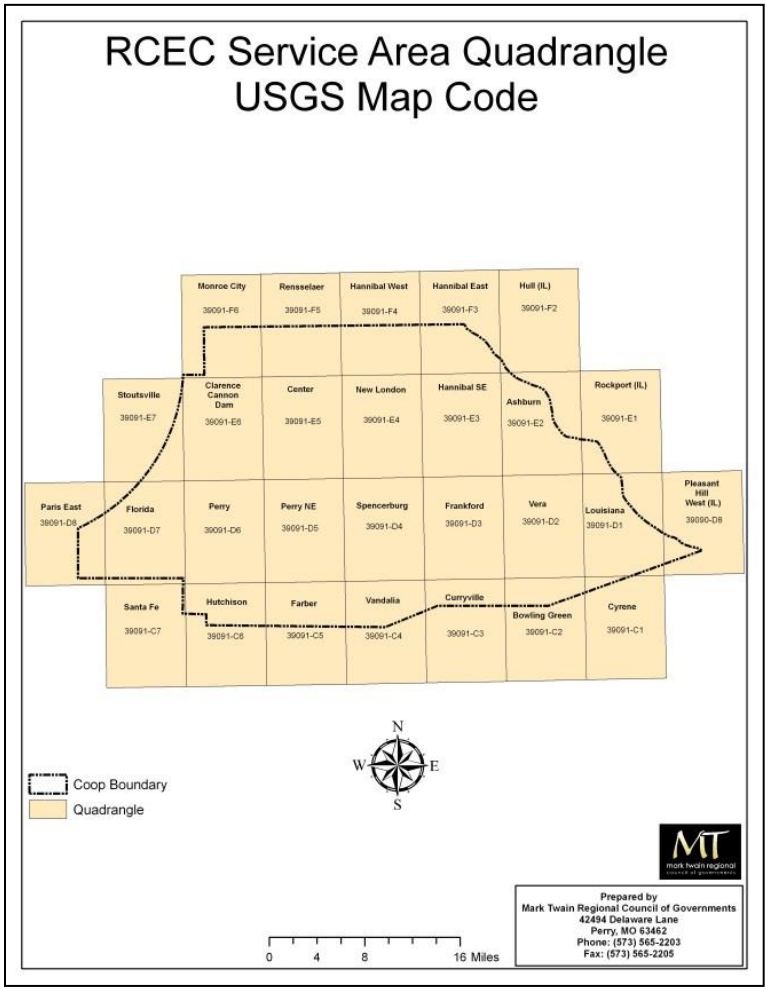
Contents: Ralls County Electric

Section 1: Introduction

In 1936, the Ralls County Electric Cooperative (RCEC) was formed for the purpose of supplying reasonably priced electricity to its member owners. In the early years of the RCEC, members were actively involved in bringing electricity to the countryside. Today, professional crews clear the rights of ways and build electric lines. In addition to electricity, RCEC sells water heaters, heat pumps, surge protection, grills and also participates in energy conservation programs. In 2003, the Cooperative formed Ralls Technologies, which provides high speed Internet service to rural Northeast Missouri. The Cooperative also recently formed a not-for-profit organization, the Ralls Community Foundation, to assist other public and not for profit entities. Headquarters for the RCEC are located in New London, Missouri. Service is provided to customers in five counties in Northeast Missouri that include Audrain, Marion, Monroe, Pike, and Ralls. A nine-member board of directors provides direction for the cooperative.

The RCEC service territory consists of approximately 1,396 miles of energized line. Figure 1 depicts the geographic boundaries of the cooperative in relation to USGS local quadrangles within the state of Missouri. *(Map sources: www.usgs.gov, Association of Missouri Electric Cooperatives, Ralls County Electric Cooperative.)*

Figure 1 *Service Area Map*



The RCEC currently has 6,373 connected meters and exceeds 6,000 members in the five-county service area. Residential customers account for 87.6% of memberships (5,581 members); while non-residential customers make up the remaining 12.4% (792 members) of the total membership. The table below provides the summary of metered customers by county.

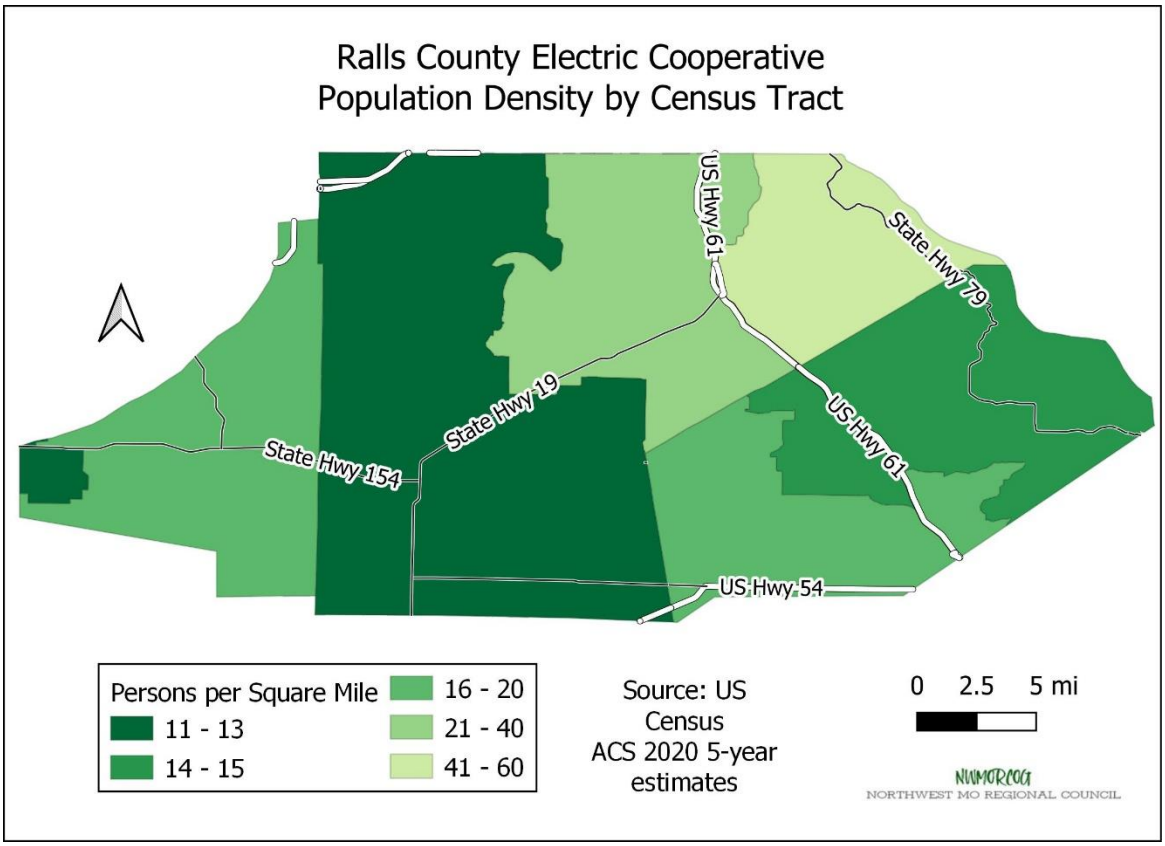
Table 1 provides the summary of metered customers by county.

Table 1 *Meters by County*

County	Number of Meters
Audrain	82
Marion	81
Monroe	789
Pike	784
Ralls	4,637
Total	6,373

RCEC's average daily customer usage is 45 kilowatt-hours (kWh). During 2021, the average annual total usage of RCEC customers was 16,544 kWh of service. 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. RCEC provides service to critical facilities that include water providers/distributors, nursing homes, group homes, emergency services, telecommunications, schools and specifically, the Women's Prison at Vandalia, and the Countryside Rest Home.

Future Development

Ralls County Electric has plans for additional areas to receive fiber service in their service area. Table 2 below illustrates the population trend for the counties served by RCEC.

Table 2 *County Population Trend, 1990-2030*

County	1990	2000	2010	2020	2030 Projected
Audrain	23,599	25,853	25,529	24,835	27,027
Marion	27682	28,289	28,781	28,423	29,759
Monroe	9,104	9,311	8,840	8,672	9,590
Pike	15,969	18,351	18,516	17,552	18,728
Ralls	8,476	9,626	10,167	10,299	10,299
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

Ralls County Electric Cooperative has a wide variety of assets. Real estate owned by the company includes office buildings, warehouses, garages, and other outbuildings throughout the service area. Twenty-six vehicles provide access to customers and infrastructure. RCEC does not own any electric generation or transmission infrastructure. Approximately 1,228 miles of distribution lines are owned and maintained by RCEC. Table 3 provides information concerning total asset valuation.

Table 3 *RCEC Inventory Valuation Summary*

Asset	Total Replacement Cost	Cost breakdown
Total RCEC Assets	$132,240,486	Buildings and vehicles - $7,603,738 Overhead assets - $116,499,128 Underground assets - $8,137,620
Distribution Lines	$99,334,070 OH $7,681,960 UG	OH Single-phase lines - $60,775,000 UG Single-phase lines - $4,740,450 OH Three-phase lines - $38,559,070 UG Three-phase lines - $2,941,510
Supporting Infrastructure	$17,165,056 OH $455,660 UG	OH Meters - $281,206 UG Meters- $20,605 Poles - $9,958,007 OH Transformers - $4,747,556 UG Transformers - $435,055 Guys/Anchors - $939,227 Cross-arms - $223,447 Regulators - $211,508 SP Oil-Circuit Reclosures - $600,946 TP Oil-Circuit Reclosures – $149,919 Capacitors - $14,520 Auto Transformers – $38,720
Office Buildings	$2,402,690	
Warehouses	$2,376,348	
Vehicles	$2,133,451	
Tech Equipment	$2,816,415	
Source: Internal RCEC Accounting and Insurance records, 2022		

Ensuring quality distribution to its customers, Ralls County Electric Cooperative 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 Service County, and total infrastructure numbers.

RALLS COUNTY ELECTRIC COOPERATIVE

Table 4 *Ralls County Asset Valuation Summary*

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: AUDRAIN	Number of units or miles: MARION	Number of units or miles: MONROE	Number of units or miles: PIKE	Number of units or miles: RALLS	Total number of units or miles:
Meters	$43.75/unit	101 OH 0 UG	93 OH 3 UG	663 OH 167 UG	853 OH 36 UG	4,718 OH 265 UG	6,428 OH 471 UG
Poles	$371.42/unit	354	219	3,086	4,940	18,212	26,811
SP*** distribution line	$78,650/mile OH $78,650/mile UG	9 OH 0.2 UG	7 OH 0 UG	96 OH 0.5 UG	174 OH 4 UG	564 OH 44 UG	850 OH 66.3 UG
TP**** distribution line	$133,100/mile ($25.21/foot OH)	6.2 OH 0 UG	1 OH 0.1 UG	30.5 OH 11 UG	48 OH 1 UG	204 OH 10 UG	289.7 OH 22.1 UG
Transformers	$1,028.50 OH $1,028.50 UG	67 OH 0 UG	70 OH 0 UG	487 OH 114 UG	722 OH 22 UG	3,270 OH 287 UG	4,616 OH 423 UG
Guys/anchors	$53.79/unit	204	193	2,121	2,946	22,992	28,456
Cross-arms	$34.88/unit	138	25	671	1,031	4,541	6,406
Regulators	$9,196/unit	0	0	3	4	16	23
Oil Circuit Reclosures	$2,602 SP/unit $21,417 TP/unit	4 SP 2 TP	1 SP 0 TP	26 SP 0 TP	35 SP 0 TP	165 SP 5 TP	231 SP 7 TP
Capacitors	$605/unit	1	0	2	2	19	24
Auto Transformers	$9,680/unit	0	0	0	1	3	4
Total replacement value by County		$1,743,160 OH 0 UG	$804,858 OH $34,891 UG	$12,833,552 OH $2,518,155 UG	$21,777,637 OH $800,802 UG	$79,339,920 OH $4,783,772 UG	$116,499,127 OH $8,137,620 UG

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

Source: Internal RCEC Accounting and Insurance records, 2022

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 RCEC 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 RCEC, hazards with historical data include tornadoes, severe thunderstorms/high wind, severe winter weather, and flood/levee failure.
>
> **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 RCEC, 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 $124,102,866
- Overhead infrastructure assets only
    - Used for:
        - Severe Thunderstorm / High Wind / Hail
        - Flood
        - Severe Winter Weather
            - Valued at $116,499,128

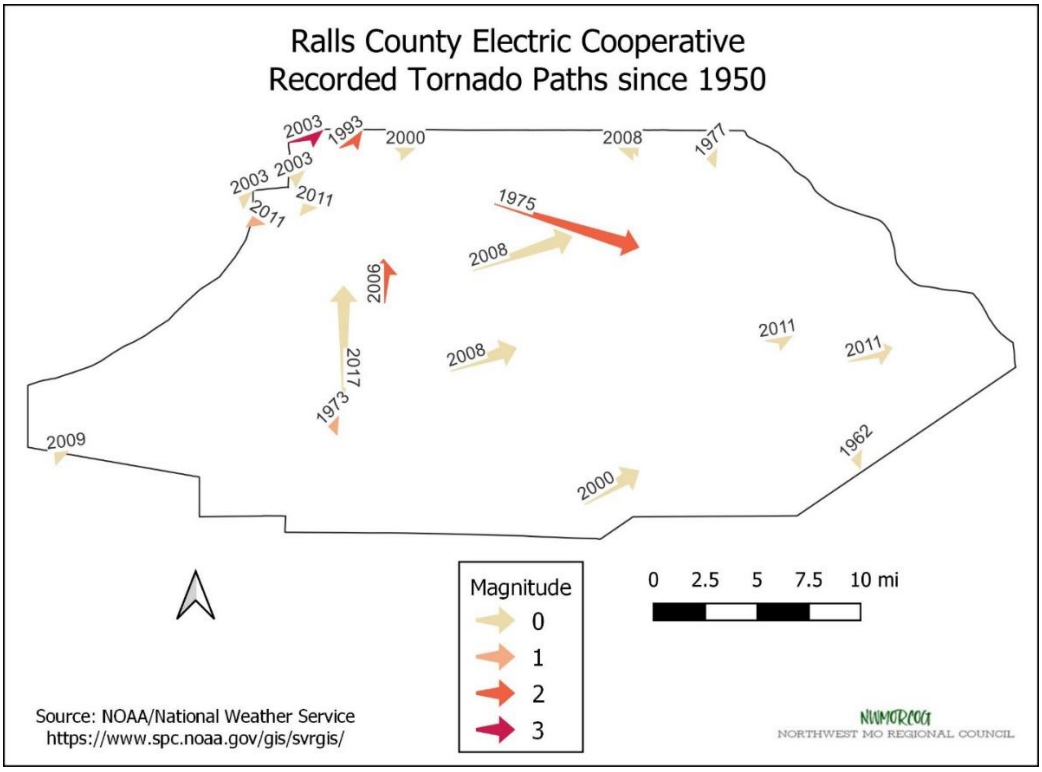
A. Historical Hazards:

Tornadoes

Previous Occurrences

From 1950 through 2020, 20 tornadoes have been reported within the Ralls County Electric Cooperative boundaries. Figure 3 provides a pictorial representation of all recorded tornado touchdown sites and recorded path. *(Data for map collected from NOAA.)*

Figure 3 *Tornado Map*



A data insufficiency exists, however, between 1968 and 1996 in both historical hazard records and cooperative records concerning damage estimates. For the purpose of this assessment, the years for which records exist for both data sets have been used. From 1996-2016, RCEC's service area within the state of Missouri has experienced a total of 15 tornadic events.

Probability of Future Occurrence and Vulnerability

Using the 71-year period of 1950-2020, the probability of a tornadic event in the RCEC service area in any given year is 28%. More recently since 1996, the probability has risen to 57.7% for a tornado event. Estimated cooperative material damages associated with each of these events since 1996 were compiled by RCEC staff. Thirteen of the fifteen occurrences caused damage to cooperative assets, resulting in a 86.7% probability that any given tornadic occurrence will produce damage. The probability that a tornado will cause damage to RCEC in any given year is 50%. Table 5 provides a summary of the event date, EF-scale ratings, damage cost estimates and outages reported.

Table 5 *RCEC Tornadic Event Summary*

Date of event	EF Scale rating	Damage estimates	Outages Reported
2/29/00	F0	$960	3
6/20/00	F0	$1,280	4
5/24/04	F0	$7,000	36
3/12/06	F0	$1,600	5
4/02/06	F2	$3,840	12
6/22/06	F0	$640	2
3/01/07	F1	$2,560	8
10/02/07	F0	$960	3
5/30/08	F0	$960	3
12/27/08	F1	$4,160	13
5/15/09	F0	$320	1
7/20/10	F0	$5,440	17
2/27/11	F0	$320	1
	Totals	$30,040	108
Data provided based on internal RCEC records which reflect cost from the referenced event year.			

Based upon the last 26 years of historical event records, tornado events will cause an average annual damage of $1,430. This averaged amount accounts for less than 0.01% of RCEC's total overhead assets and building valuation of $124,102,866.

An average annual of four outages were recorded during tornadoes since 1996. When compared with the total number of meters served by RCEC, it can be projected that less than 0.1% of all meters (6,373) 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 1996-2016, RCEC's service area within the state of Missouri has experienced 83 days of hail events and 93 days of thunderstorm/high wind events. Many of these storms produced winds in excess of 80 mph. For this update, it was possible to look at the bounds of the Ralls County Electric Cooperative using GPS, finding 99 hail events and 141 high wind/thunderstorm events from 1955-2020.

Probability of Future Occurrence and Vulnerability

The average annual number of hail event days for the area is 1.5, while the average annual number is 2.1 days of thunderstorm high wind events. RCEC staff reported that there were no material damages or outages associated with hail events from 1996 to 2016, resulting in a less than 1% probability that any given hail event will damage cooperative assets.

Sixty-seven occurrences caused damage to cooperative assets during the years existing in cooperative records. The average annual number of damaging storms for RCEC is 2.6. Table 6 provides a summary of those Thunderstorm/High Wind events which caused damage to cooperative infrastructure by date, cost estimate of damage and reported outages.

Table 6 *RCEC Thunderstorm/High Wind Event Summary*

Event Date	Damage Estimates	Outages Reported		Event Date	Damage Estimates	Outages Reported
2/29/00	$1,280	4		9/26/03	$4,160	13
3/26/00	$1,280	4		5/27/04	$1,920	6
4/20/00	$2,240	7		5/31/04	$1,600	5
5/08/00	$960	3		7/05/04	$1,280	4
5/26/00	$1,920	6		8/25/04	$3,840	12
6/04/00	$960	3		8/26/04	$2,560	8
6/25/00	$1,280	4		9/15/04	$640	2
7/02/00	$2,880	9		10/29/04	$320	1
8/07/00	$7,000	33		4/20/05	$640	2
9/11/00	$960	3		6/08/05	$2,240	7
3/13/01	$640	2		6/13/05	$1,600	5
7/03/01	$640	2		8/13/05	$960	3
9/18/01	$320	1		8/28/05	$960	3
3/09/02	$1,280	4		3/11/06	$960	3
5/06/02	$3,200	10		3/30/06	$960	3
5/08/02	$2,560	8		5/29/06	$2,880	9
7/09/02	$5,760	18		6/10/06	$320	1
7/22/02	$640	2		7/13/06	$1,280	4
5/09/03	$2,880	9		8/18/06	$3,200	10
6/25/03	$3,520	11		8/26/06	$1,280	4
7/09/03	$2,560	8		3/31/07	$1,920	6
7/18/03	$1,920	6		6/07/07	$640	2
7/28/03	$960	3		8/12/07	$1,920	6
8/28/03	$1,600	5		8/16/07	$1,280	4
7/02/08	$960	3		6/13/10	$3,840	12
7/08/08	$1920	6		6/23/10	$960	3
7/21/08	$1,600	5		7/18/10	$2,240	7
7/27/08	$1,600	5		7/19/10	$2,240	7
7/29/08	$960	3		9/18/10	$1,600	5
8/28/08	$3,840	12		9/21/10	$960	3
3/08/09	$1,920	6		10/25/10	$320	1
6/19/09	$5,120	16		10/26/10	$1,600	5
6/23/09	$640	2		07/09/21	$816,784	92
8/19/09	$640	2		Totals	$938,344	483
Data provided based on internal RCEC records which reflect cost from the referenced event year.						

Based upon historical records, thunderstorm/high wind events will cause an average annual damage of $36,090. This averaged amount accounts for less than 0.01% of RCEC's overhead asset valuation of $116,499,128.

An average annual of 19 outages were recorded during hail, thunderstorm, and high wind events since 1996. When compared with the total number of meters served by RCEC, it can be projected that less than 0.1% of all meters may experience outages during any given year due to a hail, thunderstorm, or high wind event.

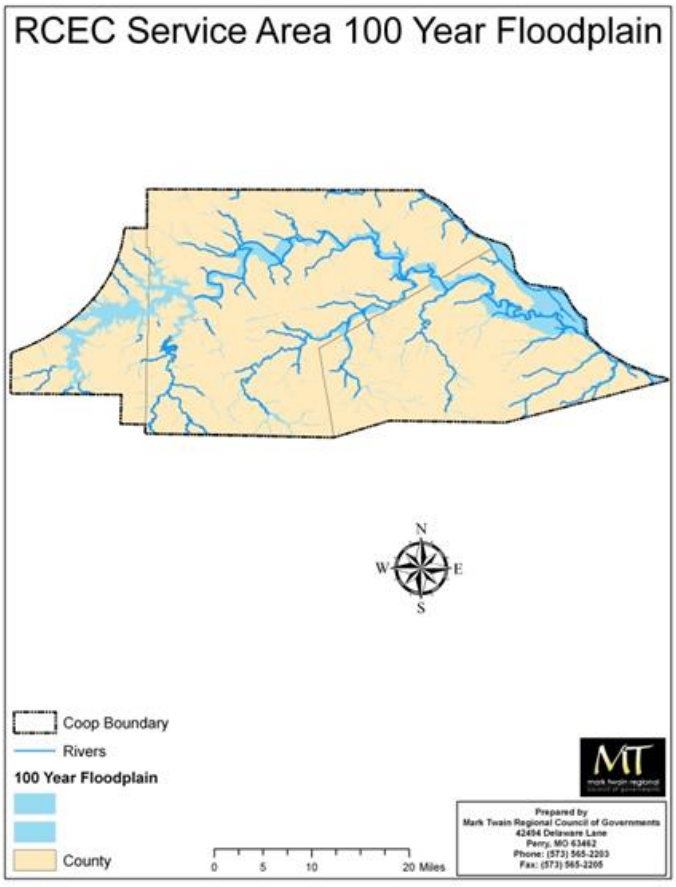
Problem Statement

Until recently, damaging thunderstorms were a yearly event in the RCEC service area. Underground assets are protected from hail and high winds.

Flood and Levee Failure

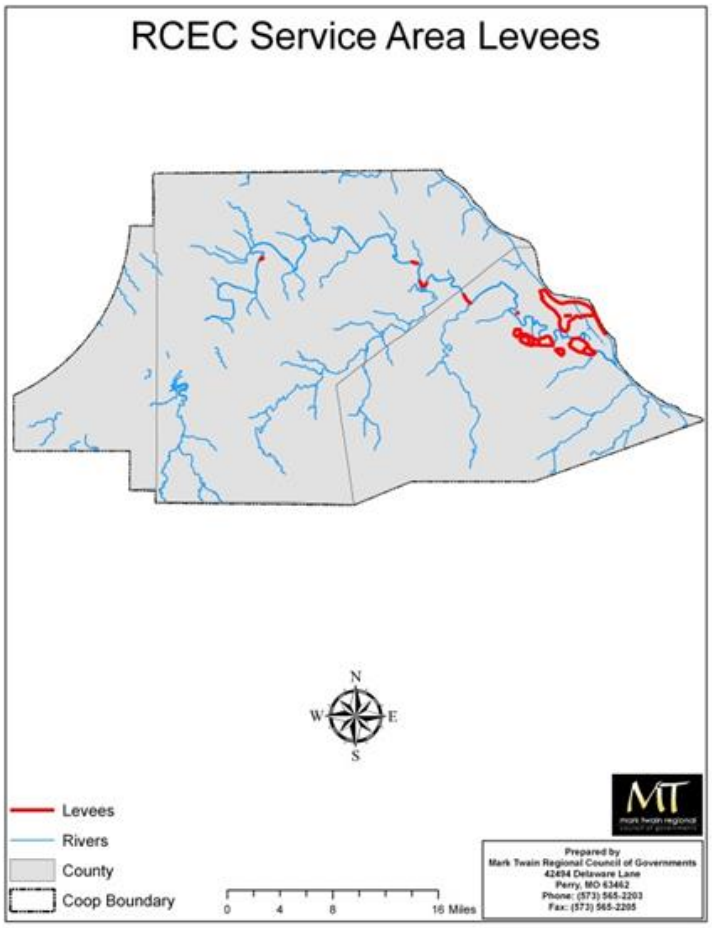
Flood and levee failure carries very minimal ongoing potential threat to the existing infrastructure of the Ralls County Electric Cooperative. Approximately six percent of the cooperative service area is located directly within the 100-year floodplain. Figure 4 below depicts the 100-year floodplain in relation to the cooperative's boundaries. *(Map sources: FEMA National Flood Hazard Layer – Missouri).*

Figure 4 *100 Year Floodplain Map*



Currently, inundation data for levee failure is lacking due to issues surrounding mapping, appropriate models, and its close association with flooding events. Figure 5 below provides the location of known state and federal levees within the cooperative's boundaries. *(Map sources: US Topographic Map and MSDIS)*

Figure 5 *Levee Location Map*



Previous Occurrences

From 1997-2016, RCEC's service area has experienced 53 days of flooding events. These included numerous flash flood and riverine flood events. Tens of millions of dollars of crop damage has been documented with these events and one fatality occurred as a result of a flash flood in 2010. To update this data, NCEI reported 5 flood events occurring during the past five years in the area. RCEC did not report any additional damages or outages since the last update. Currently, data concerning levee failure damage cannot be separated from flood damage data.

Probability of Future Occurrence and Vulnerability

The average annual number of a flood events occurring within the cooperative service area in any given year is 1. Estimated material damages associated with each of these events were compiled by RCEC staff.

Table 7 summarizes flood event dates by month, damage cost estimates and reported outages. One occurrence caused damage to the cooperative assets during the years existing in cooperative records. The probability that a damaging flood event will occur in any given year is five percent.

Table 7 *RCEC Flood Event Summary*

Date of Event	Damage Estimates	Outages Reported
7/14/08	$15,000	15
Data provided based on internal RCEC records which reflect cost from the referenced event year.		

Flood events vary widely based upon numerous factors including, but not limited to, annual precipitation. Based upon historical records, flood events will cause average annual damages of $600. This averaged amount accounts for less than 3.8% of RCEC's overhead asset valuation of $116,499,128.

An average annual of less than 1 outage was recorded during flooding events since 1997. When compared with the total number of meters (6,373) served by RCEC, it can be projected that less than 0.1 percent of all meters may report outages during any given year due to a flooding event.

Problem Statement

With numerous flood-prone rivers crossing its area, RCEC needs to waterproof assets when possible.

Severe Winter Weather

Previous Occurrences

From 1997-2016, RCEC's service area has experienced 45 days of severe winter weather events, including blizzards, heavy snowfall, and ice storms. To update this data, NCEI reported 4 winter weather events occurring during the past five years in the area. RCEC did not report any additional damages or outages since the last update. For the counties that make the service area, no reports of property damage were reported to NOAA's Storm Events Database for this time period.

Probability of Future Occurrence and Vulnerability

The average annual number is less than 1 of severe winter weather events for the RCEC service area. Estimated material damages associated with each of these events were compiled by RCEC staff. Table 8 provides a summary of event dates, types, associated damage estimates, and reported outages.

Table 8 *RCEC Severe Winter Weather Event Summary*

Event Date	Event Type	Damage Estimates	Outages Reported
12/08/07	Ice	$65,000	5
Data provided based on internal RCEC records which reflect cost from the referenced event year.			

One occurrence caused damage to cooperative assets during the years existing in cooperative records. The probability of a severe winter storm causing damage to RCEC assets is 3.8% for any given year. Based

upon these historical records, severe winter weather events will cause an average annual damage of $2,600. This averaged amount accounts for less than 0.01% of RCEC's total overhead asset valuation of $116,499,128.

An average annual of less than one outage was recorded during severe winter weather events since 1997. When compared with the total number of meters served by RCEC, it can be projected that less than 0.01 percent of all meters may report 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 RCEC service area presents a unique risk assessment. Wildfire events have occurred in each of the five counties. According to the Missouri Department of Conservation, Audrain, Marion, Monroe, Pike, and Ralls Counties have experienced wildfires between 2004 and 2016. However, since less than three percent of RCEC's meters are located in Audrain and Marion Counties, data from those two counties have not been included in this hazard's analysis. Table 9 summarizes the incidences of wildfire within the three counties that contain over 97% of RCEC's meters.

Table 9 *Wildfire Summary by County*

County	# of Wildfires, 2004-16	Average Annual # of Wildfires	Acres Burned	Average Annual Acres Burned
Monroe	227	17	3,375	260
Pike	172	13	2,323	179
Ralls	90	7	2,096	161
Totals	489	37	7,794	600
Source: Missouri State Hazard Mitigation Plan, 2018				

Probability of Future Occurrence and Vulnerability

The average annual number of wildfires is 37 for the three counties. 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 RCEC service area. However, for the purposes of this assessment, wildfire and its associated impacts cannot be eliminated from the realm of possibility. For this 13-year time period, 489 fires have burned a total of 7,794 acres. RCEC 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 600 acres burned in the three-county area and a total area of 1,176,960 acres for the three counties, it is unlikely that infrastructure damage would exceed 1% based upon asset location and unlikeliness of an uncontrollable fire.

No customers have reported outages during recorded wildfires between 2004 and 2012. When compared with the total number of customers served by RCEC, it can be projected that less than 0.1% 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.

Earthquakes

Previous Occurrences

The closest source of earthquake risk in central Missouri is 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 RCEC 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. Most recently, on February 8, 2004, a pair of earthquakes of 2.9 and 2.3 magnitude occurred near Paris, Missouri in Monroe County.

Probability of Future Occurrence and Vulnerability

The New Madrid fault has the potential to cause damage throughout the state of Missouri, including the RCEC 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, three of the service area counties (Marion, Ralls, Pike) would experience a Level VII intensity, while the remaining two counties (Monroe and Audrain) would experience a Level VI intensity characteristics. In the event of an earthquake with a 7.6 magnitude, Monroe and Audrain Counties would experience Level VII intensity, while Ralls, Marion and Pike Counties would experience intensities of VIII. Subsequently, an earthquake of 8.6 magnitude would result in Monroe and Audrain Counties experiencing intensities of VIII. Consequently, intensity levels in Ralls, Marion and Pike Counties would be IX. Substantial damage would result in the entire service area should a magnitude 8.6 earthquake occur.

In the event of an earthquake with a VI rating, the RCEC 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 VII, VIII and IX intensities. Distribution lines overhead and underground could become disconnected or severed, and transformers could be damaged and damage to structures will most likely be severe.

Based upon information from CERI, FEMA, and SEMA, it may be estimated that 1,863 meters could experience outages related to an earthquake event. When compared with the total number of customers served by RCEC, it can be projected that up to 30% of all customers may report outages during any given seismic event.

Problem Statement

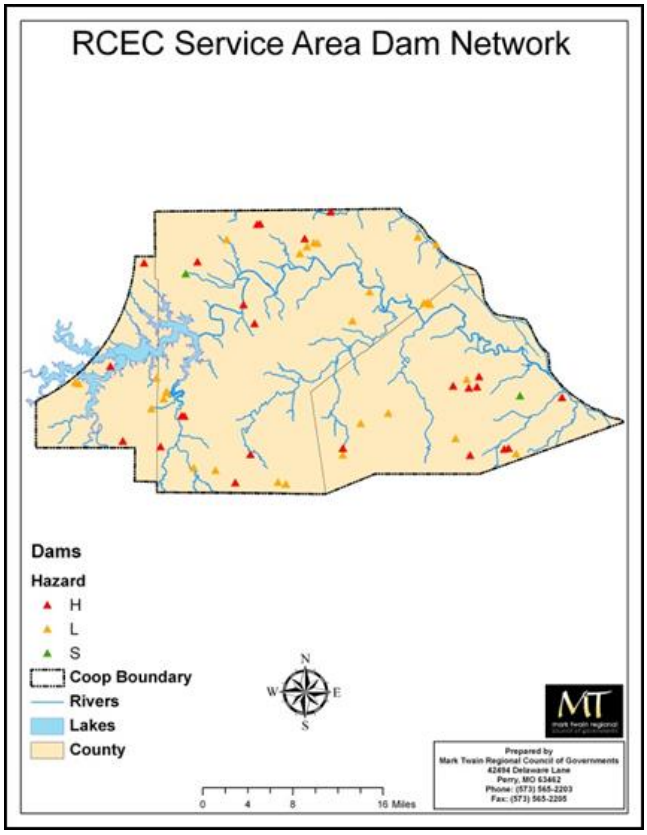
RCEC should strive to meet seismic design standards for electrical substation equipment and other overhead assets susceptible to damage from earthquake events.

Dam Failure

Like earthquakes, dam failures have had no measurable impact upon the RCEC service area to date. According to Missouri DNR's Dam Safety Division, 55 dams currently exist within the cooperative boundaries: 31 in Ralls County, 17 in Pike County, and seven in Monroe County. Of these dams, two in Ralls County, three in Pike County and one in Monroe 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 RCEC's service area. *(Map sources: www.msdis.missouri.edu)*

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.

Probability of Future Occurrence and Vulnerability

For the purposes of this assessment, dam failure and its associated impacts cannot be eliminated from the realm of possibility. 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. Large capacity dams upstream on the Mississippi River and its tributaries pose a potential threat to the service area. This assessment assumes a limited impact upon downstream electric distribution infrastructure of less than 10% 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 hazard.

Land Subsidence (Sinkholes)

Previous Occurrences

Ralls County Electric Cooperative's location along the Mississippi River places it squarely in a region where karst topography is common. This type of geological feature is characterized by springs, caves, and sinkholes – the result of the collapse of a cave ceiling. Numerous identified sinkholes are found in two of the counties where the RCEC service area is located. Although there have not been any reported incidents of sinkholes collapsing and causing personal injury or damage to RCEC infrastructure, this type of land subsidence has occurred before in Missouri. A summary of the location of RCEC area sinkholes is shown in Table 10.

Table 10 *Sinkholes in the RCEC Area*

County	Number of Sinkholes in each County	Estimated Number of Sinkholes in the Service Area
Audrain	0	0
Marion	44	0
Monroe	0	0
Pike	307	55
Ralls	181	181
Totals	532	236
Source: 2018 MO State Missouri Plan		

Probability of Future Occurrence and Vulnerability

Determining the potential impact of land subsidence on RCEC infrastructure is currently impossible due to a lack of historical data. Further study concerning land subsidence and its impact on power distribution is required to make a more comprehensive assessment of potential damage. This assessment assumes a limited impact upon infrastructure of less than one percent, and less than one percent of service interruption.

Problem Statement

The fact that RCEC 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.

C. Risk Assessment Summary

Most of the historical hazards have had an impact on the electric cooperatives. Table 11 below shows the annual damages associated with each hazard for RCEC. The table is ranked by the highest Average Annual Damages which is an indication of the vulnerability to each hazard.

Table 11 *RCEC Hazard Risk Summary*

Hazard	Average Annual Damages
Severe Thunderstorms, and High Winds	$36,090
Severe Winter Weather	$2,600
Tornadoes	$1,430
Flood and Levee Failure	$600
Dam Failure	$0
Earthquakes	$0
Hail	$0
Land Subsidence (Sinkholes)	$0
Wildfire	$0

Each of the non-historical hazards Wildfire, Earthquakes, Land Subsidence and Dam Failure has the potential for causing catastrophic damages in any given year. To date there have been zero damages to the assets of the Ralls County Electric Cooperative from the non-historical events. Nonetheless, this set of hazards should be considered in mitigation strategies because of the damage potential.

Section 4: Mitigation Strategies

Previous Mitigation Efforts

For organizations like RCEC, 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. Ralls County 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 RCEC 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, RCEC 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 RCEC 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 12 lists the goals as reviewed in the 2023 plan update.

Table 12 *RCEC 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 13, 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 13 *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 14 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.

Table 14 *Prioritized Mitigation Actions for Ralls County Electric Cooperative-2023*

Goal-Action #	Action Item	Status Update	Progress on Continued Actions	Hazards Addressed by This Action	Completion Date	Cost/ Benefit Score
1-1	Maintain membership priority list	Continue (In-progress)	We continuously update this list with our Membership	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	Annually	4
1-2	Improve outage management using GIS system. GPS all infrastructure. Replacing all meters with AMI capabilities which will reduce outage time, improve member services, and provide valuable data to improve the efficiency of our system.	Continue (In-progress)	AMI is 100% complete. GPS in ongoing	All Hazards	Annually	7
1-3	Implement IVR (integrated voice response) system to improve outage reporting	Continue (In-progress)	In place and operational	All Hazards	Annually	7
2-1	Implemented comprehensive line inspection program: Addresses right of way; miscellaneous defects; and pole rejects. Inventorying and phasing existing structures. Tagging and labeling poles on GIS mapping system.	Continue (In-progress)	We utilize an ongoing testing and replacement program.	Flooding Thunderstorms Tornado Winter Weather	Annually	5
2-2	Upgrading height and class of poles, to improve strength and clearance issues.	Continue (In-progress)	We utilize an ongoing testing and replacement program.	Winter Weather	Annually	5
2-3	Implementing new electronic reclosures to be operated via SCADA system; convert overhead lines to underground lines or vice versa in areas of vulnerability; building tie lines where practical and cost effective to reduce outage time; install new conductors and poles; upgrade to steel poles in some areas; install new electric reclosures.	Continue (In-progress)	We utilize an ongoing testing and replacement program. This is part of our Work Plan.	Dam Failure Earthquakes Flooding Levee Failure Thunderstorms Tornado Wildfire Winter Weather	Annually	6

2-4	Reestablishing Right-of-Way. Identifying ROW issues during line inspections. Developing Tie-Lines. Evaluating where tie lines can be built. Reviewing emergency response plan annually.	Continue (In-progress)	We utilize an ongoing testing and replacement program.	Dam Failure Flooding Levee Failure Thunderstorms Tornado Wildfire Winter Weather	Annually	7
2-5	Monitor developments in data availability concerning the impact of dam failure and wildfire upon the RCEC service area through local, state and federal agencies	Continue (In-progress)	performed annually	Dam Failure Wildfire	Annually	6
3-1	Partner with county emergency management agencies to ensure power for local shelters, fuel stations, and public safety.	Continue (In-progress)	We are meeting yearly with Emergency Management to identify these infrastructures	All Hazards	Annually	6
3-2	Maintain mutual aid agreements with other rural electric cooperatives.	Continue (In-progress)	Annually	All Hazards	Annually	9
4-1	Cooperate with local law enforcement and government officials to reduce the impact of power outages.	Continue (In-progress)	Ongoing	All Hazards	Annually	6

After review, there were no actions completed and removed from the Action Items list for the plan update, although Action 1-2 was partially completed as noted in the above table. There were zero actions deleted. All actions are continued in the plan update. There 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 updated 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 RCEC employment level as the organization strives to ensure quality service to their customers.

Local Planning Capabilities

Some internal planning capabilities do exist at RCEC. 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 Ralls County Electric'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 RCEC Hazard Mitigation Plan, regional planning capabilities exist at the local level. The Missouri counties of Audrain, Marion, Monroe, Pike, and Ralls 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). RCEC's plan can be easily incorporated into these local plans and allow for coordination across agencies in the event of an emergency.

RCEC is located within the rural portions of third-class counties which are prohibited from enforcing building codes and zoning by the state of Missouri. They do not provide service to any municipality within these counties. Comprehensive plans and Capital Improvement plans do not exist inside of the RCEC service areas.

Plan Maintenance

RCEC 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 20232 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.

RCEC 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 Ralls County Electric Cooperative.

Appendix: A - Adoption Resolution

RESOLUTION

HAZARD MITIGATION PLAN

(CORPORATE SEAL)

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

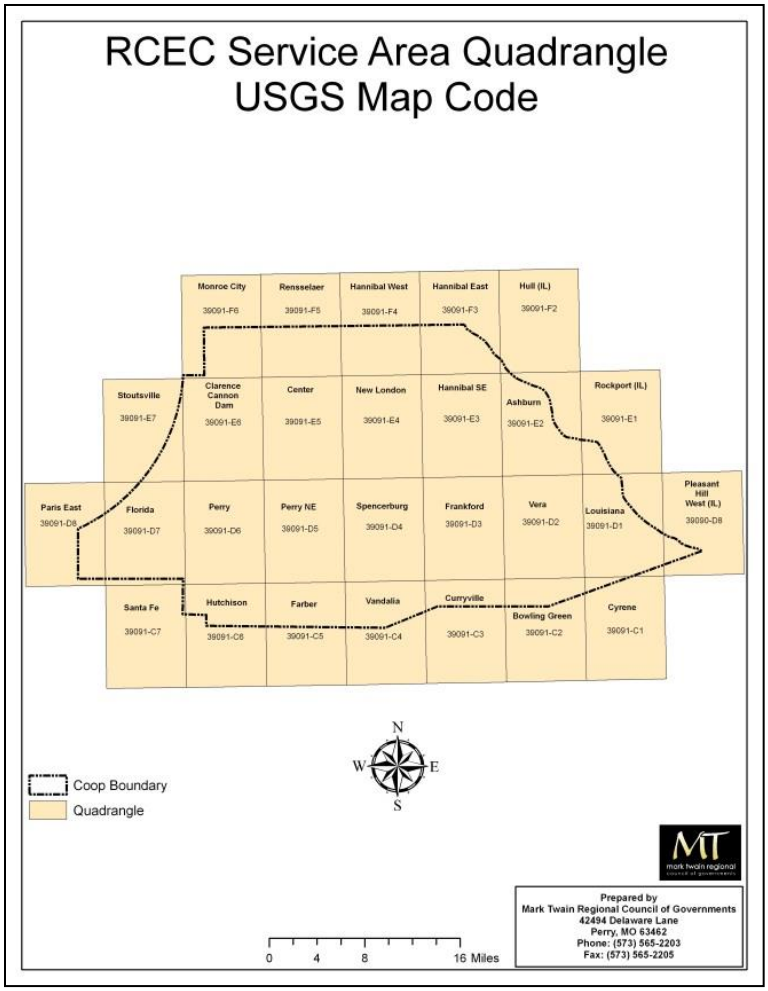
The following is the returned survey from Ralls County REC which was used by NWMORCOG staff to update the Plan:

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

In 1936, the Ralls County Electric Cooperative (RCEC) was formed for the purpose of supplying reasonably priced electricity to its member owners. In the early years of the RCEC, members were actively involved in bringing electricity to the countryside. Today, professional crews clear the rights of ways and build electric lines. In addition to electricity, RCEC sells water heaters, heat pumps, surge protection, grills and also participates in energy conservation programs. In 2003, the Cooperative formed Ralls Technologies, which provides high speed Internet service to rural Northeast Missouri. The Cooperative also recently formed a not-for-profit organization, the Ralls Community Foundation, to assist other public and not-for-profit entities. Headquarters for the RCEC are located in New London, Missouri. Service is provided to customers in five counties in Northeast Missouri that include Audrain, Marion, Monroe, Pike and Ralls. A nine-member board of directors provides direction for the cooperative.

The RCEC service territory consists of approximately 1,396 miles of energized line.

if needed, please replace or attach a different map if available or provide info on changes so a new map can be made. NO CHANGES



Population Density Map will be updated by staff at NWMORCOG

The RCEC currently has 6,373 connected meters and exceeds 6,000 members in the five county service area. Residential customers account for 87.6% of memberships (5581 members); while non-residential customers make up the remaining 12.4% (792 members) of the total membership. The table below provides the summary of metered customers by county.

Meters by County

County	Number of Meters
Audrain	82
Marion	81
Monroe	789
Pike	784
Ralls	4,637
Total	6,373

RCEC's average daily customer usage is 45 kilowatt-hours (kWh). During 2021, the average annual total usage of RCEC customers was 16,544 kWh of service.

Critical Facilities
RCEC provides service to critical facilities that include water providers/distributors, nursing homes, group homes, emergency services, telecommunications, schools and specifically, the Women's Prison at Vandalia and the Countryside Rest Home.

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

None known.

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.

Ralls County Electric has plans for additional areas to receive fiber service in their service area.

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

Ralls County Electric Cooperative has a wide variety of assets. Real estate owned by the company includes office buildings, warehouses, garages and other outbuildings throughout the service area. Twenty-six vehicles provide access to customers and infrastructure. RCEC does not own any electric generation or transmission infrastructure. Approximately 1,396 miles of distribution lines are owned and maintained by RCEC. Table ? provides information concerning total asset valuation.

RCEC Inventory Valuation Summary

Asset	Total Replacement Cost	Cost breakdown
Total RCEC Assets	$132,240,486	Buildings and vehicles - $7,603,738 Overhead assets - $116,499,128 Underground assets - $8,137,620
Distribution Lines	$99,334,070 OH $7,681,960 UG	OH Single-phase lines - $60,775,000 UG Single-phase lines - $4,740,450 OH Three-phase lines - $38,559,070 UG Three-phase lines - $2,941,510
Supporting Infrastructure	$17,165,056 OH $455,660 UG	OH Meters - $281,206 UG Meters- $20,605 Poles - $9,958,007 OH Transformers - $4,747,556 UG Transformers - $435,055 Guys/Anchors - $939,227 Cross-arms - $223,447 Regulators - $211,508 SP Oil-Circuit Reclosures - $600,946 TP Oil-Circuit Reclosures – $149,919 Capacitors - $14,520 Auto Transformers – $38,720
Office Buildings	$2,402,690	
Warehouses	$2,376,348	
Vehicles	$2,133,451	
Tech Equipment	$2,816,415	
Source: Internal RCEC Accounting and Insurance records, 2022		

Ensuring quality distribution to its customers, Ralls County Electric Cooperative 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 Service County, and total infrastructure numbers.

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Ralls County REC Asset Breakdown by County Summary

Asset	Emergency Replacement Cost per unit or mile	Number of units or miles: AUDRAIN	Number of units or miles: MARION	Number of units or miles: MONROE	Number of units or miles: PIKE	Number of units or miles: RALLS	Total number of units or miles:
Meters	$43.75/unit	101 OH 0 UG	93 OH 3 UG	663 OH 167 UG	853 OH 36 UG	4,718 OH 265 UG	6,428 OH 471 UG
Poles	$371.42/unit	354	219	3,086	4,940	18,212	26,811
SP*** distribution line	$78,650/mile OH $78,650/mile UG	9 OH 0.2 UG	7 OH 0 UG	96 OH 0.5 UG	174 OH 4 UG	564 OH 44 UG	850 OH 66.3 UG
TP**** distribution line	$133,100/mile ($25.21/foot OH)	6.2 OH 0 UG	1 OH 0.1 UG	30.5 OH 11 UG	48 OH 1 UG	204 OH 10 UG	289.7 OH 22.1 UG
Transformers	$1,028.50 OH $1,028.50 UG	67 OH 0 UG	70 OH 0 UG	487 OH 114 UG	722 OH 22 UG	3,270 OH 287 UG	4,616 OH 423 UG
Guys/anchors	$53.79/unit	204	193	2,121	2,946	22,992	28,456
Cross-arms	$34.88/unit	138	25	671	1,031	4,541	6,406
Regulators	$9,196/unit	0	0	3	4	16	23
Oil Circuit Reclosures	$2,602 SP/unit $21,417 TP/unit	4 SP 2 TP	1 SP 0 TP	26 SP 0 TP	35 SP 0 TP	165 SP 5 TP	231 SP 7 TP
Capacitors	$605/unit	1	0	2	2	19	24
Auto Transformers	$9,680/unit	0	0	0	1	3	4
Total replacement value by County		$1,743,160 OH 0 UG	$804,858 OH $34,891 UG	$12,833,552 OH $2,518,155 UG	$21,777,637 OH $800,802 UG	$79,339,920 OH $4,783,772 UG	$116,499,127 OH $8,137,620 UG
**OH = overhead ***UG = underground ***SP = Single phase ****TP – Three phase Source: Internal RCEC Accounting and Insurance records, 2022							

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
2/29/00	F0	$960	3
6/20/00	F0	$1,280	4
5/24/04	F0	$7,000	36
3/12/06	F0	$1,600	5
4/02/06	F2	$3,840	12
6/22/06	F0	$640	2
3/01/07	F1	$2,560	8
10/02/07	F0	$960	3
5/30/08	F0	$960	3
12/27/08	F1	$4,160	13
5/15/09	F0	$320	1
7/20/10	F0	$5,440	17
2/27/11	F0	$320	1
Totals			
Data provided based on internal RCEC records which reflect cost from the referenced event year.			

Thunderstorm/High Wind, Hail Event Summary

Event Date	Damage Estimates	Outages Reported
2/29/00	$1,280	4
3/26/00	$1,280	4
4/20/00	$2,240	7
5/08/00	$960	3
5/26/00	$1,920	6
6/04/00	$960	3
6/25/00	$1,280	4
7/02/00	$2,880	9
8/07/00	$7,000	33
9/11/00	$960	3
3/13/01	$640	2
7/03/01	$640	2
9/18/01	$320	1
3/09/02	$1,280	4
5/06/02	$3,200	10
5/08/02	$2,560	8
7/09/02	$5,760	18
7/22/02	$640	2
5/09/03	$2,880	9
6/25/03	$3,520	11

Event Date	Damage Estimates	Outages Reported
7/09/03	$2,560	8
7/18/03	$1,920	6
7/28/03	$960	3
8/28/03	$1,600	5
9/26/03	$4,160	13
5/27/04	$1,920	6
5/31/04	$1,600	5
7/05/04	$1,280	4
8/25/04	$3,840	12
8/26/04	$2,560	8
9/15/04	$640	2
10/29/04	$320	1
4/20/05	$640	2
6/08/05	$2,240	7
6/13/05	$1,600	5
8/13/05	$960	3
8/28/05	$960	3
3/11/06	$960	3
3/30/06	$960	3
5/29/06	$2,880	9
6/10/06	$320	1
7/13/06	$1,280	4
8/18/06	$3,200	10
8/26/06	$1,280	4
3/31/07	$1,920	6
6/07/07	$640	2
8/12/07	$1,920	6
8/16/07	$1,280	4
7/02/08	$960	3
7/08/08	$1920	6
7/21/08	$1,600	5
7/27/08	$1,600	5
7/29/08	$960	3
8/28/08	$3,840	12
3/08/09	$1,920	6
6/19/09	$5,120	16
6/23/09	$640	2
8/19/09	$640	2
6/13/10	$3,840	12
6/23/10	$960	3
7/18/10	$2,240	7
7/19/10	$2,240	7
9/18/10	$1,600	5
9/21/10	$960	3
10/25/10	$320	1
10/26/10	$1,600	5
07/9/21	$816,784	92
Totals		

Data provided based on internal RCEC 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

Date of Event	Damage Estimates	Outages Reported
7/14/08	$15,000	15
Totals		
Data provided based on internal RCEC records which reflect cost from the referenced event year.		

Levee failure,

Event date	Damage estimates	Outages reported

Severe Winter Weather Event Summary

Event Date	Event Type	Damage Estimates	Outages Reported
12/08/07	Ice	$65,000	5
Totals			
Data provided based on internal RCEC 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	Justification
→	**Goal 1**: Protect the health and safety of the community	accept, as is ☑ yes	If you chose to remove or modify the goal, please give your reasons in the box to the right.	
→	**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 *RCEC Hazard Risk Summary*

Hazard	Average Annual Damages
Severe Thunderstorms, and High Winds	$36,090
Severe Winter Weather	$2,600
Tornadoes	$1,430
Flood and Levee Failure	$600
Dam Failure	$0
Earthquakes	$0
Hail	$0
Land Subsidence (Sinkholes)	$0
Wildfire	$0

goals | actions

Goal-Action#	Action Items Specify locations when able	Status Update	Explanation for completed/deleted action	Report progress on continued actions	Select Hazard(s) addressed by this action	Completion Date	COST/BENEFI SCORE
2-1	Implemented comprehensive line inspection program: Addresses right of way; miscellaneous defects; and pole rejects. Inventorying and phasing existing structures. Tagging and labeling poles on GIS mapping system.	Continue (In-progress)		We utilize an ongoing testing and replacement program.	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	5
2-2	Upgrading height and class of poles, to improve strength and clearance issues.	Continue (In-progress)		We utilize an ongoing testing and replacement program.	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	5
2-3	Implementing new electronic reclosures to be operated via SCADA system; convert overhead lines to underground lines or vise versa in areas of vulnerability; building tie lines where practical and cost effective to reduce outage time; install new conductors and poles; upgrade to steel poles in some areas; install new electric reclosures.	Continue (In-progress)		We utilize an ongoing testing and replacement program. This is part of our Work Plan.	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
2-4	Reestablishing Right-of-Way. Identifying ROW issues during line inspections. Developing Tie-Lines. Evaluating where tie lines can be built. Reviewing emergency response plan annually.	Continue (In-progress)		We utilize an ongoing testing and replacement program.	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
3-1	Partner with county emergency management agencies to ensure power for local shelters, fuel stations, and public safety.	Continue (In-progress)		We meeting yearly with Emergency Management to identify these infrastructures	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
1-1	Maintain membership priority list	Continue (In-progress)		We continuously update this list with our Membership	Dam Failure Earthquakes Flooding Land Subsidence Levee Failure Thunderstorms Tornado Wildfire Winter Weather	annually	4

4-1	Cooperate with local law enforcement and government officials to reduce the impact of power outages.	Continue (In-progress)		Ongoing	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
3-2	Maintain mutual aid agreements with other rural electric cooperatives.	Continue (In-progress)		Annually	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	9
1-2	Improve outage management using GIS system. GPS all infrastructure. Replacing all meters with AMI capabilities which will reduce outage time, improve member services, and provide valuable data to improve the efficiency of our system.	Continue (In-progress)		AMI is 100% complete. GPS in ongoing	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
1-3	Implement IVR (integrated voice response) system to improve outage reporting	Continue (In-progress)		In place and operational	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	7
2-5	Monitor developments in data availability concerning the impact of dam failure and wildfire upon the RCEC service area through local, state and federal agencies	Continue (In-progress)		performed annually	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather	annually	6
		Read, discuss, and then decide on the status of this action in the next box.	NEW	NEW	Dam Failure Earthquakes Flooding Land Subsidence Levee failure Thunderstorms Tornado Wildfire Winter Weather		

goals | actions