

Plan Maintenance

Webster Electric Cooperative will follow the requirements coordinated by the Association of Missouri Electric Cooperatives (AMEC) for monitoring, evaluating, and updating the plan.

Continued Public Involvement Opportunities

Public notice was given in the form a notice in the *Rural Missouri*, a publication of the Association of Missouri Electric Cooperatives, distributed to all cooperative members. The updated 2023 plans were posted on the website of the Northwest Missouri Regional Council of Governments for public review and comment. Comments were considered and addressed. Once all co-op plans were completed, they were assembled into one plan and submitted to the State Emergency Management Agency and the Federal Emergency Management Agency for review and approval. The documentation for public involvement and comments can be found in Appendix B of each cooperative's section of the plan.

WEC will follow the requirements coordinated by the Association of Missouri Electric Cooperatives (AMEC) for continued public involvement. Opportunities for public comment will continue to be offered through various media outlets and the physical office of Webster Electric Cooperative.

Appendix: A - Adoption Resolution

RESOLUTION

HAZARD MITIGATION PLAN

)

Appendix: B - Documentation of Participation

This ad was published in the *Rural Missouri*, a monthly publication of the Missouri Association of Missouri Electric Cooperatives, giving public notice to all subscribing members of AMEC.

Appendix: C - Surveys

Data Survey

The following is the returned survey from WEC which was used by NWMORCOG staff to update the Plan:

Please correct/update the following information from the previous plan.

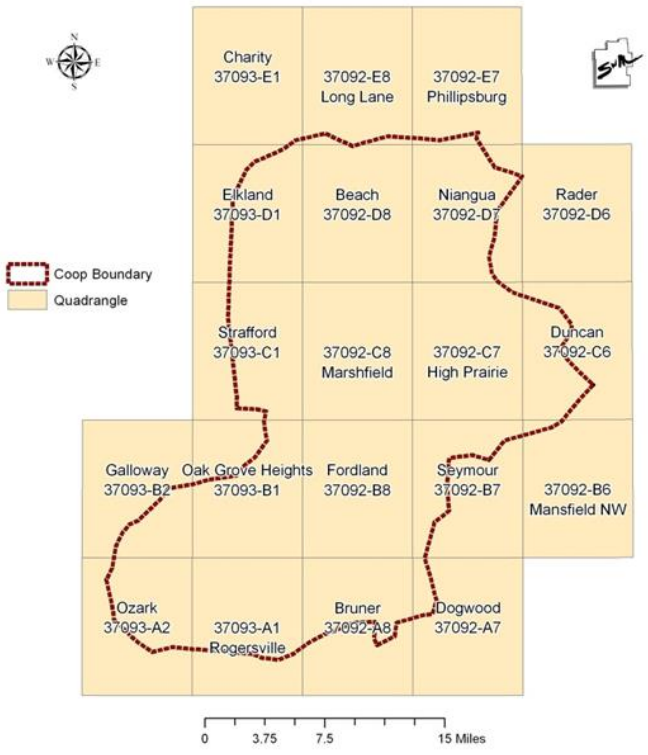
Webster Electric Cooperative (WEC) was established in 1946 to provide electric service to the rural areas of southwest Missouri. A Touchstone Energy Cooperative, Webster Electric Cooperative is a locally owned and governed not-for-profit cooperative based in Marshfield, Missouri. WEC currently serves over 18,000 member-owners in its seven county service territory. To keep up with the changing times and the changing needs of its members, in 2000 Webster Electric Cooperative's Mission Statement evolved to the following:

> *"Webster Electric Cooperative exists to provide reliable electric service at the most economical cost, enrich the life of the community, educate members concerning the benefits of membership, and encourage member participation in the Cooperative."*

WEC's service boundaries within the state of Missouri include portions of Webster, Greene, Christian, Dallas, Laclede, Wright and Douglas counties in southwest Missouri. The cooperative owns 1,957miles of overhead service line and 180 miles of underground line within its service area which covers 572 square miles.

if needed, please replace or attach a different map if available or provide info on changes so a new map can be made.

Figure 1: Webster Electric Service Area Quadrangle
USGS Code Map



The customer base of WEC currently is comprised of 17,000 members. The majority of WEC customers are in Webster County, Missouri. Webster Electric cooperative provides electric service to the municipalities of Marshfield, Rogersville, Fordland, Niangua, and Diggins in Webster County. Table ? provides the summary of meters by Missouri County.

Meters by Missouri County

County	Number of Meters
Webster	15,710
Greene	3,140
Christian	2,400
Dallas	330
Laclede	45
Wright	14
Douglas	10
Total	21,778

The average member usage for WEC is 1,470 kilowatt-hours (kWh) per month. Total usage for 2020 was 372,528,236 kWh.

Population Density Map will be updated by staff at NWMORCOG

Critical Facilities

In addition to all government owned buildings within its service area, WEC provides electric service to vulnerable and critical facilities. WEC provides service to facilities in five school districts, 8 Red Cross emergency shelters, 8 childcare facilities and 7 medical clinics. In addition to all government owned buildings within its service area, WEC provides service to 7 medical clinics, 4 residential care facilities, 8 fire districts, 4 ambulance/paramedic stations, 18 public school buildings in 5 school districts and industrial centers within its service area.

Future Development The info wanted here is if any of your members you serve have future development plans that would potentially affect your operation.

We serve the towns for Marshfield and Rogersville and there is currently great demand for housing in these areas and developers are working feverishly on adding new lots.

The FEMA reviewers that approved the previous update suggested including current operating budget information, any capital improvements, or strategic initiatives in this update. Please add or attach if possible.

Asset Inventory Please update the figures below to the most current information

Webster Electric Cooperative has a wide variety of assets by type. Real estate owned by the company includes office buildings, warehouses, garages, and other outbuildings throughout the service area. Twenty vehicles provide access to customers and infrastructure. Table ? provides information concerning total asset valuation.

Webster Electric Asset Inventory Valuation Summary

Asset	Total Replacement Cost	Cost breakdown
Total WEC Assets	$188,274,113	Buildings and vehicles - $10,730,500 Overhead assets - $161.121,004 Underground assets - $16,422,609
Distribution Lines	OH $88,195,060 UG $10,524,024	OH Single-phase lines - $71,1179,540.8 UG Single-phase lines - $9,269,568 OH Three-phase lines - $17,495,520 UG Three-phase lines - $1,462,776
Supporting Infrastructure	OH $72,925,943 UG $5,746,125	Meters - $3,462,055 Poles - $45,261,216 OH Transformers - $8,751,624 UG Transformers - $5,746,125 Guys/Anchors - $10,097,535 Cross-arms - $3,414,757 Regulators - $1,126,125 SP Oil-Circuit Reclosures - $629,764 3phase Oil-Circuit Reclosures - $128,359 Capacitors - $46,200
Office Buildings	$6,000,006	
Warehouses	$1,430,000	
Vehicles	$3,938,550	
Source: Internal Webster Electric Accounting and Insurance records, 2020		

Ensuring quality distribution to its customers, Webster maintains not only distribution lines, but also the supporting infrastructure as well.

Table ? includes a list of asset types, emergency replacement cost per unit or mile, the asset inventory by county of service, and total infrastructure numbers.

Webster Electric Asset Inventory by Service County

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: WEBSTER	Number of units or miles: GREENE	Number of units or miles: CHRISTIAN	Number of units or miles: DALLAS
Meter	$200/unit	16,485	2,983	2087	350
Pole	$1,600/unit	40,788	6,897	5,118	862
SP*** Distribution line	$35,000/mile OH ($7/foot OH) $58,000/mile UG ($10/foot UG)	1,394 OH 126 UG	230 OH 22 UG	170 OH 16 UG	30 OH 2.5 UG
TP**** distribution line	$75000/mile OH $125,000/mile UG	161 OH 1.5 UG	29 OH 1.5 UG	24 OH 1 UG	3 OH 0 UG
Transformers	$1,000/OH $1,500/UG	2,350 OH 1,506 UG	2,088 OH 255 UG	1,550 OH 189 UG	261 OH 32 UG
Guys/anchor	$500/unit	28134	3700	2710	461
Cross-arms	$250/unit	11,250	1,700	1,500	250
Regulators	$8,000/unit	150	30	24	6
Oil Circuit Reclosures	$1,200/unit	561	80	75	20
Capacitors	$500/unit	100	25	20	5
Total Replacement Value by County	OH* UG**	$118,966,544 $11,550,000	$22,155,126 $2,199,876	$16,510,165 $1,521,181	$2,762,758 $214,368

Table continues on the next page.

Asset Inventory by Service County (Continuation of Table ?)

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: LACLEDE	Number of units or miles: WRIGHT	Number of units or miles: DOUGLAS	Total number of units or miles in all counties:
Meter	$200/unit	51	16	12	21,981
Pole	$1500/unit	119	51	47	53,882
SP*** distribution line	$35,000/mile OH ($7/foot OH) $58,000/mile UG ($10/foot UG)	1 OH* 0 UG*	1 OH 0 UG	1 OH 0 UG	1,832 OH 167 UG
TP**** distribution line	$75,000/mile OH $125,000/mileUG	3 OH 8 UG	0 OH 0 UG	0 OH 0 UG	220 OH 14 UG
Transformers	$1,000/OH $1,500/UG	46OH 4UG	13 OH 2 UG	7 OH 1 UG	6,945 OH 7 UG
Guys/anchor	$500/unit	62	26	24	38,467
Cross-arms	$250/unit	26	11	10	13,007
Regulators	$8,000/unit	4	0	0	130
Oil Circuit Reclosures	$1,200/unit	5 SP TP	2 SP TP	2 SP TP	727 SP 16 TP
Capacitors	$500/unit	0	0	0	84
Total Replacement Value by county	OH* UG**	$491,937 OH $897,540 UG	$119,785 OH $5,302 UG	$113,485 OH $66,759 UG	$161,121,004 OH $16,479,309 UG

*OH = overhead **UG = underground ***SP = Single phase ****TP – Three phase

Source: Internal Webster Electric Accounting and Maintenance records

Risk Assessment

Please add any known information related to each of the natural hazards that follow: Flooding (Major and Flash), Levee Failure, Dam Failure, Earthquake, Land Subsidence/Sinkholes, Drought, Extreme Temperature, Severe Thunderstorms, Severe Winter Weather, Tornadoes, Wildfire

NWMORCOG will add information to the narrative from the National Weather Service that has occurred since 2016

Tornadic Event Summary

Date of Event	EF Scale Rating	Damage Estimates	Outages Reported
11/1/2004	F1	$3,600	350
3/12/2006	F3	$3,500	2,150
1/7/2008	F3	$7,600	5,500
1/8/2008	F0	$6,400	850
5/8/2009	F1	$2,000	200
	Totals		
Data provided based on internal WEC records which reflect cost from the referenced event year.			

Thunderstorm/High Wind, Hail Event Summary

Event Date	Damage Estimates	Outages Reported
4/20/2000	$200	54
4/11/2001	$210	147
6/14/2001	$150	27
7/5/2001	$1,875	17
5/8/2002	$150	25
5/12/2002	$200	164
7/6/2002	$250	237
8/19/2002	$125	174
5/6/2003	$375	125
8/2/2003	$5,400	1164
11/23/2003	$1,750	148
9/14/2004	$1,150	329
6/13/2005	$250	78
6/30/2005	$500	291
8/13/2005	$200	96
9/13/2005	$650	67
4/24/2007	$150	180
8/24/2007	$600	215
10/17/2007	$200	123
1/7/2008	$250	98
1/8/2008	$250	180
7/6/2008	$275	187
7/22/2008	$800	75
12/27/2008	$320	112

Event Date	Damage Estimates	Outages Reported
4/9/2009	$1,050	475
5/13/2009	$340	146
6/10/2009	$750	219
7/16/2009	$150	175
5/13/2010	$1,250	340
7/16/2010	$920	400
10/26/2010	$275	115
Totals		
Data provided based on internal WEC records which reflect cost from the referenced event year.		

The hazards of flood and levee failure have been separated in the Missouri State Hazard Mitigation Plan. If possible, separate any damage/outages data into the appropriate hazard's table.

Flood Event Summary From 2000-2016, Webster's service area has experienced 152 days flooding events, which included both flash floods and riverine floods. Property damage in Webster and Greene Counties was over $39 million during this period with two fatalities recorded. *(Source: NOAA)*

The average annual number of days with a flooding event is 8.9 for the 17-year period. To date, there have been no reported instances of flooding which have affected cooperative assets or has resulted in any outages, resulting in an average annual damage amount of $0.

Event date	Damage estimates	Outages reported

Levee failure,

Event date	Damage estimates	Outages reported

Severe Winter Weather Event Summary

Event Date	Event Type	Damage Estimates	Outages Reported
11/24/1996	Ice storm	$350,000	6,000
1/12/2007	Ice storm	$1,700,000	14,400
1/3/05	Ice storm	$650,000	9,000
Totals			

Data provided based on internal WEC records which reflect cost from the referenced event year.

Please add any dates, known damage, and outages since the last plan due to

dam failure,

Event date	Damage estimates	Outages reported

drought,

Event date	Damage estimates	Outages reported

earthquake,

Event date	Damage estimates	Outages reported

extreme temperatures (hot & cold)

Event Date	Event Type	Damage Estimates	Outages reported

land subsidence,

Event date	Damage estimates	Outages reported

or wildfire.

Event date	Damage estimates	Outages reported

Goals and Actions Survey

The original survey is an interactive Excel file that could not be inserted without stabilizing the formatting. All of the data submitted is included in the tables below.

Complete each row left to right. Click on each box to receive instructions for that box.	Goals	Reassess the goal	Instructions	Justifications
→	**Goal 2**: Reduce future losses due to natural hazard events.	accept, as is ☑ yes	If you chose to remove or modify the goal, please give your reasons in the box to the right.	
→	**Goal 3**: Improve emergency management capabilities and enhance partnerships.	accept, as is ☑ yes	If you chose to remove or modify the goal, please give your reasons in the box to the right.	
→	**Goal 4**: Continue to promote public awareness and education.	accept, as is ☑ yes	If you chose to remove or modify the goal, please give your reasons in the box to the right.	
↘	**After completing this sheet, please click the "actions" tab at the bottom**			
risk summary table Information to consider when updating				

Table 1 *WEC Hazard Risk Summary*

Hazard	Average Annual Damages
Severe Winter Weather	$90,000
Tornadoes	$914
Severe Thunderstorms, and High Winds	$841
Flood and Levee Failure	$0
Hail	$0
Wildfire	$0
Dam Failure	$0
Earthquakes	$0
Severe Land Subsidence (Sinkholes)	$0

goals | actions

Goal-Action#	Action Items Specify locations when able	Status Update	Report progress on continued actions	Select Hazard(s) addressed by this action	Completion Date	COST/BENEFIT SCORE
1-1	Research and employ when feasible the use of organic or ecologically neutral herbicides for use in vegetation management programs.	Continue (In-progress)	We continue to use and research herbicides that do the least amount of damage	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	4
1-2	Continue to employ and develop GIS technology and applications to identify system failures and reduce response time for outages.	Continue (In-progress)	We are always adding new services or updating exisiting ones and the GIS system is a core tool used in this process.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire	annually	9
3-2	Maintain looped distribution service and other redundancies to critical facilities and/or communication infrastructure.	Continue (In-progress)	This always part of our continuous improvement process.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
2-2	Install additional poles to support transformers, as mid-span poles, or to shorten spans to no greater than 300 feet.	Continue (In-progress)	All new consttruction this is accomploshed, as we reconductor or convert existing lines we respan to meet this criteria.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
2-3	Replace damaged poles with higher-rated poles of the same or different material with laminated coatings	Continue (In-progress)	Go to the next row & start at the left	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
2-1	Install vibration dampeners and air foils to prevent galloping of conductor spans during high wind events.	Continue (In-progress)	Have not identified any spans where this type of action needs to be taken.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	5

2-5	Monitor developments in data availability concerning the impact of dam failure, wildfire and sinkholes upon the WEC service area through local, state, and federal agencies.	Continue (In-progress)	This is something that we do continuously when we are in the middle of an event of ths nature described.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	2
3-1	Coordinate with local emergency managers to be included in emergency stakeholder groups and exercise participation.	Continue (In-progress)	This always part of our continuous improvement process.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
2-4	Enforce existing easements and expand inferior easements through cooperative efforts and eminent domain.	Continue (In-progress)	This always part of our continuous improvement process.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	9
4-1	Provide safety and reporting information to the general public through company websites, social media, local newspapers, presentations, and publications.	Continue (In-progress)	This always part of our continuous improvement process.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
4-2	Ensure that critical and vulnerable facilities served are provided outreach and education on best practices for generation use, alternate wiring, and transfer switching that are compatible with standard specifications and design and power delivery.	Continue (In-progress)	We make yearly contact with these organizations to ensure we are all on the same page.	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	9
		NEW Not Started	NEW	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather		
		NEW Not Started	NEW	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather		

New action item
In this box, write your new specific action that will help you meet your goal.

goals | actions