

Three-Part Wildfire Damage Mitigation Project
Grid Resilience and Innovation Partnerships (GRIP) Program
DE-FOA-0002740

Topic Area 1: Grid Resilience Utility and Industry Grants (BIL
section 40101(c))

Concept Paper Identification Code: **TA1-085-E**

Primary Points of Contact

Technical Points of Contact:

Adam G. Roybal, P.E.,
Transmission & Distribution Lines
Division Manager
Transmission & Distribution Services LLC
9550 San Mateo Blvd NE, Suite G
Albuquerque, NM 87113
Phone: 505-344-4234
Email: aroybal@t-d-services.com

Business Point of Contact:

Les Montoya, CEO/General Manager
Mora-San Miguel Electric Cooperative, Inc.
(MSMEC)
501 Highway 518; P.O. Box 240
Mora, NM 87732
Phone: 575-383-4276
Email: lmontoya@morasanmiguel.coop

Team Member Organizations:

Mora-San Miguel Electric Cooperative, Inc

Transmission & Distribution Services LLC

New Mexico Rural Electric Cooperative Assoc.

Key/Senior Personnel:

Les Montoya, CEO/General Manager
Larry Barela, Systems Operations Manager
Julie Pacheco, Finance Manager
Isaiah Romero, Operations Superintendent
April Gonzales, Systems Operations Supervisor
Jason Trujillo, AMI Network Supervisor
Adam G. Roybal, Transmission & Distribution
Lines Division Manager
Robert Perea, Planning Division Manager

Project Location: Hermit's Peak/Calf Canyon Burn Scar Area, Mora-San Miguel Electric Cooperative, Inc. Western Service Area and Eastern Sangre de Cristo Mountain Range, New Mexico.

Confidentiality is asserted as to the contents of this paper

Project Overview

Background

Mora-San Miguel Electric Cooperative, Inc. (MSMEC) is a not-for-profit member-owned electric cooperative founded under the Rural Electrification Act of 1936. MSMEC was established in 1940 to serve the rural farming and ranchlands communities located on the eastern slopes of the Sangre de Cristo Mountains, a subrange of the Rocky Mountains, and the vast desert grasslands of northeastern New Mexico. Headquartered in the unincorporated mountain town of Mora, MSMEC serves approximately 11,400 members made up of 87% residential, 15% seasonal residential, and 2% commercial accounts. MSMEC's service area covers nearly 2,000 miles of line with just seven meters per mile. MSMEC is a small utility which sells much less than 4,000,000 MWh of electricity per year, qualifying it as a small utility by the Department of Energy (DOE). Megawatt hour sales at the end of 2021 was 79,152. 94% of MSMEC's service territory is in a designated disadvantaged area per the Climate and Economic Justice Screening Tool¹. Of MSMEC's employees, 95% MSMEC are minority and 52% are women.

From April through August, 2022, MSMEC's service area experienced the ravages of the Hermit's Peak/Calf Canyon Fire, the largest recorded wildfire in the state of New Mexico. Aggravated by severe drought conditions and New Mexico's gusty spring winds, the Hermit's Peak/Calf Canyon Wildfire burned out of control for over four and a half months. Nearly 1,000 structures were destroyed and 85 more were damaged in the burn scar that covers over 500 square miles. During the fire, 9% or 150 miles of MSMEC's powerlines were burned entirely or damaged beyond repair. Several homes in MSMEC's service area were without power for months forcing families to relocate.

As soon as it was safe for crews to work, MSMEC responded to restore power where possible and began the massive rebuilding effort. MSMEC line crews worked daily to troubleshoot the electric system and restore power to members in areas with less damage. Power was temporarily restored until outside line construction crews could be mobilized to rebuild the powerline. Some areas burned so intense that the powerline and poles were entirely disintegrated. Many of these poles and powerlines have already been or will soon be redesigned and rebuilt. Depending on several factors including, material availability, the continued availability of outside line construction crews, weather, and the upcoming fire season conditions, the timeline to complete all repairs may extend into 2024. MSMEC has applied for Department of Homeland Security's Federal Emergency Management Agency (FEMA) funding to help recover the rebuilding costs.

¹ Mora-San Miguel Electric Cooperative Three-Part Wildfire Damage Mitigation Project Community Benefits Plan, page 9

MSMEC will continue grid resilience investments with vegetation management and grid hardening. These efforts will be accelerated and expanded with the Three-Part Wildfire Damage Mitigation Project (Project) over the next five years as MSMEC will apply enhanced vegetation management strategies with the assistance of contracted tree trimming crews, deploy grid modernization systems, and install advanced powerline equipment in the Project area. This effort will then expand to include MSMEC's entire service area. The Project plan and status updates will be shared on a regular basis with MSMEC's Board of Trustees, employees, and members. Project efforts will also be shared at the New Mexico Rural Electric Cooperative Association's (NMRECA) monthly manager and board meetings so that it can be used as an example for other cooperatives. State, local, tribal, and community-based organizations will also be updated and consulted throughout the Project.

Project Goal

The primary goal of the Project is to enable MSMEC to avoid, withstand, and quickly recover from power disruptions, including those due to wildfires and other climatic events, accelerate and expand current investments in vegetation management and grid hardening to obtain improved power quality and transform MSMEC's grid through innovative modernization technologies. With this transformation, MSMEC will be equipped to easily respond to increases in energy demand. MSMEC will also be able to accept more renewable energy generation from local sources, both utility scale and member-owned. Included in the goal is increasing the number of well-paid, highly-skilled positions offered by MSMEC, benefit area businesses from the patronage of contractors working on the Project and utilize existing labor agreements and enter into new agreements with labor unions, local governments, and community-based organizations. Finally, the Project will advance diversity, equity, inclusion and accessibility to electricity by MSMEC members, 94% of which reside and have business in census tracts that are designated in the Climate and Economic Justice Screening Tool as disadvantaged, in support of the President's Justice40 initiative.

Impact of Funding from DOE GRIP Grant

The cost for the Project is far beyond the approximate \$1.5 million MSMEC spends yearly on resilience investments such as tree trimming, outage restoration and repair, and system hardening². Without GRIP grant funding, MSMEC's grid will become increasingly vulnerable to impacts from natural disasters such as wildfires, windstorms, and other extreme weather. MSMEC is a member-owned, not-for-profit organization and grid investments must be weighed against keeping electric rates reasonable in its economically disadvantaged service region. Absent GRIP funding, MSMEC will have to scale back its proposed Project, extend its completion

² Mora-San Miguel Electric Cooperative, Inc. Three-Part Wildfire Damage Mitigation Project Report on Resilience Investments

date, and potentially eliminate updating the system map, coordination study, distribution automation and outage management systems, and placement of modernized innovative grid hardening equipment. The vegetation management of both the dead and live trees will be performed reactively with internal MSMEC line crews as the trees cause outages over the next 15 to 20 years (in stark comparison to the Project's goal for a proactive approach to prevent outages over the next five years by utilizing a dedicated arborist and tree removal crews). If dead trees are not quickly removed, MSMEC becomes subject to potential outages and line damage. In March 2023, a windstorm downed a dead tree onto a powerline and started a fire.

A GRIP grant will allow MSMEC to expand and accelerate its investment in grid resilience and impactful technology to protect its infrastructure and decrease the likelihood of power disruptions. The grant will not only accelerate tree removal and grid hardening, it will bring coordination technology and innovative equipment to the system and bring MSMEC in parity with areas that are not economically disadvantaged. GRIP funding will supplement MSMEC's investment in its grid so that MSMEC members receive the benefit of a resilient grid with new efficiencies and decreased expenses without an increase in electric rates to members and a possible reduction in rates over time. Reliable electric service and reasonable electric rates are indicative of economic development and may attract remote workers to the area and increase the viability of local businesses.

The Project will provide a climate resilience strategy and prepare MSMEC to address and withstand extreme weather patterns and climatic impacts such as wildfires, high winds, and the flooding of terrain exposed from previous wildfires and drought.

Community Benefits Plan³

The Project contributes to the Justice40 Initiative in that MSMEC and its members are located in identified disadvantaged areas. The service area extends through South Eastern Mora County, Eastern San Miguel County, the Northwest tip of Guadalupe County and a very small portion of Southeast Santa Fe County. All of the census tracts in MSMEC service area are 100% identified as disadvantaged except for the tract in Santa Fe County that is currently serving only 749 members, representing 6% of MSMEC membership. Both Mora and San Miguel Counties, the Project location, are designated as 100% disadvantaged tracts by the Climate and Economic Justice Screening Tool. Thus 100% of the benefits of this Project will flow to disadvantaged communities.

The Project will significantly benefit MSMEC's service area community by reducing the likelihood of disruptive events without increasing electricity rates for members. Accelerating and expanding vegetation management and grid modernization will lead to better power quality, equip MSMEC to easily respond to increases in energy demand, and allow MSMEC to

³ Mora-San Miguel Electric Cooperative Three-Part Wildfire Damage Mitigation Project Community Benefits Plan

accept more renewable energy generation from local sources, both utility scale and member-owned. The Project will increase the number of well-paid, highly-skilled positions offered by MSMEC. Additionally, area businesses will benefit from the patronage of contractors working on the Project. Throughout the Project performance, MSMEC will utilize existing labor agreements and seek opportunities to enter into new agreements with labor unions, local governments, and community-based organizations. By communication through numerous established meeting venues and reaching out to each of the organizations that provided a letter of commitment to potential partnerships for consultation and the exploration of additional partnerships, the Project will have the support it needs to be successful.

Technical Description Innovation and Impact

Relevance and Outcomes

Climate change is demonstrated in the severity of the Hermit's Peak/Calf Canyon Wildfire, presently the largest wildfire in state history, that scorched over 341,735 acres and severely impacted the resilience of MSMEC's grid by damaging 9% of its distribution system and causing some residents to be without power for months. MSMEC currently has crews working to rebuild a large percentage of the 150 miles of damaged distribution line, but it is undeniable that more must be accomplished to protect and strengthen its grid. A description of the three parts of MSMEC's proposed Project follows.

Feasibility

MSMEC has been in operation since 1940 and has adapted to the changing environment in the electric industry to successfully operate a nonprofit community-based organization providing electricity to member-owners for over 80 years. Although 2022's wildfire was a heavy blow, MSMEC, through its competent leadership, dedicated employees, and strong relationship with its membership and other community-based organizations, has rebounded and is rebuilding its system stronger than before. This grant would facilitate protecting the rebuild and bring additional benefits to the community.

With team partner T&D and through existing agreements with NMRECA, International Brotherhood of Electrical Workers, Tri-State Generation & Transmission Association (TSG&T), HelpNM, and potential new partners, MSMEC will have access to important resources for services and supplies to complete the Project. MSMEC will reach out to engage Mora County, San Miguel County, Las Vegas, Pecos, Santa Fe National Forest, State of New Mexico Forestry Division, Mora Economic Development Cooperation, Mora-San Miguel Long Term Recovery Group, New Mexico Highlands University and others to engage in partnerships that will maximize community benefit.

For the Project, MSMEC will engage T&D as a vendor to perform Project management, reporting, engineering and surveying services. T&D will provide MSMEC with contractor bidding and construction inspection support. T&D has vast familiarity with MSMEC's electric distribution system and has worked with the cooperative for 15 years. T&D and MSMEC are successfully rebuilding/repairing 150 miles of wildfire damaged line. Three of T&D's employees, the lead engineer, GIS analyst/drone pilot, and line inspector, were born, raised, and own or have owned property in Mora County and the surrounding area. T&D's staff is knowledgeable of the community, MSMEC's service area, and the terrain. T&D specializes in performing work for rural cooperatives and its field crews are highly skilled in identifying right of way in remote areas, determining structural as well as electrical damage, and performing data collection in harsh environments. Using stringent qualification standards, T&D has compiled a working list of contractors qualified to bid on Project tasks, as needed. T&D will also assist MSMEC in identifying vendors to procure other needed services and equipment. T&D is experienced in working with the federal, state, and local agencies involved in client projects such as emergency restoration, regular system expansion, and renovation or modification. T&D has assisted MSMEC in repairing and/or rebuilding line damaged by wildfire. T&D worked to assist in restoring power to MSMEC consumers and assisted MSMEC in addressing damaged and destroyed areas from: Early Assessment and Debris Removal; to Emergency Protective Measures to safely restore services immediately after conditions permitted; to Permanent Work to repair, restore, reconstruct, or replace damaged facilities; to Section 406 Mitigation projects, all as defined by FEMA. Through the past success of its relationship with T&D, MSMEC is confident that the Project will be completed in the timeframe allowed.

A key element to the feasibility of advancing this Project on a system-wide basis is providing training to key MSMEC staff. Working with its team partners, MSMEC will provide training on maintaining the map and model, enhanced vegetation practices, the placement and use of advanced grid hardening equipment, and the operation and maintenance of the distribution automation and outage management systems.

The Project was broken into three parts that overlap, but are distinct.

Part One - Recovering from the Wildfire

In 2022, realizing the need for help to recover from the wildfire damage to its system, MSMEC enlisted the assistance of its longtime engineering consultant, T&D to manage the rebuilding process so that MSMEC staff could resume the day-to-day operations of the cooperative. As T&D assessed the situation and started crews contracted by MSMEC to rebuild the destroyed powerline destroyed, it became apparent that over time further damage to the system might result from damaged trees. An initial ballpark assessment determined that there were 100,000 trees that died in the fire. Due to the trees' height and proximity to the powerline, as they fall, they could potentially come in contact with the powerline causing damage, power disruptions,

and potential fires. This scenario already occurred in March 2023 with line crews responding to a fire caused by one of these trees.

Part One of the Project is top priority and GRIP funds will be immediately utilized to identify and remove the potential danger caused by damaged burned trees. MSMEC has reached out to the Santa Fe National Forest (SFNF), New Mexico State Forestry Division (NMFD), Mora and San Miguel Counties, and multiple community-based organizations to determine how they can assist MSMEC in resolving this problem. MSMEC believes the enormity of this problem will require a combination of multiple partners and funding sources to resolve. A LiDAR study combined with a burn intensity layer will make it feasible to quickly identify each burned tree that needs removal. The survey data will be used to send ground crews to mark the trees. Once the trees are marked, MSMEC will use contracted tree crews and will call on other agencies such as SFNF and NMFD to use as many crews as possible to remove the trees.

Part Two – Enhancing Vegetation Management to Provide Additional Protection Against Future Wildfires

Since its inception in 1940, MSMEC line crews have been applying vegetation management practices and are equipped with the tools and skills to effectively reduce the likelihood of trees causing disruptions and damage to powerlines. MSMEC has approximately 20% of its total lines outside the burn scar in mountainous forested areas, both private and federal lands, that are in designated in the 90th-100th percentile for wildfire risk to structures by the Office of Clean Energy Demonstrations' Rural or Remote Area Geospatial Dashboard – Beta Version map⁴. Further measures must be taken by MSMEC to prevent future wildfire damage. MSMEC will enhance its current vegetation management practices by working with landowners to include an assessment and the removal of trees outside the usual its clearance area that are likely to fall on a powerline. Removing all brush around powerline poles and applying a fire-retardant coating will also provide additional protections. With the grant, these measures will be expanded and accelerated by performing scheduled distribution system patrols to mark trees for removal or trimming and poles that need the brush removed. After contracting with a certified arborist/s to identify the proper treatment for trees, MSMEC will contract with multiple tree crews to carry out the prescribed treatment for the areas identified. Much like Part One, but not quite as urgent, MSMEC will also explore opportunities to utilize other agencies like the SFNF and NMFD to use as many crews as possible to address the assessed areas for the enhanced vegetation management treatment.

Part Three – Modernize the Grid for Transformation to Clean Energy

MSMEC has started on the road to modernization and the transformation to clean energy by deploying an Advanced Metering Infrastructure (AMI) system and entering into a purchase

⁴ Western Mora and San Miguel Counties, New Mexico, Wildfire Risks to Structures <https://arcg.is/1jame5>

power agreement for a 2.5 MW solar system built in MSMEC's service area. Continuing these efforts, Part Three consists of advancing and expanding system-wide ongoing grid resilience investments by installing advanced grid hardening and modernization equipment and implementing distribution automation and OMS systems. MSMEC will update its system map and model in preparation of a coordination study. The map and model will be continually updated after it is brought up to date. The coordination study will recommend grid hardening equipment and develop equipment settings to ensure timely and spark free operation of the protective equipment. The protection scheme will promptly isolate faults; limiting the outage only to the affected area. The coordination study will be revised as needed as changes are made to the system, including but not limited to, reconductoring and voltage conversion efforts. Additional systems including distribution automation, fault finding, and outage management will be implemented that will operate the system in an optimal manner with limited manual intervention. Training will be provided to MSMEC employees/contractors by engineering consultants and product vendors related to the operation and maintenance of all systems, existing and new.

Interwoven in the Project is the Community Benefits plan that will encourage MSMEC member buy-in and communicate the Project plan and status to the community. The Project will flow its benefits to the disadvantaged community and promote investment in quality jobs for American workers.

Innovation and Impact

The DOE Fact Sheet on the Bipartisan Infrastructure Deal states, "Modernizing and expanding the electricity grid will make our energy sector more resilient, while enabling the buildout of affordable, reliable, clean energy to support President Biden's goal of 100% clean power by 2035."⁵ With grant funding, MSMEC will:

- a. expand and accelerate modernization of its grid;
- b. make the grid more resilient against climate change,
- c. reduce the likelihood of future disruptions,
- d. reduce the energy burden to its member-owners, and
- e. bring the rural and remote disadvantaged community into parity with other areas.

In light of the devastation caused by 2022's Hermit's Peak/Calf Canyon Wildfire and the increase in wildfires across the United States, it is undeniable that it is important for utilities to consider taking additional measures to prepare and defend against wildfires and other disasters that are increasing in intensity and frequency due to climate change. By leveraging innovative

⁵ U.S. Department of Energy. November 2021. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver For American Workers, Families and Usher in the Clean Energy Future." <https://www.energy.gov/articles/doe-factsheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>

technologies, practices and equipment, MSMEC can continue to provide safe, reliable, affordable electricity for the future generations.

Under the Project, there are a number of innovative initiatives that MSMEC will undertake:

1. Enhanced Vegetation Management Practices - Since its establishment in 1940, MSMEC has been trimming and removing trees that interfere with powerlines. Linemen are not only experts in electric distribution, building and maintaining and troubleshooting powerlines, they are also experts in managing the easements along the powerlines. Removing reoccurring tree growth, new saplings, and dying trees is an ongoing endeavor. Enhancing the current practice by expanding the clearance, identifying and removing danger trees outside the easement, removing all brush around poles and applying a fire-retardant coating to the power poles in designated densely forested areas will decrease the likelihood of disruptive events and the expense of power restoration while protecting the system from damage. By working closely with landowners, MSMEC can determine the best long-term solution so that powerline are clear of vegetation that may potentially cause a fire and extensive power disruptions.
2. Coordination Study – Protective equipment including but not limited to reclosers, sectionalizers and fuses are strategically placed on the line so that system abnormalities are detected and de-energized. The protective equipment is designed to operate when the device's settings are exceeded. It is imperative that the correct distribution equipment responds in a timely manner to protect the public and property along with maintaining power to unaffected customers. If the equipment is not properly coordinated, a larger area than necessary customer area will experience blinks and outages. If the device does not operate quickly, the public and property can be exposed to the faulted condition for longer than necessary. A coordination study is performed when a line is initially constructed. Over time, new lines are built, existing lines are upgraded, the primary voltage is changed, and the load changes. These changes on the system make the original coordination scheme less effective. A coordination study is performed using the system model to evaluate the available fault current and will identify where changes need to be made. The study will determine if new equipment is needed and if settings of existing equipment need to be modified. Examples of this are installing a recloser in areas of frequent temporary faults to restore power after the fault is removed or installing a fuse on a tap to prevent other customers from being affected by a fault on the tap. By performing a coordination study, MSMEC will be able to configure the grid with properly sized equipment in the appropriate location and settings to de-energize system disturbances in a timely manner to provide reliable, consistent, and resilient electricity.

3. Distribution Automation – MSMEC has close to two thousand miles of line over challenging terrain and line crews sometimes spend excessive amounts of time on power restoration. The implementation of a distribution automation system will prepare MSMEC to more effectively use its system due to the availability of better data in all aspects of the operating the system including engineering and maintenance. The benefits include but are not limited to loss reduction, improved power quality, and reliability that result in lower operating costs and more satisfied customers. Time and money will be saved for the utility and members by reducing the frequency, duration, and likelihood of power disruptions. The data gathered will prepare MSMEC to proactively perform system maintenance to minimize disruptions to the distribution grid. MSMEC will combine the data from the distribution automation system with the data from TSG&T's Supervisory Control and Data Acquisition (SCADA) system located in the substations that serve MSMEC to provide comprehensive data to gain a better understanding of the cause and location of where outages are, provide alerts on power quality concerns, identify areas that require preventative maintenance and proactively identify equipment failure. The distribution automation system will also allow for remote control of equipment on the line enabling MSMEC to resolve outages and power quality issues more quickly. The remote operation of protective devices will also allow MSMEC to quickly deenergize the power in instances when extreme wildfire danger conditions exist and then turn the power back on when it is safe to do so without physically driving to the location. Distribution automation is a key element for MSMEC to modernize the grid and its safe and effective operation will require extensive training for the system operator and line personnel. Deployment of distribution automation will bring parity to MSMEC and provide MSMEC members with a higher level resilient electric power.

Smartgrid.gov and the DOE, Office of Electricity Delivery and Energy Reliability studied the effects of deploying distribution automation on 15 utilities and reported some of the following benefits realized by distribution automation.⁶

- a. By upgrading its distribution circuits, PPL Electric Utilities Corporation estimated a 55% drop in the average outage duration (SAIDI) and a 58% decrease in the average number of interruptions (SAIFI) across its system in 2013. Based on these results, PPL estimates a 25% improvement in reliability over the subsequent five years.
- b. Distribution automation applications improve power factors on feeders and deliver lower voltage levels without negative effects on customers or equipment. Utilities can reduce power losses along distribution lines by dynamically

⁶ SMART GRID INVESTMENT GRANT PROGRAM FINAL REPORT

https://www.energy.gov/sites/prod/files/2017/01/f34/Final%20SGIG%20Report%20-%202016-12-20_clean.pdf

optimizing voltage and reactive power levels, which helps to deliver the same amount of power to customers at a lower cost. Conservation voltage reduction (CVR) also reduces customer voltages along a distribution feeder to reduce electricity use, particularly during peak periods. By reducing peak generation, CVR can help utilities avoid fuel costs and defer capital investments in generation assets.

- c. Smart metering, advanced distribution automation capabilities, and increased transmission visibility and control all lay the groundwork for utilities to safely and reliably integrate distributed energy resources (DER), including both small scale and large-scale renewable energy and energy storage.
4. Outage Management System – Outages are an issue for every electric utility and MSMEC has been restoring power for the last 80 years. Today, line crews rely on members calling the dispatch center when the lights go out. The dispatch center notifies the on-call lineman in the location the member/s called from. The lineman then determines the extent of the outage by the number of calls and patrolling the line in the general area of the call/s. Line crews are experts at finding and fixing the cause of outages, but it requires time to travel and locate the cause of the outage. For instance, when there is a cracked insulator, this is an intermittent issue as electricity only tracks across the insulator when it is raining, causing a protective device to operate. Because this is not something that can be easily seen, it can be very time consuming to identify and fix the issue. By installing an outage management system, it will tie the data from distribution automation, SCADA, and Advanced Metering Infrastructure (AMI) with the member phone calls reporting the outage together to pinpoint the location and other details that will help diagnose the cause of the outage. Line crews responding to outage reports spend the majority of their time patrolling line to find the cause of the outage. Being able to go directly to the area of the outage will reduce the duration of the outage and save both time and expense for the benefit of MSMEC members. Proactively, in some cases, with the system in place it will notify the operator of an outage before anyone calls to report it. The outage management system will also allow MSMEC to determine problem areas from historical outage data and assist it in maintaining these areas to eliminate repeat outages.
5. Advanced Grid Hardening Equipment - In addition to regular grid hardening practices like pole changeouts, cross arm and brace replacement, tightening connectors and recycling reclosers and transformers, MSMEC will incorporate the use of advanced grid hardening equipment that provide additional protection against climate change conditions like intensified wind storms and wildfires. For the Project, MSMEC anticipates strategically replacing the existing wire for at least ten miles with shielded

spacer cable. A number of electric cooperatives in Colorado with similar landscapes as MSMEC have already started using spacer cable in their wildfire mitigation efforts⁷ and are satisfied with the results. MSMEC will identify key areas to install the spacer cables due to density, location, or landowner requirements to reduce the likelihood of disruptions. MSMEC expects to install at least ten miles of this type of electric line during the Project. The spacer cable is supported by a support messenger that provides mechanical strength, lightning protection, serves as the system neutral and protects the phase conductors from any objects, including trees, from contacting the phases. The cable is installed in a tight configuration and is supported by an insulated spacer that hangs from the support messenger. The phase cables are insulated allowing close spacing and preventing anything from contacting the line; greatly reducing the likelihood of starting a fire. The close phase spacing also maintains voltage levels, reducing the need for voltage improvement and requiring less tree trimming compared to traditional crossarm construction. When combined with the sparkless fuses recommended from the coordination study, the spacer cables will greatly reduce the likelihood of a fire starting.

In reducing the likelihood and consequences of disruptive events and improving regional grid resilience by deploying innovative technologies and advanced vegetation management practices, MSMEC supports local community members and state and county goals of the availability of reliable, cost-effective electric service in an economically disadvantaged area. Providing a protected resilient reliable electric grid in MSMEC's service area will promote economic development and attract renewable energy resources.

Workplan

Project Objectives

MSMEC is committed to providing clean, resilient, affordable energy to members-owners located in its service area. If funded, the Project will accelerate and expand MSMEC's grid resilience investments and allow it to be better prepared to avoid, withstand, and quickly recover from power disruptions due to wildfires and other weather events intensified by climate change. The Project will significantly benefit the community by reducing the likelihood of disruptive events.

Buy America Statement

This Project will involve the construction, alteration and/or repair of infrastructure in the United States.

⁷ Colorado's Electric Cooperatives, Cooperation Among Cooperatives Addresses Wildfire Mitigation, <https://crea.coop/2021/09/30/cooperation-among-cooperatives-addresses-wildfire-mitigation/>

Technical Scope Summary

As the Prime Recipient, MSMEC will provide Project and grant oversight and administration.

The Project will identify and remove approximately 100,000 burned trees left by the Wildfire that threaten to fall and damage rebuilt powerlines, focus efforts on innovative enhanced vegetation management, and implement an advanced grid hardening and modernization plan.

Working with team partner T&D, MSMEC has identified tasks that will be performed internally by MSMEC staff and those that require a contractor. T&D will be contracted for project management and reporting, engineering, mapping, subcontractor bidding support and selection. MSMEC will reach out to other community partners such as NMRECA for support, as needed.

Project Work Description

Part One – To protect rebuilt powerline in the Hermit's Peak/Calf Canyon Wildfire burn scar areas, MSMEC proposes to identify and remove all trees that may potentially fall onto the powerline.

1. Team partner Transmission & Distribution Services, LLC (T&D) will perform a LiDAR drone survey of the rebuilt area
2. From the data collected, trees that may potentially fall on powerline will be identified
3. MSMEC field coordinators will notify landowners and collect necessary documentation
4. A certified arborist will mark trees to be cut
5. T&D will assist MSMEC in bidding out the tree trimming work and recommend a contractor to MSMEC after reviewing submitted bids
6. Tree trimming crews qualified to work around live powerlines will be contracted to cut trees
7. Action taken on felled timber will be determined by each landowner and carried out by tree trimming crews

Part Two – To protect powerlines in and around forested areas, MSMEC will use enhanced vegetation management practices and take fire retardant measures.

1. T&D will patrol all forested areas in the burn scar area over a 5-year cycle
2. MSMEC field coordinators will notify landowners and collect necessary documentation
3. A certified arborist will perform an assessment:
 - a. marking trees for removal within the utility easement
 - b. marking potentially dangerous trees outside utility easement
 - c. identifying overhanging limbs/branches that require trimming
 - d. identifying poles that need brush removal

4. MSMEC line crews will trim overhanging limbs and branches, cut trees, remove brush and apply fire retardant to poles
5. Tree trimming crews qualified to work around live powerlines will be contracted to trim overhanging limbs and branches, cut trees, remove brush and apply fire retardant to poles to supplement MSMEC line crews
6. Action taken on felled timber will be determined by each landowner and carried out by tree trimming crews
7. Distribution lines will be patrolled and poles tested on a periodic basis to ensure strength

Part Three – MSMEC’s ongoing maintenance will be enhanced and accelerated by deploying an advanced grid hardening and modernization plan. With Project funding, MSMEC will invest in advanced technology, equipment.

1. Distribution Line Hardening
 - a. T&D will design a safe and cost-effective distribution system for the forested areas that will withstand severe weather, including the use of spacer wire and larger poles.
 - b. MSMEC line crews will rebuild the existing distribution lines in forested areas
 - c. Contracted line crews will be used to supplement MSMEC crews as needed
 - d. The new construction will be inspected by T&D to ensure proper construction.
 - e. The MSMEC distribution system will be patrolled on a scheduled basis to ensure the entire system is checked in a 5-year period.
2. System Mapping and Coordination Study
 - a. T&D and MSMEC will update the system map and model
 - b. T&D will perform a coordination study with the updated system model
 - c. T&D will report study findings and recommendations for system improvements to include advanced grid hardening equipment placement on the system
 - d. T&D will specify and advise MSMEC on equipment to purchase
 - e. MSMEC line crews will install equipment and make recommended system changes
 - f. T&D will commission the newly installed equipment
 - g. Contracted line crews will be used to supplement MSMEC crews as needed
 - h. T&D will provide training to MSMEC personnel to ensure the map and model are maintained
3. Distribution Automation
 - a. T&D will assist MSMEC with the bidding and selection of a vendor for the implementation of multiple systems, including Distribution Automation and Outage Management, to improve the operational efficiency of the distribution grid.

- b. MSMEC will purchase and install the specified equipment
- c. Training will be provided to MSMEC and contract personnel to ensure appropriate implementation, operation and maintenance of the new systems.

Project Management – MSMEC will manage the Project by utilizing the experience and expertise of its team partner T&D and comply with reporting requirements outlined in the FOA2740 Reporting Requirements 2022-10-27 document.

- 1. Submit Project Management Plan (PMP)
- 2. Submit DOE Briefings at the end of years 1 through 5

Community Benefits Plan –This plan consists of continuing current practices of communication and consultation with various community and labor organizations and developing additional partnerships throughout the duration of the Project.

- 1. Community and Labor Engagement
 - a. Provide Project updates
 - i. Monthly MSMEC board meetings
 - ii. Annual MSMEC member meetings
 - iii. Employee/contractor monthly roundtable discussions
 - iv. NMRECA monthly meetings
- 2. Investment in the American workforce
 - a. Advertise and hire
 - i. Two journeymen linemen
 - ii. Two apprentice linemen
 - iii. One OMS/AMI manager
 - b. Track and reward employee training, report to the MSMEC Board of Trustees
 - c. Before the end of the first year, reevaluate succession plan needs and hire, promote and/or train personnel as necessary
- 3. Advancing Diversity, Equity, Inclusion and Accessibility (DEIA)
 - a. Send out member survey annually starting at the end of the first year
 - b. Identify opportunities for improvement
 - c. Develop and act on action plan to address areas of deficiencies
 - d. Report at annual MSMEC members meeting

Work Breakdown Structure -See Appendix A

Task Description Summary

Task 1.0: Project Management and Planning

Subtask 1.1: Project Management Plan (PMP)

Subtask 1.2: National Environmental Policy Act (NEPA) Compliance

Subtask 1.3: Cybersecurity Plan (CSP) (subtask is not required for this Project)

Subtask 1.4: Continuation Briefing(s)

Task 2.0: Three-Part Wildfire Damage Mitigation Project

Subtask 2.1: Part One - Assessment, Marking and Removal of Burned Trees

Subtask 2.2: Part Two - Application of Enhanced Vegetation Management

Subtask 2.3: Part Three - Grid Modernization

Task 3.0: Community Benefits Plan

Subtask 3.1: Project Communication Updates

Subtask 3.2: Work with Labor Institutions

Milestone Summary

Year 1 Milestones		Year 2 Milestones	
1 st quarter	Go/No Go	1 st quarter	Go/No Go
2 nd quarter	Lidar Study Complete	2 nd quarter	Coordination Study Complete
3 rd quarter	Design for Line Upgrade	3 rd quarter	Distribution Patrol 10%
4 th quarter	Mapping Update Complete	4 th quarter	Tree Removal Complete
Year 3 Milestones		Year 4 Milestones	
1 st quarter	OMS Vendor Selected	1 st quarter	Distribution Patrol 10%
2 nd quarter	DA Vendor Selected	2 nd quarter	OMS Operational
3 rd quarter	Distribution Patrol 10%	3 rd quarter	DA Operational
4 th quarter	DA equipment procured	4 th quarter	Apprenticeship Complete

Year 5 Milestones			
1 st quarter	Line Maintenance 30%		
2 nd quarter	Tree Trimming 30%		
3 rd quarter	Distribution Patrol 10%		
4 th quarter	Project Complete		

Go/No-Go Decision Points

Task	Activity	Go	No Go	Modified Go	Comments
3.2	Hire New Employees				Contract work if positions are not filled
2.1	Tree Removal				If other state or federal agencies can do it
2.2	Fire Retardant Application				If fire retardant is not approved by Forest Service
2.3	OMS				If other tasks come in over budget
2.3	Line Rebuild				Material not available

End of Project Goal

MSMEC, with T&D's assistance, expects the Project's three parts to operate concurrently with completion of the Project by 2028. MSMEC will continue to carry out grid hardening and enhanced vegetation management throughout the rest of its system after Project completion.

Project Gantt Chart – See Appendix B

Project Management

It is expected that the Project Manager will start with a kickoff meeting with all team members to solidify assignments, expectations, and assign priority to tasks. Within 30 days of award, the Project Manager and Project Team Lead will develop the Project Management Plan (PMP) for submittal to the designated Federal Project Officer (FPO). Through monthly (or more often as required) meetings with team members, the PMP shall be revised and resubmitted as often as

necessary throughout the Project to capture major/significant changes to the planned approach, budget, key personnel, major resources, etc.

The Project Manager and Project Team Lead will ensure that Project plans, results, and decisions are appropriately documented to report, at a minimum, annually to the FPO the progress, milestones and go/no go decisions made for the prior period.

The Project Manager and Project Team Lead will utilize Microsoft Project, Deltek, QuickBase Microsoft Teams, Outlook and on-site reviews to track and manage the Project's progress to quickly identify and resolve issues.

The Project Manager and Project Team Lead will manage and direct the Project according to the approved PMP to meet all technical, schedule and budget objectives and other requirements. They will coordinate activities to effectively accomplish the work. The Prime Recipient, MSMEC will ensure that Project reporting and briefing requirements are satisfied.

Team Member Roles

Team Member	Role	Organization
Les Montoya	Team Business Point of Contact and Oversight	MSMEC
Adam Roybal	Team Project Manager/POI	T&D
Robert Perea	Team Project Lead	T&D
Larry Barela	Team Technical Advisor Field Oversight	MSMEC
Isaiah Romero	Team Technical Advisor Field Oversight	MSMEC
Julie Pacheco	Team Financial Advisor and Oversight	MSMEC
April Gonzales	Team Member	MSMEC
Jason Trujillo	Team Oversight OMS/DA	MSMEC
Nathan Duran	Team Field Coordinator	T&D

The Project Manager and Project Team Lead will communicate with Team Members to identify and assign Project tasks. Les Montoya, MSMEC CEO and General Manager will provide grant oversight and administration. Adam Roybal, T&D Transmission & Lines Division Manager and Project Manager and Robert Perea, T&D Planning Manager and Project Team Lead will provide Project and resource management for the Project. Securing subcontractors/vendors for the services and equipment upon grant award will allow some Project tasks to run concurrently.

Bidding will occur for contracting tree removal, tree trimming and line upgrade construction. The equipment specification and procurement process will be commenced immediately to identify lead times and the Project schedule accordingly adjusted.

Technical Qualifications and Resources

MSMEC and T&D have vast experience in project and resource management and powerline maintenance. MSMEC, T&D and NMRECA have had decades long working relationships that will ensure successful completion of the Project.

Project Team Member Expertise

MSMEC has been in existence since 1940, building and maintaining 1,985 miles of line with three substations for 11,480 accounts that in 2021 used 79,151 MWh of electricity with a peak demand of 17 MW. Over its operating years, MSMEC has added substations, built new line, added new technology, such as advanced metering infrastructure (AMI), and adapted to electric vehicle chargers to support its growth. T&D specializes in supporting rural electric cooperatives across the southwest and has engineered and managed hundreds of large utility projects.

Project Manager Adam Roybal with Team Project Lead Robert Perea will lead the project and resource management in conjunction with Les Montoya, Team Business Point of Contact. The experienced utility staff of MSMEC along with T&D and its team of Professional Engineers, Engineering Interns; graduate electrical and mechanical engineers, Professional Surveyors, GIS technician, field services personnel/inspectors, survey technicians, and administrative staff. will assist with the Project as needed. Staff of NMRECA will be called on as necessary to support the project.

MSMEC

Project Business Point of Contact: Leslie “Les” W.J Montoya, CEO/General Manager, MSMEC

Qualifications: Mr. Montoya came to MSMEC in 2017. With lifelong experience and expertise in management, he brought essential personnel management skills, organization and goal setting skills to MSMEC. Mr. Montoya oversees all aspects of operation for both Mora and Pecos, NM which serves 11,480 consumers and spans over 1,982 miles of distribution line in Mora, Guadalupe, San Miguel and Santa Fe Counties. MSMEC’s current workforce includes 29 full-time employees, including a collective bargaining unit. Mr. Montoya works diligently to support the cooperative including attending and participating in all safety meetings, reporting to MSMEC’s Board of Trustees on a monthly basis, and implementing an Employee Engagement Committee to enhance employee morale and participation in employee engagement activities. Mr. Montoya continues to see MSMEC through the devastation caused by the 2022 wildfire by supporting employees and finding resources for consumers during a devastating time.

Mr. Montoya's skills include: 25 years financial management, leadership, communications, delegation, performance monitoring, goal setting, personnel management, policy and ordinance development, infrastructure and budgeting. Mr. Montoya's experience and expertise is difficult to summarize as he has dedicated his life to serving others as a leader.

Project Technical Advisor: Lazaro "Larry" Barela, Systems Operations Manager, MSMEC

Qualifications: Mr. Barela has built a life-long career with MSMEC. December of 2023 will mark 30 years of service for Mr. Barela at MSMEC. Mr. Barela currently serves as Systems Operations Manager. Prior, he served as a Journeyman Lineman with MSMEC for 11 years. His responsibilities to date are numerous and include oversight of all operations in Mora and Pecos, NM. Mr. Barela is extremely knowledgeable of the components of MSMEC's distribution system and is aware of its maintenance, repair and replacement requirements.

T&D

Project Manager: Adam Roybal, P.E., Transmission and Distribution Lines Division Manager

Qualifications: Mr. Roybal is a Professional Engineer, licensed in the state of New Mexico and has practiced for fifteen years. With nine years of experience at Xcel Energy, the largest investor-owned electric utilities in the southwest, three years with Jemez Mountains Electric Cooperative, the largest rural electric cooperative in the state of New Mexico, and five years at T&D working with most of the rural electric cooperatives, tribal utilities, investor-owned utilities, and municipalities operating an electric utility in New Mexico. Mr. Roybal has modeled, modernized and ensured grid resilience at each utility he has worked.

Project Team Lead: Robert Perea, P.E., Planning Division Manager

Qualifications: Mr. Perea is a Professional Engineer with over 30 years of experience in electric utility system planning. Prior to T&D, Mr. Perea managed the New Mexico Distribution Design for Xcel Energy and worked as a New Mexico Operations Engineer for Southwestern Public Services Company. Mr. Perea and his team will perform the coordination study discussed in Part 3 of the Project.

Prior Experience that Demonstrates an Ability to Perform Tasks of Similar Risk and Complexity

Most recently, MSMEC rapidly and effectively responded to the damage caused by the Calf Canyon/Hermit's Peak wildfire. With teaming partner T&D, MSMEC quickly completed a damage assessment and deployed multiple construction crews while keeping material stocks adequate to enable its crews to continue building line and providing necessary documentation for RUS compliance and FEMA qualification.

Prior Projects and Programs with Teaming Partner

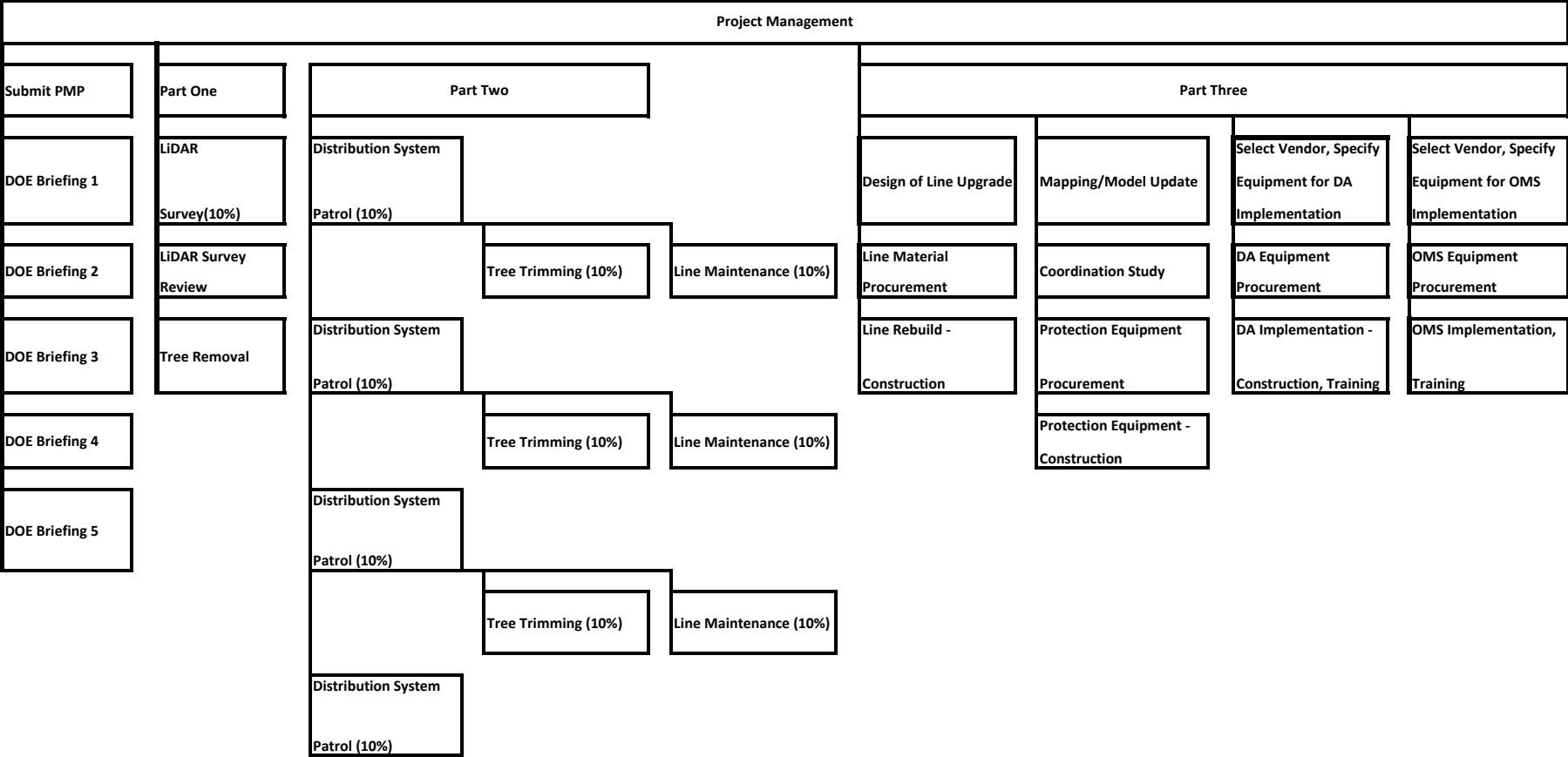
T&D has vast familiarity with MSMEC's electric distribution system and has worked with the cooperative for 15 years. Additionally, T&D's lead engineer, GIS analyst/drone pilot and line inspector were born, raised, and own/owned property in Mora County and the surrounding area. T&D's staff is knowledgeable of the community, MSMEC's service area, and the terrain. T&D specializes in performing work for rural cooperatives and its field crews are highly skilled in identifying right of way in remote areas, determining structural as well as electrical damage, and performing data collection in harsh environments. T&D has assisted MSMEC in utilizing the FEMA resources to help repair and/or rebuild most of the damage caused by the Hermit's Peak/Calf Canyon wildfire. T&D worked to assist in restoring power to MSMEC consumers and assisted MSMEC in addressing damaged and destroyed areas from: Early Assessment and Debris Removal; to Emergency Protective Measures to safely restore services immediately after conditions permit; to Permanent Work to repair, restore, reconstruct, or replace damaged facilities; to Section 406 Mitigation projects, all as defined by FEMA.

Equipment and Facilities Necessary to Accomplish the Effort

MSMEC and T&D have the facilities and equipment necessary, the capacity to locate and retain qualified external contractors, and the ability to secure material and equipment through vendors with established relationships with both MSMEC and T&D.

Mora-San Miguel Electric Cooperative
Three-Part Wildfire Damage Mitigation Project
Work Breakdown Structure

APPENDIX A



Mora-San Miguel Electric Cooperative, Inc.

Three-Part Wildfire Damage Mitigation Project

APPENDIX B

Select a period to highlight at right. A legend describing the charting follows.

Period Highlight 1 Plan Duration Actual Start % Complete Actual (beyond plan) % Complete (beyond plan)

