COLORADO STATE HAZARD MITIGATION PLAN - RURAL ELECTRIC COOPERATIVE ANNEX - 2023 UPDATE

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1. Introduction and Background

Electric Cooperatives are private, not-for-profit companies that exist for the sole purpose of providing electricity to their members. Electric cooperatives are owned and regulated by their members and governed by a board of directors elected from the membership. The board of directors set policies, procedures, and rates that are implemented by the cooperative's professional staff. Cooperatives pride themselves in providing near-cost electric service to members.

Electric cooperatives were established to provide electrical service to rural areas of the United States, which in the 1930s were still without electricity in an estimated nine out of ten rural homes. Investor-owned utility companies were unwilling to provide this service to rural areas throughout the country as it was believed there would be insufficient revenue in these areas to support the needed infrastructure investments.

The Rural Electrification Administration (REA) was created on May 11, 1935, as part of Franklin Delano Roosevelt's "New Deal", with the primary goal of bringing electricity to farms and rural areas. The Executive Order establishing the REA, and the passage of the Rural Electrification Act a year later, marked the first steps in a public-private partnership that has, over the last 85-plus years, helped rural America achieve near-total electrification.

a. America's Electric Cooperative Network

According to the National Rural Electric Cooperative Association (NRECA, 2023), more than 900 electric cooperatives exist in the U.S. These cooperatives power 56% of the nation's landmass, including 21.5 million businesses, homes, schools, and farms in 48 states, from Alaskan fishing villages to dairy farms in Vermont, and the suburbs and exurbs in between, as shown in Figure A-1.

Although cooperatives serve only 12% of the nation's electric consumers (42 million people), they own and maintain 42% of the nation's electric distribution lines. This creates large networks for cooperatives to manage and maintain with fewer customers, and when comparing revenue per mile, rural electric cooperatives (RECs) are at a significant economic disadvantage to investor-owned or municipal distribution providers. Also unlike the rest of the electric sector, electric co-ops sell the majority of their power to households rather than businesses. This is evident when comparing cooperatives' percentage sales by kWh to municipal and investor-owned providers.

Some of these cooperatives provide generation and transmission (G&T), while others are solely distribution cooperatives. G&T cooperatives generate electricity by providing wholesale power through their own electric generation facilities or by purchasing power on behalf of the distribution members. They then transmit this power to distribution cooperatives, who deliver electricity to end consumers.

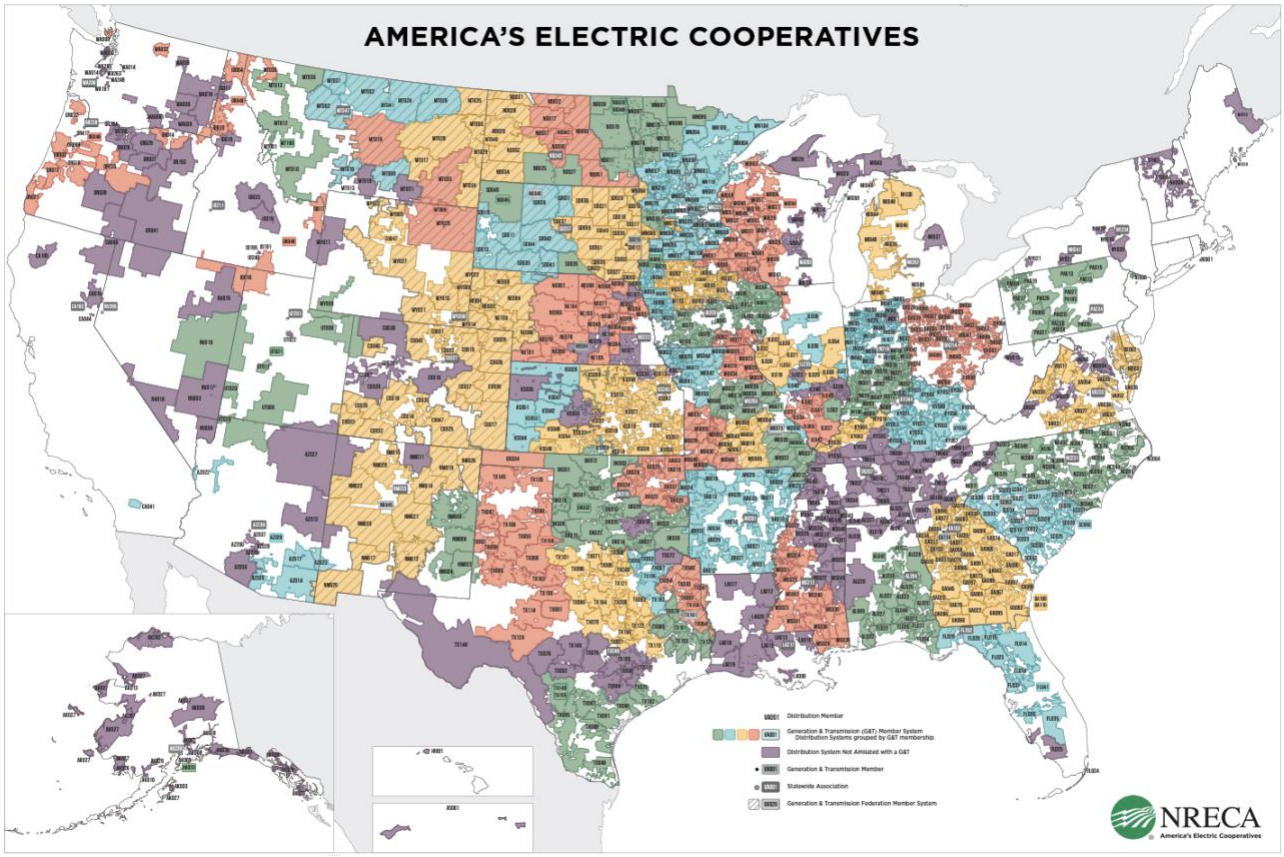
Cooperative businesses adhere to seven guiding principles, which are:

1. Voluntary and Open Membership - Cooperatives are voluntary organizations, open to all persons able to use their services and willing to accept the responsibilities of membership, without respect to gender, social, racial, political, or religious affiliation.
2. Democratic Member Control - Cooperatives are democratic organizations controlled by their members, who actively participate in setting policies and making decisions. The elected representatives are

accountable to the membership. In primary cooperatives, members have equal voting rights (one member, one vote), and cooperatives at other levels are organized in a democratic manner.

3. Members' Economic Participation - Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all the following purposes: developing the cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.
4. Autonomy and Independence - Cooperatives are autonomous, self-help organizations controlled by their members. If they enter into agreements with other organizations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.
5. Education, Training, and Information - Cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperatives. They inform the public, particularly young people, and opinion leaders, about the nature and benefits of cooperation.
6. Cooperation Among Cooperatives - Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional, and international structures.
7. Concern for Community - Focusing on member needs, cooperatives work for the sustainable development of their communities through policies accepted by their members.

Figure A-1



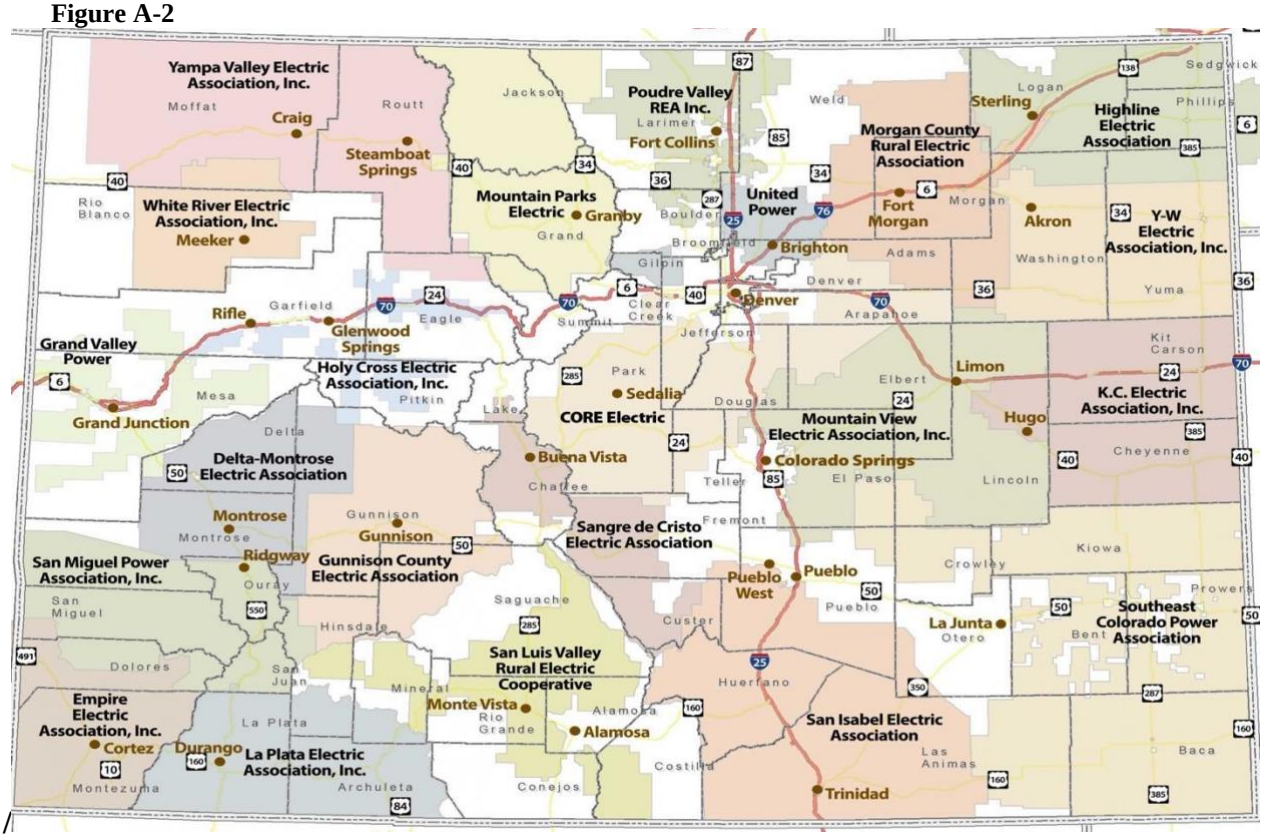
b. Colorado Cooperatives

Today, more than 1.25 million Coloradans depend on a cooperative for their electricity. Serving 70% of the land area in Colorado, cooperatives reach every county but one. Colorado's electric cooperatives serve the electricity needs of communities from mountain towns and ski resorts to irrigated farmland. These needs are served by 26 RECs and one G&T. Four of these RECs are headquartered outside of Colorado and serve multi-state regions, and the other 22 are headquartered in Colorado and serve Colorado consumers. REC service territories are shown on the statewide electric service provided map in Figure A-2.

Tri-State Generation and Transmission Association, a G&T, provides electricity to 17 of these 21 cooperatives. The remaining four cooperatives receive their power supply from an investor-owned utility or power marketer, with some self-generating a portion of their power from renewables such as solar. G&Ts serving Colorado are experiencing changes in wholesale power production, as the state transitions from non-renewable energy sources such as coal and natural gas to renewables such as solar, wind, and hydro-electric power. These changes have been accelerated by the state's clean energy roadmap, the setting of benchmark targets, and the passing of several climate and energy bills.

In addition to providing electric service, cooperatives support their communities by promoting development and revitalization projects, small businesses, job creation, and other community services. In Colorado, electric co-ops have built a system that includes nearly 80,000 miles of power lines and employs more than 2,500 people.

Figure A-2



c. Colorado Rural Electric Association (CREA)

CREA is a trade association that represents and serves 21 of Colorado's 22 electric cooperatives that distribute electricity, and Tri-State Generation and Transmission Association, the G&T that generates electricity for 17 of the state's cooperatives. Organized in 1945 to provide a variety of services to its member cooperatives, the association allows cooperatives to share in the advantages of a larger utility operation, but maintain control and ownership at the local level. CREA is governed by a board of directors made up of one elected representative from each of Colorado's 21 distribution cooperatives, plus 3 CEOs from Colorado cooperatives, and one member from Tri-State G&T. The association exists as a united representative for its members and functions for their mutual benefit to promote rural electrification and to foster the principles upon which the electric cooperatives were founded. Some of the services and programs offered by CREA include:

- Legislative Support
- Communications
- Safety Training and Loss Control
- Education Programs

2. Planning Process

a. Background

Prior to 2010, federal hazard mitigation funding had not generally been available to Colorado RECs, who were largely unaware of the opportunity available to them. The development of an electric cooperative annex to the 2010 State of Colorado Hazard Mitigation Plan was done in response to the passage of the Disaster Mitigation Act of 2000 (DMA2K). The annex was developed so RECs would be included as participants in Colorado's State Hazard Mitigation Plan, making them eligible for the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance Program (HMA). Colorado's RECs initially participated in a 2021-22 plan update process, which was initiated by the Colorado Division of Homeland Security & Emergency Management (DHSEM) in partnership with RECs across the state. This 2023 update was undertaken to align this Annex with the E-SHMP 5-year update cycle.

REC service areas do not typically stop at county borders and may exist throughout multiple counties and or across state lines (see Figure A-2). Therefore, it makes sense to be covered by the state hazard mitigation plan rather than participating in multiple local planning efforts.

b. Plan Participants

Twenty-one of Colorado's 22 RECs participated in the update to the Rural Electric Cooperative Annex to the Colorado State Hazard Mitigation Plan, including completing a robust survey, developing mitigation actions, and approving the 2022 update to this Annex. CREA Safety & Loss Control Department coordinated and facilitated the planning process and authored the annex.

The 21 Colorado cooperatives participating in this planning effort combine for a total of 68,105 miles of distribution lines serving approximately 570,520 customers in 60 of the state's 64 counties. Table A-1 lists

the current participating cooperatives, the counties in which they operate, their miles of distribution line, the number of meters per line, and the total number of customers they serve.

Table A-1

Cooperative	Counties Served	Meters per mile	Miles of Line	Number of meters
Delta-Montrose Electric Association	Delta, Montrose, Gunnison	10.43	3,358	35,007
Empire Electric Association	Dolores, Montezuma, San Miguel	9.3	1,841	17,209
Grand Valley Power INC.	Mesa, Delta, Garfield,	11.77	1,702	20,027
Gunnison County Electric Association	Gunnison, Hinsdale, Saguache	10	1,097	11,374
Highline Electric Association	Phillips, Logan, Sedgwick, Yuma, Washington, Weld, Morgan	2	5,170	10,509
Holy Cross Energy	Garfield, Pitkin, Eagle, Gunnison, Mesa	20.2	3,072	61,991
K.C. Electric Association	Cheyenne, Kit Carson, Lincoln	2.16	3,080	6,637
La Plata Electric Association	La Plata, Archuleta, Mineral, Hinsdale, San Juan	12.57	3,745	47,085
Morgan County Rural Electric Association	Adams, Arapahoe, Logan, Morgan, Washington, Weld	3.11	2,912	9,044
Mountain Parks Electric INC.	Grand, Jackson, Summit, Routt, Larimer	12	1,869	22,600
Mountain View Electric Association INC.	Arapahoe, Crowley, Douglas, Elbert, El Paso, Lincoln, Pueblo, Washington	9.6	6,242	59,901
Poudre Valley Rural Electric Association INC.	Larimer, Weld, Boulder	11.4	4,428	50,518
San Isabel Electric Association INC.	Pueblo, Las Animas, Huerfano, Otero, Fremont, Custer, Costilla	5.31	4,659	24,748
San Luis Valley Rural Electric Cooperative INC.	Alamosa, Rio Grande, Costilla, Conejos, Mineral, Hinsdale, Saguache	4.6	2,776	12,975
San Miguel Power Association INC.	Montrose, San Miguel, Dolores, Mesa, San Juan, Hinsdale, Ouray	7.49	189	14,152
Sangre de Cristo Electric Association INC.	Chaffee, Custer, Fremont, Lake, Saguache	7.7	1,796	13,853
Southeast Colorado Power Association	Baca, Bent, Cheyenne, Crowley, Kiowa, Las Animas, Lincoln, Otero, El Paso, Prowers, Pueblo	1.8	5,738	10,567
United Power INC.	Adams, Broomfield, Weld, Jefferson, Boulder, Gilpin	15.62	6,551	102,305
White River Electric Association	Rio Blanco, Moffat, Garfield	3.31	1,031	3,412
Y-W Electric Association INC.	Yuma, Washington	2.21	3,968	8,787
Yampa Valley Electric Association INC.	Routt, Moffat, Grand, Eagle, Rio Blanco	9.65	2,881	27,819

c. REC Survey

CREA conducted a survey at the end of 2022 of the 21 participating RECs, regarding their perceptions, past experiences, and concerns regarding the impacts of natural hazards on their utility systems. The survey contained 30 questions, collecting data about the hazards affecting each cooperative; the impacts of those hazards; mitigation capabilities, planning, and actions; and emergency response planning, needs, and activities. The survey was completed by 100% of the 21 distribution cooperatives surveyed, or 95% of the distribution cooperatives across the state. The responses to the survey can be found in Appendix A.

Survey highlights include:

- 67% of survey respondents have conducted a hazard analysis and risk assessment in the past 10 years (48% in the past three years).
- 90% of survey respondents have been involved with local pre-disaster mitigation planning in their local jurisdiction(s).
- 90% of survey respondents indicated their cooperative had participated in local, regional, or state-level emergency response planning.
- 71% of survey respondents indicated their cooperative had participated in local or state-level emergency response exercises.
- 76% of survey respondents indicated their cooperative had participated in local, regional, or state-level emergency response activities during an actual natural hazard event.
- 62% of survey respondents indicated their cooperative had worked with local emergency management coordinator(s) in identifying or developing mitigation measures to reduce the impact of natural disasters on critical electric infrastructure.
- Survey respondents identified the top natural hazards that had affected or damaged critical infrastructure in the cooperative service territory as – fire, lightning, winter weather, windstorms, thunderstorms, and floods.
- Survey respondents identified fire, winter weather, and windstorms as having the highest potential to impact critical electric infrastructure in their service territories.
- Less than 50% of survey respondents indicated a high capability to respond to the same natural hazards (fire, winter weather, and windstorms) that were identified as having the potential for high impact.
- Survey respondents rated the following assets as being the most critical to overall system integrity: substations, transformers, and transmission and distribution lines. Other assets ranked as being critical included human capital, telecommunications, control centers, warehouses, and vehicles.

3. Vulnerability Assessment

a. Impacts

Power outages have a huge impact on consumers, and for companies that supply power to homes for lighting, cooking, heating/cooling, and other essential needs, their main concern is keeping the lights on. As noted in *Economic Benefits of Increasing Electric Grid Resilience to Weather Outages*, severe weather is the single leading cause of power outages in the United States. Outages caused by severe weather such as thunderstorms, hurricanes, and blizzards account for 58% of outages observed since 2002 and 87% of outages affecting 50,000 or more customers (U.S. Department of Energy, 2013).

Power outages caused by the top natural hazards reported in our survey, fire, lightning, winter weather, windstorms, thunderstorms, and floods, can have significant economic impacts. These events may force the closure of businesses, schools, and government offices. Homeowners may see food spoiled, be displaced from their homes, or experience flooding inside of their homes, all due to power outages. Large-scale power outages due to extreme weather may also require state and local governments to open shelter facilities to care for people displaced from their homes. For events reaching the level of a Presidentially Declared Disaster, FEMA may allow local governments to recover some costs, but in smaller events all the costs are borne by local businesses, communities, and the local government.

Power outages may also make vulnerable populations more vulnerable, and RECs serve 92% of the nation's poorest counties (NRECA, 2023). People recovering from illnesses, the elderly, children, and low-income populations, may be more vulnerable to the impacts of power outages than others. This is due to a variety of issues including carbon monoxide poisoning from improper use of generators, the inability to access safety information, increased crime during extended outages, dependence on electronic medical equipment, or those in rural areas experiencing longer outages due to proximity of personnel and equipment to infrastructure.

b. Past Disaster Data

Severe weather has and will continue to have a profound impact on RECs across the state. Data on past severe weather events and natural disasters in Colorado is collected by National Weather Service offices. The most severe events from 2010-2022 are listed below (NOAA, 2023).

1) 2012 Wildfires
2) Summer 2012 Heat & Drought
3) September 2013 Floods
4) 2013 Wildfires
5) June 2015 Berthoud Tornado
6) March 2016 Blizzard
7) January 2017 Ice Storm
8) May 2017 Denver Hailstorm
9) Summer 2018 Hailstorms
10) Winter 2018-19 Avalanches
11) March 2019 Bomb Cyclone
12) August 2019 Bethune hailstorm
13) 2020 Cameron Peak and East Troublesome Fires
14) June 2021 Weld County Tornado
15) July 2021 Flash Flooding and Debris Flows in Cameron Peak burn area
16) March 2021 Blizzard
17) 2021 Marshall Fire

c. Hazard Profiles

During the planning process, CREA discussed hazard threats with cooperatives through meetings, surveys, and informal discussions. CREA identified 17 potential natural hazards that might affect the cooperatives based on the State Hazard Mitigation Plan: avalanche, drought, earthquake, erosion and deposition, expansive soil, extreme heat, fire, flood, hailstorm, landslides/debris flow, lightning, precipitation,

subsidence, thunderstorm, tornado, windstorm, and winter weather. Of these natural hazards, six (fire, lightning, winter weather, windstorms, thunderstorms, and floods) had adversely impacted or were the greatest concerns for Colorado electric cooperatives. Only these six hazards will be profiled in this Annex, with all other hazards profiled in the State Hazard Mitigation Plan.

1. Floods

Flooding has the potential to damage REC buildings and utility infrastructure, and the historic floods of September 2013 did impact utility infrastructure. According to the National Weather Service, following a few days of light to moderate rains in portions of the state, the clouds unleashed torrents of rain across relatively large portions of the Front Range from the evening of September 11th through much of September 12th. A very rich, subtropical airmass situated itself over the state through much of this week, but on the evening of September 11th, a weak disturbance coincided with the showers and thunderstorms. That resulted in a very slow and almost stationary area of heavy rain along the Front Range. That rainfall, heavy at times, lasted through much of September 12th, before finally decreasing late that night. A few showers and storms occurred in the days that followed, with the last bout of locally heavy rain on Sunday, September 15th (NOAA, 2019).

Rainfall totals through this period reached 6 to 18 inches in many areas of the Front Range, including most of the foothills from around I-70 northward to the Wyoming border, eastern and northern sections of the Denver Metro area, and portions of Teller and El Paso County including western sections of Colorado Springs. The heaviest totals of 12 to 18 inches were widespread through much of Central Boulder County, stretching from Boulder north and west toward Jamestown, Lyons, and into Central Larimer County including the Estes Park area. The vast majority of this rain fell in about 30 hours from the 11th through the 12th. The 24-hour state precipitation record was broken in Fort Carson, Colorado, with a whopping 11.85 inches of rain falling on September 12th. Boulder set a calendar day record rainfall of 9.08 inches, which shattered the previous wettest day of 4.80 inches set on July 31, 1919. Finally, a one-month record of 18.16 inches in September also shattered Boulder's previous all-time monthly record of 9.59 inches set in May of 1995 (NOAA, 2019).

In addition to the initial damage it causes, flooding also has the potential to significantly limit cooperatives' recovery efforts. Eighteen of the cooperatives responding to the survey stated that critical assets had been damaged or adversely affected by flooding. Seven rated its potential future impact on their infrastructure as high, with another nine rating it as medium. The flooding event of 2013 caused damage throughout the state and affected cooperative utility infrastructure, making recovery efforts more difficult.

2. Lightning

Eighteen cooperatives responding to the survey stated that lightning had previously damaged or adversely affected their critical assets. Nine rated its potential future impact on their infrastructure as high, with 11 rating it as medium. Lighting is a danger throughout the entire state of Colorado, which ranks 19th in the nation with respect to the number of cloud-to-ground lightning flashes (NOAA, 2020).

Based on data from the National Weather Service, lightning causes 2 fatalities and 12 injuries per year in the State of Colorado. In an average year, about 500,000 lighting flashes hit the ground in Colorado. In recent years, Colorado was tied for 7th in the nation when it comes to lighting fatalities (years 2008-2018). When you look at a longer period, Colorado ranks 4th in the nation for fatalities (years 1959-2019).

The unpredictable nature of lightning causes it to be one of the most feared weather elements. Individuals reliant on electricity to meet day-to-day health needs, such as those reliant on oxygen machines, may be impacted because of lightning-caused power outages. This group is susceptible to serious injury or death because of lightning-caused power outages. Additionally, lightning can often be the cause of equipment damage and wildfires, which can cause power outages and have long-reaching effects on infrastructure and resources.

3. Wildfire

Cooperative transmission lines and electrical supply lines serving neighborhoods in the wildland-urban interface are at risk of Colorado's wildfire hazard as are the rural communities they serve. Additionally, Colorado residents and businesses served by RECs are at risk for both wildland fires and electrical outages caused by fire-impacted electric infrastructure.

Wildfires can burn power poles and melt power lines, making them unable to transmit power until repairs can be made. Depending on the extent of fire-damaged electrical infrastructure, repairs could take days or months. Extended repairs have the potential for significant economic impacts on RECs due to lost revenue in addition to the cost of repairs.

Loss of electrical power following a fire could have an impact on cooperative customers, even if the customers were not otherwise impacted by the fire. Nineteen of the cooperatives responding to the survey stated that critical assets had been damaged or adversely affected by fire in the past. Seventeen cooperatives rated its potential future impact on their infrastructure as high, with four rating it as medium.

Colorado has had a devastating history dealing with wildfires, with 20 o f the largest wildfires occurring in the last 20 years. Below are lists of Colorado's largest and most destructive fires (Colorado Department of Public Safety, 2023).

Table A-2 Colorado's Largest Fires by Acreage

Rank	Fire	Acres	Year
1	Cameron Peak	208,913	2020
2	East Troublesome	193,812	2020
3	Pine Gulch	139,007	2020
4	Hayman	137,760	2002
5	Spring Creek	108,045	2018
6	High Park	87,284	2012
7	Missionary Ridge	70,285	2002
8	West Fork	58,570	2013
9	416	54,129	2018
10	Papoose	49,628	2013
11	Bridger	25,800	2008
12	Last Chance	45,000	2012
13	Bear Springs	44,662	2001
14	MM 117	42,795	2018
15	Beaver Creek	28,380	2016
16	Bull Draw	36,549	2018

17	Badger Hole (Multiple States)	33,421	2018
18	Grizzly Creek	32,631	2020
19	Logan	32,546	2020
20	Burn Canyon	31,300	2002

Table A-3 Colorado's Most Destructive Fires by Homes Lost

Rank	Fire	Homes Lost	Year
1	Marshall	1,084	2020
2	Black Forest	489	2020
3	East Troublesome	366	2020
4	Waldo Canyon	346	2002
5	High Park	259	2018

4. Windstorms

High winds are an extremely common occurrence in Colorado, and often can result in severe damages. These windstorms can be widespread and highly damaging, or can result in limited site-specific problems for electric cooperatives. On June 6, 2020, Washington, Logan, and Weld counties experienced severe straight-line winds that snapped several utility poles, knocking out power to several towns and farms.

Of the cooperatives that participated in the mitigation survey, 19 indicated that they have had electrical infrastructure adversely affected or damaged by windstorms. Thirteen of the respondents indicated that windstorms have a high potential to adversely impact electrical infrastructure, with eight ranking the potential impact as medium.

The most vulnerable electrical structures to wind events are overhead utility lines and poles, and many rural electric utility lines in Colorado are overhead. State-wide there are over 80,000 miles of distribution line, all of which can be considered vulnerable to damage from windstorms. To create a system that is less vulnerable to windstorms, overhead lines would need to be converted to underground lines or strengthened to withstand high wind events. This would be a massive and costly undertaking.

5. Winter Weather

Winter storms in Colorado typically generate wind in conjunction with precipitation, adding drifting snow to the impacts of winter storms. For RECs, the biggest impacts are seen in damaged power poles and lines, electrical wires, and communication towers.

During a winter weather event, telecommunications and power can be disrupted for days. Additionally, winter storm conditions impact rural electric staff's ability to reach damaged infrastructure, as well as their ability to do their jobs safely. Injury or death to linemen are real threats when these conditions exist. Heavy snow or accumulated ice can also isolate people from assistance or services. Because winter storms are common in Colorado, vulnerable populations can be significantly impacted. Those impacts include the inability to access services like grocery stores, pharmacies, or doctors, and to get to places of employment.

When power is disrupted, consumers are left in the dark without the ability to cook or heat their homes, and often without access to devices where they may receive safety communications or call for help.

Rural areas tend to be more susceptible to power outages during winter storms due to the high percentage of overhead lines and often being in areas that experience heavier snowfall and higher winds. These outages also tend to be of greater duration than those in more populated areas due to the proximity of crews and equipment. Rural locations also have a higher density of livestock and farming, which can be significantly impacted by winter weather.

Electric cooperatives are highly vulnerable to winter storms due to their expansive network across the state and the frequency of winter storms. Twenty of the 21 survey respondents indicated that their electrical infrastructure had been affected and/or damaged by winter storms. When asked what type of impact a winter storm has to potentially damage their infrastructure, 17 cooperatives responded that they posed a high potential threat, the highest of all natural hazards surveyed, with four responding medium. The cold temperatures that accompany winter storms also pose many challenges for utility crews. Difficult driving conditions including icy roads and drifting snow, as well as harsh environmental conditions like extreme temperatures and wind chill, put crews working outside, and their equipment, in danger.

6. Thunderstorms

Thunderstorms are common in Colorado and can generate many of the hazards already discussed here, such as high winds, lightning, heavy rain, snow, and potential flooding. Macrobursts such as the June 2020 storm that impacted Washington, Logan, Phillips, and Sedgwick counties can clock 100-plus mph winds, uproot trees, snap utility poles and lines, and damage buildings (NOAA, 2023).

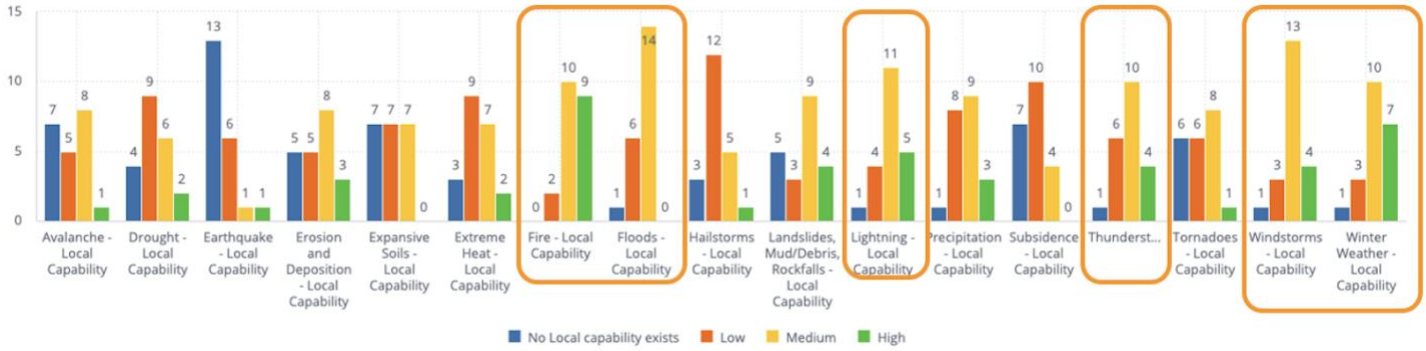
Sixteen of the cooperatives indicated that thunderstorms had adversely affected or damaged their infrastructure, with eight stating that thunderstorms posed a high potential threat and seven indicating medium. Thunderstorms have the potential to damage equipment and infrastructure and cause power outages across the state.

4. Capability Assessment

This section profiles the local capabilities of Colorado RECs to contend with the natural hazards listed in this plan. According to the survey results in Appendix A, to date 10 RECs have conducted a hazard analysis and risk assessment outside of this Annex process within the last three years. Nineteen cooperatives reported participating in both emergency response and mitigation planning with their local jurisdictions. Fifteen reported participating in state response exercises, and 16 reported having worked with local government during actual hazard events. Thirteen RECs reported having copies of their local government's mitigation or emergency response plans.

CREA identified 17 potential natural hazards that might affect the cooperatives based on the State Hazard Mitigation Plan: avalanche, drought, earthquake, erosion and deposition, expansive soil, extreme heat, fire, flood, hailstorm, landslides/debris flow, lightning, precipitation, subsidence, thunderstorm, tornado, windstorm, and winter weather. Of these natural hazards, six (fire, lightning, winter weather, windstorms, thunderstorms, and floods) had adversely impacted or were the greatest concerns for Colorado electric cooperatives. Of note is that less than half of the survey respondents indicated a high level of local capability to contend with those six natural hazards of greatest concern (Figure A-3).

Figure A-3



5. Mitigation Planning

The purpose of developing an Annex to the Colorado State Hazard Mitigation Plan specific to RECs is to create a plan for mitigating future hazards and preparing for disasters. This includes establishing a common set of mitigation goals across the state, identifying and prioritizing mitigation actions, and evaluating the success of those actions over time. Hazard mitigation activities are being pursued by RECs so future natural disasters will have less of an impact on the electric cooperative businesses, their customers, and ultimately residents of and visitors to the State of Colorado.

Mitigation actions taken by a REC may eliminate or reduce the effects of the natural hazards identified for Colorado. Consideration of which actions are taken and prioritization of those actions are based on factors such as the level and probability of risk reduction, cost, implementation challenges, and enforcement or audit requirements. There is typically a point beyond which taking additional mitigation actions will raise costs without appreciably enhancing the protection afforded.

Colorado's electric cooperatives support the goals and mission statement detailed in the Colorado State Hazard Mitigation Plan. The cooperatives also participated in a mitigation strategy workshop where they provided input into the development of the mitigation goals and actions shown below and in Table A-4.

Going forward, the State of Colorado and CREA will continue to work with cooperatives to:

- Increase awareness of risks and utility infrastructure vulnerabilities to natural hazards
- Establish hazard mitigation goals
- Identify strategies to assist with mitigation implementation
- Establish priorities for the use of cooperative and public resources to mitigate hazards
- Enable cooperatives, as sub-applicants, to seek hazard mitigation funding from FEMA
- Improve recovery efforts related to natural disasters
- Minimize public safety concerns and power supply disruptions to persons served by electric cooperatives

a. Goals, Objectives, and Actions

The mitigation goals, objectives, and actions focus on the natural hazards most frequently affecting or damaging critical electrical infrastructure, or rated as having a high potential to do so. Being the most frequent and high-impact hazards also means they are likely to result in the highest cost to cooperatives. These hazards include:

- Wildfire
- Lighting
- Thunderstorms
- Windstorms
- Winter Weather
- Flooding

Goals

Goal 1: Minimize the loss of life and personal injuries
Objective: Educate the members about hazards when natural disasters occur

Goal 2: Wildfire Mitigation
Objective: Reduce the damage to REC critical assets.

Goal 3: Reduce losses and damages to infrastructure due to natural disasters
Objective: Strengthen and harden lines where feasible

Goal 4: Minimize interruption of essential services
Objective: Strengthen and harden lines, line patrol, and hazard recognition

Goal 5: Enhance relationships between RECs and local emergency management
Objective: Participate in statewide emergency drills, participate in CREA statewide annual drills

Goal 6: Reduce costs of disaster response and recovery
Objective: Strengthen the mutual aid agreements, assist cooperatives when in need of assistance in recovery

Goal 7: Incorporate equity considerations into all mitigation strategies
Objective: Review cost analysis in future projects

All 21 electric cooperatives provided input into the development of the mitigation actions included in Table A-4. The 2023 update includes a revised order of actions that reflects the cooperatives' changing priorities. Table A-4 also identifies the status of actions and progress made toward meeting plan goals. Colorado's RECs have been proactive in working to reduce the vulnerability of their systems and improve their resilience to natural hazards. All survey respondents reported having taken some mitigation actions to make critical electric infrastructure more resistant to natural hazards. Examples are changing from overhead to underground power lines, updating vegetation plans and clearing fuel sources to minimize wildfire potential, replacing poles, and installing backup generation in critical facilities. Many RECs have used their own funding to complete these activities, but several have begun to leverage FEMA HMA funding.

Table A-4 REC Mitigation Actions

Action #	Goal/ Objective	Mitigation Measures	Project Location	Responsible Parties	Priority Rank	Projected Timetable	Progress Since 2011
1	Minimize the Loss of Life and Personal Injuries	Weather Monitoring	Statewide	Cooperative, County, State	High	Ongoing	Cooperatives use weather and radar monitoring and apps to stay on top of impending storms. Cooperatives communicate the status of outages through social media, texts, and other platforms to inform members about outages. Cooperatives have taken measures to educate members of what to do during outages.
2	Wildfire Mitigation	Vegetation Management, Pole Replacement, Cross Arm Enhancement, Wildfire Mitigation	Statewide	Cooperative, USFS, County, State	High	Ongoing	Cooperatives have individually assessed and implemented plans to reduce wildfire exposure. Cooperatives have implemented vegetation management plans, increased member education, and identified and replaced high priority poles. Some have replaced overhead lines with hardened insulated (tree) wire that will not arc or cause fires.
3	Reduce the Losses and Damages due to infrastructure due to natural disasters	Hot Spot Identification	Statewide	Cooperative	High	Ongoing	Cooperatives have individually assessed their systems to identify vulnerable or week spots in the system. Cooperative's patrol and inspect lines to identify areas for improvement. Cooperatives also test poles for integrity and safety.
4	Minimize Interruption of Essential Services	Harden Communications, Facility Backup Generation, Remote Facility Control	Statewide	Cooperative	High	Ongoing	Cooperatives have individually taken steps to improve outage duration. Cooperatives participate in mutual aid programs for times when the cooperatives resources are strained. CREA supports a disaster aid plan that all the cooperatives participate in. The plan includes a committee that meets regularly and conducts drills.
5	Enhance Relationships between RECs and Local Emergency Management	Participation in Local and Emergency Management Exercises	Statewide	Cooperative, County, State	High	Ongoing	CREA has developed relationships with State Emergency resources, and communicates and provides updates to these contacts regularly. CREA attends meetings and participates in exercises with emergency managers throughout the state.

6	Reduce Costs of Disaster Response and Recovery	Strengthen lines, put lines underground where feasible	Statewide	Cooperative	High	Ongoing	CREA's disaster aid plan connects cooperatives and vendors to aid in response and recovery, sharing resources like labor, parts, and equipment. This includes a statewide communication plan for disaster assistance and disaster aid coordinators for each side of the state.
7	Incorporate Equity Considerations into All Mitigation Strategies	Maintenance Programs	Statewide	Cooperative	High	Ongoing	Cooperatives have individually assessed their systems for ways to improve the reliability of service. Some cooperatives have placed overhead lines underground, some have replaced overhead lines with hardened insulated wire, and some have implemented the use of drones to identify areas of concern.

References

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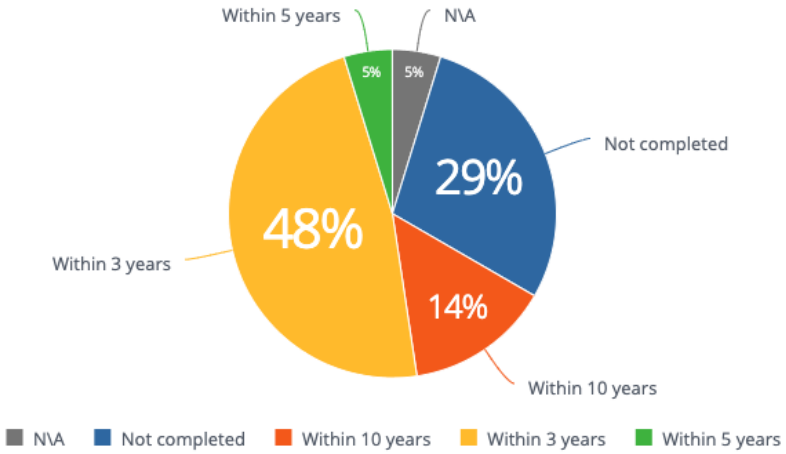
Appendix A
Cooperative Survey Results, 2022-23 Hazard Mitigation Update

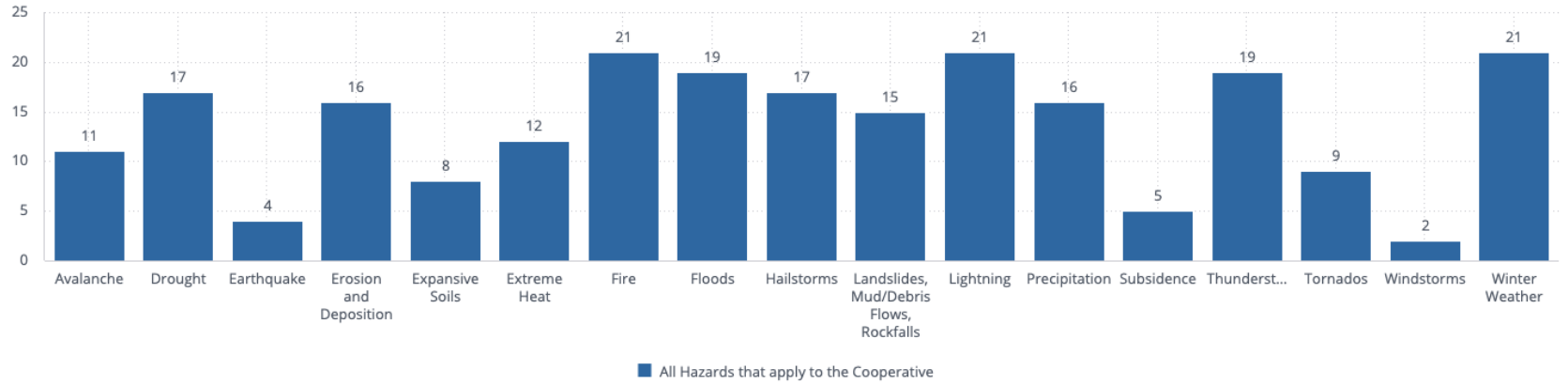
Survey Results:

Questions 1-12 are not represented here. They contain cooperative-specific information, including the number of meters and counties served, and consumers per mile of line, which can be found within the Annex report.

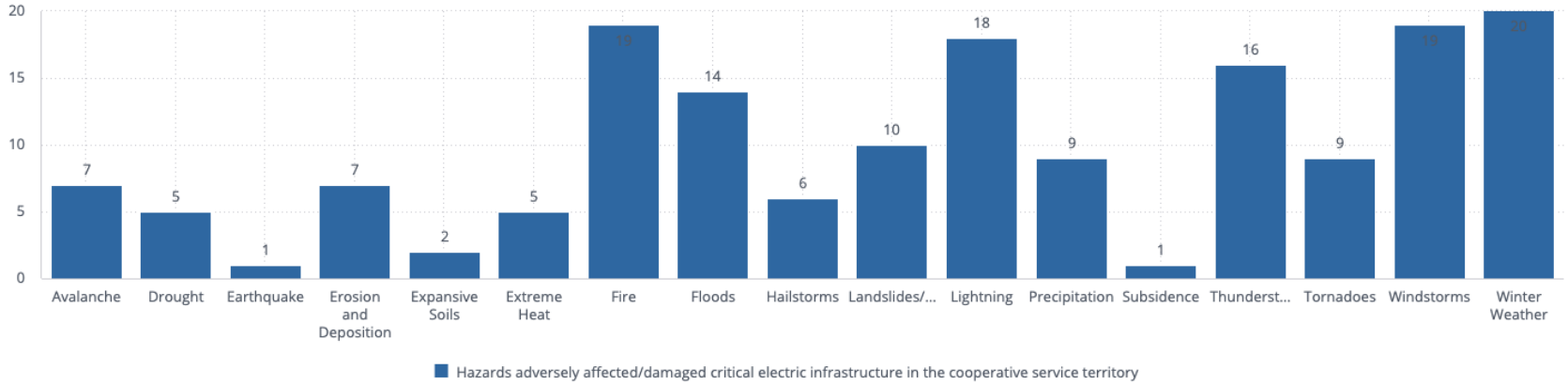
Question 13
Has the cooperative conducted a hazard analysis and risk assessment?



Question 14
Hazards that apply to the cooperative.

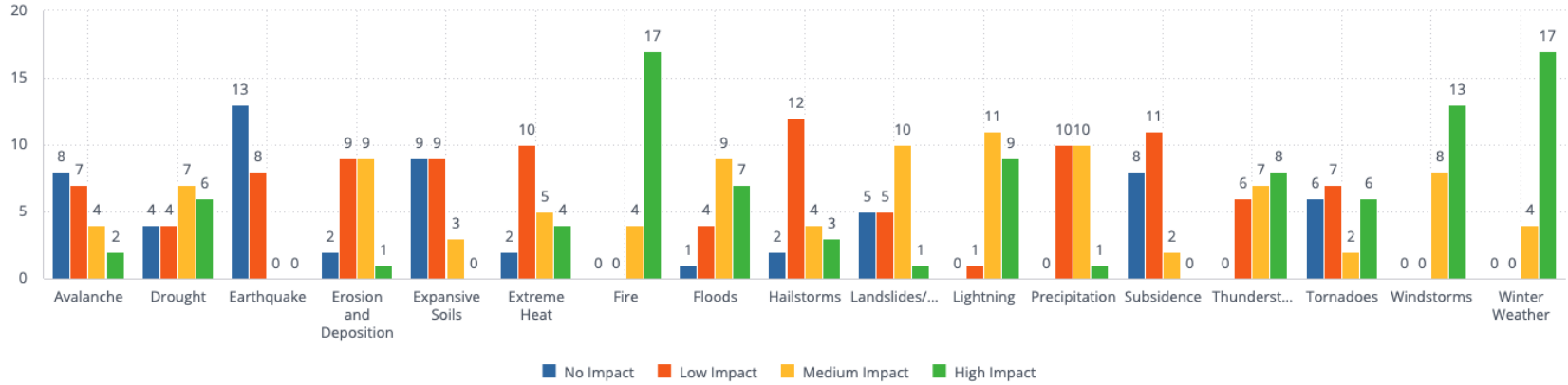


Question 15
Which of the following natural hazards adversely affected/damaged critical infrastructure in the cooperative service territory?



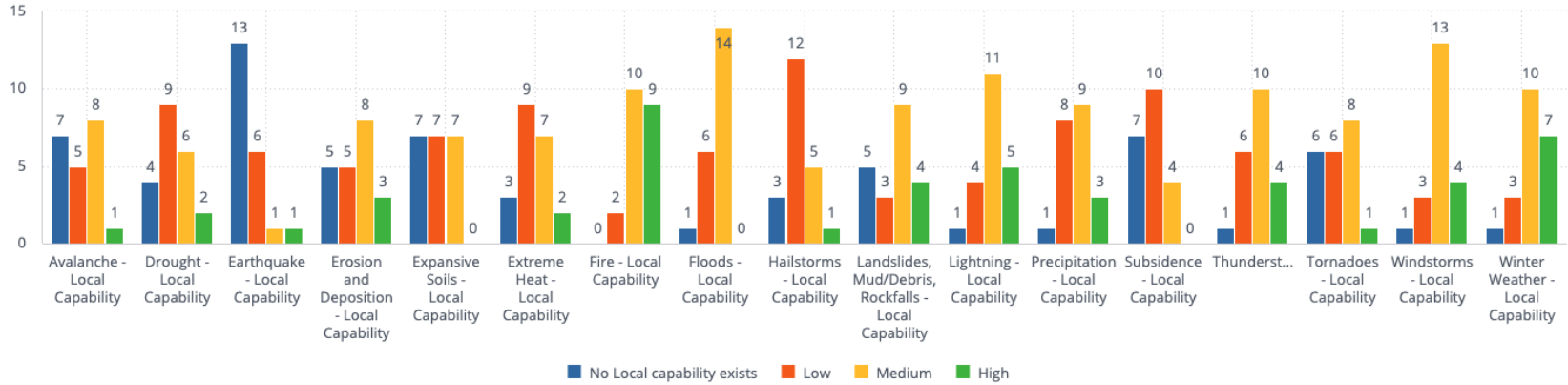
Question 16

What is the potential impact of natural hazards to the critical infrastructure in the cooperative service territory?



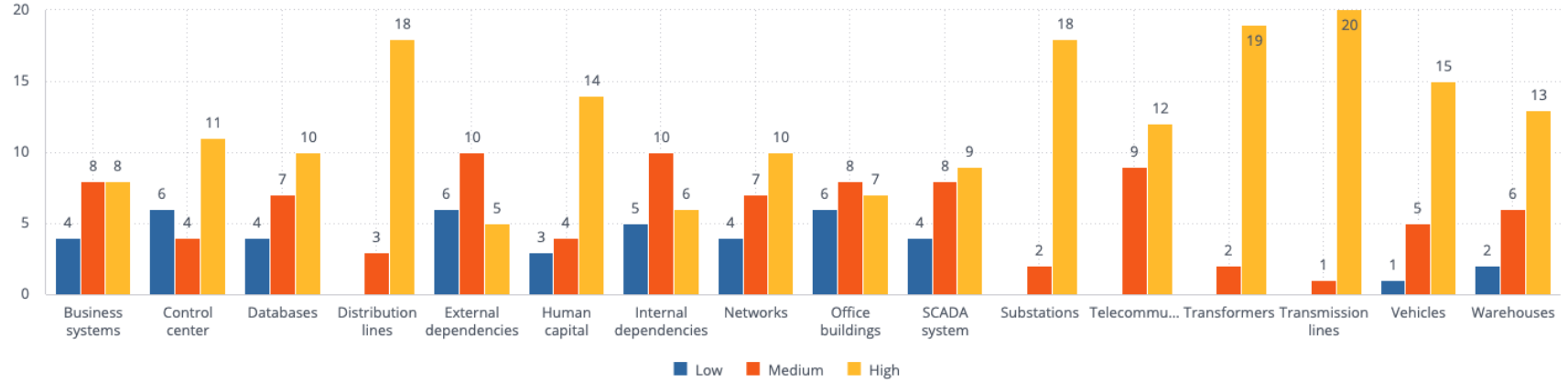
Question 17

What level of local capability exists to contend with the hazard in your cooperative service territory?



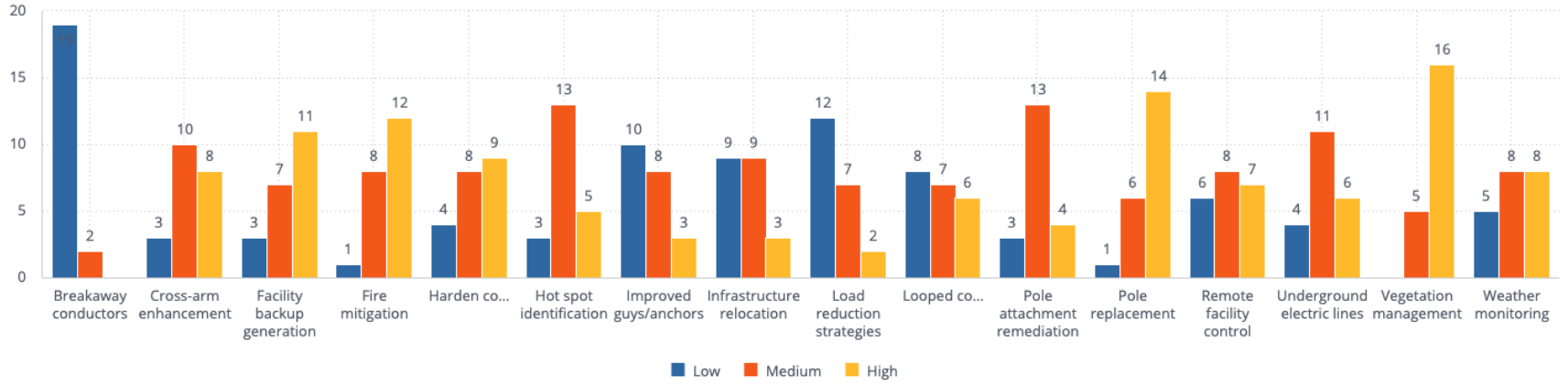
Question 18

Please review the following list of potential assets to the electric infrastructure. Please rate the criticality of each type of infrastructure to the overall system: Low, Medium, or High.



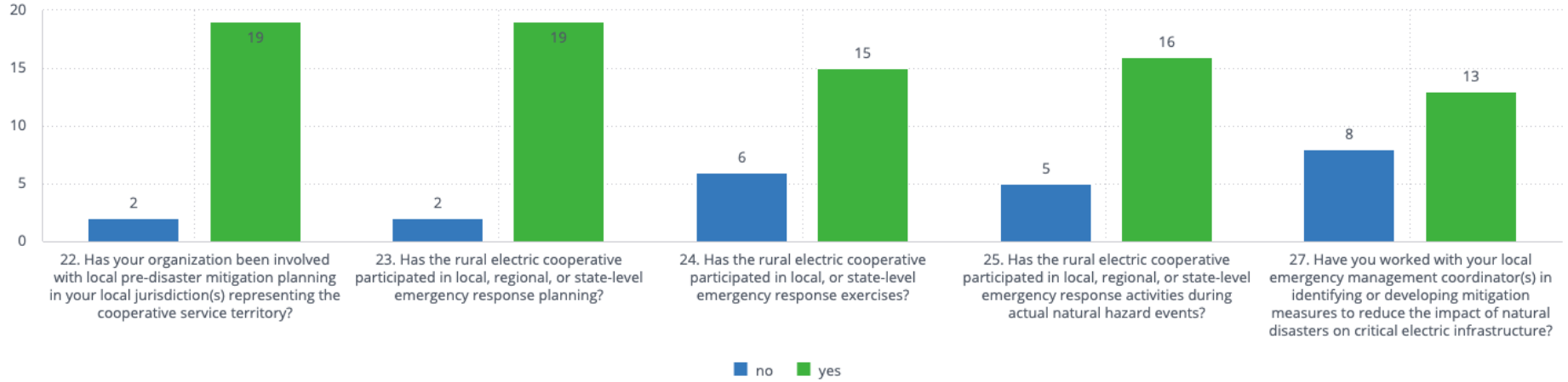
Question 21

Has the REC taken mitigation actions(s) to make critical electric infrastructure more resistant to natural hazards? If so, please indicate actions taken.



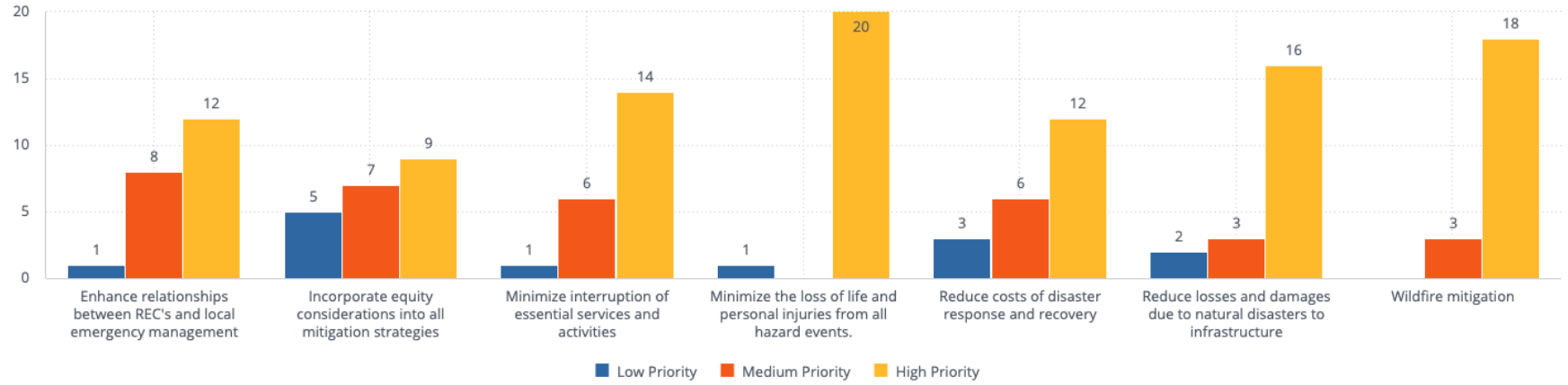
Questions 22-28

Involvement in mitigation and emergency response planning.



Question 29

Please rate the goals of the hazard mitigation plan.



Appendix B
CREA Safety & Loss Control Seminar, Hazard Mitigation Presentation

2021 Safety & Loss Control Seminar Agenda

Tuesday, July 20, 2021

8:00 - 8:30 am	Dale Kishbaugh - *Welcome & CREA Update*
8:30 - 9:15 am	Daniel Beveridge - *Colorado State Forest Service - Vegetative Control Practices*
9:15 - 9:30 am	Break
9:30 - 10:30 am	Chuck Marting - *Colorado Mobile Drug Testing*
10:30 - 12:00 pm	Daniel Greer - *Eclipse-DOT*
12:00 - 1:00 pm	Lunch - *Sponsored by Golight Inc. & Irby*
1:00 - 2:30 pm	Vendor Meet & Greet
2:30 - 3:30 pm	Jay, Chet & Andrew - *Makita Chainsaw Safety*
3:30 - 4:30 pm	Darrin Davenport - *Federated Update*

Wednesday, July 21, 2021

8:00 - 8:45 am	Mark Thompson - *DHSEM - FEMA Hazard Mitigation Grant Opportunities for RECs*
8:45 - 9:45 am	Dr Clark Ruzicka - *Healthy Posture*
9:45 - 10:15 am	Trish Makousky - *Irby FR Clothing Wear & Care*
10:15 - 11:30 am	Awards & Roundtable Discussion

Appendix C
Presentation to the Board of Directors, August 27, 2021

After evaluating the state's risk to hazards, the

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Appendix D
2021 Meeting to Review Annex Plan with Cooperatives

COLORADO RURAL ELECTRIC ASSOCIATION

Hazard Mitigation Meeting Agenda
September 15, 2021
10:00 am - 4:00 pm

Speakers:
Dale Kishbaugh, CREA
Mark Thompson, CDHSEM

Topics

- Introduction - Mitigation Goals & Objectives
- DHSEM Hazard Mitigation Grant Opportunities
- Local Mitigation Plan Review Tool
- Local Mitigation Capabilities Tracker for Local and State Plan Updates
- October 2010 CREA Natural Hazards Mitigation Plan
- State of Wyoming Hazard Mitigation Template

Hazard Mitigation Meeting

Location: United Power - Carbon Valley Service Center
Date: September 15, 2021
Time: 10:00 am - 4:00 pm

	Name	Email	Cooperative	Attendee Signature
1	Dale Kishbaugh	dkishbaugh@coloradorea.org	CREA	[illegible]
2	Kent Singer	ksinger@coloradorea.org	CREA	
3	Tim Coleman	tcoleman@coloradorea.org	CREA	
4	Geoff Hier	ghier@coloradorea.org	CREA	
5	John Stocker	jstocker@gcea.coop	GCEA	[illegible]
6	Shawn McKibben	smckibben@slvrec.com	SLVREC	[illegible]
7	DUANE Oliver	doliver@sppa.com	SAPA	[illegible]
8	Holly Woodings	hwoodings@unitedpower.com	UP	[illegible]
9	Nate Towne	ntowne@mpei.com	MPEI	[illegible]
10	Dan Finn	dfinn@mpei.com	MPEI	[illegible]
11	Darryl Stewart	DarrylStewart@SIEA.com	SIEA	[illegible]
12	John A Cramer	JCramer@yvea.com	YVEA	[illegible]
13	Butch Crawford	Crawford@myelectric.coop	SDCEA	[illegible]
14	Mateusz Pena	mateusz.pena@dmea.com	DMEA	[illegible]
15	Trenton Webber	twebber@lpea.coop	LPEA	[illegible]
16	Jeremy Eldridge	jeldridge@pvrea.coop	PVREA	[illegible]
17	Frank Simpson	fsimpson@wrea.org	WREA	[illegible]
18	Jules B. Tsilly	jules.b.tsilly@eea.coop	EEA	[illegible]
19	Mark Thompson	markw.thompson@state.co.us	DHSEM	[illegible]
20	Alex J. Mendez	amendez@core.coop	CORE	[illegible]
21	Carrie Archuleta	carchuleta@coloradorea.org	CREA	[illegible]
22	Kent Singer	ksinger@coloradorea.org	CREA	[illegible]
23				
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35				

Appendix E
2022 Hazard Mitigation Survey Sent to the Cooperatives (first page only)

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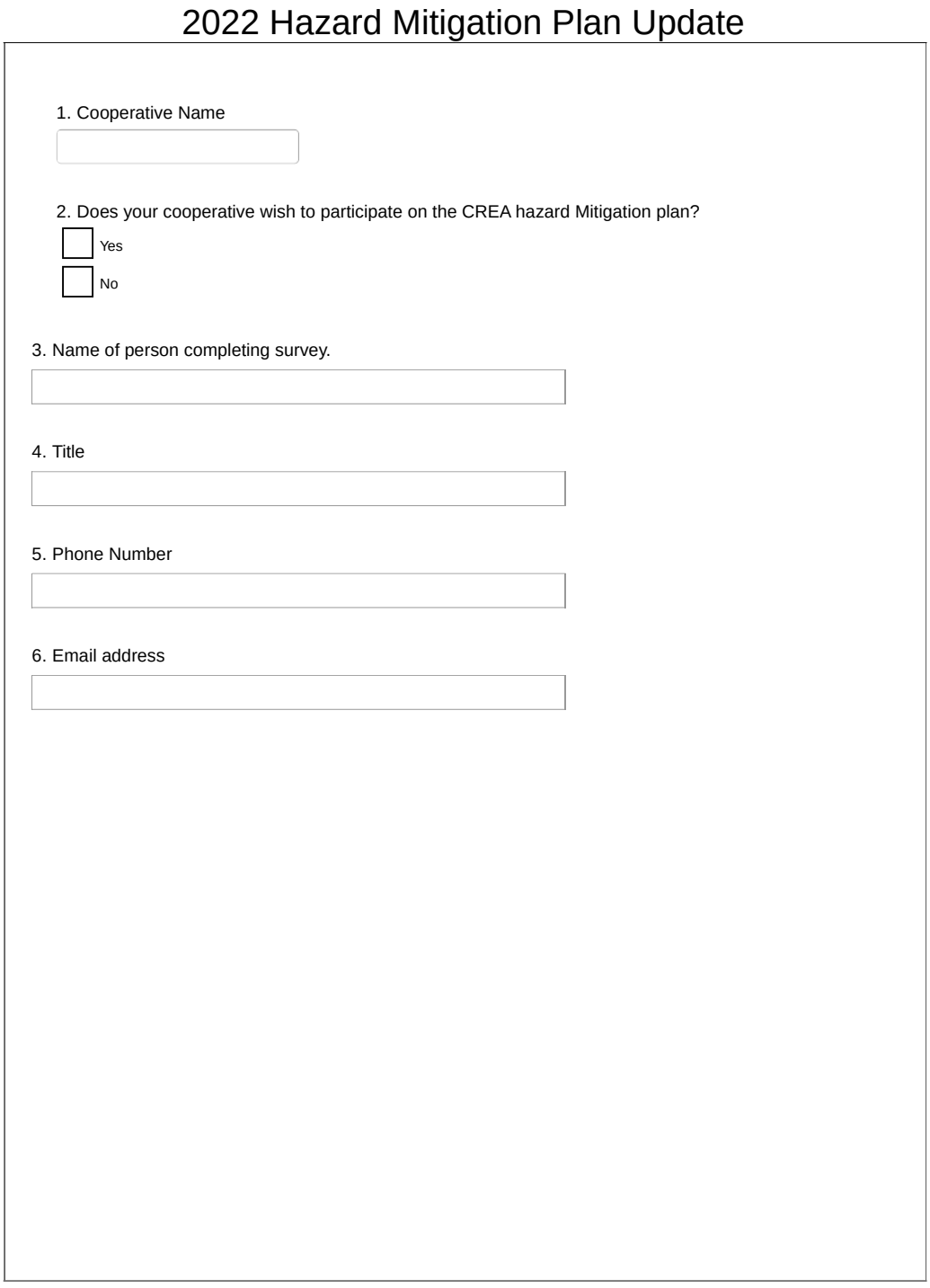


2022 Hazard Mitigation Plan Update

1. Cooperative Name

2. Does your cooperative wish to participate on the CREA hazard Mitigation plan?

- [ ] Yes
- [ ] No

3. Name of person completing survey.

4. Title

5. Phone Number

6. Email address

Appendix F
Notice of Intent

NOTICE OF INTENT - PRE-APPLICATION ELIGIBILITY WORKSHEET

FOR THE FEMA BUILDING RESILIENT INFRASTRUCTURE AND COMMUNITIES (BRIC), HAZARD MITIGATION GRANT PROGRAM (HMGP) AND FLOOD MANAGEMENT ASSISTANCE (FMA) GRANT PROGRAMS

MITIGATION PROJECT PROPOSALS

(Refer to FEMA's Hazard Mitigation Assistance Guidance for Eligible Projects)

Applicant/Organization: _____

Proposed Activity Title: _____

Applicant Type: ☐ State Agency ☐ Tribal Government ☐ Local Government ☐ Special District

Primary Contact: _____

Primary Contact Title: _____

Address: _____

City: _____ County: _____ Zip: _____

Phone #: _____

FAX # _____

Email Address: _____

Alternate Contact: _____

Alternate Contact Title: _____

Phone #: _____

Email Address: _____

If a Tribal or local government is the proposed applicant, does the Tribal or local government have a current FEMA approved, locally adopted multi-hazard mitigation plan (HMP) OR if a state agency or private nonprofit organization is the proposed applicant, is the proposed project located totally within a jurisdiction with a FEMA approved, locally adopted hazard mitigation plan? ☐ No ☐ Yes

If unsure, please check with the County or City Emergency Manager. If yes, name of plan:

_____

Current expiration date of the HMP: _____

If no, is the local jurisdiction developing *or* updating a local hazard mitigation plan? ☐ Yes ☐ No ☐ Not Applicable

Proposed Project: ☐ Acquisition ☐ Elevation ☐ Relocation ☐ Mitigation Reconstruction ☐ Retrofit ☐ Floodproofing ☐ Saferoom/Shelter
☐ Stabilization and Restoration ☐ Utility and Infrastructure Protection ☐ Flood Control ☐ Codes and Standards ☐ Warning Systems
☐ Wildlife Mitigation ☐ Education and Awareness ☐ Feasibility, Engineering, and Design Studies ☐ Microgrid ☐ Generator
☐ Landslide Mitigation ☐ Planning Related Activities ☐ Other C&CB Activities ☐ Partnerships ☐ Evacuation ☐ Windstorm
☐ Other_____

Primary Hazard:	☐ Avalanche	☐ Debris Flow	☐ Earthquake	☐ Erosion	☐ Flood	☐ Landslide
	☐ Lightning	☐ Wildfire	☐ Wind	☐ Winter Weather	☐ Other: _____	
Secondary Hazard:	☐ Avalanche	☐ Debris Flow	☐ Earthquake	☐ Erosion	☐ Flood	☐ Landslide
	☐ Lightning	☐ Wildfire	☐ Wind	☐ Winter Weather	☐ Other: _____	

Appendix G
Hazard Mitigation Grant Program Meeting

Hazard Mitigation Grant Program (HMGP) Meeting
Thursday, April 7, 2022
1pm-2pm MST

Attendees:
720-***-**36
970-***-**03
970-***-**61
Bruce Stephens - Gunnison County Electric
Chad Stickler
Chase Tucker – Yampa Valley Electric Association
Clint Arbuthnot
Clinton Smith – San Isabel Electric Association
Corine Archuleta
Dale Kishbaugh
Darryl Stewart - San Isabel Electric Association
Debbie Goerlitz – CDPS Mitigation Project Specialist
Don Finn MPEI
Doug Lyons
Emily Palmer – CDPS
Holly – United Power
Irene Merrifield – CDPS
Jeremy Eldridge
Jeremy Fox – San Miguel Power
Jessica McIntire - CDPS
John Cromer
Jules Bitsilly
Julie Byers – CDPS
Marcia Wireman – Gunnison County Electric
Mark Thompson – CDPS State Hazard Mitigation Officer DHSEM
Mateusz Pena - DMEA
Matt Arsenault – CDPS Mitigation Projects, Team Supervisor
Matthew Williams – Engineering Manager, Grand Valley Power
Shaun Dillon – Colorado Springs Utility
Shawn McKibbon SLVREC
Tammi Strickland
Trenton Webber – La Plata Electric Association, Inc.

Google NOI Form
https://docs.google.com/forms/d/e/1FAIpQLSfn4qS1u3GYzBazLuOo2GiGWCta1v7TLfG1GNqvj2xyaq8WoA/viewform

Appendix H
Presentation to the CREA Board of Directors & Managers

COLORADO RURAL ELECTRIC ASSOCIATION
BOARD OF DIRECTORS MEETING
AUGUST 1, 2022

Managers Meeting
La Plata Electric Association
45 Stewart Street • Durango

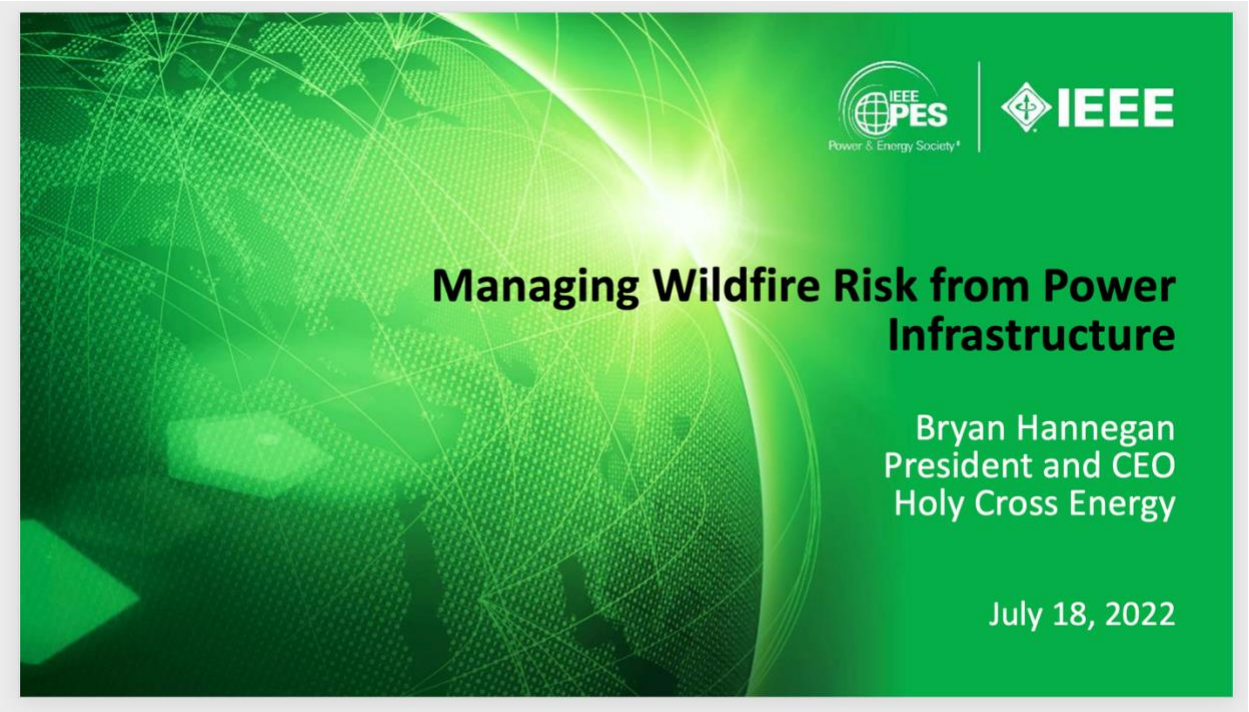
8:00 am	Breakfast Hosted by Western United
8:30 am	Antitrust Guidelines – Craig Johnson (CREA)
9:00 am	Cyber and Physical Security • Cyber Strategy Framework – Jessica Matlock (La Plata Electric) • CREA CyberForce – Trina Zagar Brown (White River Electric) Bob Farmer (Delta-Montrose) – virtual presentation
12:00 pm	Lunch
1:00 pm	Electric School Bus Program – Jessica Matlock (La Plata Electric)
1:30 pm	Supply Chain Update – Greg Mordini (Western United)

2:00 pm	Distribution Grid Operations
	• Data Analytics (San Miguel Power)
	  ○ Doug Tea
	  ○ Mike Morlang
	  ○ Mike Therriault
	• Next Generation Smart Meters – Bryan Hannegan (Holy Cross)

3:00 PM	Hazard Mitigation – Bryan Hannegan (Holy Cross)
3:30 pm	Safety and Loss Control • Update on Current Activities – Kent Singer (CREA) • Discussion – What's Working and What's Not
4:30 pm	Adjourn
6:00 pm	Group Dinner at Eolus, 919 Main Ave., Durango

August 1, 2022 PowerPoint Managing Wildfires Risk from power Infrastructure

https://www.holycross.com/grid-resiliency/ for more information



COLORADO RURAL ELECTRIC ASSOCIATION
BOARD OF DIRECTORS MEETING MINUTES
August 3, 2022

1. ROLL CALL

Roll call was taken by Secretary Rod Martinez. The following directors were present, except as indicated absent. A quorum was present.

System	Director
CORE Electric	Tim White - Absent
Delta-Montrose Electric	Damon Lockhart
Empire Electric	Larry Archibeque
Grand Valley Power	Rod Martinez
Gunnison County Electric	Tom Carl
Highline Electric	Jim Lueck - absent
Holy Cross Energy	Adam Quinton
K. C. Electric	Dan Mills - absent
La Plata Electric	Holly Metzler
Morgan County REA	David Arndt - absent
Mountain Parks Electric	Jeff Hauck
Mountain View Electric	Barry Springer
Poudre Valley REA	Jack Schneider
San Isabel Electric	Debbie Rose
San Luis Valley REC	Stephen Valdez
San Miguel Power	Debbie Cokes
Sangre de Cristo Electric	Joe Redetzke - absent
Southeast Colorado Power	Kevin Karney - absent
Tri-State G&T	Robert C. Bledsoe - absent
United Power	Ginny Buczek
White River Electric	Mark Rogers
Y-W Electric	Stuart Travis
Yampa Valley Electric	Scott McGill
Managers Association	
President	Bryan Hannegan
Vice President	David Frick
Secretary	Tom Walch
Associate Members	
Basin Electric	William Stafford - Absent
CoBank	Seth Hart - Absent
Moon Lake	Brad Casto - Absent
Wheatland Electric	Mike Thon - Absent

Guests Present: David Sinton, Josh Dellinger, Bob Barry, Corey Robinson, Brad Zaporski, Graham Smith, Kirsten Skeehan, Jessica Matlock

Staff Present: Kent Singer, Mona Neeley, Craig Johnson, Tim Coleman, Liz Fiddes and Julie Baker – minutes

Appendix I
Grant Writing and Earmark Assistance Presentation to CREA Board of Directors

MANAGERS MEETING AGENDA
PRESIDENTS MEETING AGENDA
JOINT BOARD-MANAGER-PRESIDENT'S AGENDA
TRI-STATE G&T HEADQUARTERS • WESTMINSTER
FEBRUARY 22, 2023

Managers Meeting – Hub Thompson Room

9:00 am Jenna Hirsch – CREA Safety Program Update

9:30 am CREA Survey Results

11:00 am Break

11:15 am Taloma Partners – Grant Writing & Earmark Assistance

12:00 pm Adjourn & Lunch

Presidents Meeting – Operations Center Room 201

11:00 am Presidents Roundtable

12:00 pm Working Lunch

Joint Board-Manager-Presidents – Hub Thompson Room

1:00 pm Legislative Update

1:30 pm Executive Director Report

2:00 pm CREA Survey Review – Opportunities & Challenges

4:00 pm Adjourn

Marketing & Operations Tour – Meet at the Front Desk

11:30 am – 12:30 pm