COLORADO'S POWER PATHWAY

WILDFIRE MITIGATION PLAN - COLORADO'S POWER PATHWAY, EL PASO COUNTY SEGMENT

MAY 2025

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LIST OF ACRONYMS AND ABBREVIATIONS

1041	Areas and Activities of State Interest Permit
Contractor	construction contractor
CRS	Colorado Revised Statutes
CWPP	Community Wildfire Protection Plan
IEEE	Institute of Electrical and Electronics Engineers
kV	Kilovolt
NERC	North American Electric Reliability Corporation
Pathway	Colorado's Power Pathway
Plan	Wildfire Mitigation Plan - Colorado's Power Pathway, El Paso County Segment
PSCo	Public Service Company of Colorado
ROW	Right-of-Way
TCA	Temporary Construction Area
VM	Vegetation Management
Xcel Energy	Public Service Company of Colorado, a Colorado corporation conducting business as Xcel Energy

1 INTRODUCTION

Public Service Company of Colorado (PSCo), a Colorado corporation conducting business as Xcel Energy, is seeking approval of a permit to locate and construct major facilities of a public utility (1041 permit) from El Paso County to construct and operate a portion of Colorado's Power Pathway (Pathway) located in El Paso County. Pathway is a $1.7 billion investment to improve the state's electric grid and enable future renewable energy development around the state. Pathway will increase electric reliability, boost the regional economy, and create jobs during construction. Pathway includes:

- Installation of approximately 550 miles of new 345-kilovolt (kV) double-circuit transmission line in 12 counties;
- Construction of four new electric substations (Canal Crossing, Goose Creek, May Valley, and Sandstone); and
- Expansion, equipment additions, or equipment upgrades at four existing electric substations (Fort St. Vrain, Pawnee, Harvest Mile, and Tundra).

Pathway will be constructed in five segments. Each new or expanded electric substation will serve as an endpoint for the transmission line segments:

- Fort St. Vrain – Canal Crossing (Segment 1)
- Canal Crossing – Goose Creek (Segment 2)
- Goose Creek – May Valley (Segment 3)
- May Valley – Sandstone – Tundra (Segment 4)
- Sandstone– Harvest Mile (Segment 5)

Pathway facilities proposed in El Paso County include approximately 45 miles of new 345-kV double-circuit electric transmission line. Proposed activities in El Paso County will also include seeking approval of all temporary construction areas (TCA) associated with construction of the Pathway facilities for the duration needed to complete Pathway construction (including staging/laydown areas, and conductor stringing areas). Pathway will be constructed in segments, with a portion of Segment 5 proposed to be located in El Paso County.

The proposed transmission line route in El Paso County is generally oriented in a north to south direction in the area south of Simla, near the El Paso/Lincoln county line and is co-located along the following existing roads in El Paso County: Oil Well Road, Harrisville Road, Simla Highway, Rush Road, Holtwood Road, S Johnson Road, and Whittemore Road. The El Paso County Wildfire Burn Probability Map (Attachment A) illustrates the wildfire burn probability in El Paso County, the location of the proposed

transmission line route, and Fire Protection Districts. Pathway is located in areas of low wildfire burn probability in El Paso County (Colorado Forest Atlas 2022; Attachment A). Pathway is located within the Big Sandy, Edison, and Tri County Fire Protection Districts in El Paso County.

This Wildfire Mitigation Plan - Colorado's Power Pathway, El Paso County Segment (Plan) describes the framework for measures to be taken by Xcel Energy and its construction contractor (Contractor) to ensure fire prevention and suppression measures are carried out in accordance with Xcel Energy's 2025-2027 Wildfire Mitigation Plan. Measures identified in this Plan apply to work within the Project area defined as the right-of-way (ROW); access roads; all TCAs; and other areas used during construction and operation of Pathway.

1.1 PURPOSE

The purpose of this Plan is to consolidate information provided in Xcel Energy's 1041 Application (as provided in Pathway's initial submission and subsequent resubmissions in response to agency referral comments) and the Xcel Energy 2025 – 2027 Wildfire Mitigation Plan (Xcel Energy 2024; Attachment B) per El Paso County's request.

1.2 XCEL ENERGY'S 2025 – 2027 WILDFIRE MITIGATION PLAN

Xcel Energy is continually striving to improve safety and wildfire resilience across its service network. This commitment is outlined in its Wildfire Mitigation Plan that is updated on a 3-year basis. The Wildfire Mitigation Plan includes new technologies and best practices to help reduce wildfire threat and address public safety.

Xcel Energy's Wildfire Mitigation Plan reflects its commitment to continue engaging with key community partners in government and industry, across the state and was developed to capture the broad state-wide work to protect and strengthen our communities. That continued engagement with community partners, specifically County and local Fire Protection Districts, includes supporting their development efforts of Community Wildfire Protection Plans (CWPP) and other relevant plans, when offered an invitation to participate in this type of mitigation planning.

Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan is provided as Attachment B. Relevant information from Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan is included in this document, as appropriate.

1.3 LOCAL EMERGENCY SERVICE RESPONSE AND COORDINATION

Across the state, Xcel Energy coordinates closely with local fire departments and first responders and consults with them to discuss any concerns within their respective response areas. That includes free online safety training to fire departments and first responders that is based on national standards through the Responding to Utility Emergencies Program. The training materials can be found at https://co.my.xcelenergy.com/s/outage-safety/public-safety/safety-resources. Xcel Energy also has various ways for agencies to contact it about questions or concerns, including a dedicated email address (PublicSafety@XcelEnergy.com) and 1-800-numbers to enable communications center personnel to directly and quickly contact Xcel Energy when they receive information about an emergency that involves Xcel Energy's facilities. Business cards containing these confidential emergency phone numbers are available to emergency responder organizations from Xcel Energy community relations representatives.

Specific to El Paso County, there are three fire districts covering areas crossed by Pathway: (1) Tri County Volunteer Fire Protection District, (2) Edison Fire Protection District, and (3) Big Sandy Fire Protection District (the "Fire Districts"; see El Paso County Wildfire Burn Probability Map in Attachment A for the respective jurisdictions of each Fire District). There are no components of Pathway that fall outside of existing Fire District coverage. Xcel Energy submitted Fire District Coordination letters to the Fire Districts on October 14, 2024, and has responded to referral agency comments from the Tri-County Fire Protection District by revising the Emergency Response Procedures and resending the Fire District Coordination Letter to Fire Chief Mark A. Stanwood on March 25, 2025, as documented in Xcel Energy Responses to El Paso County Second Referral Comments. On May 5, 2025, Xcel Energy followed up with Big Sandy and Edison Fire Districts via a phone call. No comments have been received from Big Sandy Fire District regarding Pathway through El Paso County as of the date of this submittal. Edison Fire District Fire Chief Anderson advised that the letter should be sent directly to the Fire Chief. The letter was emailed to the Fire Chief on May 5, 2025. As of May 7, 2025, Xcel Energy has not received a written response from the other Fire Protection Districts to its multiple outreach efforts, and it cannot compel the Fire Protection Districts to respond at this time, but Xcel Energy will continue to make good faith efforts to engage with the relevant Fire Districts and welcomes the County's assistance to set up a meeting with the Fire Districts to address any concerns the Fire Districts may have about Pathway. Like it does in other jurisdictions, Xcel Energy is happy to provide the Fire Districts with information about its online training and other coordination options.

During Pathway's construction, Xcel Energy will implement the Emergency Response Procedures provided as Attachment C. Pages 38 and 39 of the Emergency Response Procedures (Attachment C) includes the Contractor's Emergency Action Plan, with emergency contact information for local hospitals, police/sheriff, and Fire Protection Districts crossed by Pathway (see Figure 1).

PAR
ELECTRICAL CONTRACTORS, LLC
A QUANTA SERVICES COMPANY

Emergency Action Plan

All job sites must have emergency communication and an emergency response plan communicated and understood by all Contractor and Subcontractor employees. The plan shall include, at a minimum:

- Emergency Contacts
- Location and Name of Local Emergency Services
- On-site communication methods (cell phone, radio, satellite phone, etc.)
- Location and directions (including maps) to the nearest medical facility
- Procedure to follow in the event of an emergency

A minimum of two currently trained persons in First Aid and CPR will be present for each crew.

Crews will have access to the findERnow App.

Emergency Contacts		
NOTE For Persons Using GPS Units: In some cases, the address that is entered may not take you to the desired destination. Always verify that your unit is taking you to the desired location. You may need to drop a pin and save the location into your GPS unit.		
Name	**Address**	**Phone**
Hospital / Medical Facility El Paso County (Segment 5)		
UCHealth Falcon Medical Center	11605 Meridian Market Vw, Ste 184, Falcon, CO 80831 (30-60 Minutes based on Location)	719-364-9560
Hospital/Medical Facility, Pueblo (Segment 5)		
Common Spirit St Mary Hospital	1008 Minnequa Ave, Pueblo, CO 81004	800-228-4039
Local Police / Sheriff		
El Paso County Sheriff's	7 East Vermijo Avenue Colorado Springs, CO 80903	719-520-7100
Pueblo County Sherriff's Office	909 Court St, Pueblo, CO 81003	719-583-6125

Figure 1a: El Paso County Emergency Contacts

Emergency Action Plan

Fire & Rescue Squad		
Tri-County Fire Department	590 N Rush Rd, CO 80833 1.5 miles	911 or 719-478-2345
Big Sandy Fire Protection District	219 Sioux Ave, CO 80835 1 mile	911 or 719-541-2883
Edison Volunteer Fire Department	14550 Edison Rd, CO 80864 4 miles	911 or 719-390-5555 (El Paso Co Sheriff's Office Communication Center)

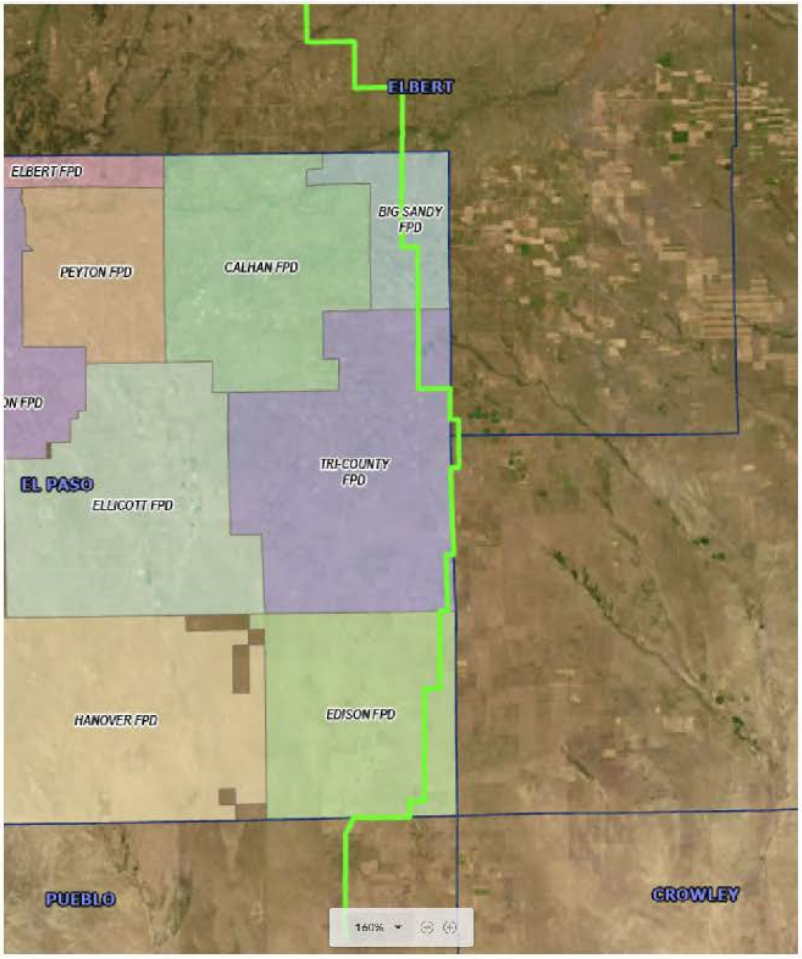


Figure 2b: El Paso County Emergency Contacts

After Pathway is built, Xcel Energy's 2025-2027 Wildfire Mitigation Plan outlines Xcel Energy's continued engagement with the County and local emergency responders like the Fire Districts. That continued engagement will include supporting the County's development of a CWPP and other relevant emergency response plans, if requested. At this time, Xcel Energy has not received an invitation to participate in any ongoing CWPP or other mitigation planning within El Paso County, but Xcel Energy's Senior Wildfire Community Engagement Managers can participate in this kind of project to support the local communities' planning efforts that involve Xcel Energy assets.

Xcel Energy has existing electric transmission infrastructure throughout El Paso County and will continue to collaborate with emergency responders regarding responses involving that infrastructure. Responses to incidents related to Pathway would be the same as responses to other similar transmission infrastructure that exists within El Paso County today.

2 FIRE PREVENTION MEASURES

2.1 PRECONSTRUCTION AND CONSTRUCTION

Xcel Energy's facilities are designed, constructed, operated, and maintained to meet or exceed all applicable requirements of the Institute of Electrical and Electronics Engineers (IEEE) standards and accepted industry standards and practices including IEEE 979, Guide for Substation Fire Protection. Applicable fire laws and regulations, as outlined in Colorado Revised Statutes (CRS) 31-15-601, will be observed during construction and normal operation of the transmission line.

Fires along transmission lines are very rare. Xcel Energy's powerlines are monitored and controlled remotely from an operations center where event response is coordinated. In the rare event of an emergency, Xcel Energy will likely be aware of an issue before the general public or emergency responders. Nevertheless, the public is encouraged to contact Xcel Energy's emergency number: 800-895-1999 to report an emergency. Unauthorized personnel, including emergency responders, should not approach the facilities and should not touch the electric lines or anyone or anything in contact with them.

Xcel Energy also coordinates closely with local fire departments and first responders and consults with them to discuss any concerns within their response area. Xcel Energy offers free online safety training to fire departments and first responders that is based on national standards through the Responding to Utility Emergencies Program.

2.1.a Training

Pages 5 through 25 and 53 and 54 of the Emergency Response Procedures (Attachment C) includes the Contractor's fire awareness training materials, which include:

> *Fire safety is everyone's responsibility and while policies, plans, and procedures are all necessary and appropriate tools, there is no substitute for common sense and general awareness. All employees should know how to prevent and respond to fires and are responsible for adhering to company policies regarding fire emergencies. The following fire prevention guidelines should be followed in order to properly identify hazards and prevent unnecessary ignitions.*
>
> *A. PAR will conduct a Job Site Fire Safety Analysis to identify major fire hazards, coordinate handling and storage procedures for hazardous materials, identify potential ignition sources and their control, and provide for the appropriate fire protection equipment.*
>
> *B. PAR will implement procedures to control accumulations of flammable or combustible waste material.*
>
> *C. PAR supervision will work with the job site Foreman, along with the Equipment Manager to complete regular maintenance of safeguards installed on heat-producing tools and equipment to prevent accidental ignition of combustible materials.*
>
> *D. PAR management team will provide Fire Awareness training to all on-site employees.*
>
> *E. Field leadership will implement, discuss and document that emergency plans are in place, discussed, and documented in advance of work being performed.*
>
> *F. Trucks mobilized for projects are required to be equipped with the following fire suppression items, when deemed necessary by the Fire Safety Coordinator:*
>
> *1. Fire Extinguisher*
>
> *2. Shovel*
>
> *3. Axe*
>
> *4. 5 Gallon Water Can*

G. When equipment with internal combustible engines is parked over or near light vegetation fire blankets will be placed under any heat source to prevent ignition of fuels.

H. PAR supervision will work with Customer, as deemed necessary, to discuss, evaluate, consider, and implement, as applicable, additional fire safety considerations.

I. The regional PAR office will daily monitor appropriate news, weather, and fire related information from the governing authorities in order to assess fire hazards and communicate this information directly to our field supervision. Additionally, field crews will monitor local conditions.

J. Field crews will discuss potential fire hazards and required mitigation measures during the daily tailboard.

K. In the event of a fire the following steps will be taken:

1. Notify first responders

2. Notify QISG/Xcel leadership

3. Notify Xcel Security Operations Center 612-330-69004.

4. Notify PAR Leadership

5. If the fire is manageable, use tools and equipment to extinguish

6. If fire spreads or becomes unmanageable, move all personnel to safety zone.

Additional training materials regarding Fire Prevention and Mitigation are provided in pages 5 through 25 of the Emergency Response Procedures (Attachment C).

2.1.b Smoking

Smoking is prohibited on the entire project, including the laydown yards, right-of-way, pull sites, and other construction areas. Smoking is also prohibited in all vehicles traveling in construction areas of Pathway.

2.1.c Spark Arresters

During construction, operation, maintenance, and decommissioning of Pathway, all equipment operating with an internal combustion engine will be equipped with federally approved spark arresters. Spark arresters are not required on trucks, buses and passenger vehicles equipped with an unaltered muffler or on diesel engines equipped

with a turbocharger. Agency fire-inspection officers will have full authority to inspect spark arresters on project equipment prior to its use on the project and periodically during construction.

2.1.d Parking, Vehicle Operation, and Storage Areas

In no case will motorized equipment, including worker transportation vehicles, be driven or parked outside the designated and approved work limits. Equipment parking areas, the ROW, staging areas, designated vehicle-parking areas, and small stationary engine sites – where permitted – will be cleared of all flammable material. Clearing will extend to a minimum of 2 feet beyond the edge of the area to be occupied but not beyond the boundary of the approved ROW. Glass containers will not be used to store gasoline or other flammable materials.

2.1.e Equipment

Pages 53 and 54 of the Emergency Response Procedures (Attachment C) includes the Contractor's fire awareness training materials, which include the following requirements for construction equipment:

> *F. Trucks mobilized for projects are required to be equipped with the following fire suppression items, when deemed necessary by the Fire Safety Coordinator:*
>
> *1. Fire Extinguisher*
>
> *2. Shovel*
>
> *3. Axe*
>
> *4. 5 Gallon Water Can*
>
> *G. When equipment with internal combustible engines is parked over or near light vegetation fire blankets will be placed under any heat source to prevent ignition of fuels.*

Additional training materials regarding Fire Prevention and Mitigation are provided in pages 5 through 25 of the Emergency Response Procedures (Attachment C).

2.1.f Road Closures

Traffic Control Plans will be developed in areas where travel on roadways could be impacted during construction. Construction updates and schedules will be discussed with local government officials as needed, as details are determined. Necessary road use and ROW permits will be obtained from El Paso County and from Colorado

Department of Transportation for state highway/interstate crossings as needed prior to construction.

2.1.g Refueling

Fuel trucks will have a large fire extinguisher charged with the appropriate chemical to control electrical and gas fires. The extinguisher will be a minimum size of 35-pound capacity with a minimum 30 BC rating. Power-saw refueling will be done in an area that has first been cleared of material that could catch fire.

2.1.h Burning

Burning of trash and other materials is prohibited on the project. Cooking, barbecue grills and other fires are prohibited on this project. All trash, debris and other materials will be collected and disposed of via a licensed garbage removal contractor.

2.1.i Flammable Liquids and Explosives

Chemicals that may be used during construction and operation are those found in diesel fuel, gasoline, coolant (ethylene glycol), and lubricants in machinery. Hazardous materials will not be drained onto the ground or into streams or drainage areas. Enclosed containment will be provided for trash disposal. Construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, will be removed and taken to a disposal facility authorized to accept such materials. No hazardous materials will be permanently used, stored, or generated on site of Pathway facilities. Pathway will not require transportation of hazardous materials.

Construction, operation, and maintenance activities will comply with applicable federal, state, and local laws and regulations regarding the use of hazardous substances. Construction activities will be performed by methods that prevent entrance or accidental spillage of solid matter, contaminants, debris, and other pollutants and wastes into flowing streams or dry watercourses, lakes, and underground water sources. All activities will follow best management practices for the management of wastes to avoid and minimize effects from potential spills or other releases to the environment.

2.1.j Communications

The contractor will be responsible for maintaining contact with fire-control agencies and will be equipped with a radio or cellular telephone so they can make immediate contact with local fire-control agencies.

2.1.k Welding

Welding is normally restricted to the material storage areas which have been graded and reinforced with stone and gravel. An 8-pound fire extinguisher and 500-gallon water tank are present to help immediately extinguish fires. On the ROW, if wildland fuels are present, areas are pre-watered and protected with fire blankets prior to commencing welding. During Red Flag days, welding is prohibited in areas where wildland fuels are present.

2.1.l Fire Suppression

Pages 53 and 54 of the Emergency Response Procedures (Attachment C) includes the Contractor's fire suppression activities should a fire occur within the Project area during construction:

> *K. In the event of a fire the following steps will be taken:*
>
> *1. Notify first responders*
>
> *2. Notify QISG/Xcel leadership*
>
> *3. Notify Xcel Security Operations Center 612-330-69004.*
>
> *4. Notify PAR Leadership*
>
> *5. If the fire is manageable, use tools and equipment to extinguish*
>
> *6. If fire spreads or becomes unmanageable, move all personnel to safety zone.*

Additional training materials regarding Fire Prevention and Mitigation are provided in pages 5 through 25 of the Emergency Response Procedures (Attachment C).

2.2 RESTRICTED OPERATIONS

The Contractor will restrict or cease operations in specified locations during fire season at the direction of the appropriate land-management agency's closure order. The Contractor may obtain approval to continue some or all operations if acceptable precautions are implemented. During periods of high fire danger, the Contractor will monitor daily for local restrictions.

Construction crew members will report all fires, whether extinguished or controlled. If the fire is uncontrolled, the Contractor will call the nearest fire-suppression agency (911). Information regarding the location of the fire, property ownership, and closest access roads should be reported to 911.

If a reported fire is controlled but not extinguished, the Contractor will call the nearest police/fire authorities using the non-emergency telephone line to alert them of the situation.

2.3 MONITORING

Xcel Energy's Contractor will be responsible for compliance with all provisions of this Plan. In addition, state and local fire-control agencies may perform inspections in areas under their jurisdiction at their discretion.

3 OPERATION AND MAINTENANCE

3.1 OPERATION

Transmission lines are built and maintained to meet or exceed safety standards, such as those specified by the National Electrical Safety Code and the North American Electric Reliability Corporation (NERC). Every effort is made to ensure safety in construction, operation, and maintenance of transmission lines. Transmission lines are designed to withstand extreme weather conditions, and protective devices at line terminals stop the electricity flow under abnormal operating circumstances. The transmission poles will be equipped with shield wires above the energized line; this equipment provides protection against lightning strikes.

Xcel Energy's transmission lines are monitored 24 hours a day, 7 days a week, 365 days a year for line contact, the term describing when an object comes in contact with the transmission line conductors. If there is an unanticipated event in the line, the line is isolated from the system to protect the public and the line from operating under unsafe conditions. Xcel Energy's transmission lines are inspected annually to check for line connections and damage. For the safety of the general public, unauthorized personnel are not permitted to come in contact with the transmission line conductor wire.

Xcel Energy's facilities are designed, constructed, operated, and maintained to meet or exceed all applicable requirements of the IEEE standards and accepted industry standards and practices including IEEE 979, Guide for Substation Fire Protection. Applicable fire laws and regulations, as outlined in CRS 31-15-601, will be observed during construction and normal operation of the transmission line.

Fires along transmission lines are very rare. Xcel Energy's powerlines are monitored and controlled remotely from an operations center where event response is coordinated. In the rare event of an emergency, Xcel Energy will likely be aware of an issue before the general public or emergency responders. Nevertheless, the public is encouraged to contact Xcel Energy's emergency number: 800-895-1999 to report an emergency.

Unauthorized personnel, including emergency responders, should not approach the facilities and should not touch the electric lines or anyone or anything in contact with them.

Xcel Energy also coordinates closely with local fire departments and first responders and consults with them to discuss any concerns within their response area. Xcel Energy offers free online safety training to fire departments and first responders that is based on national standards through the Responding to Utility Emergencies Program.

Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan contains extensive information about Xcel Energy's operational procedures for wildfire mitigation measures and mitigation tools in Section 8. A high-level summary of this information is found on page 57:

- *Situational Awareness: Situational awareness tools enhance the Company's ability to identify, assess, and respond to a physical, cyber, or environmental hazard, including wildfires.*
- *System Resiliency: System resiliency involves the Company making physical investments in its infrastructure to directly reduce the risk of a utility-caused wildfire.*
- *Operational Mitigations: Operational mitigations involve the Company adjusting something about how it operates the electric system in order to reduce the risk of a utility-caused wildfire.*
- *Customer Support: Customer support involves the Company directly informing customers regarding wildfire risk and mitigation.*

Details of each of these aspects of Xcel Energy's operational mitigation measures and tools are found on pages 57 through 97 of Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan (Attachment B).

3.2 MAINTENANCE

Xcel Energy performs vegetation maintenance in alignment with its existing Vegetation Management Standards which include wildfire risk mitigation strategies. The Standards include following an Integrated Vegetation Management (VM) approach regarding ongoing maintenance with an objective of clearing all non-compatible vegetation within the maintained right-of-way of the easement. Vegetation maintenance for Xcel Energy's facilities is required to be in compliance with requirements defined in the NERC standard FAC-003-5 (NERC 2022).

Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan contains extensive information about Xcel Energy's Wildfire Vegetation Management Program in Section 8.B.III. Xcel

Energy's Wildfire VM consists of five vegetation maintenance activities as summarized on pages 75 and 76 of Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan:

> *(1) VM Wildfire Corridor Maintenance; (2) VM Wildfire Hazard Tree; (3) VM Wildfire Defensible Space Around Facilities; (4) VM Wildfire Right-of-Way Clearance: and (5) VM Wildfire Quality Assurance/Quality Control ("QA/QC").*

Details of each of these aspects of Xcel Energy's vegetation maintenance activities are found on pages 74 through 85 of Xcel Energy's 2025 – 2027 Wildfire Mitigation Plan (Attachment B).

4 REFERENCES

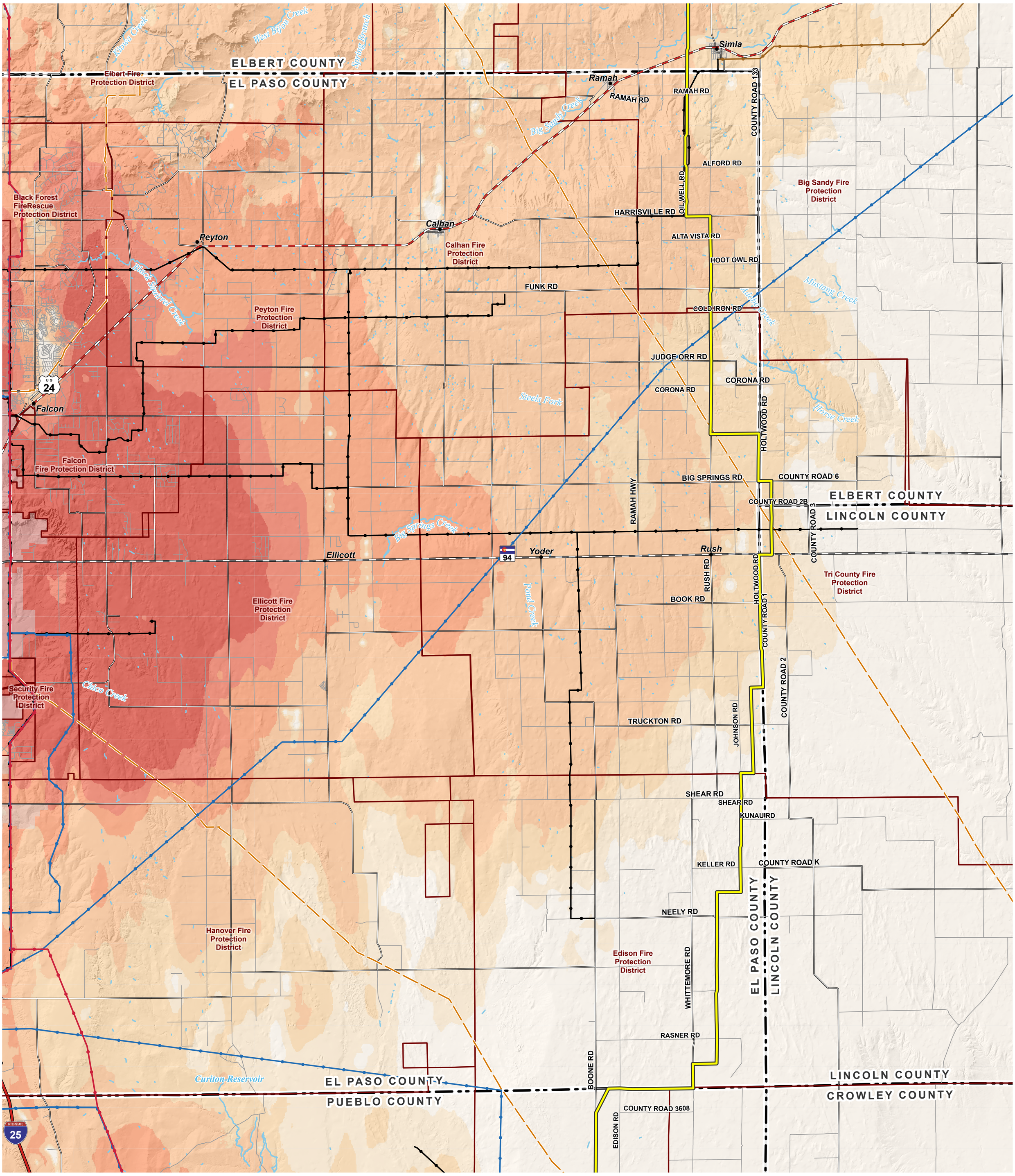
Colorado Department of Natural Resources, Colorado Parks and Wildlife, and Natural Atlas. 2022. Colorado Trail Explorer. Available online at: https://trails.colorado.gov/. Accessed November 2022.

NERC (North American Electric Reliability Corporation). 2022. FAC-003-5 Transmission Vegetation Management. Version 5: March 4, 2022. Available online at: https://www.nerc.com/pa/Stand/Reliability%20Standards/FAC-003-5.pdf. Accessed February 2025.

Xcel Energy. 2024. Xcel Energy 2025 – 2027 Wildfire Mitigation Plan. Public Service Company of Colorado, June 27, 2024. Colorado Public Utilities Commission Hearing Exhibit 101, Attachment AZS-1. Available online at: https://drive.google.com/file/d/1D_Mc3EYS5UoWvKeAJhF0865Gqk4ulW_u/view. Accessed April 2025.

ATTACHMENT A: EL PASO COUNTY WILDFIRE BURN PROBABILITY MAP

COLORADO'S POWER PATHWAY



Legend

- Proposed Transmission Route

Boundary
(CDOT 2021, DOLA 2021)
- Municipal Boundary
- County

Transportation
(CDOT 2021, BTS 2020)
- U.S. Highway
- State Highway
- Local Road

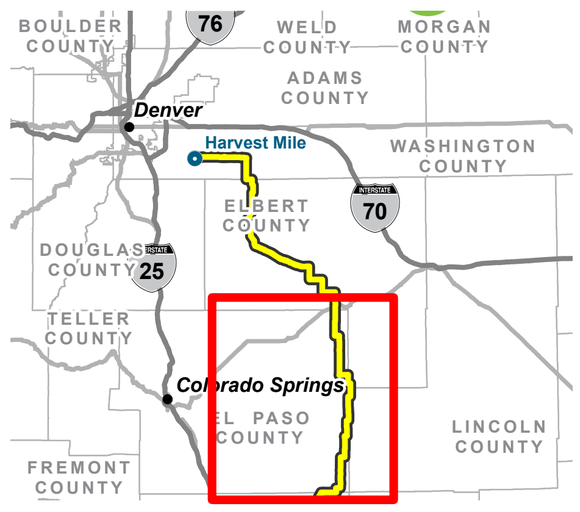
Existing Electric Infrastructure
(HIFLD 2021)
- 69kV Transmission Line
- 115kV Transmission Line
- 230kV Transmission Line
- 345kV Transmission Line

Oil and Gas Infrastructure
(Tetra Tech 2021)
- Pipeline

Fire Protection Districts
(CO DOLA 2024)
- Fire District Boundary

Wildfire Burn Probability
(CO Forest Atlas 2022)
- 1 Lowest
- 3 Low
- 5 Moderate
- 7 High

0 2.5 5
Miles



PRELIMINARY, SUBJECT TO CHANGE

The information contained herein is believed to be accurate and suitable for limited internal uses only. Xcel Energy/Public Service Company of Colorado makes no warranty as to the accuracy or suitability of any information contained herein for use by third parties. The accuracy of this map and the information depicted should be verified prior to use. The user shall assume all risk and responsibility for any and all damages, including consequential damages, which may arise from the user's reliance on this information.

Revised: 4/29/2025 | **NOT FOR CONSTRUCTION**

Path: Z:\1163_0039_CO_Pathway_Permits\GIS\Layouts\Permitting\El_Paso_Co\El_Paso_Co_Permit.aprx

El Paso County Wildfire Burn Probability

ATTACHMENT B: XCEL ENERGY'S 2025 – 2027 WILDFIRE MITIGATION PLAN

Xcel Energy®

2025-2027 WILDFIRE MITIGATION PLAN

Public Service Company of Colorado

June 27, 2024

CONTENTS

1. MESSAGE FROM EXECUTIVE LEADERSHIP

Chairman Eric Blank
Commissioner Megan Gilman
Commissioner Tom Plant
1560 Broadway, #250
Denver, Colorado 80202

Dear Chairman and Commissioners:

Delivering safe, reliable, affordable, and clean energy to the customers and communities we are privileged to serve is an obligation and commitment we do not take lightly. This Wildfire Mitigation Plan is a key component of how we will meet the commitment to keep our customers and communities safe.

As I mentioned during the May 6 Commissioners' Information Meeting, the nature and extent of wildfire threat continues to evolve, posing a public safety risk to our communities. Climate change is driving severe weather and drier conditions. This means wildfires are an ongoing threat in regions across Colorado. Xcel Energy is committed to public safety, and to reducing wildfire risk for our customers, communities, and way of life in Colorado. We have a clear goal: that no catastrophic wildfire in Colorado is started by our assets.

As the wildfire risk continues to evolve, the mitigations we implement are also evolving. Our 2025-2027 Wildfire Mitigation Plan builds on the over $500 million we have invested since 2020 in a variety of wildfire mitigation activities. The 2025-2027 plan integrates industry experience; incorporates evolving risk assessment methodologies; adds new technology; and expands the scope, pace, and scale of our work.

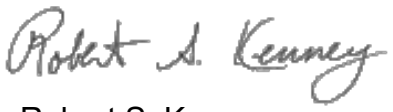
Our proposed investments and improvements are designed to reduce wildfire risk in a comprehensive and efficient manner. The plan takes into account not only the effectiveness of various mitigation activities, but also the associated costs, operational constraints, and customer impacts of those activities. Broadly, we propose to continue foundational system work, improve situational awareness and the resiliency of the system, and address emerging threats through operational mitigations, while longer-term mitigation initiatives are implemented.

We also know that engagement, education, and outreach are necessary components of our wildfire safety work. This plan recognizes that reality and includes new customer, public safety partner, and community outreach strategies. It also reflects our plan to continue engaging with key community partners across government and industry, as we all work to protect and strengthen our communities.

At Xcel Energy we are all committed to building the safe and reliable future Coloradans expect and deserve. We look forward to working with you and our communities as we

continue this important wildfire mitigation work. Thank you for your time and effort reviewing and evaluating this plan to protect our customers and communities.

Sincerely,



Robert S. Kenney
President, Public Service Company of Colorado
Xcel Energy

2. EXECUTIVE SUMMARY

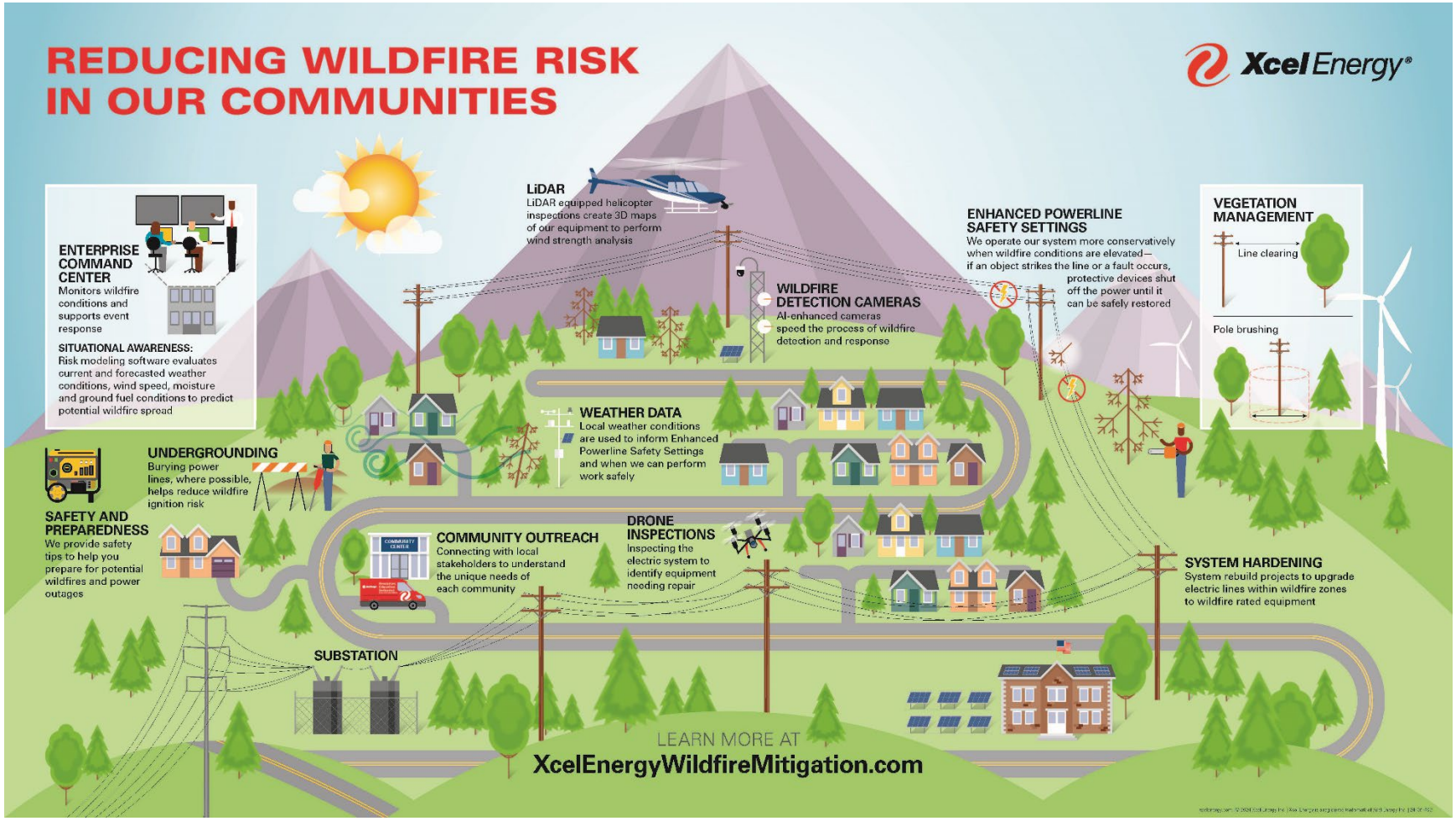
Public Service Company of Colorado ("Public Service" or the "Company") is committed to reducing the risk of wildfires to promote the safety and wellbeing of the State of Colorado and the customers and communities we serve. This commitment was demonstrated in our first Wildfire Mitigation Plan that we began implementing in 2020 (the "2020 WMP" or "Inaugural WMP"), where Public Service voluntarily and proactively initiated utility-specific wildfire risk reduction measures. The 2020 WMP was a natural progression of important Company objectives: community and employee safety, environmental stewardship, and stakeholder participation. The Company now presents our 2025-2027 Wildfire Mitigation Plan ("2025-2027 WMP" or "Updated WMP") to build on our existing efforts, integrate industry experience, incorporate new risk assessment methodologies, add new technology and expand the scope, pace and scale of the work we do. The Updated WMP reflects the Company's commitment and desire to continue to promote public safety through programs that construct, maintain, and operate the electric system in a manner that helps reduce the risk of a utility asset causing a wildfire.

Severe weather and drier conditions mean that wildfires are an ongoing threat in regions across Colorado, even areas that have not traditionally been wildfire prone. Our Updated WMP reflects the Company's continuing focus on protecting customers, enhancing the safety of Colorado's electric system and keeping the lights on while responding to a changing climate and more frequent severe weather events. As wildfire risks continue to evolve, so do the tools we are using to protect customers and communities.

The Updated WMP reflects the next step in the Company's Wildfire Risk Assessment and mitigation work, building heavily on the foundation we have previously established and implemented. Circumstances have evolved significantly since the Company's Inaugural WMP filing, and those changes have led to a step change to our mitigation efforts. In our Updated WMP, the Company is expanding existing mitigation programs, incorporating new mitigation approaches and programs consistent with utility practices, updating its approach to performing risk modeling, and focusing on the areas of its system to prioritize mitigation efforts.

A snapshot illustration of the Updated WMP and its comprehensive approaches to address wildfire risk is shown in the following Tab.

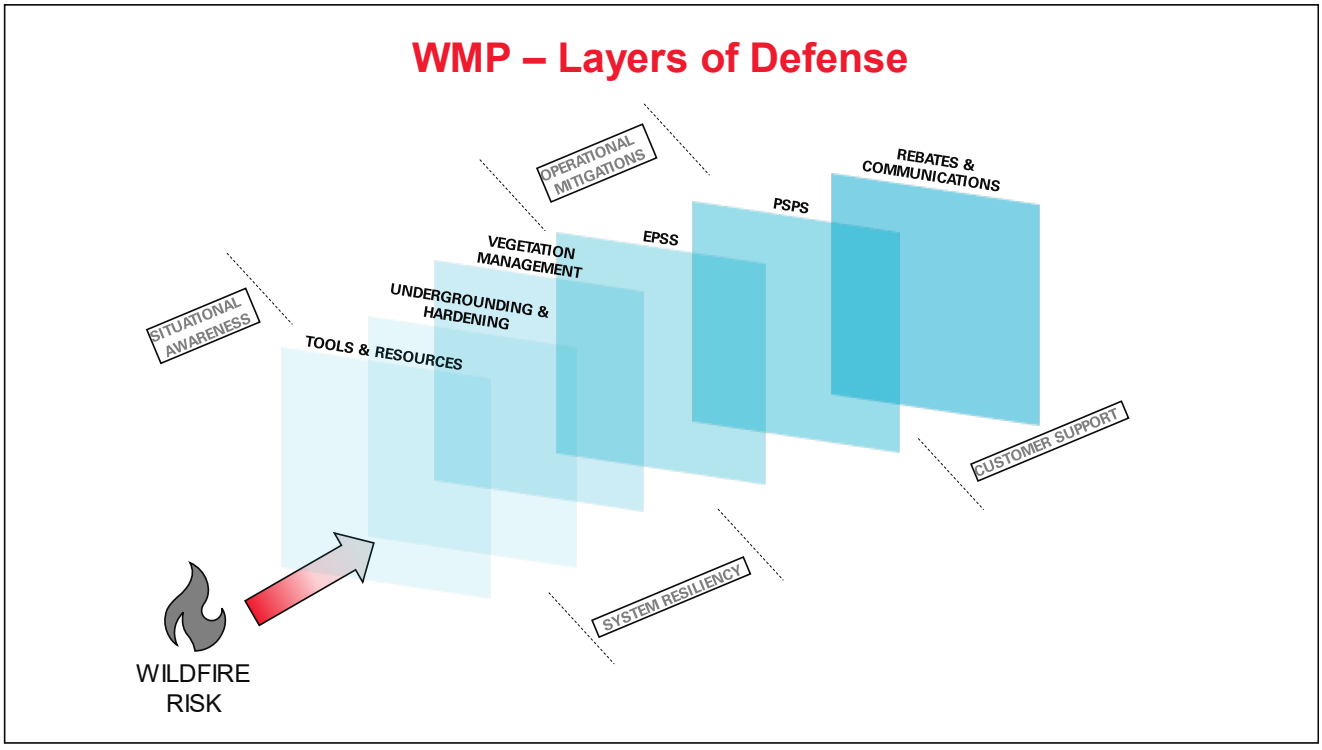
Figure D-1: 2025-2027 WMP Illustration



As promoted through an evolving risk-informed analysis, the Updated WMP will effectively reduce both the risk of the Company's facilities igniting a wildfire and the consequences of fires started throughout our service territory, regardless of their cause. The Company has developed an updated service-territory-wide Wildfire Risk Map, with assistance by EDM International ("EDM") and based on federally recognized landscape data sources. In addition, the Company has refined its approach to assess the risk reduction benefits of certain mitigation programs. The Company made those refinements through collaboration and consultation with Filsinger Energy Partners ("FEP"). Together, the updated Wildfire Risk Map and Wildfire Risk Assessment provide the Company with a data-driven approach to identifying where the highest risk areas are in our service territory, and informing the mitigation measures to employ and where the Company will prioritize work.

Public Service's mitigation measures in the Updated WMP are consistent with those that western utilities are implementing. As illustrated in the diagram below, the investments create a comprehensive, multi-layered approach to wildfire risk reduction though increased situational awareness, system resiliency, operational mitigations, and customer support activities designed to both prevent wildfire ignitions from utility infrastructure, limit the spread of fires regardless of their cause, and provide resources to our customers to mitigate the impacts of wildfires.

Figure D-2: WMP Layers of Defense



In this Updated WMP, the Company has quantified a benefit-cost ratio (referred to as "Risk Spend Efficiency" or "RSE") intended to model the cost-effectiveness of certain program elements on a specific wildfire risk-reduction basis. Not all of the Company's

mitigation activities were quantified with an RSE, as the activities were also informed from ongoing Company experience, along with support from industry learnings and practices. With the Company's comprehensive approach, we expect our suite of mitigations will help us achieve an overall risk reduction that is consistent with efforts being undertaken by other utilities, who have similarly comprehensive plans to address their own wildfire risks.

The following provides a summary of key mitigations and work activities the Company is proposing in this Updated WMP.

Greater Situational Awareness

- Adding hundreds of weather stations for granular data on temperature, humidity, wind speed and moisture levels near our power lines and equipment and monitoring during high-risk fire conditions.
- Tripling the number of Artificial Intelligence ("AI") cameras for rapid detection of fires.
- Expanding meteorology and fire science expertise to the wildfire mitigation team.

System Resiliency Investments

- Expanding the use of drone inspections and light detecting and ranging ("LiDAR") to create three-dimensional maps of equipment and terrain in high-fire threat areas.
- Updating the frequency of assessment of poles and other equipment in wildfire risk zones.
- Expanding our multi-year accelerated inspection programs to identify, analyze and repair or replace equipment that may be associated with higher wildfire risk.
- System hardening measures to help prevent contact with vegetation and animals, pole repair/replacement, equipment upgrades and major transmission line rebuilds.
- Targeted undergrounding of distribution power lines in high-risk areas.
- Accelerating and expanding vegetation management efforts in high-risk areas.

Improved Operational Mitigations

- Installing new sectionalizing protective equipment and new technology to facilitate Enhanced Powerline Safety Settings ("EPSS") and improve our facilities' capabilities to react to wildfire risk events.
- Establishing a Public Safety Power Shutoff ("PSPS") program as a wildfire mitigation tool for use in cases where risk is not adequately addressed by other methods.

Dedicated Customer Support

- Active work to educate, prepare and support customers for potential PSPS events, and to communicate and coordinate with offices of emergency management ("OEM") ahead of and during events. This includes targeted outreach to Qualifying Medical Customers, Critical Customers, income-qualified ("IQ") customers and customers in disproportionally impacted ("DI") Communities.

- Enhanced interactive web maps reflecting outage areas.
- Adding a back-up power rebate program for IQ, medical exemption rate, and medical certification program customers in high fire-risk areas.

Wildfire risk mitigation remains an evolutionary process, where improving data analytics and successful mitigation implementation will enable deeper levels of risk mitigation. The Updated WMP demonstrates the progression of Public Service's wildfire risk mitigation program. It has been designed with complementary mitigation strategies that promote prioritization of risk reduction in an expedient, comprehensive, and reliable manner. The Updated WMP and its programs, standards, and goals are intended to protect customers, enhance the safety of Colorado's electric system, and keep the lights on while responding to a changing climate and more frequent severe weather events.

Public Service looks forward to continuing collaboration with state and federal policymakers; state, local, and tribal government officials; OEMs; community-based organizations; customers; and other stakeholders to help build a safer and more fire resilient Colorado.

3. BACKGROUND

Utility Wildfire Risk Assessment and mitigation is changing, with utilities across the United States implementing updates to their operational, management, and capital programs in response to global climate change, population growth, and expanding wildland urban interface ("WUI").[1] Climate change continues to impact vegetation composition and health across the landscape. Many ecosystems are no longer fire resilient. The changing conditions increase the frequency and intensity of extreme weather events, and lead to an expansion of high wildfire risk areas. The WUI also continues to expand, increasing the probability and exacerbating the costs of wildfire damage to people and property.

Wildfire risk mitigation is an evolutionary process, where improving data analytics, new and emerging technologies, and implementation of mitigation measures will deepen the next level of risk mitigation the Company can achieve. The Updated WMP represents the continuous refinement, expansion, and improvement in Public Service's wildfire mitigation efforts and builds heavily on the 2020 WMP. Many of the foundational initiatives contained in the 2020 WMP will continue, but the Updated WMP improves upon prior work by integrating practices and experiences of other utilities, new technologies, and new and evolving risk assessment methodologies.

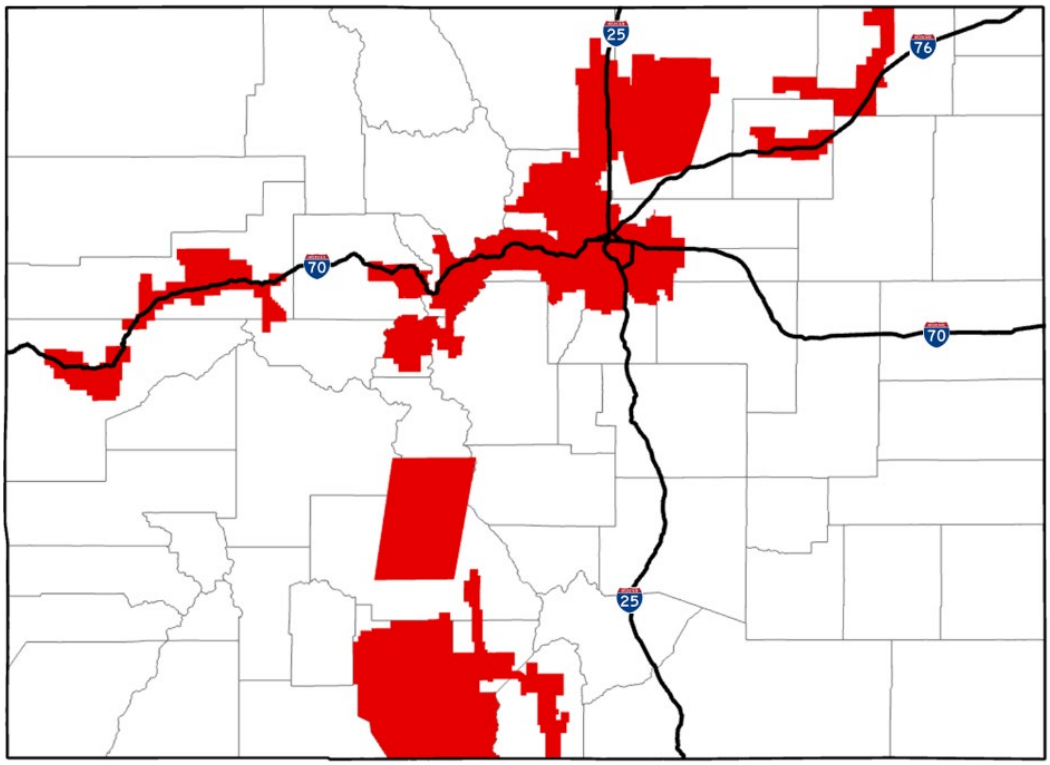
This document details the continued progression and maturity of Public Service's wildfire mitigation program, with the expanded and complementary mitigation strategies selected to promote risk reduction, in an expedient and reliable manner. The 2025-2027 WMP and its programs and goals are intended to enhance the safety, reliability, and resiliency of Colorado's electric system, respond to a changing climate, and prepare for more frequent and severe weather events. The Updated WMP reflects the Company's commitment to public safety through programs that construct, maintain, and operate the electric system in a manner that minimizes the risk of a utility asset being the ignition source for a wildfire.

A. Service Territory

Public Service is one of Xcel Energy's four operating companies and provides service to approximately 1.6 million electric customers and 1.5 million gas customers across its 8,200 square mile Colorado service area. The Company's electric service comprises more than 14,200 electric line miles, including both transmission and distribution overhead line miles. That mileage is roughly equivalent to traveling the coast-to-coast distance of the United States more than five times over. Our extensive system allows us to provide electric service to a diverse set of geographies and communities. Public Service's electric territory map is provided in the following figure.

[1] Colorado's WUI is comprised of "[an] area where structures and other human developments meet or intermingle with wildland vegetation." *Colorado's Wildland-Urban Interface,* Colo. State Forest Service*,* https://csfs.colostate.edu/wildfire-mitigation/colorados-wildland-urban-interface.

Figure D-3: Public Service Electric Service Territory



I. Introduction To Wildfire Risk

Investor-owned utilities in California were the first to implement comprehensive wildfire mitigation plans in response to changing climate conditions that led to a series of destructive fires within their service territories. Utilities in other jurisdictions, particularly across the Western United States, are now implementing their own wildfire mitigation programs.

Much knowledge has been gained and shared within the industry by the utilities in the Western United States; more knowledge and technological advancements have allowed for better planning and prioritization. The coordination supports how to import fire science knowledge, resources, capital, and new technology to areas deemed to have a higher probability of ignitions, and higher consequences of potential fire spread. This has resulted in mitigation plans that contain numerous layers of defense. Those mitigation strategies that are most fitting to the electrical systems and environmental conditions in the Company's service territory are described in detail within this Updated WMP.

II. Previous Wildfire Mitigation Efforts

In implementing its 2020 WMP, Public Service has made meaningful progress in identifying and reducing wildfire risk on the Company's electrical transmission and distribution systems. The Updated WMP builds upon the Company's accomplishments and represents the next step in wildfire risk assessment and mitigation. The table below highlights progress made achieving the 2020 WMP objectives and goals through 2023.

Table D-1: Summary of Public Service's 2020-2023 Wildfire Mitigation Milestones

Initiative	Wildfire Mitigation Milestones & Achievements in 2020-2023
Community Outreach	Engaged with local, county, and state entities to ensure Public Service customers, communities, and emergency responders are aware and informed of the Company's operations and the work being conducted. Educated stakeholders on the Company's wildfire mitigation practices, solicited feedback and concerns, and discussed potential new and expanded programming anticipated through this Updated WMP.
Conductor Replacement Program	Replaced 40 miles of bare secondary conductor, 159 miles of small conductor, and installed 22 miles of covered conductor. Aligned secondary and small wire replacement programs.
Equipment Design & Upgrades	Advanced the design and implementation of the following: Advanced Distribution Management System ("ADMS") control features, protection studies for feeders,[2] a sectionalizing device communications network, substation relay communication upgrades, and substation relay upgrades for Enhanced Powerline Safety Settings-enabled feeders.[3]
Equipment Inspections	Annually completed 2,832 visual inspection miles of transmission lines (primarily on foot). Collectively inspected 56,415 distribution poles via the Company's Unmanned Aircraft System ("UAS") asset inspection program, which obtains high-resolution imagery of distribution pole tops, crossarms, and equipment.
Expanded Vegetation Management ("VM") Program	Initiated the Mountain Hazard Tree activity, Defensible Space Around Poles ("DSAP" or "pole brushing") activity, established secondary voltage line clearance standards, and Right-of-Way ("ROW") vegetation type conversion in ROW (a fuel minimization initiative).

[2] As used herein, "feeders" means power lines from substations that distribute power to customers.

[3] For purposes of the Updated WMP, the Company has adopted the terms "Enhanced Powerline Safety Settings" and "EPSS" to describe an operational mitigation that modifies settings in relays and recloser controls on the distribution system (both within the substation and outside the substation on the feeder) to create a wildfire-specific operating mode. The Company also has referred to this operational mitigation as "Wildfire Safety Settings" or "WSS". The Company is using "Enhanced Powerline Safety Settings" and "EPSS", as those terms are becoming standard nomenclature throughout the industry.

Initiative	Wildfire Mitigation Milestones & Achievements in 2020-2023
Artificial Intelligence ("AI") Cameras	Completed a pilot program deploying AI Cameras in Boulder County as a tool to heighten situational awareness for early detection of wildfires. Contracted to procure AI Cameras for 42 additional sites, 21 of which were installed in 2023 with the remaining 21 sites to be installed in 2024.
Pole Distribution Loading and Clearance Modeling and Analysis Inspections	Implemented LiDAR - equipped helicopter inspections to model and analyze structural load parameters and line clearances. These inspections assist in informing the Company's pole replacement program. 11,975 poles were completed using this technology.
Preventative Wildfire Action Communication Protocol	Implemented changes to our operational protocols, including new processes for operational teams to increase wildfire and high-risk area awareness, along with providing work criteria for wildfire and high-risk areas.
Repair and Replace Program Improvements - Distribution	Replaced 159 miles of small wire conductor, 39 miles of open wire secondary conductor, 13,827 distribution poles, performed 24,767 equipment upgrades (replacement of fuses, cutouts, arresters, etc.), and installed 22 miles of covered conductor.
Repair and Replace Program Improvements - Transmission	Rebuilt 37 miles of transmission line and identified and corrected 1,065 priority transmission defects.
Satellite Vegetation Inspections Pilot	Initiated a pilot program to assess vegetation clearances along overhead circuits using high-resolution satellite imagery (a technology designed to identify the horizontal and vertical distances between power lines and trees, which can also estimate the growth rates of vegetation along those lines).
Utility Wildfire Mitigation Summit	Initiated, hosted and participated in multiple Colorado Wildfire Mitigation Summits to share practices and experience gained with other utilities, cooperatives, municipal power agencies, transmission agencies and companies, and other stakeholders.
EPSS Pilot	Enabled EPSS fast trip capability on eight higher risk distribution feeders. Initiated situational awareness monitoring for these feeders, which determines the daily device settings for each pilot feeder. The Company installed 56 distribution sectionalizing devices and 58 substation protective relays.

Initiative	Wildfire Mitigation Milestones & Achievements in 2020-2023
Wildfire Spread Modeling Risk Software	Implemented Technosylva wildfire spread modeling software (Wildfire Analyst Enterprise) to simulate wildfire spread scenarios under varying weather conditions and to improve situational awareness in the Company's service territory.
WMP Website	Deployed a special purpose website (www.xcelenergywildfiremitigation.com) to disseminate current wildfire mitigation program information in English and Spanish. The website has seen a steady increase in traffic since its inception.

4. ESCALATION OF WILDFIRE RISK

The United States has experienced an increase in both the frequency and intensity of wildfires in recent years. A 2016 comprehensive wildfire study concluded that each decade since the 1970s showed an "increased frequency of large wildfires at a regional scale compared with preceding decades. Area burned by wildfires has also increased through the decades, particularly through the increasing frequency of large wildfires (greater than 400 hectares or 988 acres)."[4] This is due to a combination of factors, such as climate change, increasing population, and drying and diseased forests. Fire risk has evolved as part of every community and ecosystem. Climate change, along with new and altered weather patterns have accelerated the fire return interval in most developed areas. Many utilities across the country have substantially increased their investments in wildfire-risk reduction activities, both in response to large fires in their service territories or as mandated by their utility commissions or legislatures.

A. Western United States

The Western United States faces unique and complex challenges with wildfire management and prevention. In recent years, these challenges have grown more pronounced, driven by a multitude of factors, such as rising temperatures, changes in vapor pressure deficit,[5] bark beetle impacts on tree mortality, and a growth of the WUI, where increased human-caused fires and expanded communities within forested environments are leading to increased risk of catastrophic fires at these locations.

B. Weather and Climate

Rising temperatures, decreasing atmospheric and fuel moisture, and shifting weather patterns have combined to elevate wildfire risk in the Western United States. The region has seen a notable increase in size and destructive impact of wildfires over the last decade. The National Oceanic and Atmospheric Administration ("NOAA") reported a tenfold increase in wildfire damage from 2017-2021 ($81.6 billion) compared to 2012-2016 ($8.6 billion).[6] A NOAA-supported study found that climate change has been the primary cause of the increase in fire weather in the Western United States, accounting

[4] *Increasing western US forest wildfire activity: sensitivity to changes in the timing of spring*, Anthony LeRoy Westerling (June 2016), https://royalsocietypublishing.org/doi/10.1098/rstb.2015.0178.

[5] The vapor pressure deficit is the difference between the amount of moisture in the air and the maximum amount of moisture the air can hold at a given temperature, indicating how dry or humid the air is. This metric indicates the rate at which fuels dry, or the "drying power" of the atmosphere, which makes it a good proxy for wildfire weather due to the relationship between drought and wildfire. *Multi-Decadal Change in Western US Nighttime Vapor Pressure Deficit,* Andrew M. Chiodi et al. (July 2021), https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2021GL092830; *Climate Science Special Report: Fourth National Climate Assessment, Volume 1, Chapter 8*, U.S. Global Change Research Program (2017), https://science2017.globalchange.gov/chapter/8/.

[6] *Wildfires,* Cybersecurity & Infrastructure Security Agency, https://www.cisa.gov/topics/critical-infrastructure-security-and-resilience/extreme-weather-and-climate-change/wildfires.

for two-thirds of the increase in vapor pressure deficit.[7] Additional NOAA studies have demonstrated that climate change-induced fuel aridity doubled the burn area of fires between 1984 and 2015,[8] while driving longer and off-cycle wildfire seasons.[9]

C. Colorado Weather and Climate

Colorado is experiencing climate change impacts, with NOAA studies indicating that Colorado's climate has warmed by 2°F over the past 30 years.[10]

In addition, recent bark beetle epidemics (caused by unhealthy forest conditions, long-term droughts, and higher temperatures according to the Colorado State Forest Service) have also made Colorado forests more vulnerable to wildfires.[11] Bark beetle damage causes an accumulation of dead fuel in the forests, which leads to increased wildfire frequency and intensity. Since bark beetle population growth is connected with temperature rises, this stands to further exacerbate wildfire risk in Colorado.[12]

D. Colorado Wildfire Risk Considerations

Colorado faces an increasing wildfire threat. The combination of rapidly growing population pushing farther into wildfire-prone areas, combined with rising temperatures, increasingly dry conditions, and poor forest conditions, have increased the risks for Colorado energy providers.

E. Recent Fire History

Lack of large, natural wildfire activity in recent Colorado history has led to a change in vegetation composition and flammability. These changes have resulted in a significant increase in wildfire growth. The top 10 largest fires in Colorado's history have taken place

[7] *Study Shows That Climate Change is the Main Driver of Increasing Fire Weather in the Western U.S.*, Rong Fu and UCLA (Nov. 9, 2021), https://www.drought.gov/news/study-shows-climate-change-main-driver-increasing-fire-weather-western-us.

[8] *Wildfire climate connection,* National Oceanic and Atmospheric Administration (last updated July 24, 2023), https://www.noaa.gov/noaa-wildfire/wildfire-climate-connection.

[9] *Climate Science Special Report: Fourth National Climate Assessment, Volume 1, Chapter 8*, U.S. Global Change Research Program (2017), https://science2017.globalchange.gov/chapter/8/.

[10] *Colorado Fire Season: In-Depth Guide*, Western Fire Chiefs Association (last updated Nov. 3, 2023), https://wfca.com/articles/colorado-fire-season/.

[11] *Colorado's Forests in a Changing Climate*, Colorado State Forest Service, https://csfs.colostate.edu/colorados-forests-changing-climate/.

[12] *Interactions among the Mountain Pine Beetle, Fires, and Fuels*, Michael J. Jenkins et al. (Aug. 2023), https://academic.oup.com/forestscience/article/60/3/489/4583745.

since 2002.[13] Additionally, three of the five largest fires in Colorado history occurred in the last five years, and Colorado endured two of the most destructive fires in that same time.

In 2020, the largest fire ever occurred in Colorado, the Cameron Peak Fire. It burned over 200,000 acres, including in the Arapaho and Roosevelt National forests and the Rocky Mountain National Park. In 2021, the Marshall Fire, a late December wildfire become the most destructive wildfire in Colorado history in terms of structures lost. This wildfire highlights the new reality that wildfires can occur any time of year, not just in the warmer seasons.

A list of more recent wildfires in Colorado include the following:

Table D-2: List of Recent Colorado Wildfires

Year	Wildfire Name	Acres Burned
2020	Pine Gulch Fire	139,007
2020	Grizzly Creek Fire	32,631
2020	Cameron Peak Fire	208,913
2020	Williams Fork Fire	14,833
2020	Middle Fork Fire	20,517
2020	Mullen Fire	176,878
2020	East Troublesome Fire	193,812
2021	Oil Springs Fire	12,613
2021	Morgan Creek Fire	7,586
2022	Marshall Fire	6,200
2023	403 Fire	1,215
2023	Gageby Creek Fire	4,600

[13] *Colorado Fire Season: In-Depth Guide*, Western Fire Chiefs Association (last updated Nov. 3, 2023), https://wfca.com/articles/colorado-fire-season/.

5. INTRODUCTION OF 2025-2027 WILDFIRE MITIGATION PLAN

The 2025-2027 WMP promotes public safety by mitigating the risk of Public Service's equipment being a potential ignition source for wildfires. This Updated WMP reflects an evolution of prior wildfire mitigation efforts, incorporating new risk modeling, expanded situational awareness, and a combination of new and expanded wildfire risk mitigation activities and programs.

A. Updated WMP Overview

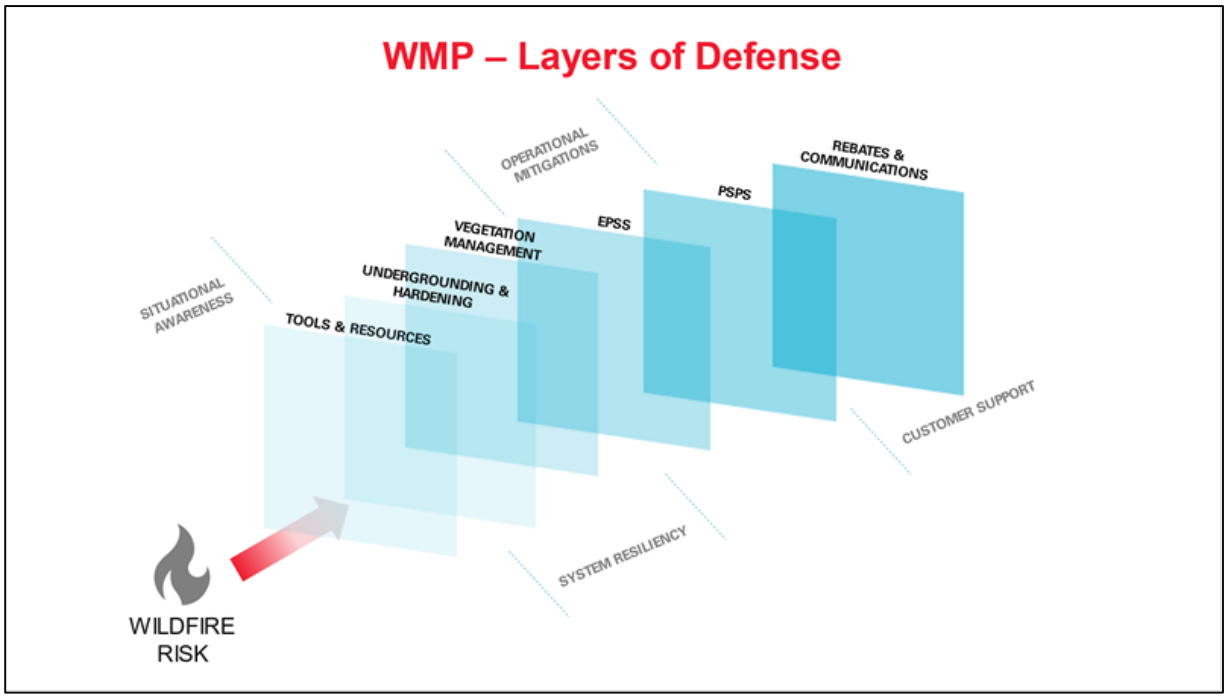
In developing this Updated WMP, the Company identified four guiding principles:

- **Do the Right Thing -** Remember what is at risk. The decisions we make in this space impact the health and safety of our customers, their lives, and their livelihoods.
- **Execute Confidently -** Do what we say we are going to do, in the time and at the cost that is appropriate.
- **All In -** All internal organizations must be brought into the execution of the proposed work through documented processes, validation, measurement, budgeting, and reporting.
- **Adaptability -** Our plan must be dynamic and flexible enough to address evolving risk.

The Company is committed to these principles, and they are at the center of the Company's Updated WMP planning efforts and decision-making.

In incorporating these principles, the Updated WMP developed separate layers of defense to protect against the risk of wildfires. Recognizing that no single "layer" is going to be 100 percent effective, we have designed a plan that includes numerous, complementary layers designed to help reduce the risk of Public Service's equipment being a potential ignition source for wildfires. Figure D-4 illustrates the multiple layers of defense in the 2025-2027 WMP.

Figure D-4: WMP Layers of Defense

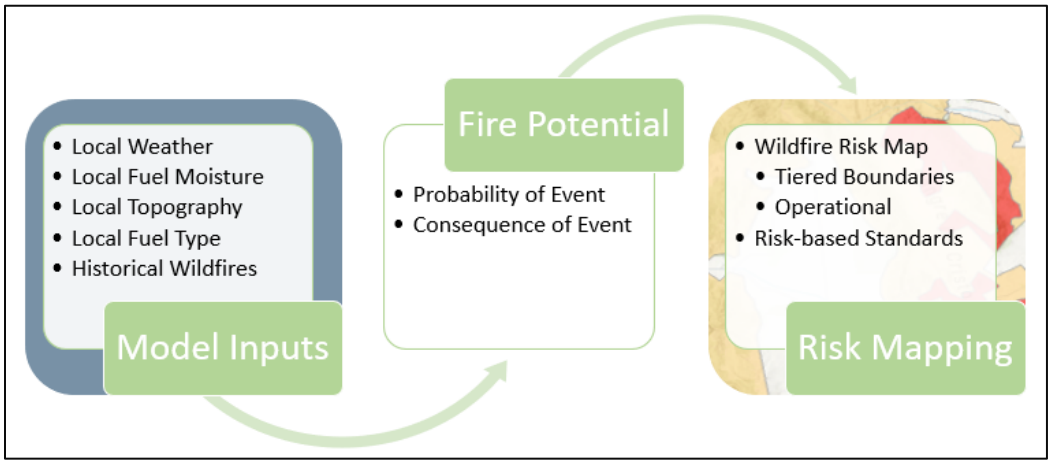


Building on this layering concept, the Company, with the assistance of FEP, developed the mitigation tools in the Updated WMP. The mitigations have been carefully tailored to the unique circumstances of Public Service's system and service territory.

I. Updated Wildfire Risk Map and Wildfire Risk Assessment

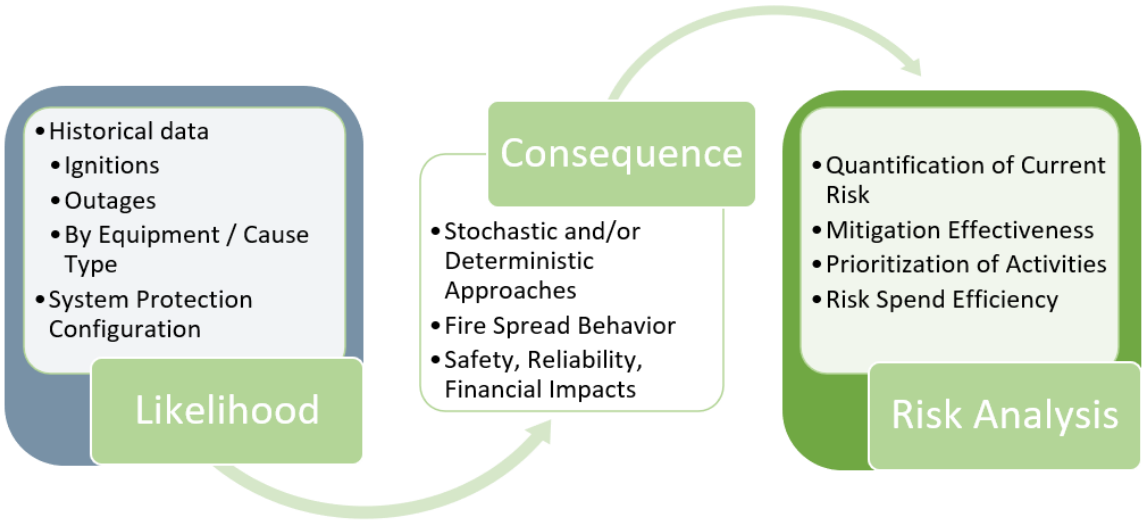
Updated and Expanded Wildfire Risk Map: Working with third-party consultant EDM, the Company commissioned an updated Wildfire Risk Map. The updated Wildfire Risk Map visualizes the level of risk within the Company's service territory, both in terms of probability and consequence of a wildfire event. The Wildfire Risk Map indicates where risk reduction may be the most effective and is used to influence the prioritization of activities. Notably, the Wildfire Risk Map evaluates risk across the Company's entire service territory, assigning one of three risk tiers to all areas within the Company's service territory based on nationally and industry-recognized data sources. While Section 6 provides more detail on this important tool, the figure below provides a graphic summary of how it was developed.

Figure D-5: Wildfire Risk Map Development



Wildfire Risk Assessment: In coordination with FEP, the Company developed an updated approach to consider the risk-reducing benefits of certain mitigation activities. Quantification of wildfire risk requires great efforts to effectively incorporate historical data, such as ignition and outage data based on system protection configurations. In addition to estimating the probability of ignitions by distribution feeder, our Distribution Feeder Model incorporates the consequence of fire spread behavior. The Distribution Feeder Model was used to quantify risk reduction for several programs of work, including: undergrounding, EPSS, covered conductor, and small wire replacement. The Distribution Feeder Model also analyzes the effectiveness of the mitigation efforts to calculate a Risk Spend Efficiency ("RSE") of the mitigation measure. Additionally, and again working with FEP, the Company developed an approach to consider the unique risk-reducing benefits of certain vegetation management work through a Vegetation Risk Analysis. Section 7 provides more detail on the approach to assess risk. In addition, the below figure provides a graphic summary of the overarching Wildfire Risk Assessment conducted to support the Updated WMP.

Figure D-6: Wildfire Risk Assessment Development



II. Layers of Defense

With the development of the Wildfire Risk Map, Wildfire Risk Assessment, experience from the 2020 WMP, and collaboration with and consideration of Western U.S. utilities and their practices, the Company developed and refined its wildfire mitigation activities. The Updated WMP includes four broad categories of activities: (1) situational awareness; (2) system resiliency; (3) operational mitigations; and (4) customer support. Descriptions of each of these broad categories is as follows:

- **Situational Awareness**: Situational awareness tools enhance the Company's ability to identify, assess, and respond to a physical, cyber, or environmental hazard, including wildfires.

- **System Resiliency**: System resiliency involves the Company making physical investments in its infrastructure to directly reduce the risk of a utility-caused wildfire.

- **Operational Mitigations**: Operational mitigations involve the Company adjusting something about how it operates the electric system in order to reduce the risk of a utility-caused wildfire.

- **Customer Support**: Customer support involves the Company directly informing customers regarding wildfire risk and mitigation activities and also provides direct customer assistance for customer resiliency.

Within each category, there are a variety of programs, each of which are part of the multi-layered strategy to reduce the wildfire-related risk of providing electric utility service. The table below provides a high-level organization of the Updated WMP within these four categories.

Table D-3: Summary of Updated WMP Activities

Category	Updated WMP Activities
Situational Awareness	• AI Cameras • Technosylva • Weather Stations • Emergency Management Resources • Weather and Fire Science Modeling • Area Risk Mapping • Wildfire Command Center • Software
System Resiliency	• Targeted Undergrounding • Line Rebuilds • Asset Assessment and Remediations • Pole Replacements • Non-Expulsion Upgrades • Vegetation Management
Operational Mitigations	• Enhanced Powerline Safety Settings • Public Safety Power Shutoff (“PSPS")
Customer Support	• Public Dashboard • PSPS Resiliency Rebates • Communications and Engagement

The Company’s situational awareness resources allow for the monitoring of environmental conditions that could contribute to wildfire in order to maximize the effectiveness of each layer of defense. In Section 8, the Company addresses the situational awareness tools, including utility-owned weather stations, third-party weather and fire risk data, high-definition cameras equipped with artificial intelligence, the monitoring of fuel conditions, field reports, and fire analysis.

Our system resiliency efforts support the hardening of our system in the face of evolving wildfire risks. The work begins with proper installation, maintenance, repair, and inspection of utility assets to maintain equipment health and reduce ignitions stemming from equipment failure. It then involves the replacement of existing facilities with more resilient infrastructure, as undertaken through line rebuilds, distribution undergrounding, pole replacements, wire upgrades, and removal of ignition prone components from our system. The Company simultaneously complements these efforts through enhanced vegetation management activities, removing and clearing vegetation growth around our facilities that could pose a risk of ignition. The vegetation management defensive layer includes managing vegetation to prescribed clearances (distance from the wires and associated components) through inspection and pruning, along with the identification and removal of hazard trees that have the potential to fall into energized lines. Details on the Company's system resiliency work are provided in Section 8.

Operational mitigations facilitate dynamic Company operations to proactively address forecasted weather conditions that post a threat to public safety. There are two such mitigations in the Updated WMP. First, is the deployment of EPSS, adding capabilities to powerline protective equipment to allow for more sensitive ground settings and faster trip settings during periods of elevated wildfire risk. During periods of higher wildfire risk, more sensitive settings are used such that feeders will trip at lower levels and faster if a significant issue is detected, resulting in de-energization of the feeder until the root cause can be determined and the line is restored to service. Further details on the Company's EPSS proposal are addressed in Section 8. Second, is the use of a PSPS program, which can act as a mitigation tool for use in cases where risk is not adequately addressed by other methods. It will allow the Company to proactively shut off power to feeders and circuits during elevated fire risk conditions. The equipment and techniques used for EPSS will aid in focusing and limiting portions of our system that are de-energized. The Company's PSPS approach exists in a standalone plan outside of this document, but is also briefly addressed in Section 8.

Customer support is necessary and appropriate to ensure our customers have the information, tools, and resources appropriate to address the risks of wildfires, including from outages that the Company proactively planned or those caused by severe weather. Such support is facilitated through new communications and engagement efforts that include both mass customer communication efforts, education and preparedness campaigns, as well as engagement and support for customers adversely impacted in a wildfire-related event. The Company will enhance its customer support and engagement through new online tools, including a wildfire mitigation hub and new outage maps to inform of our customers on areas impacted by PSPS outages. Additionally, the Company is introducing new rebate offerings to support appropriate residential customers with back-up power equipment to assist their own resiliency to withstand the impacts associated with power outages.

The Company's layers of defense in the Updated WMP are well designed with cohesive mitigation activities to support our customers, our communities, our system, and the State

of Colorado. In the sections that follow, we address our risk mapping updates, our revised risk analysis approach, and then the four categories of our mitigation efforts to lower the risk of wildfires.

6. UPDATED WILDFIRE RISK MAP

The Wildfire Risk Map is an essential tool to visualize the level of risk within the Company's service territory. The Wildfire Risk Map indicates where risk (the potential of ignition times the potential consequence of ignition) is the highest, and therefore where risk reduction may be the most effective. The Wildfire Risk Map is used to guide operational activities and system resiliency work like vegetation management, asset inspection programs, and strategic undergrounding.

The 2020 WMP included a single-risk tier, asset-based map. The area of heightened wildfire risk was referred to as the Wildfire Risk Zone.[14] Company personnel identified the Wildfire Risk Zone using Company data and state data available through the Colorado Wildfire Risk Assessment Portal ("CO-WRAP").[15]

The Updated WMP includes a new Wildfire Risk Map, developed by EDM in partnership with the Company's Risk Management department. The updated Wildfire Risk Map introduces three geographic tiers of wildfire risk: Tier 1 (lower risk), Tier 2 (moderate risk), and Tier 3 (high risk). The new tiered system assists the prioritization of risk mitigation resources and program rollout for the whole service territory. The Company's mitigation efforts under the Updated WMP will largely focus on Tier 2 and Tier 3 areas.

A. Background on Wildfire Risk Map Development

Wildfire risk varies across the Company's service territory and is specific to the fuels, terrain, fire behavior patterns, prevalent weather patterns, proximity of developed areas (e.g., WUI), and other key criteria. As such, the Wildfire Risk Map provides a geospatial look of the entire service territory, allowing the Company to better visualize fire risk on the landscape and prioritize and operationalize its mitigation efforts.

The following summarizes the purpose, features, and background data utilized in developing geospatial categorizations of wildfire hazards in the Company's service territory.[16] Those categorizations include Hazardous Fire Areas ("HFAs"), which served as the foundation of the three operationalized tiers created by the Company. HFAs provide granular insight into the relative hazards across the landscape, whereas tiers meld the information into generally larger polygons appropriate for prioritizing and operationalizing mitigation strategies. The risk categorization was ultimately incorporated into the Wildfire Risk Map that forms foundation to the Updated WMP.

[14] Approximately 2,100 miles of overhead distribution feeder (out of 9,500 miles total on the system) and 2,900 miles of transmission lines (of nearly 5,000 total) were included in the initial Wildfire Risk Zone.

[15] The Colorado State Forest Service (CSFS) (https://csfs.colostate.edu) created CO-WRAP as an online mapping tool that will help decision makers, community leaders, professional planners and interested citizens determine wildfire risk and where forest management actions can achieve the greatest impact to reduce that risk. The WRZ was specific to Company owned assets and included a 1,000-foot buffer.

[16] Mapping process and data sources excerpted from: *PSCO Wildfire Map Tiers & Hazardous Fire Areas*, EDM International Inc. (July 2023).

B. Purpose of Risk Categorization

The purpose of the risk categorization within the Wildfire Risk Map is to rank areas in the Company's service territory by wildfire risk. The Wildfire Risk Map ranks areas based on those that are susceptible to high intensity, severe wildfire behavior should a wildfire originate or burn in the vicinity, and areas with greater potential damages receiving a higher risk ranking. The HFAs and tiers are significant references that support multiple activities and functional areas and can provide guidance and insight when developing measures for reducing risk of utility-related ignitions and improving system resilience to outside wildfire threat.

C. Baseline Data

The raw datasets used to develop the Wildfire Risk Map tiers and HFAs are available from wildfirerisk.org ("WRO").[17] The data was created by the United States Forest Service ("USFS") at the direction of Congress for the purpose of providing guidance and informing mitigation prioritization.

WRO is built from nationally consistent data, including vegetation cover and fire-behavior fuel models, topography, recent weather patterns, and long-term simulations of large wildfire behavior. It is based on techniques developed by the Missoula Fire Sciences Laboratory of the Rocky Mountain Research Station. Baseline data informing the model include, but are not limited to:

- Vegetation cover and fire-behavior fuel models from the interagency LANDFIRE program, which leverages the Scott and Burgan 40 Fire Behavior Fuel Models.
- Topographic data from the United States Geological Survey ("USGS").
- Historical weather patterns from the National Weather Service ("NWS").
- Long-term simulations of large wildfire behavior from the USFS.
- Community data from the United States Census Bureau and Department of Energy ("DOE").

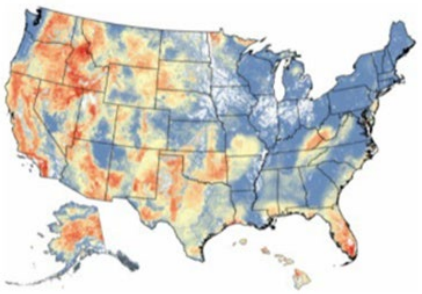
The following data layers were used in developing the HFAs and Wildfire Risk Map tiers:

Figure D-7: Wildfire Hazard Potential (WHP)

Wildfire Hazard Potential (WHP): An index that quantifies the relative potential for wildfire that may be difficult to control, used as a measure to help prioritize where fuel treatments may be needed.

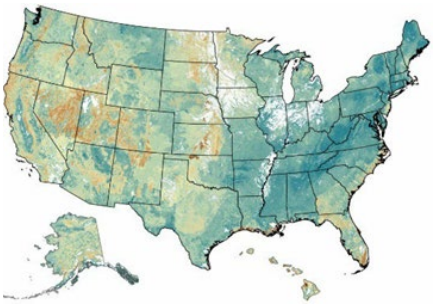
[17] *Wildfire Risk to Communities,* U.S. Department of Agriculture and U.S. Forest Service, https://wildfirerisk.org.

Figure D-8: Burn Probability (BP)



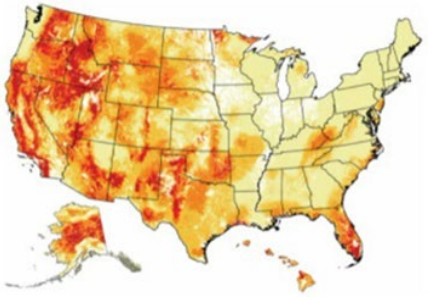
Burn Probability (BP) (or Wildfire Likelihood): The annual probability of wildfire burning in a specific location.

Figure D-9: Conditional Flame Length (CFL)



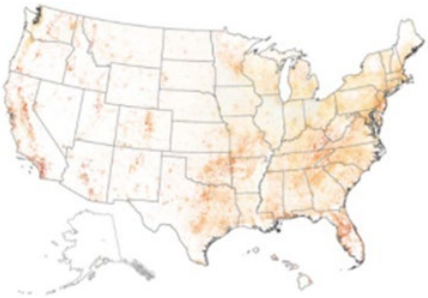
Conditional Flame Length (CFL): Most likely flame length expected at a given location if a fire occurs, based on all simulated fires; an average measure of wildfire intensity.

Figure D-10: Risk to Potential Structures (RPS)



Risk to Potential Structures (RPS) (or Risk to Homes): A measure that integrates wildfire likelihood and intensity with generalized consequences to a home on every pixel. For every place on the landscape, it poses the hypothetical question, “What would be the relative risk to a house if one existed here?”

Figure D-11: Housing Unit Risk (HU Risk)

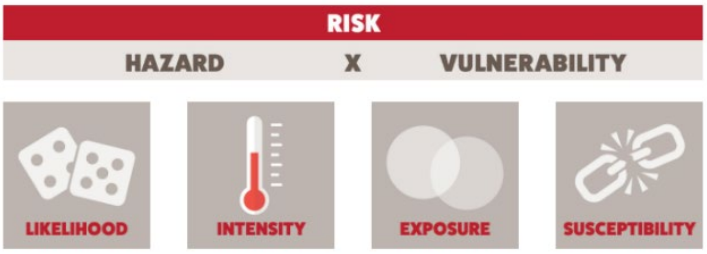


Housing Unit Risk (HU Risk): An index that integrates all four primary elements of wildfire risk, i.e., likelihood, intensity, susceptibility, and exposure, on pixels where housing unit density is greater than zero. It is conceptually similar to Risk to Potential Structures, but also incorporates housing unit count.

I. WRO Risk Evaluation

WRO (wildfirerisk.org) evaluates four risk factors – wildfire likelihood, wildfire intensity, exposure, and susceptibility as depicted and defined below.[18]

Figure D-12: WRO Risk Factors



Wildfire Likelihood is a probability that any specific location (pixel) may experience wildfire in any given year. It is based on thousands of fire behavior modeling simulations. In each simulation, factors contributing to the probability of a fire occurring, including weather, topography, and ignitions are varied based on observations from recent decades.

Wildfire Intensity is a measure of the energy expected from a wildfire. Intensity is largely a condition of the physical landscape (topography) and vegetative fuel available to burn. For example, a crown fire on a forested hillside can produce a greater wildfire intensity than grasses on flat ground.

Exposure is the spatial coincidence of wildfire likelihood and intensity with communities. Any community that is located where wildfire likelihood is greater than zero (i.e., where there is a chance wildfire could occur) is exposed to wildfire. For example, a home in a flammable forest is exposed to wildfire. Communities can be directly exposed to wildfire from adjacent wildland vegetation, or indirectly exposed to wildfire from embers and home-to-home ignition.

Susceptibility is the propensity of a home or community to be damaged if a wildfire occurs. WRO uses a generalized concept of susceptibility for all homes. In other words, WRO assumes all homes that encounter wildfire will be damaged, and the degree of damage is directly related to wildfire intensity.

D. Wildfire Risk Map Hazardous Fire Areas

The HFAs are a foundational dataset that enables the Company to visualize wildfire risk more granularly within tiers. The WRO baseline data is first used to produce the more granular HFAs. The HFAs are weighted and scored locally for where population and utility infrastructure are located. A weighted natural breaks process is utilized to develop

[18]Wildfire Risk to Communities, U.S. Department of Agriculture and U.S. Forest Service, https://wildfirerisk.org/understand-risk/.

the HFA scores, which consist of six adjective classes (i.e., normalized descriptors of the various factors affecting wildfire initiation, spread, and difficulty of control on an area):

1. Zero (0)
2. Very Low
3. Low
4. Moderate
5. High
6. Very High

The weighted scores determining specific HFA classifications are shown in the following sample map. It is intended to demonstrate the granularity of hazardous fire areas.

Figure D-13: Hazardous Fire Area Classifications

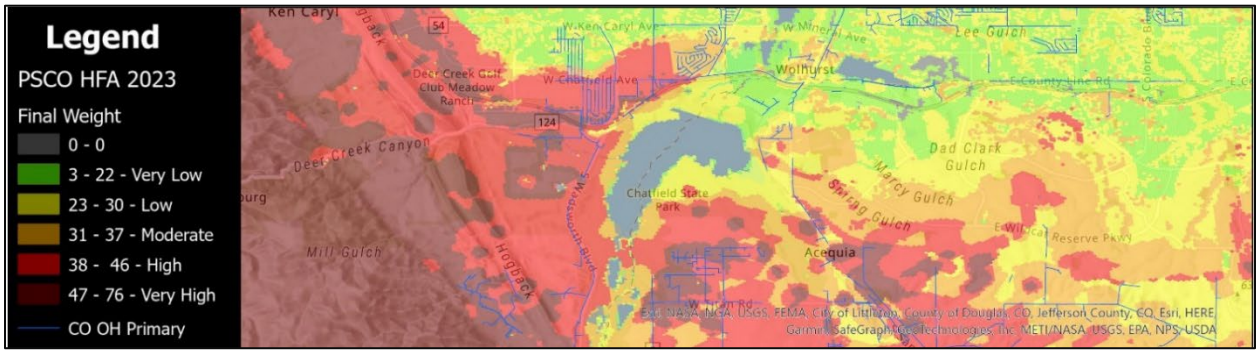
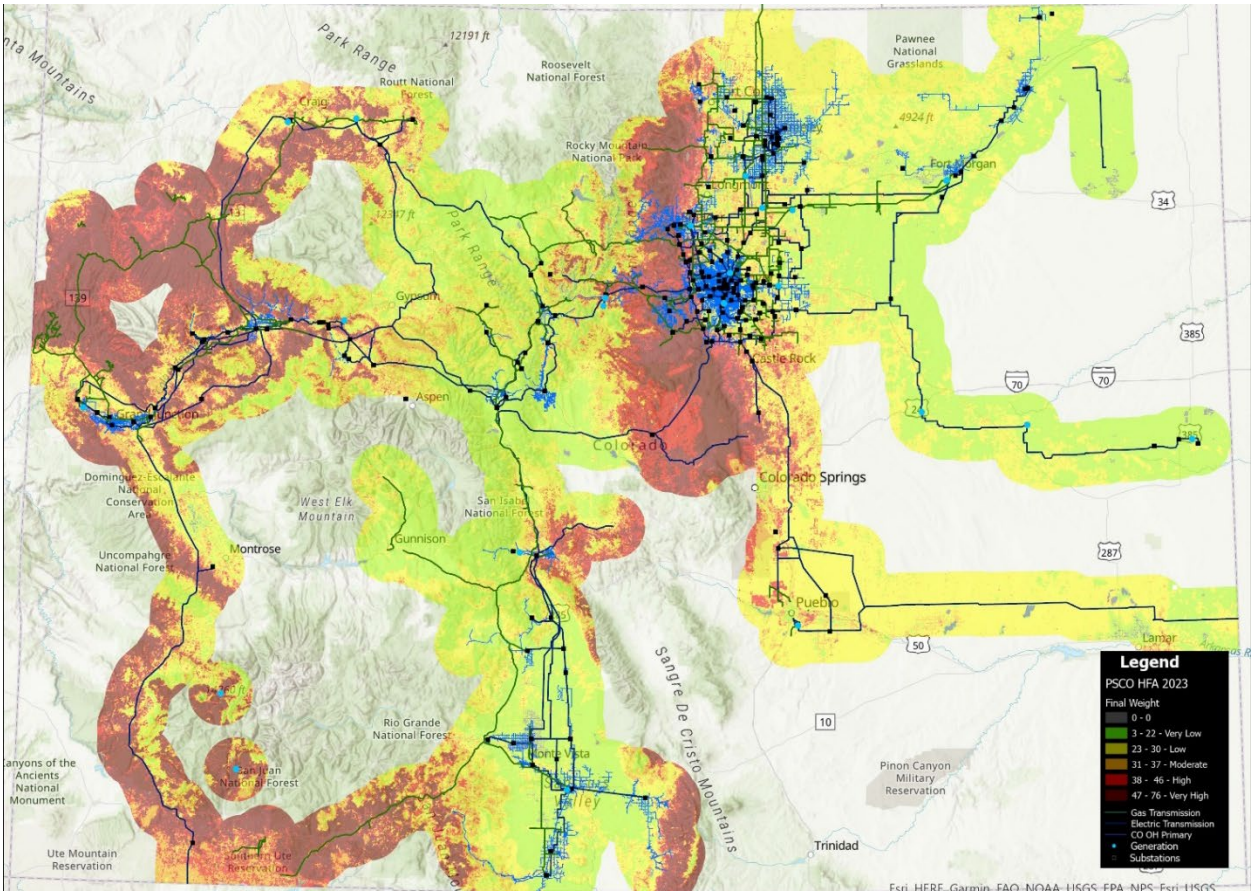


Figure D-14 depicts the HFAs relative to the Company's service territory and assets using a facilities centerline and 20-mile buffer.

Figure D-14: HFAs and Company Assets



E. Updated Wildfire Risk Tiers

The three Risk Tiers were created to turn the more granular geospatial HFAs into contiguous polygons useful for a variety of business functions.

Risk Tiers are aggregated from HFAs using broader wildfire risk value ranges to develop a geospatial wildfire risk visualization variant. A quantile evaluation of the HFA data is used to aggregate the six HFAs into three tier levels or adjective classes described below.

Tier 1 includes Fire Resistant and Low HFAs. Fire Resistant incorporates areas with significant human development and/or surfaces resistant to fire. Examples of fire-resistant areas include bodies of water and waterways (e.g., lakes, rivers, etc.) and dense urban areas covered by buildings and surfaces covered in asphalt/concrete (e.g., parking lots, surface streets, freeways, etc.). Low covers areas of human development and disturbance that reduce the likelihood of a large, destructive wildfire. In general, urban, and semi-urban areas can be classified as Low as well as barren ground, gravel pits, plowed / irrigated fields, feed lots, golf courses, and railroad yards. A catastrophic wildfire is still possible in areas designated as “Low” depending on conditions severity and fire suppression resource availability.

Tier 2 Incorporates Moderate HFAs, where wildfire may cause significant damage to human infrastructure due to fuel continuity and/or terrain. The resulting wildfire may be less likely to develop substantial momentum depending on severity of conditions and fire suppression resources availability.

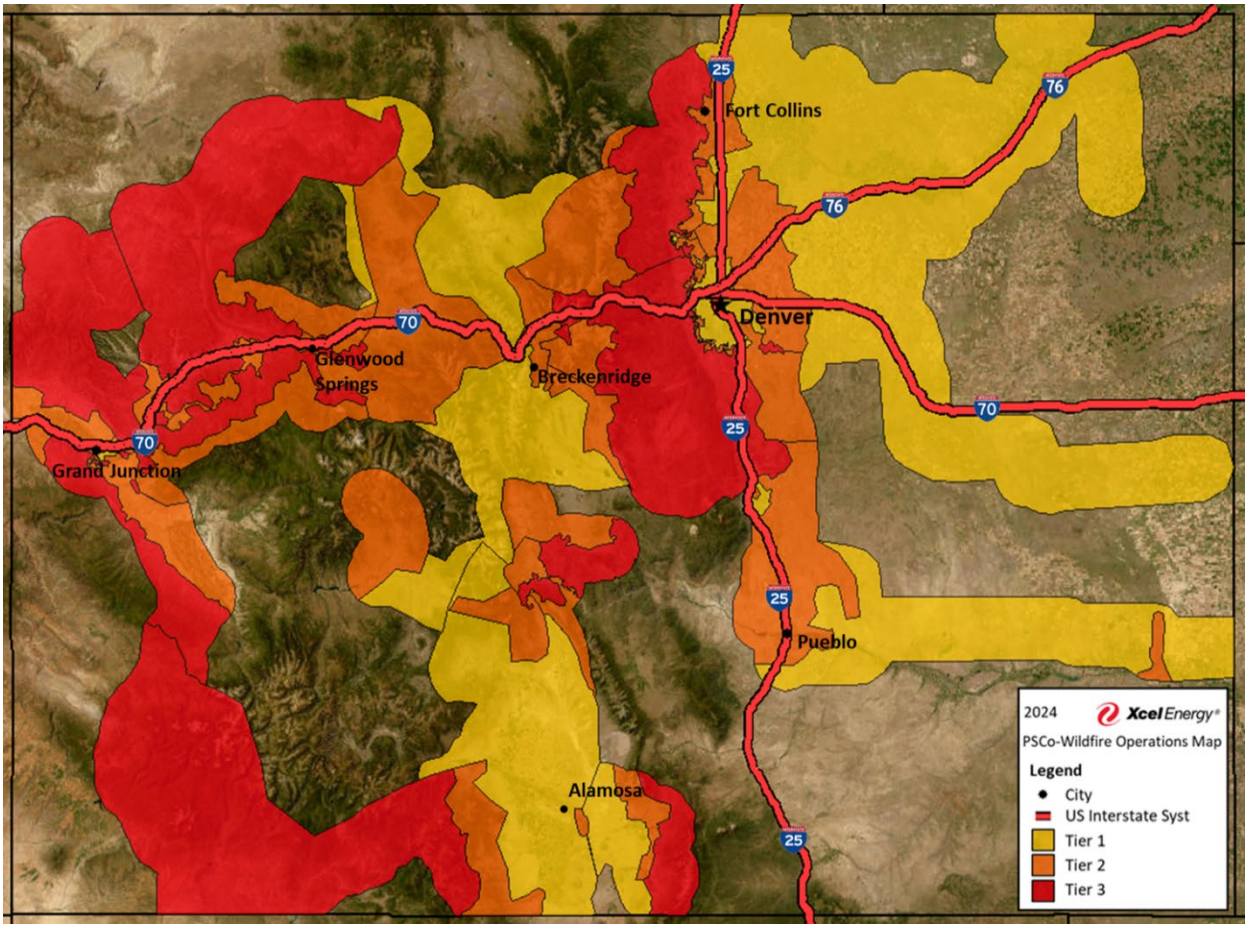
Tier 3 Contains High HFAs with fuel continuity and population density such that a wildfire is likely to rapidly become a large destructive or catastrophic event.

F. Operationalizing the Wildfire Risk Map

The nature of the data forming the tier-based map can result in areas where multiple risk categories are located in close proximity to one another. In some cases, an individual polygon may be completely surrounded by a different risk category. Such maps can be operationally challenging and confusing to utility field personnel due to frequent and abrupt changes in risk categories over short distances in which differing inspection standards and programs may apply.

To enhance the effectiveness of the Wildfire Risk Map, the Company refined the final weighted HFA-based map to operationalize it, to avoid tier boundaries from beginning or ending in the middle of a line. This includes homogeneous areas of risk categorization designed to enhance operational efficiency and streamline the implementation of programs and technologies across the Company's system. For example, if a distribution feeder is located in an area predominately categorized as "High" with small amounts of "Moderate" and "Low", the entire risk area surrounding the distribution feeder was adjusted to "High". From an operational perspective, any activity undertaken by Company personnel in that area would be treated as if it were "High" risk, regardless of the designation of each individual hexagon in the original HFA-based map. Figure D-15 below depicts the three-tiers of wildfire risk across the Company's service territory.

Figure D-15: Wildfire Operations Map



This three-tier geographic risk system provides for a more focused and efficient utilization and implementation of risk-reducing strategies. The risk rankings also facilitate an organized rollout of programs to emphasize the highest risk areas in the Company's service territory.

7. WILDFIRE RISK ASSESSMENT

The Updated WMP is informed by a quantitative Wildfire Risk Assessment of wildfire risk and effectiveness of various mitigations that can be reasonably modeled. The Company's Wildfire Risk Assessment estimates the current wildfire risk and identifies the effectiveness of certain mitigations to reduce that risk. The Wildfire Risk Assessment is comprised of four distinct, but interrelated components: (1) a Quantitative Risk Framework, (2) the systemwide Estimated Total (average) Wildfire Risk ("ETWR") Analysis, (3) a Distribution Feeder Model, and (4) a Vegetation Risk Analysis. This section discusses how the components of the Wildfire Risk Assessment were developed and used.

Risk assessments have been used in various industries and settings for a long period of time, but those that focus on wildfire risk at electric utilities are relatively new. Risk assessments typically use a combination of actual data, estimated data, and assumptions provided by subject matter experts ("SMEs"), though they depend on the quality of data. The Wildfire Risk Assessment for this WMP should be interpreted as an informative estimate, rather than a precise forecast; while the overall Wildfire Risk Assessment provides useful data to inform the Company's mitigation approach, determining how the findings should be applied to decision-making is based on human judgment and many assumptions. In addition to the general imprecision and limitations of the Wildfire Risk Assessment, many other factors, such as feasibility, strategic alignment, and resource availability need to be considered in determining the appropriate scope of wildfire mitigation work.

Below, we discuss each of the four elements of the Wildfire Risk Assessment in turn.

A. Quantitative Risk Framework

I. Overview

The Company, in consultation with FEP, developed a risk valuation method called a "Quantitative Risk Framework," which is foundational to the Wildfire Risk Assessment. The Quantitative Risk Framework considers various impacts from a wildfire and develops a way to quantify those impacts in a manner that allows for comparison across four attributes. The table below displays the four attributes and associated assumptions incorporated into the Quantitative Risk Framework. The "Score" listed in the table is equivalent to a monetary value of $10,000 per unit (e.g. $10,000 per acre, $1 million per structure).

Table D-4: Quantitative Risk Framework

Attribute	Unit	Score
Acres Burned	Acre	1
Structures Destroyed	Structure	100
Electric Reliability	1 SAIDI[19]	228
Financial	$1 million	100

This Quantitative Risk Framework is the Company's first iteration of such, and it will likely undergo changes in future years as more information is gathered and stakeholder input is received. As such, the four attributes currently reflected in the table above do not represent all quantifiable risks from wildfire. As the Company gathers further experience and data it is likely that additional attributes will be considered for future inclusion in the Quantitative Risk Framework.

It is important to note that the attributes used in the Quantitative Risk Framework are meant to capture the broader societal impact from wildfires, as opposed to solely impacts to Company assets and personnel. For example, "Structures Destroyed" refers to structures (or buildings) within the general community, not specifically Company-owned structures.

II. Using the Quantitative Risk Framework

The Quantitative Risk Framework assigns values to each of the attributes; these values are then used to measure the consequence of a wildfire, were one to occur. A hypothetical example of this quantification is shown below, using two separate fires with different impacts for each attribute:

Table D-5: Illustrative Examples of Hypothetical Wildfire Damage

Attribute	Fire 1 Impacts	Fire 2 Impacts
Acres Burned	250 acres	10,000 acres
Structures Destroyed	30 structures	5 structures
Electric Reliability	3 SAIDI minutes	10 SAIDI minutes
Financial	$0	$0

[19] System Average Interruption Duration Index ("SAIDI") represents the total minutes of interruption experienced by the average customer.

Using the Quantitative Risk Framework, the fires in this table would have consequence scores of:

Fire 1 consequence score = 250 x 1 + 30 x 100 + 3 x 228 = 3,934 risk units ($39.34M)

Fire 2 consequence score = 10000 x 1 + 5 x 100 + 10 x 228 = 12,728 risk units ($127.28M)

The other factors shown in these calculations represent the estimated per-unit impact associated with each attribute, as discussed later in this section. Computing consequence scores is a key element to the Wildfire Risk Assessment, which uses these consequence scores in combination with likelihoods of events to create a risk score. This process is also explained in detail further below in this section.

Each "Score" value in the Quantitative Risk Framework acts as a form of weighting to indicate the relative importance of each attribute relative to the other attributes. Although this method of placing values on multiple attributes is common in decision science, its application to wildfire risk is relatively new. The Company crafted the Quantitative Risk Framework based on available information that is relevant to its service territory.

Below is a discussion of each of the impact attributes.

III. Acres Burned Attribute

This attribute estimates the impact to society for each acre burned. The value of "1 per acre" was selected based on reviewing historical impacts from medium to large fires in recent years in the Western United States. The consequences included in that review were ecological impact, fire suppression costs, lost revenue, and air pollution. Importantly, this attribute does not capture the cost of structures located in the acre, which is estimated through the Structures Destroyed attribute.

While different acres of land would ultimately have different values of impact, depending on many factors, for purposes of this analysis, all acres are given the same valuation. The Quantitative Risk Framework value of "1 per acre" has a financial equivalent of $10,000 (without structures); this can be computed by understanding that 100 acres of impact has the same value in the Quantitative Risk Framework as the financial value of $1 million. Therefore, one acre is valued as the same as $1,000,000/100 = $10,000.

For the Distribution Feeder Model (addressed further below), the number of acres burned for each feeder were obtained by using analysis that combined data from Technosylva and proxy factors applied to normalize for the worst-case conditions. Technosylva is a wildfire technology that specializes in operationalizing fire science. The Company received daily model runs from Technosylva that estimate the size of a fire were it to start at specified locations. Daily data that had been received from Technosylva was used to perform risk analysis at each feeder.

IV. Structures Destroyed Attribute

This attribute estimates the impact to society from a hypothetical average structure burning. The value of "100 per structure" was selected based on current real estate

values. This value is applied equally per structure, regardless of other factors; the value used is intended to be an average value of single-family homes across all of the Company's service territory and does not differentiate by commercial versus residential structures, nor does it consider the size of the structure or the specific property values of any region within the Company's service territory.

The Quantitative Risk Framework value of "100 per structure" has a financial equivalent to $1,000,000. This can be computed by understanding that one structure burned has the same value in the Quantitative Risk Framework as the financial value of $1 million.

As with the acres burned attribute, Technosylva also is also the basis for the source for data for the structures burned attribute.

V. Electric Reliability Attribute

This attribute estimates the impact to society from the loss of electrical service. Impacts are due to lost commercial revenue, impacts to quality of life, and spoilage of food, for example. Like the other attributes mentioned above, the value used represents an average across the Company's service territory and does not differentiate between commercial and residential customers, or other factors such as time of day of the outage. It is common for electric utilities to place a value on electric reliability for the purposes of identifying which electric reliability improvement programs have the most merit.

The Quantitative Risk Framework value of "228 per SAIDI minute" has a financial equivalent of $2,280,000, which can be computed by understanding that the value for one SAIDI minute is 2.28 times higher (i.e., 228 vs 100) than the financial value of $1 million. The foundation of this valuation is in the monetization of a customer minute outage derived from the Interruption Cost Estimate ("ICE") Calculator, which Berkeley Lab developed in 2016, known as the ICE calculator.[20] The ICE calculator provides estimates for the cost of an interruption event for residential, commercial, and industrial customers. Blending this estimate across the customer types and escalating the cost with inflation derives a value for a customer minute out of $1.58; multiplying this value times the number of customers calculates the estimated value of a SAIDI minute of $2,280,000.

VI. Financial Attribute

This attribute measures the potential financial impact of a risk event, distinct from the impacts mentioned above. This attribute is included to assist in "monetizing" the other Quantitative Risk Framework attributes. With the inclusion of the financial attribute, it is possible to derive a financial value for the other attributes, by assigning a per unit financial value.

[20] The ICE calculator is available at: icecalculator.com.

B. Estimated Total Average Wildfire Risk

I. Introduction and Overview

Modeling undertaken for the Updated WMP results in an average annual risk from wildfire of approximately $95 million. Although using the average value is useful for certain analytic purposes, there is more to wildfire risk than just the average annual value. Wildfire risks to the Company have a wide range of potential annual consequences, including both "tail risks" and the results of the annual Estimated Total (average) Wildfire Risk ("ETWR"). This section addresses both concepts.

Current estimated wildfire risk level is used as the starting point to determine the degree that potential mitigation measures can reduce risk and associated consequences. For quantification purposes, the risk level is discussed in the context of the "expected value" of risk in a single year. Different mitigant measures have different useful lives, as demonstrated later in this section; therefore, risk and risk reduction are considered on an annualized basis.

For the purposes of calculating an RSE, the Company calculated an annualized risk from wildfire of $95 million. This value is an average and is not intended to suggest that there will be any particular level of wildfire risk in a given year. This value represents the modeled wildfire risk associated to the Company from all causes, including Transmission and Distribution assets.

II. Probability Distributions and Tail Risks

What follows is a brief discussion on risk distributions using three examples: rolling a single die, rolling multiple dice, and a Poisson distribution.

Using the example of a dice roll, the expected value of a single roll is 3.5 – due to the fact that a single roll of a die is equally likely to be a 1 through 6. The math is:

$$\text{Expected Value of dice roll} = \frac{1}{6}(1) + \frac{1}{6}(2) + \frac{1}{6}(3) + \frac{1}{6}(4) + \frac{1}{6}(5) + \frac{1}{6}(6) =$$

$$\frac{1}{6}(1 + 2 + 3 + 4 + 5 + 6) = \frac{1}{6}(21) = 3.5$$

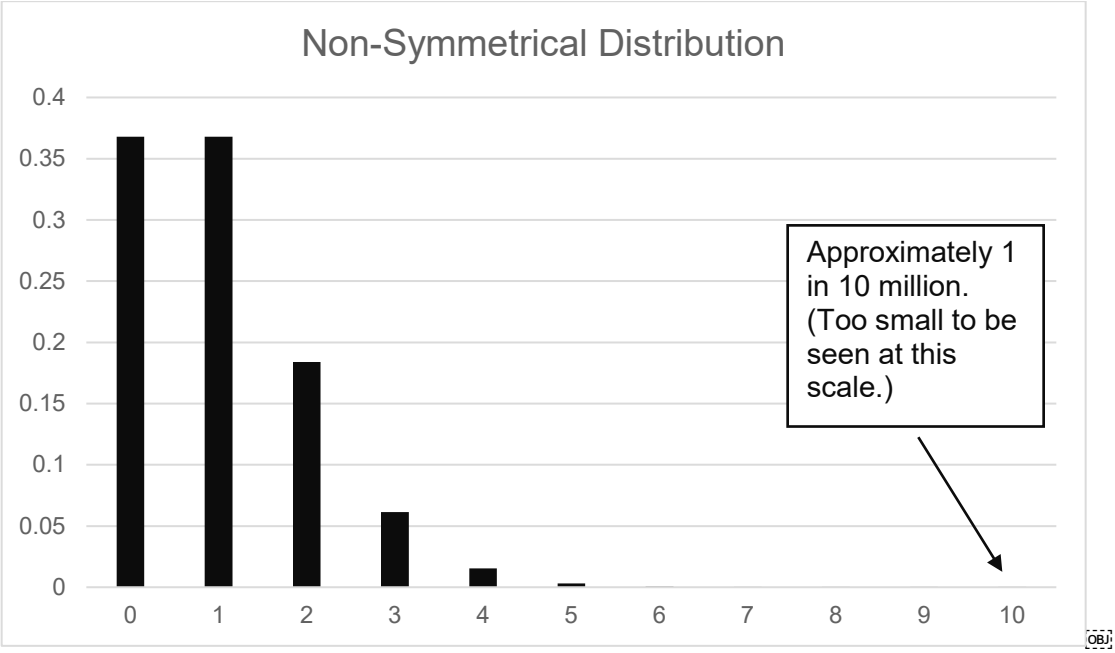
In the above example, a dice roll has a range of possible outcomes from 1 to 6, but the expected average is 3.5. From this simple example, one can see that there is uncertainty involving the dice roll, as opposed to the dice roll resulting in a value of 3.5 on each roll.

Some events have ranges of consequences that are symmetrical, like the rolling of two dice shown in the figure below. The likelihood of each outcome of rolling two dice are not all the same, like that of the rolling of a single die, but the results are still symmetrical.

Figure D-16: Likelihood of Achieving Particular Sum with Two Dice

Other events have a non-symmetrical range of outcomes. When using the Poisson distribution, such as in the figure below, there are no values less than 0; in fact, the range of possible outcomes lies between 0 and infinity.

Figure D-17: Poisson Distribution with Parameter = 1



The range of outcomes associated with a Poisson distribution is illustrative of the notion of how a “tail risk” has a small chance of occurring, but the outcome can be significant if they do occur. In the figure immediately above, the outcome of 10 is very rare, but could represent an outcome that is extreme. A “tail risk” thus refers to risk distributions whose

most frequent outcomes are not remarkable, but rare events can be significantly negative. Examples of tail risks are earthquakes, hurricanes, and financial crises – all low probability but high consequence events. There are many earthquakes every day across the planet, and the average impact of earthquakes is exceedingly small. However, as is well known, large earthquakes – while rare – can have significant damage to widespread areas, and are appropriate to plan for, even if the average annual value of the risk is relatively low.

Wildfires also fall in the category of tail risks because there are many ignitions in wildlands that cause very little damage, but there are rare large fires that are highly destructive. Research has shown that the worst one percent of wildfires destroyed over 80 percent of the acres burned from all fires.[21]

III. Output From the ETWR Analysis

The ETWR is a single value, representing the annual average of a wide array of potential annual consequences. In the ETWR analysis, while most simulated years have no consequence at all, the worst five percent of years simulated have an average consequence of just over $1.5 billion. The following table highlights some of the data from the ETWR analysis:

Table D-6: Specific Data Points from ETWR Analysis

Expected Value	$95M
Likelihood of no significant consequences in a given year	84%
Likelihood of risk exceeding $10M in a given year	14%
Likelihood of risk exceeding $100M in a given year	11%
Likelihood of risk exceeding $1B in a given year	3%
95th Percentile annual consequence	$656M
99th Percentile annual consequence	$2.27B
Average of 90 - 100 percentile annual consequence	$933M
Average of 95 - 100 percentile annual consequence	$1.5B

The method of determining the "Expected Value" is discussed below. The estimation of wildfire risk involves many unknowns, and the conclusions shown here represent estimates using available data and reasonable assumptions. Because large wildfires are rare, and large wildfires caused by utility equipment in Colorado are even rarer, it is not straightforward to estimate these risks with a high degree of precision.

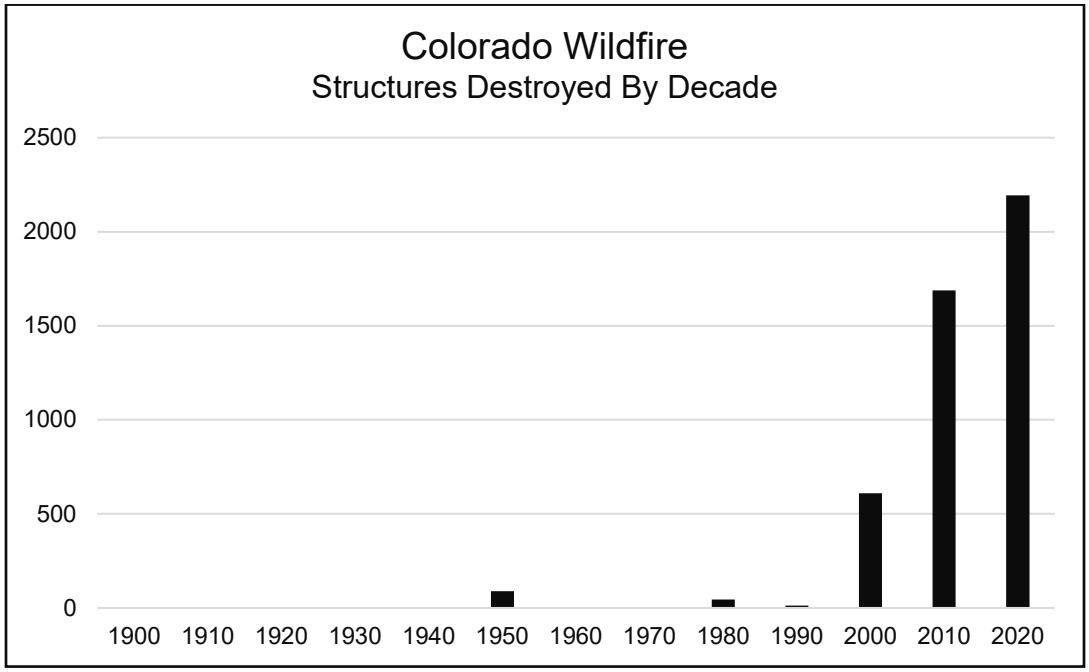
[21] *Do One Percent of Forest Fires Cause Ninety-Nine Percent of the Damage?* Forest Science, Strauss, Bednar, Mess, https://www.fs.usda.gov/psw/publications/strauss/psw_1989_strauss001.pdf

IV. ETWR Methodology

To estimate total wildfire risk, the Company reviewed available data regarding wildfires that have occurred in Colorado, including fires from as early as 1924, and then turned its focus to fires that destroyed structures. After reviewing that large data set, the scope of data used to inform the model was limited to the last 10 years (2013-2023) to include fires that were representative of the frequency and magnitude that is seen today. Attempts were made to gather information on cause of fire, structures destroyed, and size of burn area measured in acres.

Figure D-18 demonstrates the number of structures destroyed by decade. Data for the cause of each fire and structures destroyed have little standardization; data quality is therefore imperfect, though it has improved over time. The definition of a structure can also vary by source, where some sources focus on residences and larger commercial properties, while others include smaller structures such as barns and sheds. The data found in Figure D-18 was built from a composite from dozens of sources of data including national wildfire records, but also heavily from news articles and various state and local fire agency reports.

Figure D-18: Structures Destroyed by Decade from Colorado Wildfire



As the figure reflects, the number of structures destroyed from wildfires has increased over time and decade, and it can be concluded it is unlikely that this increase is due to a lack of data prior to the year 2000. The increase can likely be attributed to other causes, such as the environmental and geographic factors discussed earlier.

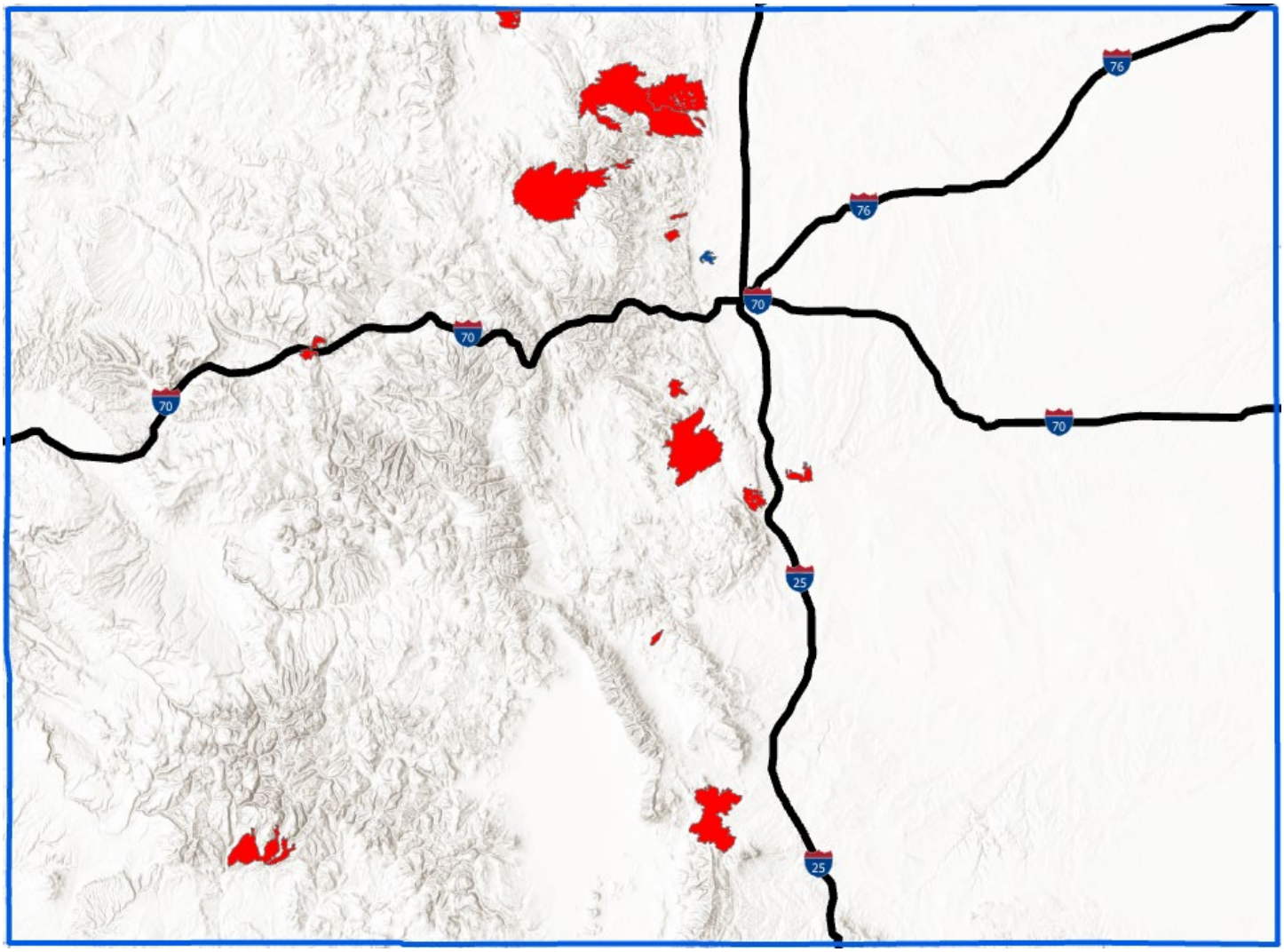
Categorize Wildfires into Two Separate Geographic Groupings

Using the Wildfire Risk Map discussed in Section 6, the Company reviewed general historical wildfire behavior, specifically with wildfires that caused damage to 30 structures or more. The Company reviewed the location, fire spread, vegetation involved, and where possible, the weather conditions present at the time of each fire. After this review, the Company concluded that – for the purposes of analysis – damaging wildfires can be grouped into two separate categories; Type 1 and Type 2 fires. These groupings are not meant to be an exhaustive taxonomy of wildfires in Colorado, but help the risk analysis by adding some level of granularity to a broad subject. Fire Type 1 fires represent all fires except for those in Fire Type 2; Fire Type 2 fires are fires that originate on the Eastern slope of the Front Range in the grassy foothills during extreme windy events.[22]

Figure D-19 below is a map showing all wildfires since 1924 that destroyed 30 structures or more. The red fires are the Fire Type 1, and the blue fire is Fire Type 2. As can be seen from the map above, all wildfires in Colorado history since 1924 that destroyed 30 structures were Fire Type 1, except for the Marshall Fire of 2021.

[22] Note that the Black Forest fire of 2013 occurred east of the Front Range in a forested area northeast of Colorado Springs.

Figure D-19: Wildfires Destroying 30 Structures or More Since 1924



There are many different vegetation types associated with Fire Type 1, but the significant and damaging fires in those areas are primarily in forested areas, and the impacted areas tend to be lower density populations. These fires can be very difficult to suppress, with the East Troublesome Fire of 2020 continuing for six weeks before it was considered extinguished. The duration of these fires prolongs their risks. The majority of structures that burned in the East Troublesome Fire occurred in the second week of the fire burn.

The above discussion of Fire Type 1 is contrasted by the intensity and impact of the Marshall Fire that was driven by extreme downslope winds, which subsided relatively quickly. During that time, however, the fire impacted the landscape immediately. The Marshall Fire progressed mostly through grassy vegetation, rather than a forested ecosystem. The zone for Fire Type 2 is concentrated along the Front Range primarily west of I-25 and can be thought of as primarily WUI fires.

While performing the ETWR analysis, it was understood that Fire Type 1 fires were more frequent, but of relatively lower impact on average, than Fire Type 2 fires. Although the Marshall Fire has different characteristics than other wildfires in Colorado, it is believed that fires similar to it are possible and even likely in the future, especially as the WUI encroaches farther west into prime down-slope Chinook wind areas.

The drivers that lead to fires of Type 1, on the other hand, are quite common and align frequently in the summer in Colorado's forests. These drivers include preponderance of dead or dry fuel, mountainous terrain (slopes aid in fire spread), and breezy to windy conditions.

V. Stochastic Modeling (Monte Carlo)

Probabilistic modeling was used to estimate wildfire risks. Because wildfire inputs and assumptions have uncertainties, probabilistic models allow the analysis to consider scenarios that span across a variety of possible outcomes. Both fire types discussed above have their own uncertainties and ranges associated with the destructiveness of fires, the likelihood of these fires, and the likelihood of electric infrastructure being associated with ignition. The ranges for destruction and likelihood are described using probability distributions. A Monte Carlo simulation performs risk analysis by building models of possible results by substituting a range of values – a probability distribution – for any factor that has inherent uncertainty. It then calculates results over and over, each time using a different set of random values from the probability functions.

The general steps of Monte Carlo modeling are summarized below.

- **Step 1:** Run 100,000 simulations of the following steps. Consider each simulation to be a single year of results, repeated over and over.
- **Step 2**: For Type 1 fires, choose the number of years to look backward for trend.
- **Step 2a:** Perform data search of number of fires that burned 30 structures within the number of years selected.
- **Step 2b:** Calculate annual probability of fire, given the results of the data search.
- **Step 2c:** Randomly determine if, for the simulation year, a wildfire will occur. This is done by choosing a random number between 0 and 1, and determining if that number is smaller than the probability established in Step 2b.
- **Step 2d:** If a wildfire occurred for the simulation year, randomly determine whether utility equipment is associated with its ignition. Currently, the model assumes that likelihood to be 20 percent or 0.20. As above, a random number between 0 and 1 is selected, and if it is less than 0.20, the wildfire is considered to be associated with the Company.
- **Step 2e:** If a fire associated with the Company occurred during the simulation year, randomly choose the consequences of that fire from the probability distribution selected for Type 1 fires. Record the consequence that has been identified.
- **Step 3:** Identical to Step 2, except use probability distribution selected for Type 2 fires.

- **Step 4:** With all runs completed, utilize recorded consequence data. For example, to determine the annual average risk (or expected value), divide the total consequence from all simulations by the number of simulations.

With the average annual risk estimated, that value can then be used for further analysis, notably as part of the Distribution Feeder Model discussed in Section 7(D) below.

Estimate Annual Likelihood of Wildfire for Each Geographic Grouping

Destructive wildfires are relatively rare, and those associated with electric infrastructure are even rarer. The low frequency of these events complicates the ability to accurately forecast certain aspects of wildfire risk. The likelihood of a wildfire occurring in a given year, before the year has begun, is inherently unknown and hard to predict. Historical data and subject matter expertise can nonetheless be used to try to make reasonable predictions.

The Estimated Total (average) Wildfire Risk analysis attempts to account for this uncertainty by employing stochastic modeling that uses ranges of probabilities. Specifically, to help estimate the likelihood of a wildfire occurring, stochastic modeling was used to randomly select what length of wildfire history should be used.

It is clear that wildfire risk is increasing; the general analysis is to determine how many fires there have been over a certain number of years, and then use that number divided by the years reviewed as the likelihood. For example, if four fires had occurred in the past 10 years, the probability would be 0.4 fires in a given year. But because of the clear trend upward in recent years, it is not obvious how far back one should look to acquire the probability for a future year. Going back one year is the equivalent of suggesting that every year in the future will look like last year, and going back 100 years may underestimate the probabilities due to the lack of large fires in the past.

The ETWR analysis therefore uses a stochastic approach by ranging the years of review from one to 10, distributed evenly. In other words, some simulations look back seven years, and others look back three years. This approach was taken for both Fire Type 1 and Fire Type 2.

Create Probability Distributions of Consequences for Each Geographic Grouping Using Recent Wildfires

In addition to determining the probability of an event occurring, it is also important to evaluate how consequential a wildfire may be. The relatively small number of wildfires in Colorado makes the act of understanding their consequences difficult. However, to determine consequence, the ETWR analysis relies on the PowerLaw distribution, which offers a reasonable proxy for the true probabilistic distribution of wildfire consequences.

The PowerLaw distribution used for Fire Type 1 was set by assuming the East Troublesome of 2020 is a P80 fire. Meaning, that it is larger than 80 percent of the group of wildfires being studied – namely, those wildfires in Fire Type 1 that have destroyed 30 structures or more. The PowerLaw distribution used for Fire Type 2 was set by assuming that the Marshall fire of 2021 is a P80 fire. Meaning, that it is larger than 80 percent of

the group of wildfires being studied – namely, those wildfires in Fire Type 2 that have destroyed 30 structures or more.

With the probability distributions created, the Monte Carlo steps 2e and 3 are performed by randomly sampling from these distributions.

VI. Estimated Total (average) Wildfire Risk Summary

Based on the ETWR analysis, for the purposes of calculating an RSE, it is estimated that the annual average consequence from ignitions caused by Company equipment is approximately $95 million. This value is the average annual consequence prior to including the impact of any mitigations. This dollar value is calculated using the output from the Monte Carlo steps discussed above.

Section 7(E) discusses how the ETWR is then used for mitigation assessment.

C. Risk Spend Efficiency

After establishing annual risk values, it is then possible to estimate the risk reduction of a given mitigation measure or measures and then compare the risk reduction to the cost of the mitigation. For purposes of the Updated WMP, this cost-benefit analysis is referred to as the Risk Spend Efficiency ("RSE"), which is stated as a ratio of how much risk is reduced compared to the cost of the mitigation measure(s).

An RSE is calculated using the following formula:

$$\boldsymbol{RSE = \frac{(Annual\ Risk\ Reduction)\ x\ (Project\ Life)}{Cost\ of\ Project}}$$

"Annual Risk Reduction" is the estimated amount of wildfire risk, as computed using the Quantitative Risk Framework and the ETWR values.

> **Example**: Suppose a mitigation is intended to reduce ignitions on certain equipment by 20 percent, and that the equipment has a useful life of 20 years. Further, the cost of the mitigation is estimated to be $10 million. For this example, assume that the equipment is estimated to currently cause $6.7 million of average annual wildfire risk, as computed by the Risk Framework.
>
> The RSE for this example mitigation would be:
>
> $$RSE = \frac{(\$1.34M)\ x\ (20)}{\$10M} = 2.68$$

Note the $1.34 million is the amount of risk reduction from a 20 percent reduction of a $6.7 million annual risk (i.e., $6.7 million x 20 percent = $1.34 million)

An RSE of 2.68 indicates that more monetized risk is reduced than the cost of the project. Namely, 2.68 times more risk is reduced than the cost of the project. This analysis, therefore, would support including the mitigation in a wildfire plan.

While RSEs can be a helpful metric to inform various programs of work, an RSE alone is not necessarily the best or only metric to decide if a particular mitigation measure should be implemented, as a mitigation measure could have other benefits that are not included in the Quantitative Risk Framework.

Some mitigation measures (e.g., vegetation management) were assessed at the wildfire tier level, while others (e.g., EPSS) were analyzed at the distribution feeder level, though more detailed engineering and design work is also required before implementing mitigations at the feeder level. Different programs lend themselves to more detailed analysis than others. For example, when considering the risk reduction from undergrounding an existing overhead distribution line, it is possible to use specific information on that distribution feeder to assess the benefits and costs.

Table D-7 is a table of different mitigation measures that were evaluated for risk assessment, what level of analysis was undertaken, and the key metric used to assess each mitigation. The calculated RSEs are reflected in the Distribution Feeder Model.

Table D-7: Mitigation Measures Considered for Wildfire Risk Assessment

Mitigation	Level of Analysis	Metric
Vegetation Management – Clearances	Tier	RSE
EPSS	Feeder	RSE
Undergrounding (Distribution)	Feeder	RSE
Covered Conductor	Feeder	RSE
Small Conductor Replacement	Feeder	RSE

D. Distribution Feeder Model

Overview

Four mitigation measures were analyzed for risk reduction at the feeder level. Feeder-level analysis offers a practical approach because much of what happens on a feeder affects other parts of the same feeder. For example, if an outage occurs at that feeder's circuit breaker, the entire distribution circuit will experience the outage.

There are 247 feeders included in the Distribution Feeder Model, most of which are either in Tier 3 or Tier 2 risk areas. These feeders were selected as part of the Company's partnership with Technosylva. As part of the partnership between the Company and Technosylva, the Company requested that Technosylva design and construct daily updated high-resolution weather forecast data and to archive this weather forecast data into a 20-year dataset, which will act as a component of the fire potential index that is correlated to actual fire occurrence in Colorado. The Technosylva platform performs hundreds of millions of fire simulations daily to generate risk forecasts calculated every 1-3 hours. New forecasts are derived daily to provide timely analysis of possible wildfire events. This provides insights into current and future weather and fire danger scenarios to inform daily operations.

Described immediately below, the Distribution Feeder Model quantifies wildfire risk allocated across the 247 feeders in an amount of approximately $76 million.

Distribution Feeder Model Methodology

To perform risk assessment at the feeder level, the first step was to determine the amount of annual average risk on each feeder. This determination was made in several steps. First, the Company assumed that 80 percent of the total annual risk was located on the 247 feeders. This value was estimated by estimating how much risk was from the transmission system, and how much risk was present on the distribution feeders other than the 247 discussed above.

Second, based on the allocation method discussed below, the Distribution Feeder Model assumes 80 percent of total wildfire risk – approximately $76 million, or 80 percent of approximately $95 million of total system risk, is allocated across the 247 feeders.

Third, each feeder had certain historical information collected regarding its characteristics, such as customer counts, length in miles, number of average annual outages, number of average annual ignitions, data from Technosylva, and the geographic location of the feeder. An estimate was made of how many ignitions had historically occurred on each feeder. This estimate was based on actual ignitions and actual outages recorded on overhead Company equipment.

Fourth, for each feeder, Technosylva data was used to estimate the consequence of wildfires occurring on the particular feeder. The Technosylva data was then used to identify the maximum number of acres burned and maximum number of structures destroyed for each feeder. The Quantitative Risk Framework was used in this step to convert acres burned and structures destroyed to a single monetized value.

The final step was to multiply the ignition rate by the maximum consequence for each feeder. Although this value is not a practical value by itself as an estimate of average annual risk (*i.e.*, it is too large of a value because it assumes that every fire that occurs on that feeder will inflict maximum consequences), the value is then used to apportion the total wildfire risk. In other words, the annual average wildfire risk of approximately $76 million discussed above is allocated to the 247 feeders using the relative magnitude of

the calculations discussed in this section. In the end, each of the 247 feeders have their own annual feeder risk amount, which sums to approximately $76 million.

Distribution Feeder Model Summary

The Distribution Feeder Model can be described as top-down analysis with a component allocation. The top-down analysis estimates the total wildfire risk. With that total identified, it is then allocated to its constituent parts using an assessment that gauges the relative risk among those parts.

With an estimated risk at the feeder level computed, it is then possible to analyze how specific mitigations reduce that risk at the feeder level.

Additionally, with the feeder level risk estimated, certain programs can use those values to help prioritize where work should be carried out. For example, if it becomes known that two identical pieces of equipment need repair, the feeder risk levels can help prioritize whether one repair should occur before the other.

E. Mitigation Assessment

The Distribution Feeder Model provides RSE scores for the four wildfire risk mitigations, plus vegetation management clearances were evaluated in the Vegetation Risk Analysis. Performing these analyses not only illustrates the mitigations to generalize prioritize over others, also illuminate opportunities to improve processes and data integration going forward.

I. Modeling Summary by Mitigation Measure

As mentioned above, RSEs are only a part of the decision-making process. Nevertheless, some mitigation measures – at the tier level or the feeder level – appear to provide a larger benefit than their cost (*i.e.*, have an RSE >1). Other mitigations did not appear to provide as much benefit as their cost would warrant, but yet may still be justified based on considerations other than RSEs.

Below is a summary of mitigation measures analyzed, the Distribution Feeder Model output associated with the mitigation measure, and the operational take-away.

Table D-8: Summary of Mitigation Measures and Distribution Feeder Model Output

Mitigation Measure	Feeder Model Output (RSE Score)	Operational Take-Away
EPSS	> 1 for most feeders (more than two thirds of all feeders)	Implementation is warranted.
Undergrounding	> 1 for a select number of feeders	Targeted deployment, understanding that actual use will be based on detailed engineering and design.
Covered Conductor	>1 for a select number of feeders.	The Company should consider covered conductor as an option for replacing small wire.
Small Conductor Replacements	<1 for most feeders.	Local knowledge of risk associated with small wire issues support some attention, despite RSE results.
Vegetation Management Clearances	Mixed for larger clearances.	Focus on Tier 2 and Tier 3 for clearances as also informed by utility practice.

II. Enhanced Powerline Safety Settings

EPSS is the most sophisticated form of Wildfire Safety Operations ("WSO"). EPSS reduces wildfire risk by decreasing the amount of time a fault persists, which reduces the time where a spark could be present and therefore lowering the chance of an ignition.

The Distribution Feeder Model cost-benefit RSE calculation assumes EPSS mitigates 40 percent of wildfire risk. This is a lower number than other utilities that currently operate similar programs. As deployment expands, the Company will gain information to track risk reduction, including knowing when EPSS settings are turned on and off for each feeder, tracking outages and ignitions on that feeder, and documenting causation of outages/ignitions.

The Distribution Feeder Model incorporates higher-level cost assumptions for the following equipment:

Table D-9: EPSS Cost Assumptions for RSE

Cost Element	Cost	Units
Protection Study	$25,000	$/Study
Substation Relay	$500,000	$/Relay
Substation Communications[23]	$60,000	$/Device
Recloser	$90,000	$/Recloser

The Company's Updated WMP budget for EPSS uses more granular cost assumptions, though actual costs will depend on the fully developed scope of each EPSS feeder project as determined through detailed engineering and design.

EPSS has a relatively high RSE compared to other mitigations: of the 247 feeders analyzed, more than half of feeders have an EPSS RSE of at least 2.0 (meaning estimated risk reduction benefits are at least double associated costs) and seventy percent of them have an RSE greater than 1.0 (meaning estimated risk reduction benefits are at least equal to associated costs).

III. Targeted Undergrounding

"Undergrounding" involves reconfiguring all or a portion of an electrical distribution feeder that was built above ground (or overhead) to an underground construction.[24] While it is possible for underground electric lines to cause sparks and small fires, the chance of one of these sparks leading to a destructive wildfire is low. This results in targeted undergrounding mitigating substantial wildfire risk.

Undergrounding also increases reliability due to less of the feeder being exposed to external elements, thereby reducing, or avoiding entirely, the causes of many outages (*e.g.*, animal, plant, or vehicle contacts, or wind, lightning, or icing). The Distribution Feeder Model calculates a cost-benefit RSE that considers reliability benefits, though the Company's scope of targeted undergrounding is informed by RSE that considers only wildfire risk reduction benefits.

[23] The $60,000 for Substation Communications was calculated by assuming one out of every five feeders would require such work. The assumed cost for substation communications upgrades is $300,000 which divided by five equals $60,000.

[24] The Company is not proposing to underground transmission assets as part of the Updated WMP due to the significantly greater cost and complexity. Additional discussion of the difference between undergrounding distribution and transmission assets is provided in the Company's Direct Testimony accompanying the Updated WMP.

The Distribution Feeder Model cost-benefit RSE calculation assumes targeted undergrounding mitigates 95 percent of wildfire risk. This is consistent with the mitigation benefits used by Southern California Edison to calculate cost-benefit in its 2023-2025 Wildfire Mitigation Plan.[25]

The Distribution Feeder Model cost-benefit RSE calculation utilizes a per mile cost of targeted undergrounding, with two different values used depending on the location of the feeder. Different values are used because feeders located east of the Front Range are less expensive to underground, based on geological factors (*e.g.*, less granite and flatter terrain).

Table D-10: Targeted Undergrounding Cost Assumptions for RSE

Cost Element	Cost	Units
Metro + Foothills	$4.0	$ Millions /Mile
Mountains	$6.6	$ Millions /Mile

There are six feeders in the Distribution Feeder Model with an RSE (excluding reliability benefits) greater than 1.0. These results will help inform selection of feeders for targeted undergrounding activity under the Updated WMP.

IV. Covered Conductor

Unlike bare conductor (which has no insulating cover), covered conductor has an outside coating of cross-linked polyethylene that is ultraviolet resistant, non-tracking, fully voltage rated, and erosion resistant. Covered conductor is heavier than standard bare conductor of the same gauge and type and has a higher wind loading profile. Covered conductor is less susceptible than bare conductor to ignition events associated with vegetation contact. It therefore is a useful mitigation, particularly in heavily forested areas.

The Distribution Feeder Model cost-benefit RSE calculation assesses replacing all conductor on each feeder with covered conductor. For purposes of calculating an RSE, the Distribution Feeder Model assumes covered conductor mitigates 60 percent of wildfire risk. This assumption is based on information from utilities in the California Joint IOU Covered Conductor Working Group.

The Distribution Feeder Model cost-benefit RSE calculation utilizes a $761,333 per mile cost of replacing conductor with covered conductor. The cost of the covered conductor is a combination of the cost of the conductor and needed upgrades to poles.

[25] *See* Southern California Edison, *2023-2025 Wildfire Mitigation Plan* at 742 (Mar. 27, 2023), https://www.sce.com/sites/default/files/AEM/Wildfire%20Mitigation%20Plan/2023-2025/2023-03-27_SCE_2023_WMP_R0.pdf.

V. Small Conductor Replacement

Small conductor replacement involves replacing small diameter (*i.e.*, #4 American Wire Gauge[26] ("AWG") or smaller) conductor with stronger, more durable conductors. Larger, more durable conductor being installed through the small conductor replacement program is physically more robust than small conductor, making it better able to withstand tree contact, other mechanical damage, and extreme weather and therefore less likely to end up broken and on the ground.[27] Ultimately, the stronger, more durable conductor is less likely to result in ignition events.

The Distribution Feeder Model cost-benefit RSE calculation assesses replacement of the estimated amounts of small wire on each feeder with a larger, bare wire alternative. The Distribution Feeder Model cost-benefit RSE calculation also assumes replacing small conductor with larger, bare conductor reduces potential wire down events by approximately 50 percent. This 50 percent reduction in wire down events translates to a very small reduction in wildfire risk in the Distribution Feeder Model. Given the limitations of available data, the Distribution Feeder Model likely underestimates mitigation benefits of this resiliency work.

The Distribution Feeder Model cost-benefit RSE calculation utilizes a $603,000 per mile cost of replacing small conductor with larger, bare conductor.

VI. Vegetation Management Clearances & Vegetation Risk Analysis

The Company, with FEP's assistance, additionally performed a Vegetation Risk Analysis to help determine the appropriate clearances. Vegetation Management is an ongoing mitigation and is discussed in detail in Section 8(D). Based on the Company's data, the tree clearance aspect of Vegetation Management reduces wildfire risk as well as generally reduces outages. Outages and ignitions are tracked based on cause – whether from live tree contact, broken branches, or full tree failure. With this data set, it is possible to estimate what fraction of the overall risk from wildfire and reliability are due to tree contacts.

The Vegetation Management clearance mitigation was analyzed at the tier level by using outage data to ascertain the proportion of tree contacts in each tier. The Vegetation Risk Analysis considers the degree to which outages will be reduced by implementing the mitigation, allocating that reduction through the overall risk amount specifically from Vegetation Management, then allocating that from the total Company risk. As discussed above, these values are then converted to risk scores that estimate the annual risk reduction. For Vegetation Management, the assessed mitigation involves pruning trees to be no closer than 10 feet from the electrical lines, rather than six feet.

The cost of the proposed Vegetation Management program is estimated by looking at historical costs per mile of Vegetation Management, then extrapolating to a larger amount

[26] American Wire Gauge is the standard measure for the diameter of electrical conductors in the United States.

[27] There may also be instances where small conductor is physically degraded or damaged due to age.

based upon the new mitigation. The annual cost of the Vegetation Management clearance mitigation activity differs by the Company's per year cost proposal.

Vegetation Management Mitigation $RSE = \frac{(\$19.3M)\ x\ (1\ year)}{[\$Annual\ Cost]}$

VII. Updated WMP Mitigation Selection

This Updated WMP reflects the Company's commitment and desire to promote public safety through programs that construct, maintain, and operate the electric system in a manner that helps reduce the risk of a utility asset being the ignition source of a wildfire. The overall mix of programs builds on the work conducted over the prior years and considers evolving risks, operational considerations, utility practices, and cost. The following broadly describes how the Company identified the wildfire mitigation technologies and procedures included in the Updated WMP.

The Updated WMP incorporates multiple categories of mitigation activities to be implemented in the years 2025, 2026 and 2027. Those mitigation categories were identified by the Company and its external experts and are directed at the specific wildfire risks in the wildfire risk area. The Company's proposed allocation of resources across those categories balances three factors: (1) risk reduction; (2) operational constraints; and (3) customer impacts. Each factor is discussed below.

Risk Reduction

The mitigation activities under the Updated WMP are informed, where possible, by the Company's quantitative Wildfire Risk Assessment. The Wildfire Risk Assessment incorporates the updated Wildfire Risk Map and wildfire spread modelling to identify and quantify wildfire risks within the Company's service territory. The Wildfire Risk Assessment also produces several risk reduction cost curves that identify activities and locations where mitigations will maximize risk reduction per dollar spent (*i.e.*, RSE). Given operational and financial constraints, the RSE scores help the Company allocate resources across activities and prioritize projects within each mitigation category, with the overall goal of reducing wildfire risk in an economically and operationally efficient manner.

Operational Constraints

The growth in wildfire risk has resulted in there being more potential risk mitigation activity than can be accomplished during the Updated WMP's plan period. As a result, the Company's proposed scope of work and allocation of resources reflects its assessment of the number of hours reasonably available to execute work based on current and proposed staffing levels, as well as the volume and type of work considered. The Company also considered seasonal variables, permitting and access/land use considerations, preexisting work and lead times, anticipated contractor availability, while recognizing there are some known and unknown variables that will inevitably impact our ability to carry out work.

Ultimately, these practical factors also influenced the scope of mitigation activities the Company believes it can reasonably execute during the plan period.

Customer Impact

The Company is obligated to provide safe and reliable service to its customers. Wildfire risk mitigation is a core component of that obligation, but so too are other activities. For example, the Company is significantly expending the use of renewable resources to serve customers with clean and low carbon energy and is modernizing its distribution system to accommodate new use cases (*i.e.*, building and transportation electrification) and accommodating customer-sited generation. These are all important activities that increase the value of the Company's service to customers, but they also require resources (both financial and operational). The scope of mitigation activities within the Updated WMP reflect the Company's attempt to balance financial demands and remain focused on providing safe, and reliable service.

The Distribution Feeder Model, which is part of the overall Wildfire Risk Assessment, allows for the calculation of RSE scores for certain mitigation strategies, incorporating items such as the duration of risk reducing benefit of the mitigation, its projected effectiveness at reducing ignitions, as well as its overall risk reduction per unit of cost. This was used by the Company to inform the development of a balanced portfolio of mitigation initiatives. Ultimately, the overall mix of mitigations is designed to improve situational awareness, reduce risk by improving the resiliency of the system, and address emerging threats through operational mitigations, while supporting customers with new programs and enhanced communication and engagement efforts.

By using this approach, the Company is better able to evaluate its investments across multiple programs. In addition to evaluating these types of outputs, the Company has considered other factors, such as programs that address multiple risk drivers, local and geographic considerations, resource and other constraints, regulatory commitments, interactions among various programs, operational constraints, and time to implement a given mitigation measure.

VIII. Continuous Improvement

Risk identification and analysis is a continuous process, and the Company will be re-evaluating its risks continuously and assessing the most effective ways to address them.

In selecting and optimizing the portfolio that is included in this Updated WMP, the Company has analyzed and balanced multiple factors such as risk reduction values, fire history, ingress/egress, geographic considerations, types and density of local vegetation, feasibility constraints, available resources, regulatory requirements, customer impacts, and other commitments.

The Company will continue to update and refine its Wildfire Risk Assessment approach for the Updated WMP as it is implemented, ensuring that its lessons learned, additional data streams, and program developments are considered to prioritize work scopes and annual activities.

8. 2025-2027 WILDFIRE MITIGATION PLAN

This section provides a more detailed description of the various mitigation measures and mitigation tools that Public Service plans to deploy over the 2025-2027 WMP period horizon. As noted above, the Updated WMP mitigation measures and tools span four broad categories:

- **Situational Awareness**: Situational awareness tools enhance the Company's ability to identify, assess, and respond to a physical, cyber, or environmental hazard, including wildfires.
- **System Resiliency**: System resiliency involves the Company making physical investments in its infrastructure to directly reduce the risk of a utility-caused wildfire.
- **Operational Mitigations**: Operational mitigations involve the Company adjusting something about how it operates the electric system in order to reduce the risk of a utility-caused wildfire.
- **Customer Support:** Customer support involves the Company directly informing customers regarding wildfire risk and mitigation activities and also provides direct customer assistance for customer resiliency.

The Updated WMP builds upon the 2020 WMP, and is part of an evolutionary process to steadily enhance the ability to identify and mitigate wildfire risk on the Company's system.

In this section, each mitigation is detailed, organized by the four above-listed categories. Additionally, it also outlines the growth of expertise and organizational support needed to aid the Company's wildfire mitigation activities and the 2025-2027 WMP.

A. Situational Awareness

Situational awareness is the ability to monitor environmental conditions to make critical operational decisions in an effective and timely manner. It covers a broad range of systems and tools that inform operational and/or response actions for both the transmission and distribution systems. Currently, the Company uses various public information sources (such as the National Weather Service, Rocky Mountain Geographic Area Coordination Center Predictive Services) and third-party services (such as Indji Watch)[28] to provide pertinent data, including Red Flag Warnings[29] and Fire Weather Watch and High Wind Warning/High Wind Watch/Wind Advisories. Situational awareness resources also include internal personnel (crews/technicians), as well as external resources (first responders) that can assist in the gathering of environment condition data and provide condition reports on active wildfire situations.

[28] Indji Watch is a third-party data service that provides information on environmental threats like active fires that the Company monitors for proximity to Company assets. More information is available at https://www.indjiwatch.com/.

[29] A Red Flag Warning is a weather warning issued by the National Weather Service when temperatures, humidity, fuel moisture, and winds increase the risk for wildland fire.

In addition to gathering information on current environmental conditions, situational awareness also extends to understanding which parts of the service territory may be exposed to higher consequential wildfires. The Company began piloting Technosylva wildfire spread modeling software in as part of the 2020 WMP, which generates millions of simulations to estimate wildfire spread scenarios under varying fire weather conditions, to further refine and identify areas where to focus wildfire mitigation efforts. This risk modeling software also improves situational awareness through the integration of various external wildfire notifications such as IRWIN[30] and FireGuard.[31]

The Company will implement PSPS for severe wildfire risk events (detailed in Section 8(E)) and expand its EPSS program as part of the Updated WMP. Both programs require more detailed and location-specific assessments of fire potential, including enhanced meteorological forecasting, along with the gathering of localized environmental conditions such as temperature, wind speed/direction, humidity, and fuel moisture.

The following are situational awareness capabilities, tools, and upgrades the Company proposes in this Updated WMP:

I. Enhanced Meteorology Capabilities

Historically, Company meteorology staff have supported various functional areas. Given the increased wildfire risk in the Company's service area, the Company has begun hiring meteorological staff to focus solely on wildfire mitigation. The Company plans to expand its meteorological and fire science staff over the 2025-2027 WMP period to support the continued evolution of situational awareness and predicting.

Responsibilities of the wildfire mitigation meteorology team include monitoring, forecasting, and tracking of weather conditions. The team will produce real-time forecasts and help develop long term analysis and trends that are informative about the spread of wildfire. This will include coordination and interpretation of data from public sources, Company-owned weather stations, high-definition cameras, and third-party services. The meteorology team is responsible for providing advance notice to Company personnel regarding Red Flag Warnings, Fire Weather Watches, and High Wind Warnings/High Wind Watch/Wind Advisories and will be responsible for determining when conditions

[30] Integrated Reporting of Wildland Fire Information ("IRWIN") is a Wildland Fire Information and Technology affiliated investment intended to provide an "end-to-end" fire reporting capability. IRWIN is tasked with providing data exchange capabilities between existing applications used to manage data related to wildland fire incidents. *Data Management & WFIT - Integrated Reporting of Wildfire Information (IRWIN)*, U.S. Department of Agriculture and U.S. Department of the Interior, https://www.wildfire.gov/application/irwin-integrated-reporting-wildfire-information.

[31] FireGuard uses military satellites with the National Interagency Fire Center, U.S. Forest Service and the National Geospatial-Intelligence Agency's Firefly capability to detect wildfires, notify authorities, and create products to disseminate to firefighting networks nationwide. *FireGuard Program Enhances National Guard Wildfire-fighting*, National Guard Bureau (Nov. 18, 2022), https://www.nationalguard.mil/News/Article/3223104/fireguard-program-enhances-national-guard-wildfire-fighting/.

may exist for PSPS. The Wildfire Risk Mitigation team has made progress in building out this team and hired a Senior Meteorologist in December 2023.

The following are the anticipated steps that the Company plans to undertake for the development and refinement of its meteorological and fire science group:

- Develop Situational Awareness tools, such as a Fire Potential Index, that can inform current and near-term wildfire risk across the Company's service territory. Provide daily updates of this data to all relevant Company personnel.
- Collect and analyze fire weather data to further support the relationship between wind speeds and undesired events such as outages and ignitions.
- Determine appropriate weather data sources, ranging from existing public sources to the addition of Company-owned weather stations.
- Build relationships throughout the Company and relevant outside stakeholders, such as local fire suppression agencies, various emergency organizations, local academia, and fire weather research centers.
- Collect ignition data with enough granularity to allow for analysis. Create a standard for the definition of an ignition and use trained personnel to collect data within a short time of the event occurring. This data will be collected such that it can be easily linked to other Company data such as locations of assets and outage events.
- Assist in building standards regarding when and where operational wildfire mitigation measures should be deployed, such as PSPS.
- Continue to hire meteorology staff as the need grows.

II. Weather Station Deployment Strategy

Weather stations gather real time weather data to inform weather forecasts and weather model validation. These automated weather stations can be deployed in remote regions and installed directly onto utility poles to gather weather data on a more granular and site-specific basis than may be obtained through other government or third-party weather monitoring networks. These weather stations collect the following information: (1) air temperature, (2) barometric pressure, (3) relative humidity, (4) sustained wind speed/direction, (5) wind gust speed/direction, and (6) fuel moisture. Most weather stations are capable of recording and communicating between six and 120 observations per hour.

As part of the Company's expansion of its EPSS program and its PSPS program, each circuit in these programs will eventually be equipped with a minimum of one Company-owned weather station, and possibly more if the circuit extends into different environmental/weather areas. The Company is beginning to install weather stations in 2024 and will expand this weather station network in 2025-2027. The weather station data will be used to monitor weather conditions for EPSS and PSPS events and validate hourly forecast weather models. The weather stations will be installed on high priority circuits and substations. The Company's strategy to estimate the number of weather stations to install and the total number needed overall is based on a 1:175 mile install ratio per linear mile of both transmission and distribution lines.

III. Camera Deployment

AI-equipped cameras assist with early wildfire detection. Early detection can trigger more rapid deployment of fire suppression resources thereby helping reduce the consequences of an ignition – whether related to utility equipment or from other human or environmental causes.

Public Service has begun to build out its own network of these cameras.[32] These high-definition camera systems use AI to scan the skies for signs of smoke or fire and give the Company accurate 360-degree fire detection triangulation capability across remote and/or higher risk parts of its service territory.[33] Once smoke is detected, an alert is sent to the Company and its public safety partners who are onboarded with the system.

The Company ran a pilot with Boulder County with three AI cameras beginning in late 2022 that informed its decision to expand the use of AI cameras in 2023 and 2024. The Company installed 21 units in 2023, with nine of these cameras in the eastern part, and 12 in the western part of its service territory. The Company plans to install an additional 21 sites in 2024, with seven already installed. In addition to using cameras for monitoring and detection, the Company will continue to explore additional applications for wildfire mitigation and network expansion going forward. The Updated WMP calls for an additional 93 cameras, bringing the total to 135. With 135 cameras, 100% of Tiers 3 and 2 will have coverage.

The Company's AI camera systems are part of a larger situational awareness strategy coordinated with federal, state, and local fire agencies and officers.

IV. Technosylva/Weather and Fire Science Modeling

Technosylva software is a combination of observation, model, and asset information that provides current and forecast weather conditions. Technosylva software is used during PSPS events and if there are active wildfires to simulate possible wildfire behavior and spread scenarios if a wildfire occurs within the Company's service territory.

For this Updated WMP, the Company requested Technosylva design and construct daily updated high-resolution weather forecast data and to archive this weather forecast data into a 20-year dataset which will act as a backbone to the fire potential index, correlated to actual fire occurrence in Colorado. Additionally, Technosylva will be used for developing numeric weather predictions for Colorado by running software that will monitor critical wind speed, dryness, and temperature for initiating EPSS and PSPS events.

[32] More information is available at https://www.pano.ai/.

[33] Although the platform's machine learning algorithms have seen significant improvements in their abilities to detect wildfires on a 24-hour basis, most systems still operate with a 'human in the loop', to validate a wildfire prior to sending notifications to stakeholders.

The use of Technosylva and the associated data produced by the model runs will allow the Company to elevate the situational awareness which may help limit the impact of the PSPS program on customers.

V.Emergency Management Resources and Wildfire Command Center

The Company is integrating its situational awareness with other emergency management resources to inform those emergency management and response efforts. Specifically, the Company is developing a Wildfire Command Center that will serve as the Company's 24/7 hub for monitoring wildfire risks and processing weather, remote sensing, and other data from the Company's situational awareness programs. The Wildfire Command Center will be equipped with the necessary infrastructure for monitoring and processing data from the existing and planned situational awareness programs. The Wildfire Command Center will also serve as a centralized location for wildfire coordination, response, and recovery efforts.

VI.Area Risk Mapping

The Company's Wildfire Risk Map serves as a foundational tool providing guidance in work procedures, mitigation programs, and situational awareness. The updated Wildfire Risk Map serves as a statewide snapshot of the Company's updated risk categorization across its service territory and asset locations. The Wildfire Risk Map provides guidance for work and directs various programs within the wildfire risk tiers. Additionally, the Wildfire Risk Map provides valuable data which drives our EPSS and PSPS programming and scope of work.

VII.Software

The objective of the software updates that support risk assessments and modeling is to improve both near term and long-term predictive risk model capabilities as the Company's situational awareness and wildfire mitigation strategies mature. Specifically, these upgrades aim to refine the accuracy of data and data processes and seek to improve the quality of model outputs. In tandem with the improvement of model outputs, the Company will be able to better plan for and mitigate wildfire risk.

B. System Resiliency

System resiliency involves the Company making physical investments in its infrastructure to directly reduce the risk of a utility-caused wildfire. As discussed in more detail below, this work is performed on both the distribution and transmission systems. It also includes vegetation management, which protects physical investments and helps reduce the chance assets cause a wildfire.

The Company's system resiliency work builds upon the 2020 WMP, in which the Company initiated critical risk-reducing repair and replace programs. These programs will continue to be a significant part of the Updated WMP. As the Company's strategies have matured, however, we now group all physical investments that help reduce the risk of a utility-caused wildfire into the broader system resiliency category.

An effective system resiliency program often includes a systematic, risk-informed approach to the evaluation of available options that can make the electric system more resilient to outages and ignitions that can lead to wildfires. This approach includes detailed analyses and prioritization of the needed work on distribution feeders and transmission lines. The Wildfire Risk Assessment (described in Section 7) is used to estimate the existing risk compared to mitigation alternatives in terms of risk reduction per unit of cost (i.e., the RSE).

System resiliency improvements using wildfire-resistant construction standards, implementing ignition-reducing equipment enhancements, and upgrading electric equipment to be stronger in severe weather will all help reduce the risk of Company equipment igniting a fire. Our Updated WMP system resilience work is focused on Tier 3 and Tier 2 Wildfire Risk Areas.

In addressing these resiliency investments and activities, the Company's proposals for the estimated scope of work undertaken for each may reasonably differ based on factors such as situations encountered in the field, supply chain issues, labor constrains, and inflation. These types of factors may change the scope of the Company's wildfire activities and related costs.

The Company's system resiliency investments and activities are composed of those that address distribution and transmission needs, as well as vegetation management.

I. Distribution System Resiliency

The below section of this Updated WMP addresses the distribution activities the Company will undertake, including: (1) targeted undergrounding; (2) small conductor replacement; (3) non-expulsion upgrades; (4) pole replacement; and (5) overhead assessments and remediations.

Targeted Undergrounding

As discussed above, undergrounding involves reconfiguring all or a portion of an electrical distribution feeder that was built above ground (or overhead) to an underground construction. Undergrounding significantly mitigates wildfire risk, but it also is engineering, design, and construction intensive. For example, in some instances, the feeder will need to be reconfigured from radial taps to a normally open looped system. The Company must identify and obtain locations for switch cabinets and pad-mount transformers and associated land rights. Undergrounding also can involve more onerous permitting requirements from various agencies (Bureau of Land Management, U.S. Forest Service, National Parks Service, State and local government, etc.).

The Updated WMP targeted undergrounding reflects a balancing of several factors, including practical considerations of geology, the Company's experience with undergrounding portions of its distribution system and cost.

Undergrounding is more difficult in areas of greater elevation (or elevation change) and areas with rocky geology, like Colorado's Front Range, which is part of the Company's

service territory. Much of the Company's service territory has rocky geology, particularly in areas with higher wildfire risk. Undergrounding in such geologic conditions is far more challenging and costly than flatter, less rocky terrain. As a result, the Company will not attempt to underground feeders in areas that are predominately bedrock as part of the Updated WMP.

The Company has experience undergrounding shorter segments of the distribution system, particularly in flat, less rocky terrain. The Company has less experience undergrounding large portions of its distribution system (*i.e.* multiple miles). These practical considerations, along with others like more substantial permitting and land rights requirements (as the physical construction footprint is larger due to the need to stage equipment and disturb more ground) and more complicated logistics (*e.g.*, utility conflicts and geology) all contribute to the Company developing a proposed scope of work that reflects the Company's assessment of an ambitious, but achievable scope to be completed in the 2025-2027 timeframe.

The Company's targeted undergrounding proposal also considers cost. Undergrounding, while significantly mitigating wildfire risk, is relatively expensive due to the intensity of necessary work. Therefore, the targeted undergrounding scope of work also is informed by the Distribution Feeder Model RSE cost-benefit analysis.[34] That analysis identified six feeders with an RSE above 1.0. These feeders will be candidates for the targeted undergrounding program, with actual undergrounding being dependent on detailed engineering and study.

The proposed amount of targeted undergrounding included in the Updated WMP is shown in the table below.

Table D-11: Targeted Undergrounding

	2025 (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
Miles	5	20	25	50

Small Conductor Replacement

The small conductor replacement program involves replacing small diameter conductor with stronger, more durable conductor.[35] It also includes replacing existing bare, open wire secondary conductor spans with insulated aerial cable lashed to a bare neutral

[34] Undergrounding also increases reliability due to less of the feeder being exposed to external elements, thereby reducing or avoiding entirely causes of many outages (e.g., animal, plant, or vehicle contacts, or wind, lightning, or icing). The Distribution Feeder Model does calculate an RSE that considers reliability benefits, though the Company's scope of targeted undergrounding is informed by RSE that considers only wildfire risk reduction benefits.

[35] Small conductor replacement also requires pole replacement. The number of poles to be replaced due to small conductor replacement (as well as associated costs) are part of the pole replacement program discussed below.

conductor.[36] The Company has combined small conductor replacement with bare, open wire secondary conductor replacement ("open wire secondary replacement") to accomplish both in a more cost-effective manner. This combination does not mean all open wire secondary replacement will be on the same poles as small conductor replacement, but rather that both open wire secondary replacement and small conductor replacement will be performed on the same distribution feeders or in the same geographic areas.

Small conductors are used on some of the oldest lines in the Company's service territory and are smaller relative to what is now used for standard construction. Further, based on available 2022 data, small wires had almost twice the number of wires down events (weighted by feet of wire installed). Replacing open wire with insulated conductor provides protection against contact with tree limbs. It also allows the bare neutral conductor that the insulated conductor is lashed to provide a ground path so upstream protection can operate more quickly in the event the insulation becomes compromised.

The Company plans to replace 165 miles of small conductor and 33 miles of open wire as part of the Updated WMP. This is incremental to the 300 miles of small conductor the Company committed to replace by the end of 2025 in the 2020 WMP, of which the Company is still re-evaluating the completion of the remaining 120 miles of. It is possible that detailed studies, resource constraints, or other factors could cause actual deployment to differ from the amounts shown below. Further, progress made on the 2020 WMP work could materially impact the schedule for the next phase of small conductor and open wire replacement undertaken as part of the Updated WMP.

Table D-12: Small Conductor Replacement Program
(Miles)

	2025 (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
Small Conductor Replacement	50	55	60	165
Open Wire/Bare Secondary Conductor Replacement	10	11	12	33

The Company will be making other equipment upgrades in conjunction with small conductor replacement, which are detailed in the non-expulsion upgrades section below. The combination of these activities (small conductor replacement and associated pole replacement and equipment upgrades) is sometimes referred to as "line rebuilds."

[36] These spans can pose ignition risk due to vegetation contact, or due to failure initiated by pitting and/or wear of these smaller conductors.

The Company will perform a study of each feeder to determine whether bare conductor, covered conductor, or other solutions are appropriate for a particular feeder.

Non-Expulsion Upgrades

When a distribution feeder experiences a fault and an overcurrent occurs, fuses on the feeder are designed to open and isolate the fault, limiting further damage to other equipment. An expulsion fuse is designed to quench the arc, with material being expelled out of the fuse tube. The material being expelled can be hot and therefore presents an ignition risk when expelled in proximity to vegetation.

Lightning arresters are devices installed to ground lightning surges. They direct the excess energy from a lightning strike to ground, protecting pole top equipment such as transformers. Arresters can fail when lightning surge energy exceeds their capacity, or due to repeated operations. The end of life for an arrester is to fault to ground. When the fault happens, a built-in isolator fires and takes the arrester off-line by removing its connection to ground. This operation can expel hot material from the arrester, which can potentially ignite flammable matter or vegetation near the pole.

Non-expulsion upgrades are a form of system resiliency that involves replacing expulsion fuses, associated fuse cutouts, and lightening arresters on distribution poles with newer technology that does not emit hot material when operating. By avoiding the release of hot material during normal operations or at end of life, this newer technology directly reduces ignition risk. The new lightning arresters and non-expulsion fuses the Company has selected meet Cal Fire standards.

The Company will perform non-expulsion upgrades in connection with small conductor replacement. Based on non-expulsion upgrades in connection with small conductor replacement performed in 2023 as part of the 2020 WMP, the Company estimates approximately 167 devices will be upgraded per mile of small conductor line rebuild.

The Company plans to replace install 27,510 non-expulsion devices as part of the Updated WMP. Actual deployment will depend on the total miles of small conductor replacement as well as the actual number of devices that need to be replaced in connection with each small conductor line rebuild.

Table D-13: Non-Expulsion Upgrade Program
(Devices)

	2025 (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
Number of Devices	8,340	9,170	10,000	27,510

Pole Replacement

Decayed and weakened poles can fail, increasing the chance that energized conductors could come into contact with other objects or surfaces, possibly resulting in an ignition.

The Updated WMP pole replacement program reflects two work streams to identify such poles: (1) ground-based assessments of Tier 3 and Tier 2 poles that have yet to undergo ground-based assessment as part of the 2020 WMP; and (2) pole replacement occurring in connection with small conductor replacement.[37]

Ground-based assessments involve above- and below-grade assessment of distribution pole strength.[38] This is accomplished by partially excavating around distribution poles and drilling into the poles (both above and below ground level) to identify internal decay and estimate the pole's remaining strength. The drilled holes help the Company identify poles that are weakened through decay, weathering, or other physical damage, and/or that do not meet National Electric Safety Code ("NESC") remaining strength requirements, as well apply wood preservatives to reduce risk of future decay.

The Company performed ground-based assessments on wood poles within the 2020 WMP Wildfire Risk Zone ("2020 WMP WRZ") as part of the 2020 WMP. Consistent with that work, the Updated WMP provides for ground-based pole assessment of Tier 3 and Tier 2 poles that have yet to undergo ground-based assessment as part of the 2020 WMP.

Based on the Company's experience of replacing small conductor as part of the 2020 WMP, the Company assumes that it will need to replace 25 poles for every mile of small conductor replacement. As such, the Updated WMP includes 4,125 pole replacements associated with small conductor replacements. The Company also plans to replace 6,240 Tier 3 and Tier 2 poles as part of accelerated ground-based assessments. The Company also continues to explore if there are alternatives to wood poles that make sense in certain areas of the system.

Table D-14: Pole Replacement

	2025 (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
Accelerated Tier 3 and Tier 2	2,080	2,080	2,080	6,240
Small Conductor	1,250	1,375	1,500	4,125
Total	**3,330**	**3,455**	**3,580**	**10,365**

[37] Pole replacement also may occur as part of remediations identified through overhead assessments, discussed below. Costs for pole replacements stemming from overhead assessments are not part of the pole replacement program budget.

[38] These assessments were referred to as the "Groundline Inspections Program" or the "Groundline Intrusive Pole Assessment Program" under the 2020 WMP. It has also been referred to as Invasive Pole Assessment and Treatment ("IPAT").

Overhead Assessments and Remediations

Asset assessments are part of the Company's overall asset maintenance program. Assets are assessed to identify defects that have the potential to lead to equipment failure. This proactive approach to asset management aids in reducing ignition risk and sustains and/or improves system reliability by identifying where work is needed to preserve the integrity and functionality of the system components.

The Company's distribution assessments historically have fallen into one of four categories: (1) Overhead Pole Assessment ("OPA") using Unmanned Aerial Systems ("UAS"); (2) Intrusive Pole Assessment and Treatment ("IPAT"); (3) Infrared Assessment; and (4) Pole Loading and Clearance ("PLC") using UAS or helicopters. Only OPA and PLC assessments are included in the Updated WMP.[39] Further, the Updated WMP includes estimated work to correct defects identified through these assessments.

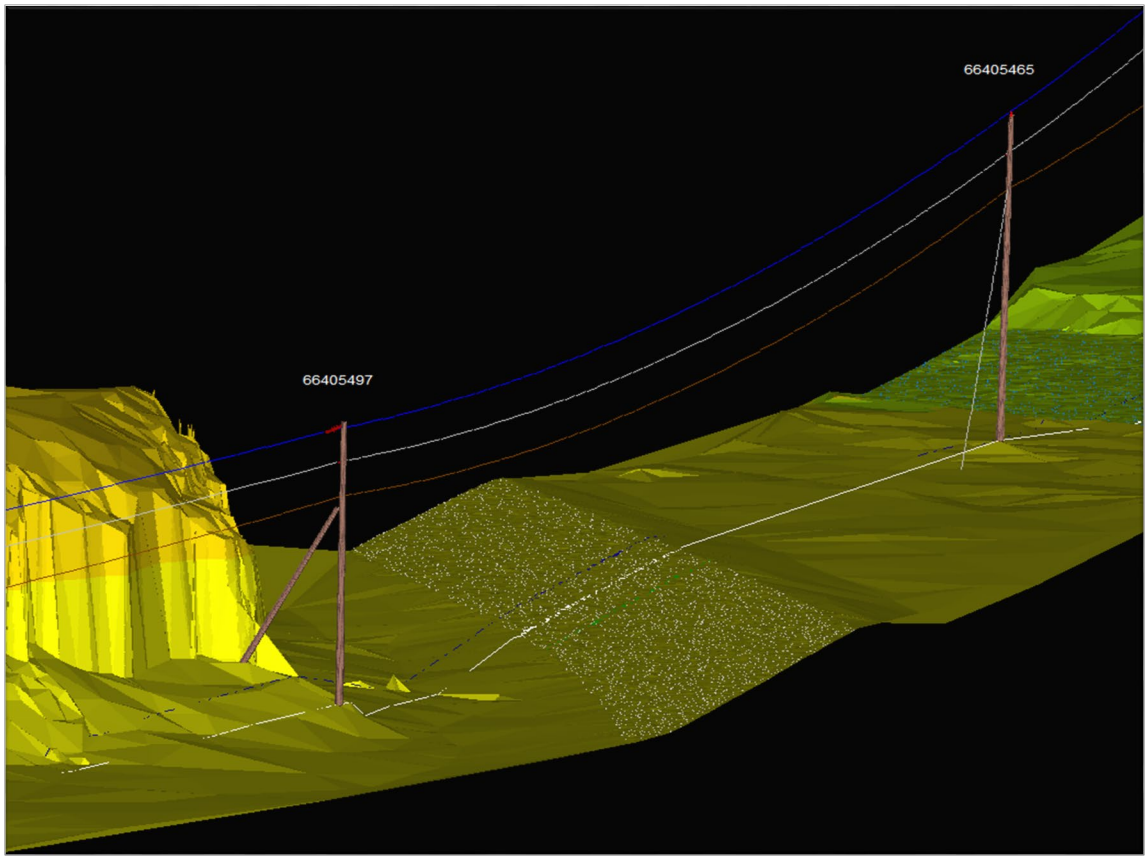
OPA assessments are the primary method of performing above ground visual assessments for distribution assets. OPA assessments involve the use of unmanned aerial drones, flown by licensed UAS pilots using a consistent procedure, to capture images of distribution structures and attachments from multiple angles. The imagery is then analyzed by Qualified Electrical Workers ("QEW") or other individuals with significant electrical experience against a standardized defect matrix to identify and classify deficiencies that can impact public safety and/or reliability.[40] Identified defects are categorized or ranked based on safety risk, risk to reliability, and ignition risk, and then addressed according to that prioritization. OPA assessments therefore are directly related to reducing wildfire risk.

PLC assessments identify the physical strength of distribution structures and vertical clearance of supported overhead conductors to increase the Company's ability to identify and correct potential structural weaknesses before failure. As part of the 2020 WMP, the Company started using light detection and ranging technology ("LiDAR")-equipped helicopters to assess lines in higher-risk areas. In 2024, the Company began using LiDAR-equipped UAS to conduct the assessments as well. The assessments were fed into Power Line System Computer-Aided Drafting and Design ("PLS-CADD") software to build models of asset strength in as-built conditions. Those models in turn help identify structures with insufficient strength to withstand extreme wind criteria.

[39] The Company still performs IPAT assessments on a standard 12-year cycle. Under the 2020 WMP, the Company accelerated IPAT assessments for poles located in the Wildfire Risk Zone. As discussed above, the Updated WMP provides for accelerated ground-based assessment of Tier 3 and Tier 2 poles that did not undergo ground-based assessment as part of the 2020 WMP. These accelerated assessments are not included in the Updated WMP overhead assessments and remediation program, though associated pole replacements are part of the pole replacement program.

[40] The Company will have a team of QEW resources reviewing samples of the OPA assessments to verify contractors' identification and classification of defects against the standardized defect matrix.

Figure D-20: Example of PLS-CADD Software



OPA assessments will occur according to a tier-based assessment schedule. By 2027 (the end of the Updated WMP time horizon), distribution poles within Tier 3 will be assessed every other year; Tier 2 distribution poles will be assessed every five years.

The Company is proposing to increase OPA and PLC assessments throughout the 2025-2027 period, as shown below.

Table D-15: Updated WMP Distribution Assessments

Assessment Type	**Location**	**2025** (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
OPA					
	Tier 3	44,000	44,000	44,000	132,000
	Tier 2	0	0	27,000	27,000
	Total	**44,000**	**44,000**	**71,000**	**159,000**
PLC					
	Tier 3	5,400	8,100	12,000	25,500
	Total	**5,400**	**8,100**	**12,000**	**25,500**

These assessments identify defects requiring remediation. For OPA, various equipment on a distribution pole, including but not limited to arms, arresters, or the pole itself, could be found to be defective and requiring replacement. PLC assessments, on the other hand, are strictly focused on identifying poles that are not able to withstand extreme wind conditions or do not meet standard clearances. Based on historical defect rates, the Company estimates the Updated WMP OPA assessments will require 79,500 defect remediations,[41] while the Updated WMP PLC assessments will result in 2,550 pole replacements.

Table D-16: Overhead Assessment Remediations

	2025 (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
OPA	22,000	22,000	35,500	79,500
PLC	540	810	1,200	2,550
Total	**22,540**	**22,810**	**36,700**	**82,050**

The remediations above are based on historical defect rates; it is possible that the Company could identify fewer defects than it has in the past. It also is possible that as the Company's programs mature and more equipment is replaced, fewer defects will be identified.

Finally, the Company will be using the UAS images taken as part of or along with the OPA assessments to gather detailed information regarding assets located in the field. The information gathered will include a detailed, GPS coordinate for each pole, details regarding the conductor at the pole (e.g., bare wire versus covered conductor, whether

[41] The Company will be reviewing samples of the OPA remediation work to verify outside contractors' timely completion of corrective work and adherence to established standards.

the primary conductor is copper or aluminum, if secondary conductor is lashed cable or open-wire), and types of fuses and lightning arresters on the poles. This will result in the Company having more granular information (including more accurate location information) regarding field assets, thereby improving our ability to operate and maintain the distribution system and determine where to implement wildfire mitigations.

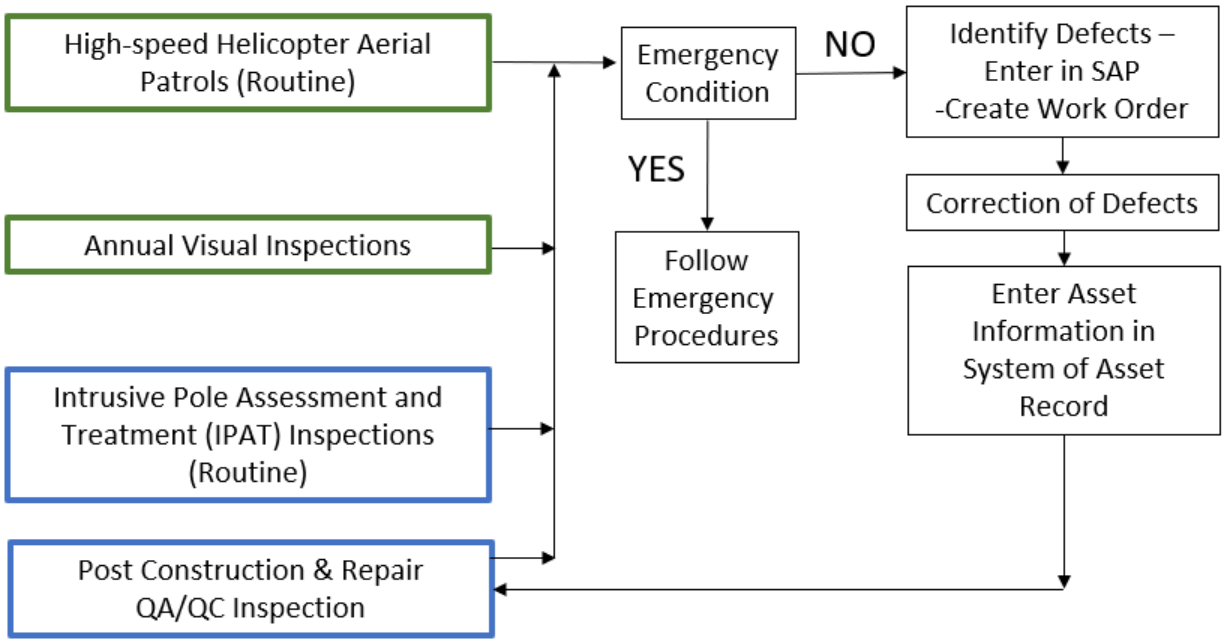
II. Transmission System Resiliency

The below section of this Updated WMP addresses the transmission activities the Company will undertake, including: (1) transmission asset inspections; and (2) transmission infrastructure improvement. The Company's transmission asset inspection work includes two routine inspection programs (high-speed helicopter aerial inspections, and Intrusive Pole Assessment and Treatment (IPAT) inspections) and one wildfire-based program (the Annual Visual Inspection program). The Annual Visual Inspection program is an important wildfire mitigation strategy that involves detailed ground-visual inspections of all transmission assets in high wildfire risk areas—Tier 3 and Tier 2—on an annual basis. The Company's transmission infrastructure improvement work—formerly called "Repair and Replace" work—includes the continuation of two programs: Major Line Rebuilds, and High-Priority Defects corrections. Additional details on the programs under transmission asset inspection and infrastructure improvement are provided below. First, this section summarizes what is involved in each of the three inspection programs and provides a schedule for asset inspection. Next, this section outlines prioritization for infrastructure improvement work based on what the Company has identified through inspections, and details the infrastructure improvement programs.

Transmission Asset Inspection Programs

As shown in Figure D-21, transmission asset inspections are conducted via the following programs: Annual Visual Inspections, High-speed helicopter aerial patrols, and IPAT. The workflow of each is provided below.

Figure D-21: Transmission Inspections & Repair Workflow



Annual Visual Inspections: This wildfire-based program primarily uses ground patrols to conduct detailed visual inspections on transmission lines and poles. The program is conducted annually, primarily in Tier 2 and Tier 3 wildfire areas. These inspections involve a QEW equipped with high-power binoculars and other tools who inspect transmission assets from a close distance by driving or walking up to each structure. While the Company's routine high-speed helicopter aerial patrols allow for rapid transmission line and structure inspections, they can lack the granularity and detail required to identify certain smaller component defects. Therefore, there is a need to conduct detailed visual inspections more frequently in higher-risk wildfire areas. While the primary method of inspection in this program will be ground patrols, the Company may incorporate additional inspection techniques, such as high-resolution imagery assessments and detailed helicopter-aided aerial inspections, in instances where ground inspection may be difficult to perform due to challenging access or to enable more comprehensive evaluation of asset condition. Techniques such as Infrared (IR) camera may also be used to supplement these more detailed inspections. The defects identified through the Annual Visual Inspection program are addressed through the transmission Infrastructure Improvement programs (formerly, the Repair and Replace programs), which include High Priority Defects and Major Line Rebuilds.

High-Speed Helicopter Aerial Patrols: This routine program involves rapid aerial inspection of transmission lines and structure with an on-board QEW. These inspections are conducted annually on the entire transmission system. These inspections provide an aerial perspective and help to locate larger defects or issues ahead of more detailed patrols.

IPAT: This routine inspection program is applied to transmission poles that are made of wood, using the procedures that were previously described in the distribution IPAT section. This program is currently on a 12-year-cycle plan generally in accordance with the United States Department of Agriculture ("USDA") Rural Utilities Service ("RUS") Bulletin 1730B-121 (Wood Pole Inspection and Maintenance). The Company does not anticipate accelerating this inspection frequency at this time because Colorado is located in the least severe decay zone defined by the USDA Rural Utilities Service. However, the Company will continue to review the Intrusive Pole Inspection results and evaluate the appropriate cycle length to determine if any adjustment of frequency is required in the future.

Transmission Asset Inspection Schedule

Similar to the distribution inspections, the Company plans to perform the majority of its transmission asset inspections on a risk-informed basis, where assets in the higher wildfire risk tiers are inspected on an accelerated basis. For Tiers 2, 3, and select Tier 1 areas, the Annual Visual Inspection program will provide annual detailed inspections. This is in addition to the annual route High-Speed Helicopter Aerial Patrols and 12-year cycle IPAT inspections.

Transmission Post-Inspection Repair/Replace Prioritization

Transmission defects identified *via* inspections are assigned priority. The priority ratings, which are based on condition, and the expected maintenance actions are included in the figure below.

Figure D-22: Transmission Defect Priority Definitions for the Tier 2 and Tier 3 Risk Areas

Maintenance Priority	Condition Priority Rating	Task Severity and Asset Management Action
Emergency	1	**Immediate Action Required** Failed component or failure imminent – component damaged or no longer suitable for intended use.
High	2	**Action Required** Asset Renewal Required Significant wear, corrosion, or damage to warrant action plans.
Medium	3	**Action Recommended** Asset Renewal Recommended – moderate to minimal wear, corrosion, or damage to warrant action plans.
Low	4	**No Action Required** Minimal Maintenance - Minor wear, corrosion, etc. Structure is still in functional condition for the intended purpose. Observe during next inspection for further deterioration
Monitor	5	**No Action Required** Initial stage of normal wear. Asset is Functional. Observe during next inspection for further deterioration

The defect definitions and maintenance actions stated above will apply to the assets located within the wildfire risk areas. For defects that require an immediate response, the inspector will notify the Transmission Control Center and Transmission Field Operations for immediate correction. Other defect notifications are evaluated by Transmission System Performance and Transmission Field Operations for work plan creation, then handed off to the Project Management Office. Project Management Operations then engages various groups including Engineering, Project Controls, and Siting and Land Rights organizations to create the work package for Transmission Field Operations to execute. Efforts will be targeted primarily to higher risk zones such as Tier 2 and Tier 3,

but defects identified within Tier 1 that are classified as a high priority will also be addressed.

Transmission Infrastructure Improvement

Major Line Rebuilds: Aging transmission lines that are beginning to encounter maintenance and reliability issues and approaching their expected useful life must be rebuilt to operate safely and reliably. These rebuilds will have a significant impact on system reliability and potentially reduce ignition risk by preventing a transmission line failure. Continuation of this program ensures that the Company is maintaining its infrastructure, thus reducing risk, and improving system reliability.

As part of the 2020 WMP, Public Service initiated a Major Transmission Line Rebuild Program. The program is directed at asset renewal and is driven by both the inspection program and the Wind Strength Review performed in 2019. Where the Company determined that the amount of required corrective action identified *via* inspection programs is too large to be effectively mitigated through a few structure or component replacements or if most of the assets on a transmission line are nearing the end of their useful life, a full or partial rebuild of the line is the most effective method to improve resilience and mitigate ignition risk. Additionally, the Wind Strength Review results determined that line rebuild was the preferred alternative for eight 69 kV transmission lines based on physical condition and potential vulnerability to high-speed wind events. A total of 37 miles of transmission lines was rebuilt from 2020-2023 and approximately 30 more miles are planned to be completed in 2024. Under the Updated WMP, approximately 125 miles of the remaining 69 kV transmission lines that were part of the original WMP will be rebuilt or refurbished between 2025-2027. In addition, newly identified rebuild projects could begin construction as early as 2027.

High-Priority Defect Corrections: The inspection programs discussed above identify defective transmission line components located within elevated wildfire risk areas. Timely correction of these defects is key to an effective asset maintenance program. This program addresses high-priority defects identified in the Tier 2 and Tier 3 wildfire risk areas by replacing or repairing defective structures and other components such as poles, cross-arms, insulators, braces, and wires. This also includes Priority 2 (High) defects within Tier 1. In addition, the Company will replace the defective wood structures in the Tier 2 and Tier 3 wildfire risk areas with steel or composite structures to provide more resiliency against fire (if not feasible, apply fire-resistant wrap around the replacement wood pole). Once a defect is identified, assignment of the appropriate defect priority is utilized to schedule repair or replacement work.

III. Wildfire Vegetation Management Program

Utility VM programs are generally designed to protect infrastructure from vegetation-caused damage, and help reduce injury to the public, the risk of wildfires, and interruptions of electric service. A comprehensive VM program incorporates tree pruning, brush control/removal, and tree removal to reduce the frequency with which vegetation can damage electrical equipment, and the frequency of vegetation-caused outages and

ignitions. VM programs are part of the overall obligation to provide safe and reliable service, as well as the specific goal of reducing wildfire risk.

Public Service has been performing VM activities for decades. Those activities are designed to address a large service territory with multiple ecosystems. The Company's service territory, across 27 Colorado counties, contains ecoregions that range from Central Shortgrass Prairie (East) to Southern Rocky Mountains (Central) to Colorado Plateau (West). Most of the forested landscapes contain a majority of coniferous rather than deciduous tree species. Colorado's forest conditions warrant particular concern primarily due to trends in forest cover change, insect population and disease cycles, and expansion of WUIs. The decline in forest health and the lengthening of wildfire seasons linked to climate change are pressing issues.[42]

Vegetation Management guidelines are based on the International Society of Arboriculture ("ISA") Best Management Practices ("BMP") and the American National Standards Institute ("ANSI") standards. Public Service uses specialized VM vendor resources to perform these activities, creates VM prescriptions,[43] provides VM field services, and performs quality assurance and quality control for VM-related activities.

Specific to the Updated WMP, the Wildfire VM Program is designed to build on the foundation presented in the 2020 WMP, with programmatic changes to reflect:

- Changing forest and environmental conditions (*e.g.* mountain pine beetle infestation, drought, extreme wind, climate fluctuations);
- Expansion of the WUI;
- Company experience gained from the 2020 WMP;
- Updates to industry practices and new processes (increased inspection frequency programs, increased radial clearance and trim cycles); and,
- Published standards and practices.

Public Service's wildfire VM activities are designed to reduce fuels and ignition risk that contribute to wildfires and minimize the risk posed to facilities and the communities it serves. VM practices and maintenance activities mitigate risks by removing hazard trees, clearing dead vegetation, creating firebreaks, and thinning dense forests on utility easements and ROW.

For the Updated WMP, the wildfire VM Program consists of five major activities to help protect electrical distribution, transmission, and substation assets: (1) VM Wildfire Corridor Maintenance; (2) VM Wildfire Hazard Tree; (3) VM Wildfire Defensible Space

[42] *The Condition of Colorado's Forests*, Colorado State Forest Service and Colorado State University (2023), www.csfs.colostate.edu/colorado-forests/condition-of-colorado-forests.

[43] Prescriptions refer to a unique plan for work on an individual property and typically describes in detail the trees to be pruned, removed, treated, etc., and are created by inspectors for each property/site.

Around Facilities; (4) VM Wildfire Right-of-Way Clearance: and (5) VM Wildfire Quality Assurance/Quality Control ("QA/QC"). These different activities are discussed below.

Federal and State Requirements

Generally, federal and state regulations require electric utilities to maintain reliable electric service, comply with reliability standards, and maintain their systems in accordance with the National Electric Safety Code ("NESC"). VM is a critical component of complying with these regulations. The following provides a brief overview of the regulatory and practice drivers behind the Wildfire VM Program.

North American Electric Reliability Corporation ("NERC") developed and enforces Reliability Standard FAC-003-5 – Requires transmission owners to maintain a reliable electric transmission system (greater than 200 kV) by using a defense in-depth strategy to manage vegetation located on transmission ROW and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation related outages.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Region (11/12/2021) – Master Operations and Maintenance Plan describing the Company's required activities to operate and maintain safe and reliable electric and ancillary facilities throughout the five local National Forests with electric transmission and distribution lines and utility infrastructure within Region 2.

Colorado Revised Statutes Title 9 Safety – Industrial and Commercial, Article 2.5 – High Voltage Power lines – Safety Requirements. Only qualified employees of an electric utility can perform any activity that may bring an individual or equipment within 10 feet of high voltage (lines more than 600 volts) overhead lines. Certain vendors working directly for the utility are considered qualified. Non-qualified employees or individuals must contact the appropriate utility to arrange for safe activity.

National Electric Safety Code Section 21 Part 2 Rule 218 – Addresses VM by requiring that vegetation that may damage ungrounded supply conductors be pruned or removed as experience has been shown to be necessary. Factors that should be considered when determining clearance distances include line voltage class, species growth rates and failure characteristics, ROW limitations, vegetation location in relation to conductors, potential combined movement of vegetation and conductors during routine winds and sagging conductors due to elevated temperatures or icing.

Occupational Safety and Health Administration ("OSHA"), Standard 1910.269: addresses labor standards and training requirements for tree work in proximity to electric hazards.

American National Standard for Arboricultural Operations ("ANSI"), Z133 – Pruning, Repairing, Maintaining, and Removing Trees, and Cutting Brush – Safety Requirements: ANSI Z133 provides standards to comply with the requirements contained in OSHA Standard 1910.269, such as on clearance distances in relation to voltages and elevation for qualified and non-qualified tree workers.

ANSI, A300, Part 1 Pruning: performance standards for pruning of trees, shrubs, palms, and other woody plants.

ANSI, A300, Part 7 Integrated Vegetation Management ("IVM"): providing standards for developing specifications to implement an integrated approach to management of vegetation on utility rights of way.

ANSI, A300, Part 9 Tree Risk Assessment: providing performance standards for the practice of tree risk assessment for risk associated with failure.

International Society of Arboriculture ("ISA"), Best Management Practices: aids in the interpretation and implementation of ANSI A300 standards and assists in the promotion of industry standards.

Wildfire VM Program Activities

Public Service's Updated WMP consists of five major activities that will be performed in Tier 3 and Tier 2 wildfire risk areas: (1) VM Wildfire Corridor Maintenance; (2) VM Wildfire Hazard Tree; (3) VM Wildfire Defensible Space Around Facilities ("DSAF"); (4) VM Wildfire Right-of-Way Clearance; and (5) VM Wildfire Quality Assurance/Quality Control ("QA/QC"). The table below provides an overview of these activities.

Table D-17: Wildfire VM Program Component Summaries

Activity #	Name	Task	Targeted Maintenance Cadence*	Updated Scope Summary
1	**VM Wildfire Corridor Maintenance**	Pre-Inspection of Work & Work Execution	Every 4 years	• WF Corridor Maintenance is an enhanced activity to the previous maintenance activity in the Inaugural WMP. • Governs vegetation management to an enhanced clearance standard. • Additional removal of mature trees within the new clearance target ranges.
2	**VM Wildfire Hazard Tree**	Inspection for Hazard Tree Work & Work Execution	At least every 2 years	• WF Hazard Tree replaces the previous Mountain Hazard Tree activity. • Expanded criteria and qualifications for hazard tree identification and assessment personnel. • Includes re-inspection of any documented exception trees. • Added a mitigation prioritization for identified high priority trees.
3	**VM Wildfire Defensible Space Around Facilities (DSAF)**	Facility Clearance	Distribution – at least every 2 years Substations – Annually	• DSAF is an expansion of DSAP that was in the Inaugural WMP.

Activity #	Name	Task	Targeted Maintenance Cadence*	Updated Scope Summary
4	**VM Wildfire Right-of-Way Clearance**	Brush Removal	In combination with Corridor Maintenance	• WF ROW Clearance is a new activity. • Standardizes objective of removing woody vegetation from within the maintained ROW, focusing on the smaller statured bushes and small or young trees. • Cadence will typically occur in conjunction with VM Corridor Maintenance.
5	**VM Wildfire QA/QC**	QA/QC	On-going	• QA/QC expanded to include enhancements of existing activities.

*Targeted cadence barring circumstances that could impact the schedule (weather, materials, access, safety issues).

Additional information on these VM Program elements included in the Updated WMP is provided in the following sections.

VM Wildfire Corridor Maintenance Activity

The VM Wildfire Corridor Maintenance Activity occurs on the distribution system and includes VM work activities performed on a risk-informed, time-based interval. The interval is typically four years and is driven by wildfire risk, system voltage, asset location, reliability risk, and vegetation conditions. This four-year targeted cycle is unchanged from the inaugural WMP.

Trees will be pruned on primary lines with the objective of maintaining a clearance distance of approximately four-feet throughout the four-year targeted cycle in Tier 3 and in Tier 2 areas, where possible. Trees that have shown previous contact with energized facilities will be assigned a P1[44] designation and considered for mitigation. Trees will be pruned to provide a minimum of approximately 10-feet of side clearance for single phase and multi-phase construction from the outermost phases, where possible. A radial clearance of two feet will be obtained on open wire secondary lines as part of VM Corridor Maintenance.

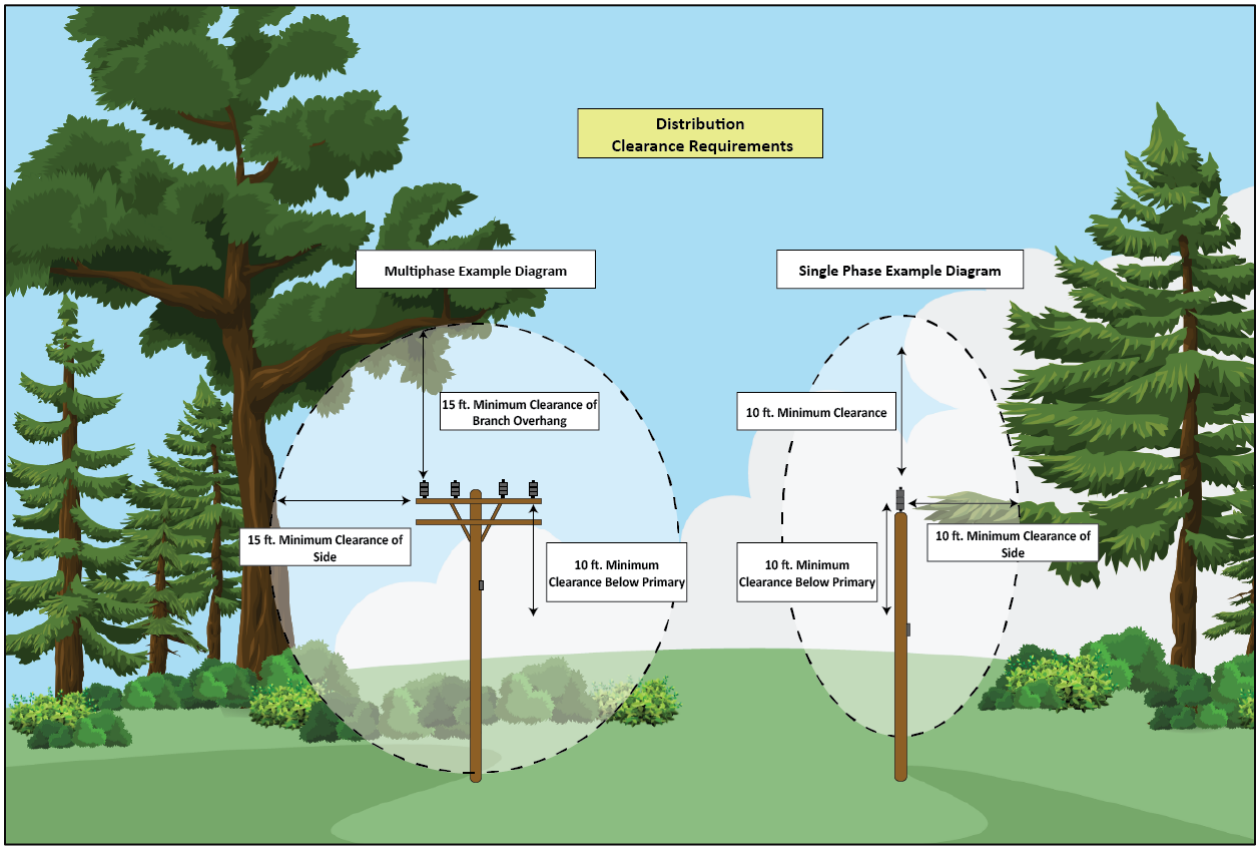
Bundled or spun triplex and duplex (i.e., covered) lines will be cleared of broken limbs to resolve wire deflection, abrasion, and contact to prevent an unintended ignition risk.

The Company will seek to avoid overhanging branches within ten vertical feet on single-phase and multi-phase construction. Dead or visibly declining overhanging branches will be removed from overhead facilities where practicable. If a live branch above ten feet of construction has the potential to hinge upon failure and strike the conductor, it will be reduced in length or removed depending on the vigor and vitality of the limb.

[44] P1 designates a “Priority 1” hazard and represents an immediate risk to utility infrastructure. A P2 designation indicates a damaged or diseased tree that could fall into transmission or distribution assets.

This clearance activity is illustrated in the following figure.

Figure D-23: VM Wildfire Corridor Maintenance Activity



VM Wildfire Hazard Tree Activity

The VM Wildfire Hazard Tree activity is a VM field assessment and mitigation activity that occurs at least biannually within Tier 3 and Tier 2 areas for both transmission and distribution facilities to reduce the likelihood of tree conductor contact and resulting ignition potential. The purpose of the Hazard Tree activity is to identify hazard trees that exhibit signs of insect/disease infestations, are dead or declining in health, have been subjected to grade changes, exhibit exposed/damaged roots or are structurally unsound, will not maintain required clearance or that may fail prior to the next maintenance cycle with potential of striking the adjacent facilities. Any such trees would be mitigated or removed to prevent a potential ignition event. This activity replaces what Public Service previously referred to as the Mountain Hazard Tree program because it covers non-mountainous terrain as well.

Identification of hazard trees in higher fire risk areas is conducted by trained ISA Tree Risk Assessment Qualification ("TRAQ") credentialed contracted VM resources. Tree species with a higher risk of susceptibility to insect or disease activity, high growth rate potential, failure characteristics, or are known to be responsible for increased outage

rates may be preemptively targeted to achieve expanded clearances around Company assets. The TRAQ credentialed inspector conducts an assessment using a standardized checklist.

There are two levels of utility tree risk inspections:

- Level 1 inspection is an assessment of trees within the ROW to determine the amount of required pruning for the annual cycle based on tree growth and/or to abate a hazardous condition.
- Level 2 inspection is a 360-degree visual assessment of a tree where the crown, trunk, canopy, and above-ground roots are evaluated for specific hazards to the electric infrastructure. This may involve tools such as a mallet to "sound" the tree trunk.[45]

Company or contracted VM inspectors will conduct a Level 1 inspection on trees that can strike the primary conductor, secondary conductor, pole, or guy wire if the tree or parts of the tree were to fail. If the Company/contracted inspector identifies a tree that is dead, shows signs of disease, decay, or ground or root disturbance, they will perform a Level 2 inspection. Tree(s) identified as having a moderate to high probability of failure and that pose an unacceptable risk to the facilities will be mitigated. The Company defines a tree that poses an unacceptable risk of failing onto assets as a hazard tree.

VM Wildfire Right of Way Clearance

Public Service has designed a VM Wildfire ROW Clearance activity to promote vegetation that is sustainable, fire-resilient, and compatible with land used as an electrical utility ROW. Generally, the activity removes the woody vegetation (brush) within the easement and below conductors in Tier 3 and Tier 2 areas—leaving behind grasses and forbs.

Standard ROW clearing widths are twenty feet total width, ten feet from centerline, for both single-phase and multi-phase distribution primary conductor.

The following figures illustrates the activity for both single- and multi-phase facilities.

[45] ISA Utility Tree Risk Assessment BMP.

Figure D-24: Single Phase Right-of-Way Clearance

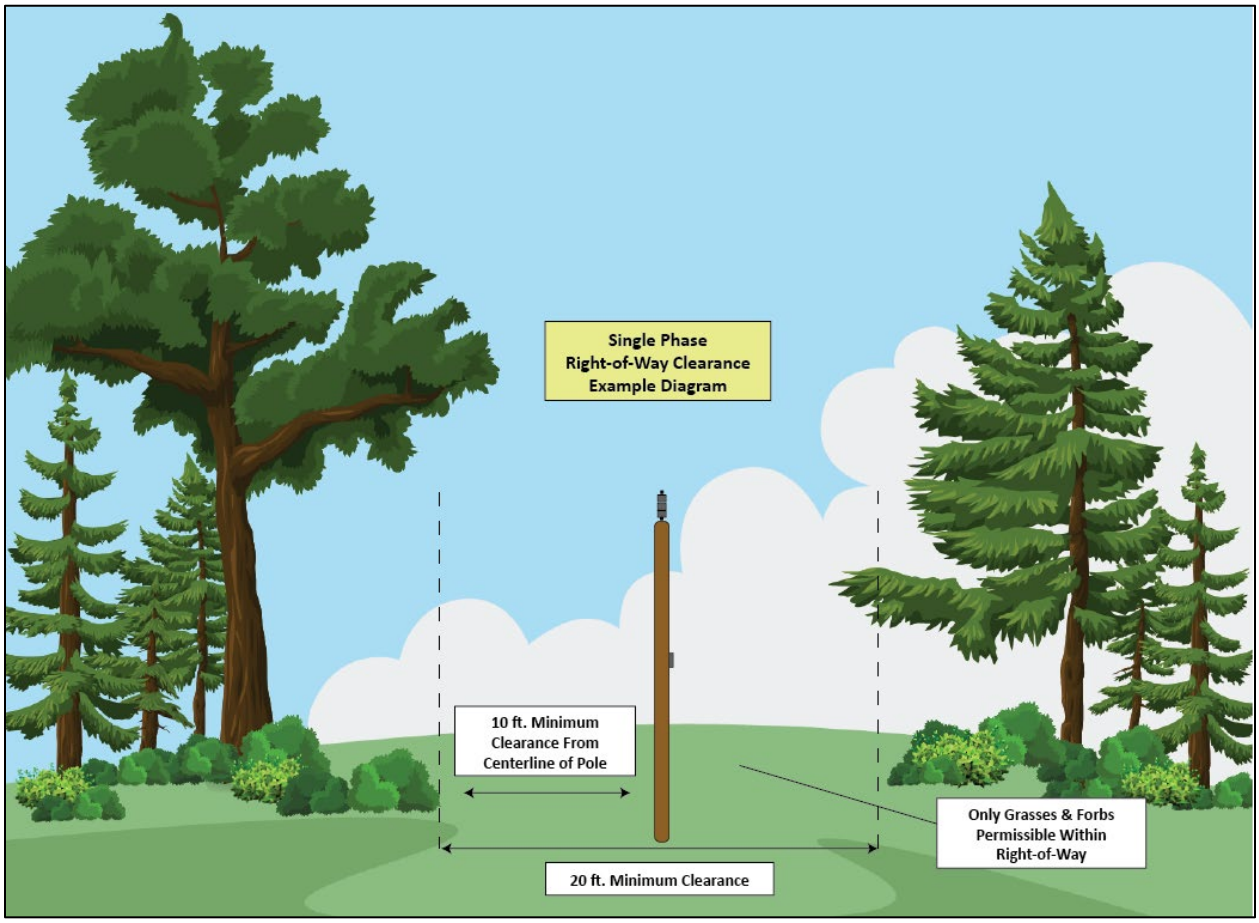
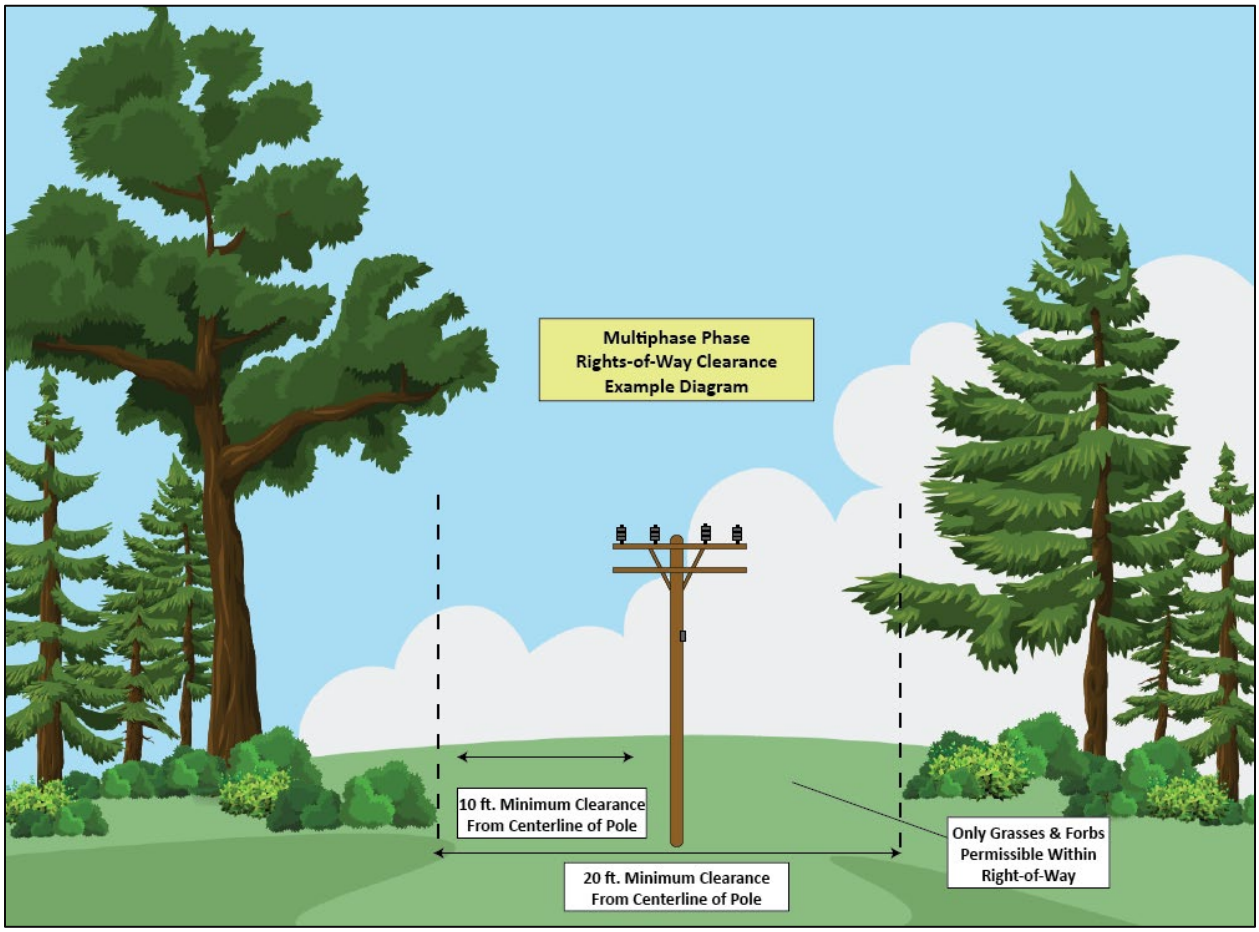


Figure D-25: Multiphase Right-of-Way Clearance



Neutral High construction type will be considered as high priority when conducting the VM Wildfire ROW Clearance due to the proximity of the primary conductor to young trees and brush growing underneath the lines.

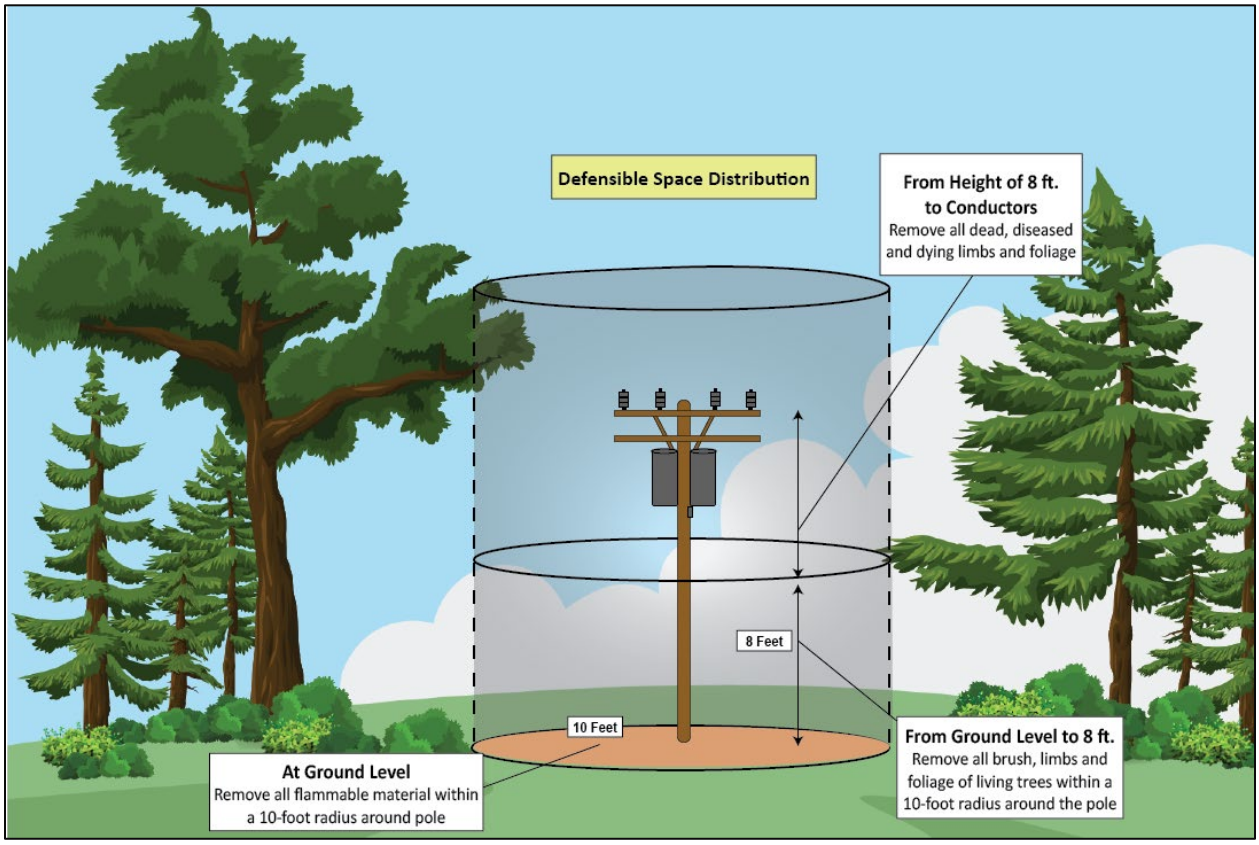
The Company already undertakes similar clearance activities for transmission assets as part of its routine work. Because the Company is already addressing this activity on transmission assets in all areas of its system, it is not necessary to create a wildfire-specific program as part of the Updated WMP for transmission assets.

VM Defensible Space Around Facilities Activity

Defensible Space Around Facilities (DSAF) is designed to establish a woody vegetation-free zone around assets to reduce ignition potential. The DSAF is specific to the type of asset as well as the equipment it may contain. As part of the DSAF activity, existing wood debris (cut brush, logs, or limbs, fallen trees/branches) not generated by the Company's activities, may be removed to the extent practicable in high fire threat areas (Tiers 3 and Tier 2) or as directed by Company representative through discussions with landowners or land management agencies.

The DSAF activity for distribution assets is specific to the type of equipment contained on a distribution pole. If the pole houses equipment that is known to have a higher fire risk potential, DSAF will be employed around the base.[46] The DSAF for distribution consists of a 10-foot radius and eight-foot vertical zone around the pole targeting to remove all brush, limbs and foliage, and grasses where practical to the height of the conductors on qualifying distribution poles.

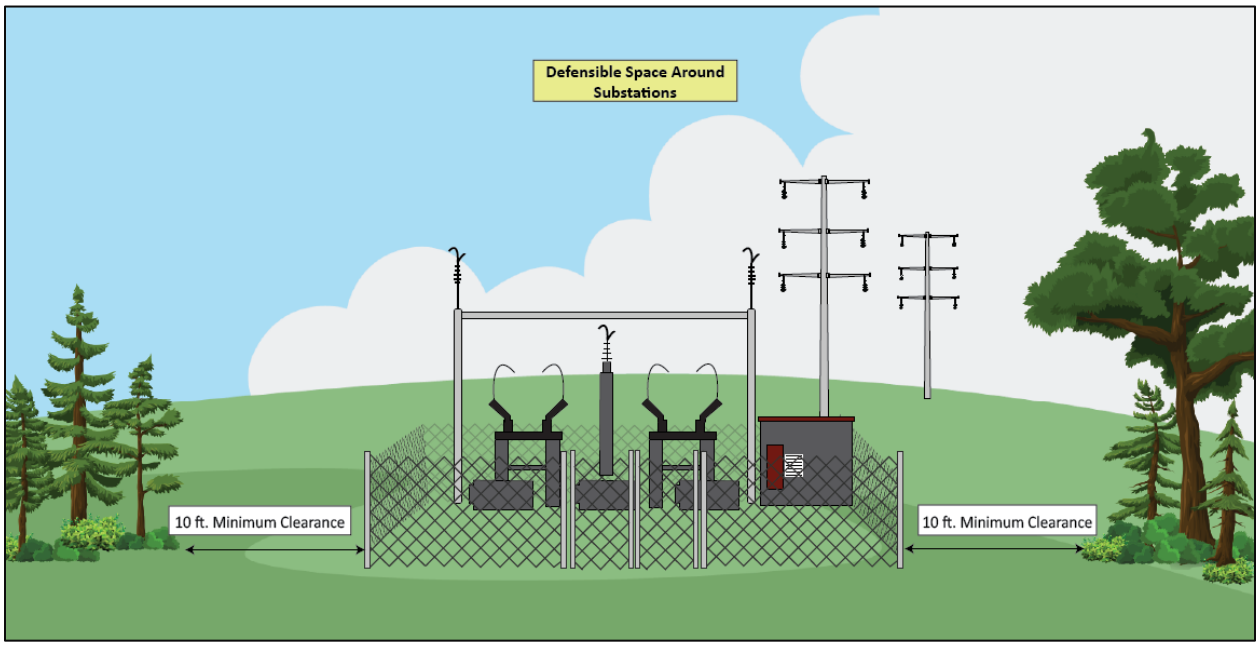
Figure D-26: Defensible Space Distribution



The DSAF Activity around substations is designed to reduce ignition probability and wildfire consequence due to vegetation contacting or growing in and around a substation. The prevention of herbaceous and grassy vegetation from establishing within substations is vital to provide safe and reliable electrical operations. The Company will target an annual inspection of all transmission and distribution substations to identify any vegetation growing around or within the substation. Vegetation should be maintained at approximately a 10-foot distance from the perimeter of the substation fences for safety and security purposes, where land rights allow.

[46] Examples of such equipment are contained in the California Power Line Fire Prevention Guide 2021 Edition published by the California Department of Forestry and Fire Protection.

Figure D-27: VM Wildfire DSAF Substations



The Company is also completing DSAF on its transmission facilities in its service territory on a routine basis. This means that it is not necessary to include transmission DSAF as a specific mitigation program in the Updated WMP.

VM Quality Assurance/Quality Control Activity

QA/QC activity is a significant component of the Wildfire VM Program. QA/QC confirms that VM activities are being executed in the field as defined in the specifications, and to identify gaps in implementation of the WMP programs.

Public Service has established a QA/QC process to evaluate the effectiveness of the Wildfire VM Program. The QA/QC assesses VM activities in the high fire risk areas and includes documenting any trees that were missed/skipped, unexpected growth, insufficient clearances (as compared to standards and requirements), and customer refusals (not previously recorded) and tracking trends seen post completion. Results of QA/QC activities are used to adjust program activities, provide additional training where needed, and measure specification and standards adherence.

The Company's QA/QC process includes a 100 percent audit of all VM Wildfire Corridor and VM Wildfire Hazard Tree completed tree work in Tier 3 and Tier 2 areas. Planned work (or trees) that are missed or have inadequate clearances will be resolved at the cost of the VM contract vendor. All other quality issues that do not meet specifications or standards will be documented and included in the contractor report card. Pass rates for vegetation clearances or missed trees must achieve 100 percent prior to project final close out.

Contract QA/QC staff are responsible for auditing all VM field activities, while Company VM personnel are responsible for examining effectiveness of the audit vendor plus random tree crew inspections. Auditing is the primary activity function of the QA/QC vendor. There may be exceptions or limitations to meeting quality expectations in some instances due to inaccessibility of work locations and/or constraints. The contractor is accountable for providing quality work and should sign off when an assigned area/circuit has been completed and reviewed for deficiencies. The third-party QA/QC contractor who is responsible for auditing work performed in high fire risk areas should be a separate vendor from the VM work planning or VM tree pruning contractor.

C. Operational Mitigations

Operational mitigations involve the Company adjusting something about how it operates the electric system in order to reduce the risk of a utility-caused wildfire. These adjustments will be coordinated with neighboring transmission owners.

The Updated WMP includes two operational mitigations: (1) EPSS, the most sophisticated form of WSO; and (2) PSPS. Both mitigations are discussed below.

I. Enhanced Powerline Safety Settings Program

EPSS is the most sophisticated form of WSO. All forms of WSO provide for disabling automatic reclosing on relays and reclosers that are normally set to automatically reclose. More sophisticated versions of WSO enable faster (but not necessarily coordinating) trip settings for relays and reclosers that have those capabilities. EPSS is the most sophisticated version of WSO, as it has faster and coordinating trip settings and is intended to address operations in heightened wildfire risk conditions.

EPSS modifies settings in the relays and reclosers on the distribution system (both within the substation and outside the substation on the feeder) to create a wildfire-specific operating mode. When EPSS is activated, relays and reclosers are more sensitive to electrical faults and react faster to those faults (compared to normal settings in each such device). EPSS, when activated, also disables reclosing in relays and reclosers that would normally be set to automatically reclose after tripping because of a fault. Ultimately, EPSS allows for powerlines to remain in-service during periods of elevated wildfire risks, but with protection settings that mitigate the wildfire risk.

Figure D-28 shows how the distribution system reacts to an electrical fault (such as may be initiated by a tree limb falling on a power line) under normal circumstances. Under normal settings, the electrical fault causes the fuse to trip, de-energizing the line downstream. With the fuse tripping, the recloser and substation relay generally will not trip, as they are set to clear faults slower than the downstream fuses. Also, if the recloser and substation relay trip (generally for a fault upstream of any fuses), they will automatically reclose one or more times.

Figure D-28: Normal (Non-EPSS) Configuration

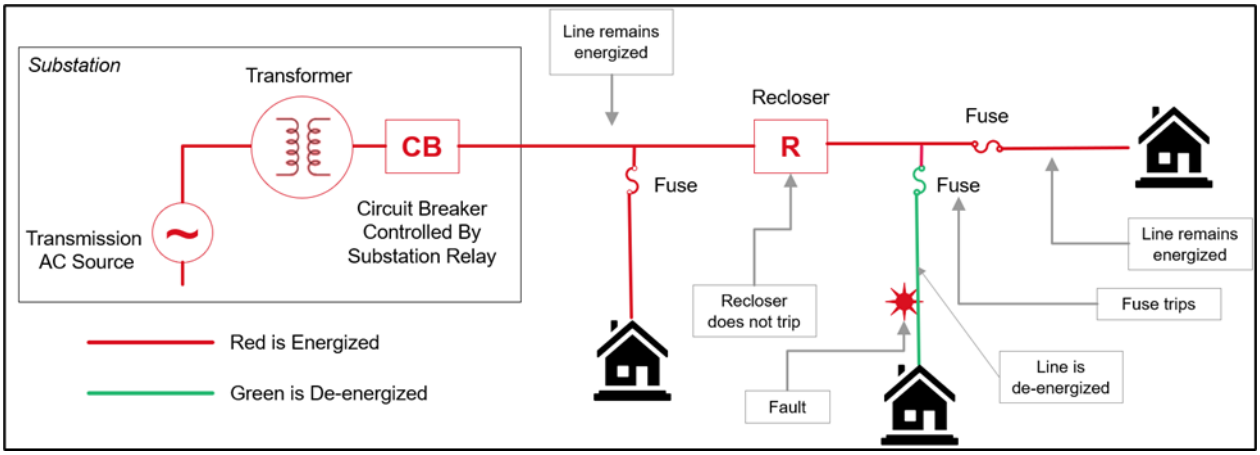
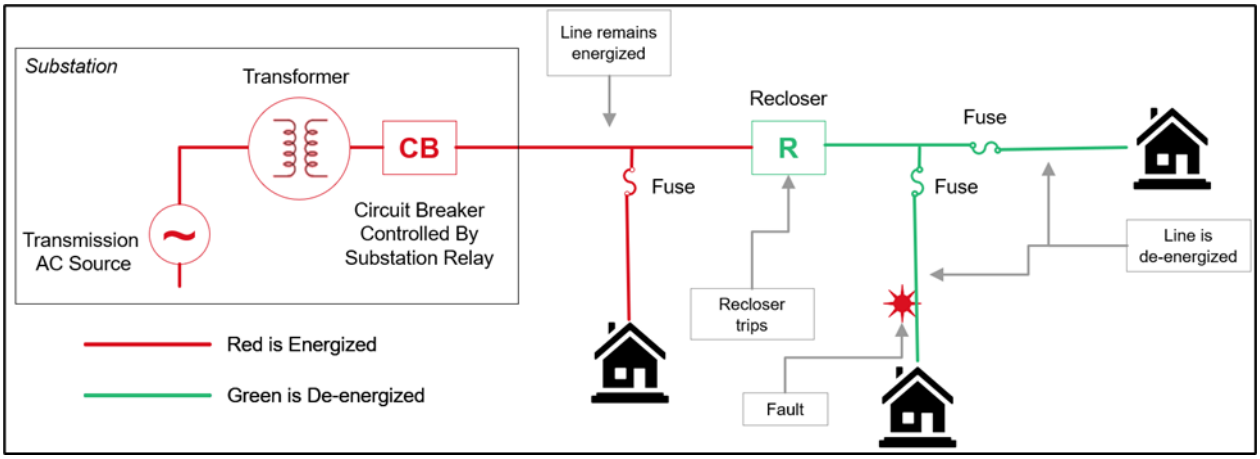


Figure D-29 shows the same fault scenario, but with the distribution system operating under EPSS. Because relays and reclosers are operating at heightened sensitivities and faster speeds, the fault generally causes the recloser to open before (or at the same time as) the fuse. With automatic re-closing disabled, all portions of the distribution system downstream from the recloser will be de-energized. However, the distribution system between the substation circuit breaker and the recloser remains energized. EPSS also provides the option of non-coordinating fast tripping when a fault occurs.

Figure D-29: EPSS Configuration



Public Service began implementation of its own EPSS pilot program under the 2020 WMP; installing it on eight feeders covering approximately 369 circuit miles of the distribution system. The Company is planning to expand EPSS as part of the Updated WMP, so that by the end of 2027, all non-undergrounded Tier 3 and Tier 2 feeders will have EPSS capability. Projected Updated WMP EPSS quantities of work are identified below, which represents adding EPSS capability to approximately 100 feeders per year, achieving 100% coverage of all 300 Tier 3 and Tier 2 feeders by the end of 2027.

Table D-18: Updated WMP EPSS Expansion

EPSS Work Categories	**2025** (Forecast)	**2026** (Forecast)	**2027** (Forecast)	**2025-2027 Cumulative** (Forecast)
Substation Relay Replacements and Upgrades	26	30	35	91
Distribution Recloser Installations[47]	300	300	300	900
Distribution Protection Studies	120	120	120	360
Non-Traditional Fault Detection Sensors	4,500	9,500	15,000	29,000

The situational awareness tools described in Section 8 will be used to forecast the potential need to enable EPSS. As noted, the primary data inputs considered for enabling EPSS may include projected/actual wind speed, relative humidity, and fuel moisture. As situational awareness capabilities mature at the Company, improved methods of forecasting and enabling EPSS will occur. This maturity may include forecasts with more geographic granularity, longer-term forecasting approaches, and overall improved data and logic to improve the risk-based decisions to implement EPSS.

EPSS and WSO implement protection settings that could de-energize more of the Company's system following an electrical fault. EPSS and WSO therefore are only activated during conditions of elevated wildfire risk. That activation can occur either by automation or manually.[48] The Company estimates that it will incur approximately $44,000 in staging costs per WSO event on average across 2025-2027, for a total of approximately $7.3 million across 2025-2027.

Distribution lines must be physically inspected if a fault is detected and a sectionalizing protective device operates during a WSO event (including EPSS events). When a recloser or breaker trips while EPSS is active, the distribution operations team will patrol and restore the outage, including initiating corrective maintenance if needed, and will document any visible cause of the trip in writing and with imagery. If there is a second trip on the same line segment within five minutes of the line being reenergized (including a trip immediately upon the line being reenergized), a review will be conducted with the distribution control center and distribution operations leadership to determine the next

[47] For planning purposes, the Company assumed an average of three reclosers per feeder, though actual installation numbers will be dependent on detailed design and engineering.

[48] WSO events require field crews to put each recloser into WSO mode at the beginning of the WSO event and to put the recloser back into normal mode at the end of the WSO event. EPSS is a form of WSO, but generally does not require field crews for activation and deactivation. The WSO events requiring pre- and post-event staging relate to WSO that requires manual activation and deactivation.

steps for restoration. Patrols and restorations after daylight hours will be at the discretion of the distribution control center and distribution operations leadership based on factors such as weather conditions, terrain and geography of the service territory, lighting, and other operational factors limiting the ability to fully assess the line. The Company has developed and implemented a process to capture the causes of outages that occur while EPSS is activated for assessment and quantification of the effectiveness of EPSS.

The Company needs to execute a conditions assessment of facilities de-energized as part of a PSPS event. This assessment includes patrolling for equipment failures, identifying hazards within facilities, and identifying any needed repairs. Once a determination is made that it is safe to proceed with restoration, the Company will re-energize affected facilities in a logical sequence.

II. Public Safety Power Shutoff Overview

The Public Safety Power Shutoff (PSPS) Plan is described fully in a separate plan document. The PSPS Plan provides an overview of the situational awareness resources, decision-making processes, and procedures for communicating internally and externally before, during, and after a PSPS event. A PSPS will be initiated during severe fire weather conditions that pose elevated risk of wildfire caused by Company equipment as a tool for use in cases where risk is not adequately reduced by other methods. When conditions dictate, the PSPS process will culminate in de-energization of those portions of Company assets that pose a severe fire risk to surrounding communities based on information from Public Service's situational awareness resources, observations, science, and experience gained from other utilities. Public Service will consider the risks and potential negative effects on its customers along with the risks and potential consequences of a wildfire caused by Company equipment when making PSPS decisions. The Company will complement a decision to engage in a proactive de-energization with robust communication and engagement efforts, supporting our customers with the information and resources necessary to limit the impacts of service outages.

D. Customer Support

The Company plans to enhance and expand its communication and engagement with its customers, stakeholders, and external partners to help manage wildfire risk across its service territory. This engagement will include road education efforts, and enhanced collaboration with other utilities and community partners.

The Company has started and will continue to conduct informational sessions and present its Updated WMP to legislators, regulatory stakeholders, public safety partners, OEMs, and members of the communities it serves. Soliciting input and support from managers of public lands, especially those overseeing high-risk areas, is also a priority.

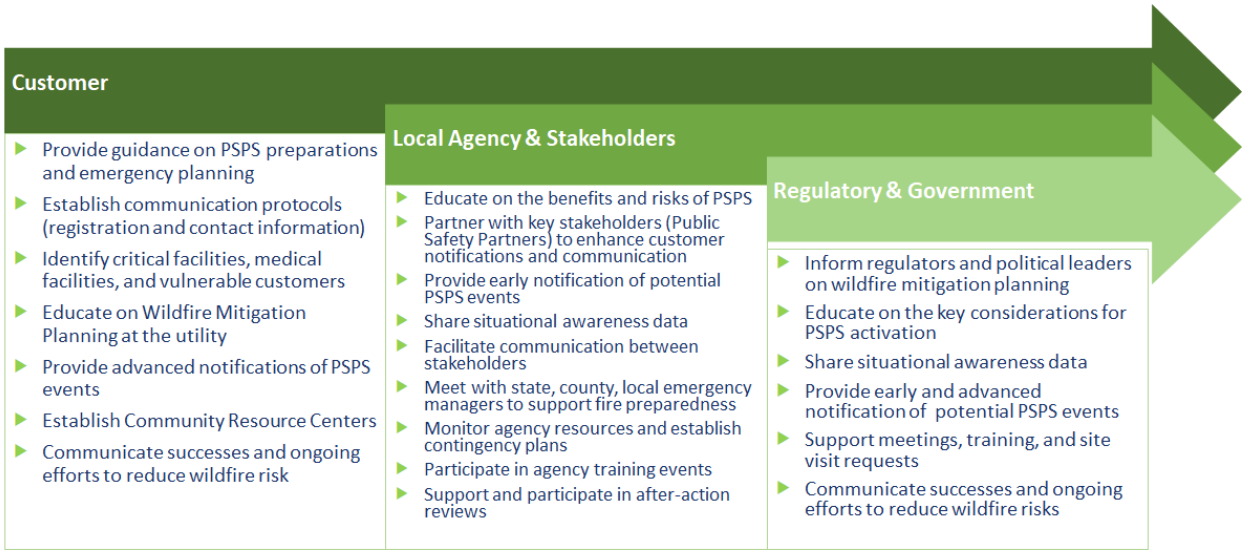
The Company continues to build its outreach, education, and engagement efforts since the filing and execution of the 2020 WMP. Stakeholder engagement is an essential element of the Updated WMP because wildfire mitigation is something where everyone has a part to play. For example, in the State of Colorado alone, there are over 400 agencies (federal, tribal, state, local) that touch on wildfire mitigation. Ongoing

communications with customers, regulators, public safety partners, government officials, academia, research institutions, peers, and industry groups has helped to formulate the Updated WMP and will be key in execution and implementation going forward.

Stakeholder engagement refers to the development of inclusive and collaborative processes for engaging various parties with a particular interest in aspects of Public Service's Updated WMP. Clear and established lines of communication with external partners are a necessity as the Company develops new programs and augments existing ones.

Figure D-30 provides a high-level overview of the communication strategy in the Updated WMP, followed by more detailed summaries of the Company's planned engagement efforts by constituent group. The Company has also developed a communications and engagement strategy to support its PSPS Plan, which is detailed in greater detail in the PSPS Plan and supporting documents.

Figure D-30: Overview of Updated WMP Communication & Engagement Strategy[49]



Beyond communications and engagement, the Company is including in the Updated WMP a new rebate offering to support certain residential customers from the impacts associated with service outages during wildfire and severe weather events.

Our customer support approaches are addressed below.

[49] The stakeholder references in this illustration are generalized, with the Company's specific definitional proposals for communications and engagement addressed by its witnesses and supporting attachments. In addition, while the Company encourages all customers to update their contact information, only certain customers such as critical customers and Qualifying Medical Customers will receive targeted advance PSPS notifications. Last, Community Resource Centers are also envisioned to be developed in partnership with third party implementers.

I. Customers and Communities

Outreach and engagement with our customers and communities is a top priority for the Company. Without their engagement, particularly those located in the top tier wildfire risk zones, our work cannot be as effective.

For this Updated WMP, the key themes of our outreach and engagement efforts are preparedness and education around the Company's wildfire mitigation efforts, improving outreach and engagement processes, and incorporating special considerations for Qualifying Medical Customers, OEMs, IQ/DI Community customers, and Critical Customers.

II. Preparedness and Education

The goal of preparedness outreach and engagement is to confirm, identify, and/or address the unique energy or preparedness requirements of our communities, particularly Critical Customers and Qualifying Medical Customers or IQ/DI Community customers during an EPSS, PSPS, or wildfire event. Although the Company has already identified many customers with unique energy requirements and has established relationships with these customers, the Company recognizes more work needs to be done to identify and address customers with unique energy requirements that may be impacted by a PSPS or wildfire event and will continue to identify and determine the functional needs or dependencies for those customers. The Company is also establishing internal processes for assigning and managing the relationship with these customers and stakeholders before, during, and after an outage or emergency event.

The Company's outreach and engagement efforts focused on preparedness are interrelated to and a subset of our broader educational efforts. Our educational outreach and engagement efforts are intended to educate customers, communities, and other stakeholders more broadly on the Company's wildfire mitigation efforts, including programs like vegetation management, wildfire safety, and PSPS. These efforts include:

- Establishing communication channels: such as the dedicated website, email contact, telephone calls, and opt-in text messaging.
- Sending letters and making outbound calls to inform customers of wildfire mitigation work in their community.
- Developing social media, blog posts, newsletter articles, and a video series to promote program initiatives and provide preparedness tips.
- Completing proactive media outreach to share timely, relevant news about our programs and initiatives and help raise awareness across our service area.
- Hosting, attending, and sponsoring community meetings and events.
- Expanding the number of annual town halls and webinars hosted in wildfire risk zones and increasing our presence at community events.
- Increasing the frequency and reach of social media campaigns across Colorado and expanding the use of various social media platforms.
- Developing comprehensive outreach campaigns regarding PSPS events.

- Developing an interactive outage map on the Company's website where customers can input their home address to an approximated geographical extent of customer impacts in a PSPS and/or wildfire event.

III. Improving Outreach and Engagement Processes

The Company will further enhance its outreach and engagement by improving internal processes supporting those efforts. Specifically, for this Updated WMP the Company is:

- Hiring a Community Resilience Manager to serve as a single point of contact for all county emergency operations centers, first responders, and other emergency preparedness and response directors and officers.
- Continuing to deploy our communications and outreach plan and improve internal coordination of engagement activities with local municipalities, first responders and community organizations.
- Participating in conferences and engaging in utility outreach and engagement focused on wildfire mitigation efforts and industry practices.
- Collaborating and benchmarking with the Electric Power Research Institute, Edison Electric Institute, national labs, and educational institutions.

IV. Outreach and Engagement with Qualifying Medical Customers, Critical Customers, and DI Communities and IQ Customers

Qualifying Medical Customers

The Company is establishing processes for identifying and tracking information for customers with particularized medical needs. Qualifying Medical Customers include Critical Care Customers, Medical Baseline Customers, and customers enrolled in the Safe For Colorado Program, which includes customers enrolled in the Colorado Medical Certification Program or Colorado Medical Exemption Program. The Company will contact all Colorado residential customers on an annual basis to inform them of the Company's medical program offerings and encourage them to opt-in if eligible. The Company is updating its medical programming by better defining the programs, including what devices are included and how these customers can navigate the opt-in process to register their information with the Company.

The Company will conduct outreach to and partner with the healthcare industry to enhance identifying and supporting Qualifying Medical Customers.

Critical Customers

The Company defines Critical Customers as "Critical Facilities," "Critical Infrastructure," and "Large Electric Load Customers" with automatic throw-over capabilities. Critical Infrastructure means those systems and assets, whether physical or virtual, that are vital to the state of Colorado so that the incapacity or destruction of such systems and assets would have a debilitating impact on public safety, public health, or economic security. This list of customers is identified in partnership with our local and state emergency managers and deemed highly critical for the health and safety of a community. It can

include state and local government infrastructure, identified power users within emergency operations centers, fire stations, smaller water treatment plants, telecommunications companies, and other local government safety infrastructure.

As explained in our PSPS Plan and PSPS Communications Plan, in advance of a PSPS or imminent wildfire event, the Company will provide emergency alerts, warnings, and reminders directly to Critical Customers 72 hours in advance of a PSPS event. Our outreach and engagement team will communicate about the event using telephone calls, text messages, and emails through a single point of contact from the Company that is assigned to designated representatives. The advance notifications will correspondingly trigger Critical Customers to activate their emergency preparedness plans and enable them to use their communications channels to share information provided by the Company. The Company will share a resource guide with Critical Customers in advance of the interruption.

IQ Customers and DI Communities

From an outreach and engagement perspective, the Company considers a DI Community to be a community that experiences higher levels of environmental related to environmental exposures such as pollution, hazardous waste, or other health risks. Specifically, a DI Community is one where:

(1) more than 40 percent of households are at or below 200 percent of the federal poverty line;

(2) more than 40 percent of the population identifies as anything other than non-Hispanic White;

(3) more than 50 percent of households spend more than 30 percent of their income on housing costs like rent or mortgage payments;

(4) more than 20 percent of the population live in households where all adults speak a language other than English; or,

(5) the community has been historically impacted by environmental racism created through a series of systemic issues, including redlining or discriminatory laws, policies, or practices and they continue to experience present-day environmental health disparities.

An IQ customer is an individual who has a household income below 60 percent of the state of Colorado's median income, below 200 percent of the relevant federal poverty level, or below 80 percent of area median income.[50]

As equity issues in the utility space have gained increased prominence in recent years, the Company has incorporated equity considerations for DI Communities and IQ customers into many programs, including this Updated WMP. The Company is and has

[50] The Company will update its definitions of IQ Customer and DI Community as appropriate to comply with Commission rules.

been committed to implementing successful programs for IQ customers and DI Communities and has implemented a comprehensive plan to engage this subset of customers. As part of its Updated WMP and in coordination with its broader equity strategy, the Company will collaborate and partner with community-based organizations like Energy Outreach Colorado, the Latino Community Foundation of Colorado, the Food Bank of the Rockies, and Mile High United Way to better understand and tailor our outreach and engagement to the unique needs of IQ customers and customers that live in DI Communities.

Specific outreach and engagement efforts for DI Communities and IQ customers will include door-to-door canvassing, expanding our media outlets to include Spanish language channels, providing all communications and materials in both English and Spanish, and ensuring an interpreter attends community meetings. Additionally, the Company's Resources. Education. Delivered. ("RED") Truck Initiative, launched in May 2023, will provide a direct route to engage and interact with IQ customers and DI Communities and provide a forum for community members to give feedback as well as ask questions about the Company's wildfire mitigation programs, energy initiatives, and other issues of interest to our customers.

The Company is also hiring a DI Community and IQ Customer representative to lead educational initiatives to increase awareness and understanding wildfire risks, emergency preparedness, and response strategies. The DI Community and IQ Customer representative will be responsible for outreach and engagement with DI Communities and IQ customers and will develop and maintain relationships with community action partners and connectors, organizations, and IQ customers and DI Communities. This includes attending community meetings, events, and other public forums to understand community needs and concerns related to wildfire preparedness and response. This position will also help develop and implement outreach programs aimed at increasing community awareness and resilience to wildfires. This includes working with local agencies, nonprofits, and other stakeholders to design programs that meet the specific needs of a given community.

V. Public Safety Partners

The next group of stakeholders that are key to the Company's successful execution of the WMP are our public safety partners and OEMs. Public Safety Partners include fire protection districts, offices of emergency response, county sheriffs, and local police departments.

The Company is meeting with and identifying these stakeholders. One example of this is when the Company held community and development meetings with Evergreen Fire and Rescue, Lake County, the Center for Climate and Energy Solutions, Pikes National Forest Shared Steward Meeting, Garfield County Commissioners, and the Two Rivers Coalitions, among others.

Public Service has also leveraged its partnership with Pano AI to build relationships with the different fire protection districts whose jurisdictions are covered by Pano cameras.[51] Pano has done outreach and onboarded 21 unique fire protection districts, offices of emergency management, and sheriff's offices in 2023. By continuing to extend the AI camera network through 2024 and beyond, we will continue to use these opportunities to build relationships and create ongoing channels of communication.

Incorporating outreach and engagement with Public Safety Partners, such as OEMs, is reflected and engrained in our communications plans, including for PSPS notifications.

Government Agencies and Other Public Partner Organizations

Approximately 50 percent of the Company's Colorado service territory includes land managed either by USFS or the Bureau of Land Management ("BLM"). Over 50 percent of the Company's Tier 3 service territory is federal land. Approximately 47 percent of Tier 2 service territory is federal land. Frequently, execution of wildfire mitigation work in land subject to federal jurisdiction requires permitting or other approval processes. In order to streamline some of these processes and create efficiencies, the Company and USFS, over an 18-month period, negotiated a comprehensive Master Operations & Maintenance Agreement. The Company is undergoing similar discussions to address wildfire mitigation or potential control lines with the BLM and hopes to enter into a similar agreement the Updated WMP.

Another way the Company is engaging with governmental agencies is through the identification of and application for funding to support its wildfire mitigation work. Xcel Energy was awarded a $100 million grant from the Department of Energy under the Grid Resilience and Innovation Partnerships ("GRIP") program to be administered from 2024-2028. In the application, the Company indicated $42 million of this was designated for projects in Colorado, and the Company would match those funds at the level of $67 million. In January 2024, the Company submitted concept papers as the first step in applying for further funds under the GRIP program and the Company will continue to pursue similar opportunities. The additional funding from the DOE would aid the Company in balancing the cost of system improvements and advancing a more resilient grid. The Company continues to seek out additional external funding to support its wildfire and extreme weather mitigations.

Research and Academia

Research and academic institutions offer new and exciting partnership opportunities for the Company. We are working hard to leverage existing relationships and develop new relationships with key wildfire research stakeholders at the Colorado State University, the National Renewable Energy Laboratories, the National Center for Atmospheric Research, and the Los Alamos National Lab.

Engagement with Other Utilities

Other utilities within the State of Colorado and throughout the Western United States are an additional source of information and collaboration regarding wildfire mitigation. Beginning in 2020, the Company sponsored the first Colorado Wildfire Summit to discuss wildfire risk and actions being implemented to mitigate that risk. This Summit has continued on an annual basis and expanded to include stakeholders beyond Colorado energy providers.

To enhance engagement, the Company started the Colorado Utility Wildfire Consortium with other utilities in the state to discuss wildfire mitigation work. This group discusses best practices, emerging technologies, and experiences gained through the work they're doing in their different geographic regions. Ongoing engagement with peers is valuable and the Company intends to continue this dialogue to evolve our benchmarking in areas such as organizational structures, risk assessment methodologies, and mitigation tools used.

Industry

Industry trade groups and conferences provide valuable sources of information. The Company is very engaged in the Edison Electric's Institute's wildfire mitigation efforts. Further, the Company is participating in a joint DOE and Electric Power Resource Institute effort, servicing on both the working group and the leadership group.

VI. PSPS Resiliency Rebates

The Updated WMP establishes a new rebate program as part of the Updated WMP, where the Company will assist certain residential customers in the purchase of Battery Energy Storage Systems ("BESS") and Vehicle-to-Home electric vehicle equipment. The residential customers include those that are income-qualified, part of the medical exemption rate, and medical certificate program customers. The rebates will assist these customers in installing and using back-up power systems to help mitigate the impacts of a proactive de-energization. Through the use of BESS and Vehicle-to-Home equipment, these residential customers will have appropriate resources available to them to prepare to meet the challenges of wildfire risk. The rebates are intended to cover 100 percent of the cost of purchase and installation of eligible equipment, and the rebate offerings will be encouraged through the Company's communication and engagement efforts.

VII. WMP Leadership, Governance, and Organization

While wildfire mitigation efforts span multiple business units, Xcel Energy is consolidating its wildfire expertise within a centralized wildfire organization. The intent of this consolidation is to have requisite wildfire-supporting roles in a standalone business unit. This consolidation and expansion will add new in-house technical capabilities in the areas of meteorology, fire science, ignition analysis, risk modeling and data analysis, communication specialists, data governance and data collection, engineers, field personnel, and operators. These additions will build out the organizational structure necessary to effectuate Public Service's wildfire mitigation efforts. As with many other

aspects of this Updated WMP, this will be an iterative process, designed to adapt as new competencies and demands change over time.

WMP Leadership and Wildfire Risk and Governance Steering Committee

Xcel Energy's wildfire organization will be led by a Vice President of Wildfire Risk Management. Other leadership positions within the wildfire organization include:

- Area Vice President, Wildfire Mitigation: Regulatory and Policy
- Director, Wildfire Strategy and Performance
- Senior Meteorologist
- Director, Wildfire Mitigation and Resilience

Each of these individuals are responsible for leading different aspects of the Company's wildfire risk management and reduction efforts.

The Company has also established a Wildfire Risk and Governance Steering Committee. The Wildfire Risk and Governance Steering Committee will be composed of the WMP leadership team and Company executives. The Wildfire Risk and Governance Steering Committee will make ongoing decisions about developing and prioritizing mitigation initiatives, with the goal of making decisions that will help prevent catastrophic wildfires, mitigate wildfire risk, and reduce customer impacts. While the Updated WMP establishes the selected mitigations, timelines, and work scope (see Section 7(E) for more information on the selection process), these programs will continually be updated in light of new information and circumstances, resource availability, and other constraints.

The Wildfire Risk and Governance Steering Committee will meet weekly or more frequently as necessary to receive presentations from internal subject matter experts. Items that may be brought to the Wildfire Risk and Governance Steering Committee for informational purposes or approval include things such as:

- Work plan reprioritizations that may impact risk reduction timelines or commitments;
- Updated Risk models that introduce new, more granular modeling capabilities, or that contain material changes to methodology or inputs, and that may impact future work plan execution;
- Approval of safety or quality improvement initiatives;
- Approval of any corrective action plans to bring program execution back into alignment with plans; and,
- Progress report on WMP program execution, ignition/outage trends requiring attention, benchmarking against other utilities.

Wildfire Organizational Support

In total, 41 new positions will support this 2025-2027 WMP from within Xcel Energy's wildfire supporting organizations. Some of these roles have already been filled while others are proposed to be added during implementation of this 2025-2027 WMP. The

table below reflects the number of proposed FTEs to support specific mitigation strategies for the 2025-2027 WMP.

Table D-19: FTE Position Growth

Mitigation Strategy	Proposed FTEs
Wildfire Risk Management and Reduction	31
Vegetation Management	4
Transmission	1
Communication	3
Integrated System Planning	2
Total:	41

Certain positions will support Xcel Energy's entire enterprise while others will be dedicated solely to Public Service. For those enterprise-wide positions, the budget for those positions has been adjusted to reflect the proportional allocation of those positions between Public Service and Xcel Energy's other jurisdictions.

Of the proposed new positions, 31 will be individuals dedicated to wildfire risk management and reduction as part of the Wildfire Risk team. The Wildfire Risk team includes positions with expertise in the following areas:

1) Risk Management, Assessment, and Analytics;
2) Wildfire Strategy and Performance;
3) Regulatory and Policy (including a dedicated outreach and communications resource); and,
4) Incident Command for Severe Risk Events

The Wildfire Risk Team also includes staffing and support for a new Wildfire Command Center to serve as Public Service's 24/7 hub for monitoring wildfire risks and processing weather, remote sensing, and other data from the Company's situational awareness programs. The Wildfire Command Center will also serve as a central location for wildfire coordination, response, and recovery efforts.

9. CONCLUSION

Wildfire risk mitigation remains an evolutionary process, where improving data analytics and successful mitigation implementation will enable deeper levels of risk mitigation. The Updated WMP demonstrates the progression and leadership of Public Service's wildfire risk mitigation program. It has been designed with complementary mitigation strategies that promote prioritization of risk reduction in an expedient, comprehensive, and reliable manner. The Updated WMP and its programs, standards, and goals are intended to protect customers, enhance the safety of Colorado's electric system, and keep the lights on while responding to a changing climate and more frequent severe weather events.

Public Service looks forward to continuing collaboration with state and federal policymakers; state, local, and tribal government officials; safety partners; community-based organizations; customers; and other stakeholders to help build a safer and more fire resilient Colorado.

LIST OF FIGURES

LIST OF TABLES

ATTACHMENT C: EMERGENCY RESPONSE PROCEDURES

General Construction Note:
Construction installations are completed according to certified engineering drawings issued for construction. Certified engineering drawings and designs for transmission lines structures are required to be per the National Electric Safety Code which defines loading cases for ice and wind based on the American Society of Civil Engineering Standards.

No hot work activities are expected to occur in El Paso County.

Fire Prevention Plan

CHANGE RECORD:

DATE	REV #	CHANGE	APPROVER NAME/SIGNATURE
5/7/2025	B	Updated for El Paso County	Kelly McBartlett (Pathway Safety Manager)
10/26/2023	A	Updated Document Control	

Purpose

The purpose of this Fire Prevention procedure is to identify hazards and seek to eliminate the causes of fire and prevent loss of life and property by fire. It provides employees with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards.

Scope

All managers and supervisors are responsible for implementing and maintaining a Fire Prevention process at their company location and for all project site areas. A copy of this Fire Prevention Procedure is available from each manager and supervisor. All managers, supervisors, and crews will go through fire prevention and mitigation training as part of the employee onboarding process.

Fire Prevention Plan

Fire safety is everyone's responsibility and while policies, plans, and procedures are all necessary and appropriate tools, there is no substitute for common sense and general awareness. All employees should know how to prevent and respond to fires and are responsible for adhering to company policies regarding fire emergencies. The following fire prevention guidelines should be followed in order to properly identify hazards and prevent unnecessary ignitions.

A. QISG will implement procedures to control accumulations of flammable or combustible waste material. Construction crews are responsible for housekeeping and cleaning up waste from the ROW. Additionally, during wire pulling activities, which create the most waste/trash on the ROW, dumpsters will be staged on the ROW for waste disposal.

B. QISG supervision will work with the job site Foreman, along with the Equipment Manager to complete regular maintenance of safeguards installed on heat-producing tools and equipment to prevent accidental ignition of combustible materials.

C. QISG management team will provide Fire Awareness training to all on-site employees.

D. Field leadership will implement, discuss and document that emergency plans are in placed in advance of work being performed.

E. Trucks mobilized for the project are required to be equipped with the following fire suppression items:
    1. Fire Extinguisher, 5 lb (minimum) ABC
    2. Shovel
    3. Axe
    4. 5 Gallon Water Can

F. Mufflers and Spark Arrestors: All vehicles, UTV and small gasoline engines shall have mufflers installed. UTV and small gasoline engines shall have an approved spark arrestor installed.

G. When equipment with internal combustible engines is parked over or near vegetation, fire blankets will be placed under any heat source to prevent ignition of fuels.
    1. Fire blankets will be visually inspected monthly
    2. Fire blankets will be rated for intended use

H. Water Trailer: water buffalos shall have a minimum 300-gallon capacity tank with a minimum of 150 gallons of water in it for fire suppression activities. Water buffaloes will be staged at project laydown yards.

I. QISG supervision will work with Customer, as deemed necessary, to implement, as applicable, additional fire safety considerations.

J. QISG Safety Managers will monitor appropriate news, weather, and fire related information from the governing authorities to assess fire hazards and communicate this information directly to our field supervision. Additionally, field crews will monitor local conditions.

K. Field crews will discuss potential fire hazards and required mitigation measures during the daily tailboard.

L. Fire Watch: The foreman shall designate a crew member as a Working Fire Watch. The Working Fire Watch can perform ancillary duties to their normal job duties. The Working Fire Watch shall ensure all required fire tools, equipment, and fire mitigation efforts are in place at the job site location. Fire Watch will extend one hour beyond completion of hot work activities.

Dedicated Fire Watch is a crew member whose only assigned job responsibility is to stand by at a job site to watch for possible or new fire ignitions while work is being performed. This person should have complete situational awareness, help to extinguish fires quickly, and stop work, when needed, due to safety concerns. The Dedicated Fire Watch must remain at the job site, 60 minutes after work has ended. A Dedicated Fire Watch will be required when hot work activities are conducted in areas covered by NWS Fire Advisories or under Very High or Extreme Fire Danger.

All crew members have the responsibility to ensure fire safety is being implemented at each job site.

M. ROW Preparation: ROW will be mowed to clear tall vegetation and grass for travel along the ROW. At structure locations, work areas will be mowed, vegetation and grass removed, and area graded. Pictures of work areas illustrating work areas included on next page.

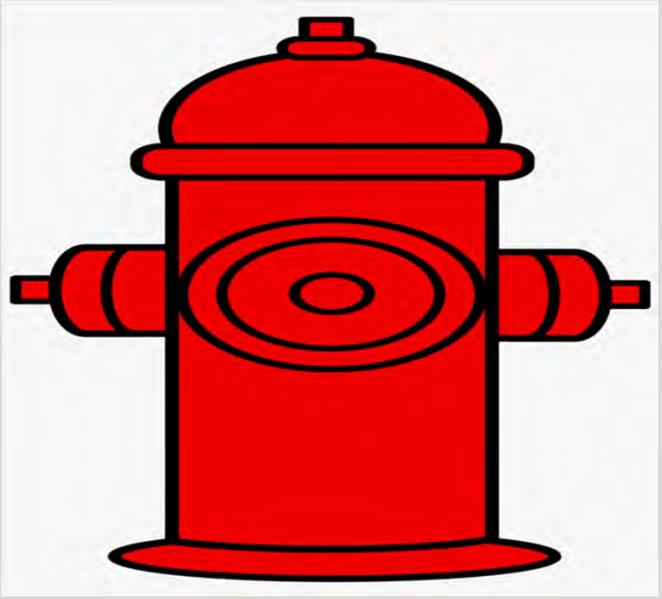
N. Smoking: Xcel Energy and QISG maintain smoke-free work areas for the Colorado Power Pathway project. Smoking is not permitted on the ROW, in any Pull Sites, Project Access Road, Laydown Yard or other property secured for the purposes of construction of the project.

O. In the event of a fire the following steps will be taken:
    1. Notify first responders
    2. Notify QISG/Xcel leadership
    3. **Notify Xcel Security Operations Center 612-330-69004.**
    4. If the fire is manageable, use tools and equipment to extinguish
    5. If fire spreads or becomes unmanageable, move all personnel to safety zone

Structure Location Photos

Slides used during in person on boarding to the Pathways Project.

Fire Prevention & Mitigation



Slides used during in person on boarding to the Pathways Project.

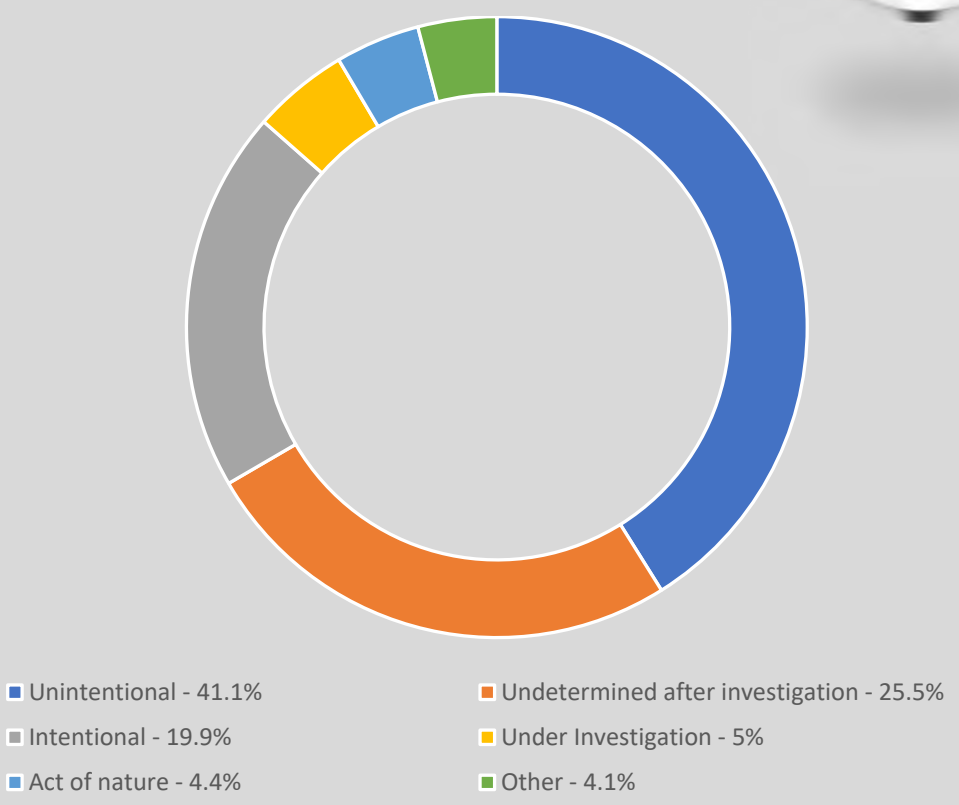
FIRE PREVENTION AND MITIGATION

- The safety plan is the fire safety authority
- Fire prevention and mitigation is element-specific
- Know your work area's fire conditions, prevention, mitigation, and actions plan
- Fire prevention plan:
- Lighting an open flame requires a permit
- Welding requires a permit
- Red flag fire danger ratings

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

- From 2019 to 2021, there was a 17% increase in U.S. wildfires. (National Interagency Fire Center)
- This U.S. Fire Administration's graphic highlights the causes of outside fires in 2019.
- In 2019 alone, there were 492,500 fires

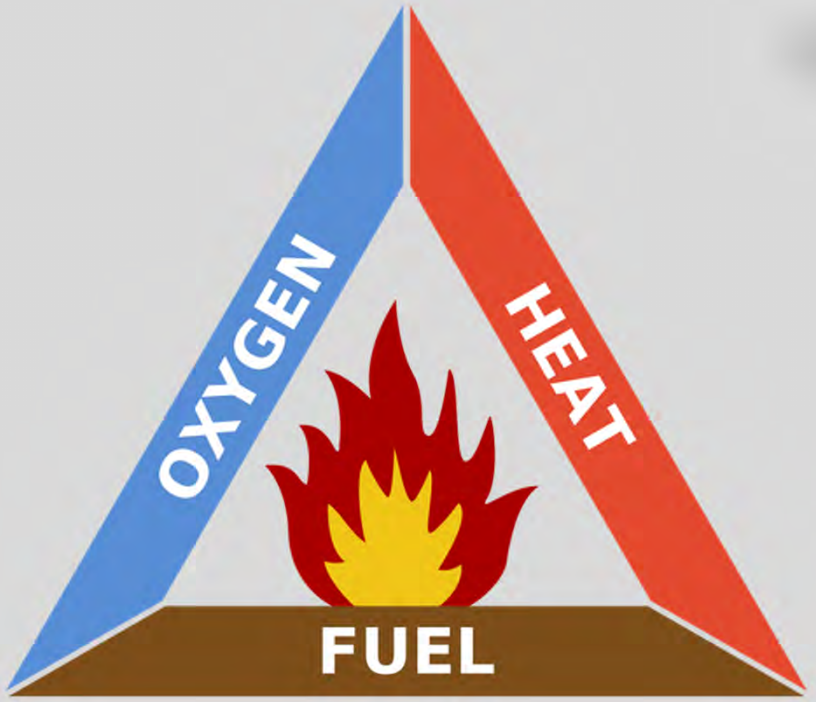


GRAPHIC BY usfa.fema.gov

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

- Three elements must be present at the same time to ignite a fire:
  - Enough oxygen to sustain combustion
  - Enough heat to raise the material to its ignition temperature
  - Enough fuel material to keep the fire alive and enable the spread



Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

- Oxygen cannot be prevented in the fire triangle but can be diminished.
- Suffocate the fire by throwing dirt or a blanket over the top of it.
- Remove oxygen with a Co2 fire extinguisher.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

- The heating element in the fire triangle can be controlled to help stop and prevent fires.
- Once at the job site:
  - Water your working area down and lay fire-resistant tarps or blankets for vehicles to park on.
- If a fire ignites:
  - Immediately cool the area with water or dirt.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

- Once at the job site:
  - Remove the surrounding area's possible fuel sources (wood, grass).
  - Wet the area down and lay fire-resistant tarps or blankets for vehicles to park on.
  - Wear fire-resistant materials.
- If a fire ignites:
  - Remove the fuel source to help stop the fire from spreading past the fire line.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION

Classes of fire

- Class A – ordinary combustibles
- Class B – flammable liquids
- Class C – electrical fires
- Class D – metals fires
- Class K – kitchen fires

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
Class D & K

- Class D – Metals
- These fires are specific to laboratories or in an industry-specific field with the metals listed below:
  - Magnesium
  - Sodium
  - Potassium
  - Titanium
  - Zirconium

Class K – Cooking / **K**itchen

These fires will involve:

Vegetable and animal oils

Non-saturated oils

Fats

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
FIRE EXTINGUISHERS

Water Fire Extinguisher

- Only to be used on a Class A fire.
- The water eliminates the fire by taking away the heat component.

- Do NOT use a water fire extinguisher on:
  - Class B fires
  - Class C fires

Co2 Fire Extinguisher

- Only to be used on Class B and Class C fires.
- Removes the oxygen and heat with cold discharge.
- Must be 3-8 feet from fire.
- Only use in a well-ventilated area.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
MULTIPURPOSE FIRE EXTINGUISHER

- Can be used for Class A, B, and C fires.
- Helps prevent re-ignition.
- Can be commonly found in businesses and on trucks when out on a job site.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
FIRE EXTINGUISHER INSPECTION

Daily inspection

Do not block the extinguisher

1. Flip upside down to aid in mixing the contents.
2. Ensure the extinguisher needle indicator is in the “full” or green range.
3. Ensure there is a pin and a breakaway zip tie. If the tie is broken, it needs to be removed from service.
4. Inspect the hose, nozzle, or horn for any breakage.

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
P.A.S.S METHOD

P.A.S.S.

- Pull
- Aim
- Squeeze
- Sweep

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:

FIRE PREVENTION AND MITIGATION: FIRE TOOLS (CONT.)

Slides used during in person on boarding to the Pathways Project.
Video not included in this document.

FIRE PREVENTION AND MITIGATION:

Slides used during in person on boarding to the Pathways Project.
Video not included in this document.

FIRE PREVENTION AND MITIGATION:
VEHICLE SAFETY

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION: **VEHICLE SAFETY (CONT.)**

- Ignition factors
  - Energy Wheel hazards:
    - Temperature: exhaust pipe heat.
    - Grass can ignite in less than a minute when exposed to 575°F.
    - Steps of prevention to take?

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION: **ENVIRONMENTAL FACTORS**

- Topography
  - Location of job site
  - Steepness of land: elevation and slope
  - Aspect (direction of slope face)
  - Features (canyons, valleys, rivers, or drainage)
  - Energy Wheel hazards:
    - Motion: fire racing upslope
    - Biological: grass, trees, shrubbery
    - Steps of prevention to take?

Fire Weather

- Weather can impact fire behavior
- Temperature, wind, and relative humidity are weather factors that affect the probability of fire ignition and behavior
- Energy Wheel hazard:
  - Temperature: hot days can create a dry environment

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION: **WORK HAZARDS**

- Electrical
  - Equipment used on a job site presents potential fire hazards
  - Energy Wheel hazards:
    - Electrical: sparks ignite a possible fire
    - Temperature: hot equipment
    - Steps of prevention to take?

Hot Work

Energy Wheel hazards:

- Temperature: hot equipment
- Electrical: equipment may release sparks
- Gravity: dropping hot equipment
- Steps of prevention to take?

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION: **EMERGENCY EVACUATION**

- Establish a safety zone (10 times the vegetation height)
- Park vehicles facing out for a quick exit
- Points to remember:
  - Know what fuel source is burning
  - P.A.S.S. and position yourself with an exit at your back
  - Assist anyone in immediate danger without putting yourself at risk
  - Active fire alarm and call 911

Slides used during in person on boarding to the Pathways Project.

FIRE PREVENTION AND MITIGATION:
IF A FIRE OCCURS

- Stay calm
- Notify local fire authorities of the evacuation process and pre-determined safety zone
- Shut down all equipment
- Get into pickup trucks
- Exit the job site in a single file to the pre-determined safety zone
- Once at the safety zone, ensure all crew members are present
- Assess crew members to see if anyone needs medical attention

CO | MI | MN | ND | NM | SD | TX | WI

Xcel Energy®

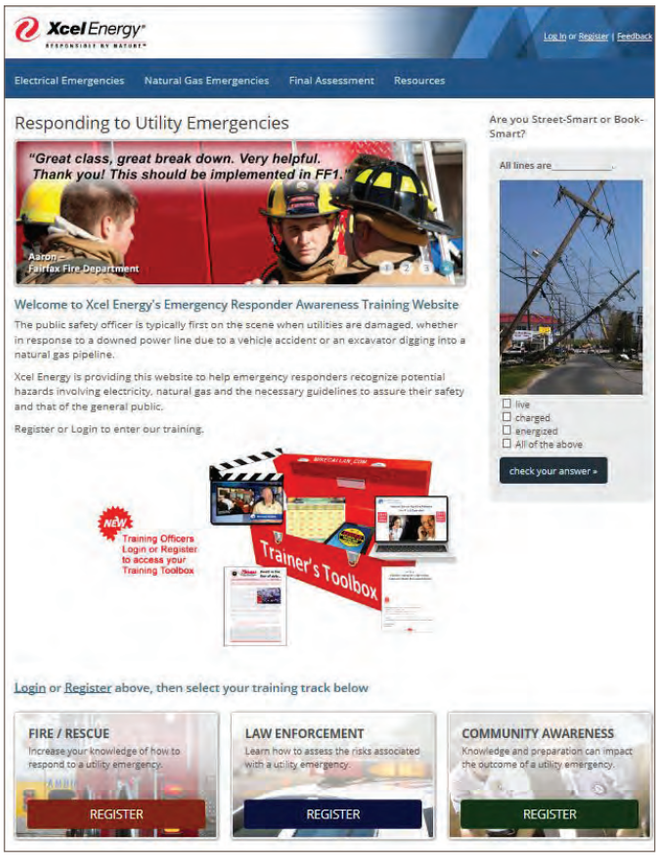
You're first on the scene. What's next?

As an emergency responder you do everything possible to keep your community safe. But if the situation involves electricity or natural gas, do you know how to keep the public and your team safe? Utility emergencies present unique dangers to recognize and handle. Knowing about them and specific actions to take can lead to better results and, ultimately, to saved lives.

Responding to Utility Emergencies (RTUE) Online

(https://Xcel-Energy.RTUEonline.com) can effectively bridge the knowledge gap. It complements your department's training program, and gives you new information. It also provides a refresher about working safely during a utility emergency.

RTUE Online offers access to effective interactive training based on national standards. It includes learning objectives and application activities to educate and engage all types of responders, including firefighters, police officers and other emergency personnel. Training can be tracked and a certificate will be offered upon completion of the course.



"Nice work, you should be proud of this valuable safety training tool … Best tool I've seen so far in my career as a fire fighter (24 years) and utility professional (31 years)."

UTILITY SAFETY CONSULTANT
AND MINNESOTA FIREFIGHTER

https://Xcel-Energy.RTUEonline.com
For more information please contact PublicSafety@xcelenergy.com.

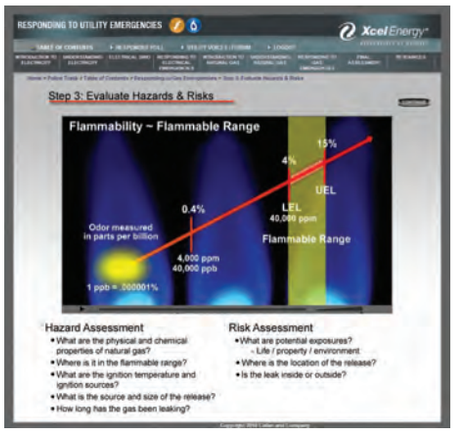
This awareness training program is provided to you compliments of Xcel Energy.

Also, RTUE Online is continually updated to ensure you have relevant, real-time information. The course incorporates interactive media and features former fire captain and nationally-recognized author Mike Callan.

About Mike Callan

Mike Callan is a 40-year veteran of the fire service, serving 20 of those years as a Captain with the Wallingford, Connecticut Fire Department. In 2013, Mike was awarded the John M. Eversole Lifetime Achievement Award to recognize his distinguished career in hazardous materials emergency response. In addition to Responding to Utility Emergencies, Mike has written numerous training and instructor guides and conducts safety, chemical and emergency response programs for industrial and municipal hazmat teams throughout the U.S. Mike is passionate about accident prevention through education, and most importantly, about saving lives.

Want to learn more? Please visit us at **https://Xcel-Energy.RTUEonline.com** or contact us at **PublicSafety@xcelenergy.com**.



Training tracks for fire/rescue and law enforcement cover:

- Understanding Electricity
- The Electrical Grid
- Responding to Electrical Emergencies
- Understanding Natural Gas
- Responding to Natural Gas Emergencies

"Hello, My Name is Chief Wes Williams with the Ruggles–Troy Volunteer Fire Department in Nova, Ohio. I am writing to let you know that this site will be beneficial to ALL emergency first responders. The site is user friendly as well as informational without losing your interest. Job well done!"

Substation fire response

The overall mission of an emergency response involving Xcel Energy substations is always to:

1. Protect lives.
2. Establish a protective perimeter around the substation, protecting surrounding structures: DO NOT enter or extinguish any substation equipment until given authorization by Xcel Energy substation personnel.
3. Assist Xcel Energy in efforts to stabilize the incident, as directed/needed.

Responders must use extreme caution around high voltage areas due to the severe electric hazards. High voltages in these sites can exceed 500,000 volts, or 500 kilovolts (kV), and operating amperages (A) of 1000A or more. Substations contain transformers, circuit breakers, switch gear, capacitors, bus bars (large diameter, non-insulated metal conductors) and large banks of batteries to control power in control rooms.

Electrical emergencies at Xcel Energy substations should be approached cautiously. Responders should wait for Xcel Energy personnel to arrive before initiating any type of offensive actions (see note 2 above). Since there is extreme risk to responders during high voltage emergencies, decisions must be made by the emergency services incident command in conjunction with Xcel Energy's incident commander. Unified command is critical in these types of operations.

Caution

Substations can have a great deal of oil. It is used for cooling transformers and as an arc suppression agent while opening a circuit breaker. In some facilities the oil reservoir can be very large, or stored indoors.

When there is a fire or damage to oil-cooled equipment, an oil spill can result. Regular hazardous materials tactics can be employed if the area is free from any energized equipment. Most utilities have eliminated the polychlorinated biphenyl (PCB) problem in their cooling oils; however, the real hazards are the flammability of heated oils and the ever-present danger of energized equipment.

Emergency numbers

IMPORTANT: These numbers are for emergency responders only. **DO NOT release these numbers** to the public! Ensure that 911 dispatchers do not transfer calls to our Emergency Response Line.

Life-threatening

Electric emergencies
800.641.4400

Natural gas emergencies
800.541.8441

Non life-threatening

Emergencies or Essential Services Outages
800.771.7300

General public numbers

Xcel Energy electric outage
800.895.1999

Xcel Energy gas emergency/gas odor
800.895.2999

Xcel Energy residential customer service
800.895.4999

Xcel Energy business solutions center
800.481.4700

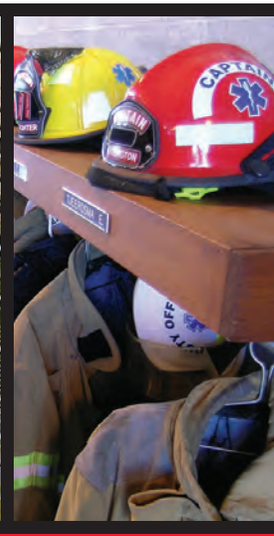
TDD/TYY (hearing-impaired service)
800.895.4949

xcelenergy.com/Safety

Xcel Energy®
RESPONSIBLE BY NATURE®

Xcel Energy®

Fire safety response for substation emergencies



Any operation involving Xcel Energy substations requires de-energizing the affected equipment and isolating of the surrounding area. If entry is deemed necessary by a unified command team, emergency personnel should be guided by Xcel Energy substation electricians.

Unified command at utility emergencies

In large incidents, it is common to use a modified incident command structure, called unified command, whereby representatives from both the emergency services command and utility companies work together. They share information and coordinate personnel to develop an overall action plan that best solves the problem. The unified command team develops an incident action plan that uses agreed-upon strategies and tactics to accomplish the mission.

In high voltage emergencies involving an electric substation or a generation plant, the unified command process is the only way to guarantee success and assure the safety of all responders and utility personnel at the scene. Unified command at utility emergencies provides a joint method for incident management teams to:

- Determine incident priorities and identify strategic goals
- Select tactics for achieving the strategic incident goals and priorities
- Ensure joint planning for objectives and tactical activities
- Allow joint tactical operations to be conducted
- Maximize the use of all assigned resources
- Provide a method for resolving conflicts among the team players

Decision making for high voltage/substation emergencies

The initial task during high voltage emergencies involving Xcel Energy substations is to determine the tactical action plan. This is done by assessing the incident's potential. The incident commander (IC), based on input from the Xcel Energy, should estimate the likely outcome of the emergency and select the overall operating strategy to favorably impact this outcome.

Pre-planning for substation emergencies will help identify response strategies and tactics, as determined by representatives from both the emergency services and local utility companies, like Xcel Energy. The absence of a preplan for a substation or generation plant emergency raises the risk of disaster and injury.

Pre-planning questions

What type of incident is it?

Is it a generation substation or distribution substation incident? Is the equipment visible from the outside, or is it inside a surrounding wall or building?

Are all safety considerations identified?

Have all electrical safety hazards or considerations associated with the event been identified? Has the site been de-energized and verified by Xcel Energy substation electricians? Can the emergency area be isolated from electricity, and is it of a magnitude that would allow operations without fear of runoff, steam or extinguishing agent contacting energized equipment and causing an arc?

Is there an electrical hazard still present?

Even though the immediate area has been de-energized, equipment nearby may remain energized.

What is the location of the incident?

Is the substation in a rural or remote outside area (perimeter chain link fence), in a populated area (perimeter "fence" limiting view inside), or in the heart of the city (potentially inside a building)?

What is the external public impact?

Has Xcel Energy addressed the informational needs of the emergency services, the impact on the public and what will be necessary to lessen the public's fear, imposition and loss of power? Xcel Energy's communications team is ready to respond.

Are there any other hazards present?

Could there be an explosion, structural instability due to earthquake, mechanical equipment or hazardous materials present. In many substations there is combustible oil used to cool the circuit breakers and transformers. This hazard can create large flammable liquid fires outside and inside the substation.

Can the incident escalate?

What could possibly happen that would make this incident worse and has it been addressed? Can oil in transformers ignite or explode? Will the oil flow through duct openings or travel to lower floors?

Strategy and tactics for substation emergencies

Strategy is the overall goal of the response effort. Strategies are general in nature, such as life safety, incident stabilization, environmental impact and utility service restoration. Examples of common strategic goals at utility emergencies could include the following:

- Rescue (if possible and can be done safely)
- Public protective actions (isolate downed wires, arc safety and downwind evacuation)
- Preventing cooling oil from impacting the environment
- Controlling the spread of oil around the substation
- Fire suppression and control
- Safety during restoration operations

Tactics are action specific and they are implemented to achieve the strategic goals. Tactics could include:

- Protecting in place vs. evacuating
- Use extinguishing agents rather than water spray
- Cooling exposures from radiant heat

Operational modes

Mitigating a utility emergency must be implemented in an overall operational mode. The three modes are non-intervention, defensive and offensive. Criteria for evaluating operational modes include:

- Level of available resources (e.g. personnel and equipment)
- Level of training and capabilities of emergency responders
- Potential harm created by the incident

Nonintervention

"No action" is taken. The risks of intervening are unacceptable when compared to the dangers of fighting the electrical fire. All personnel are withdrawn to a safe location.

Defensive

Conditions indicate that the defensive actions chosen will buy time, enabling the response effort to be directed towards limiting the overall spread of the problem.

Offensive

The offensive mode must never be initiated without Xcel Energy substation electricians present to advise the responder. All operations must be done in conjunction with, and under the direct supervision of substation personnel.

Health and Safety Plan (HASP)

Colorado's Power Pathway

Segment 5

2025

Table of Contents

Contact Info

Customer Contacts	Name	Phone	Email
XCEL Energy Superintendent	Stephan Grenier	812-746-7011	stephan.grenier@xcelenergy.com
XCEL Energy Project Engineer	Joshua Peterson	608-469-0216	joshua.g.peterson@xcelenergy.com
XCEL Energy Project Manager	John Geiger Sascha Archie Brandon Bubenik	303-437-4110 718-869-4118	john.c.geiger@xcelenergy.com sascha.w.archie@xcelenergy.com brandon.bubenik@xcelenergy.com
Land Rights		303-285-6533	jennifer.l.chester@xcelenergy.com

QISG (Quanta Infrastructure Solutions Group)	Name	Phone	Email
Program Manager	Luke Moore	217-480-7798	lmmoore@quantaisg.com
Director of Operations	Adam Bittner	614-404-7913	adam.bittner@quantaisg.com
Project Manager	Bryan Howe	346-510-7653	bryan.howe@quantaisg.com
Asst. Project Manager	Denise Brozovich	720-724-5763	denise.brozovich@quantaisg.com
Safety Manager	Kelly McBartlett	346-330-0172	kjmcbartlett@quantaisg.com
Project Controls	Brandon Dittel	763-482-1450	brandon.dittel@quantaisg.com
Environmental	Ginger Horn	214-497-9906	gchorn@canacre.com
Material Manager	David Wiedemann	865-771-0077	david.wiedemann@quantaisg.com

PAR Electrical Contractors, LLC	Name	Phone	Email
VP Western Region	Brett Staehr	816-890-1843	bstaehr@parelectric.com
Superintendent	Mark Dalton	720-417-3831	mdalton@parelectric.com
Safety Coordinator	Bob O'Neil	989-506-0037	roneill@parelectric.com
Fleet Manager	Mike Sells	303-901-8016	msells@parelectric.com
Tool Manager	Steve Paeper	303-356-5148	spaeper@parelectric.com
Operations Manager	Brian Mueller	720-391-0239	bmueller@parelectric.com

Subcontractors	Name	Phone	Email
Sanitation	TBD		
Waste/Trash	TBD		

Project Details

Revision Date:	03/04/2025
Contractor Company:	PAR Electrical Contractors, LLC.
Project Name:	Colorado Power Pathway Segment 5
Project Address:	**PAR Office Location** 815 2nd St, Limon, CO, 80828 **Project Location** Sandstone Substation to Harvest Mile Substation
Mobilization Date:	April 2026
Project Duration:	4/2026 to 2/2027
Workdays & Hours:	5 days a week 10 hour days. Subject to change.
Voltage(s) Present & MAD:	345kV
Project Scope:	**Pathway Segment 5 consists of 125 mile of new construction 345kv line from Sandstone Substation to Harvest Mile Substation** **Conductor:** 12.72ACSR **Shield Wire/OBGW:** 0.555OBGW
Subcontractor(s) Project Scope:	

Purpose

This site-specific Health and Safety Plan (HASP) aims to provide a management approach for identifying, evaluating, analyzing, and controlling workplace hazards and work area emergencies. The intent of this program is to:

- Provide a safe and healthy working environment for PAR employees.
- Provide a pre-planning tool for employees to control workplace and work area emergencies.
- Meet the requirements of CFR 29 1926.35.

Reference: PAR Safety Manual addresses the safety, health, and environmental issues in greater detail.

Review and Updates

The HASP is designed to be "site-specific" and shall be reviewed and updated by the Project Safety Professionals as necessary. An example of an event that would warrant a review would be a change in project management, a significant change in the scope of the work, and/or when serious safety concerns arise that were not initially addressed in the plan. Updates shall be communicated to all affected crewmembers.

Emergency Action Plan

All job sites must have emergency communication and an emergency response plan communicated and understood by all Contractor and Subcontractor employees. The plan shall include, at a minimum:

- Emergency Contacts
- Location and Name of Local Emergency Services
- On-site communication methods (cell phone, radio, satellite phone, etc.)
- Location and directions (including maps) to the nearest medical facility
- Procedure to follow in the event of an emergency

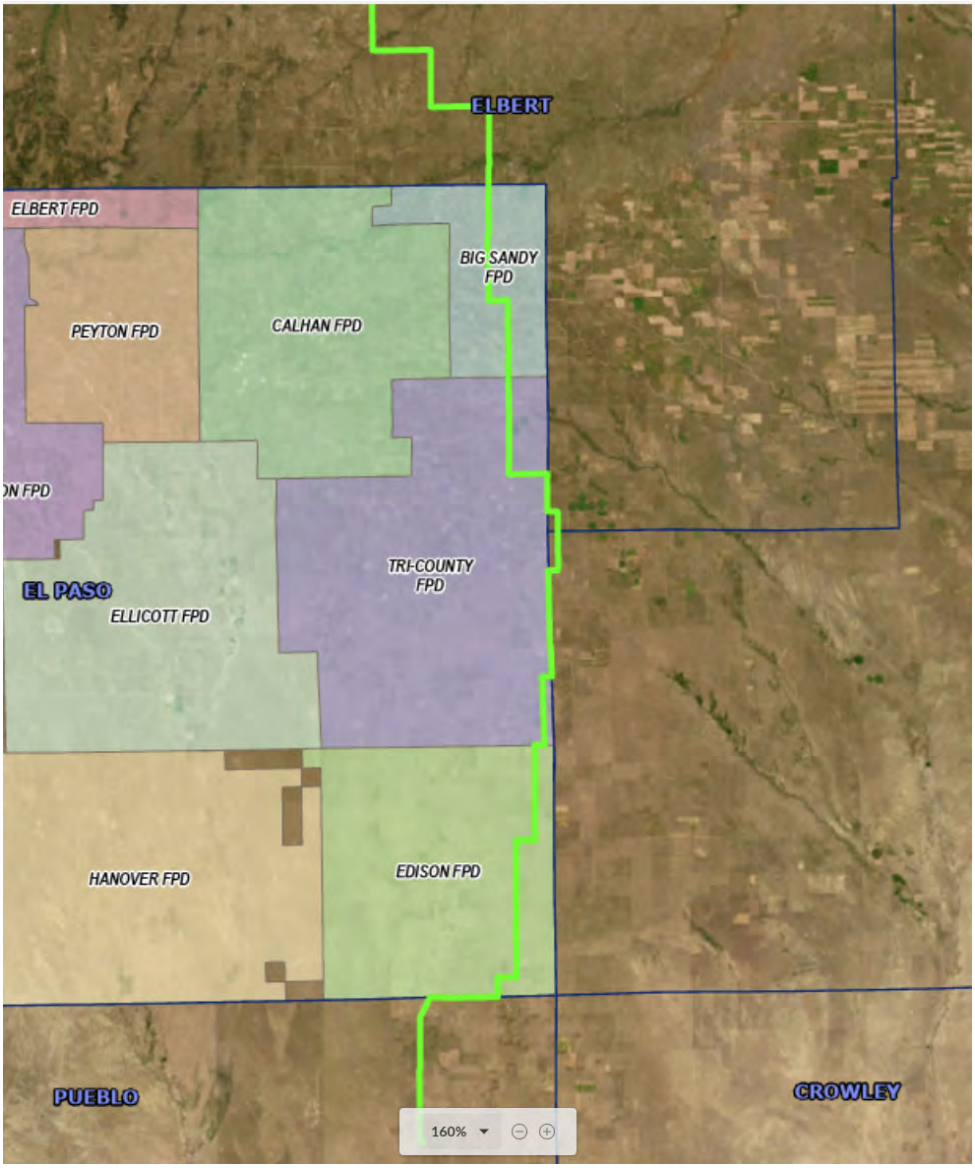
A minimum of two currently trained persons in First Aid and CPR will be present for each crew.

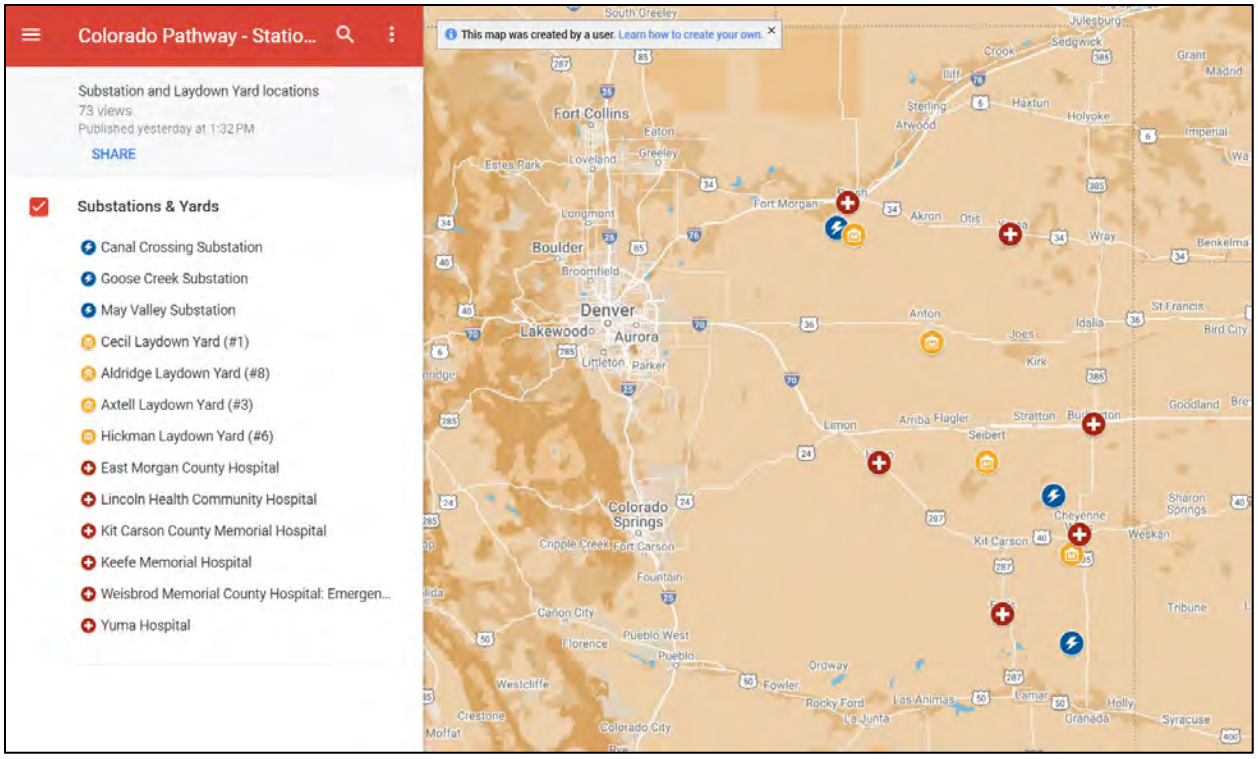
Crews will have access to the findERnow App.

Emergency Contacts		
NOTE For Persons Using GPS Units: In some cases, the address that is entered may not take you to the desired destination. Always verify that your unit is taking you to the desired location. You may need to drop a pin and save the location into your GPS unit.		
Name	**Address**	**Phone**
Hospital / Medical Facility El Paso County (Segment 5)		
UCHealth Falcon Medical Center	11605 Meridian Market Vw, Ste 184, Falcon, CO 80831 (30-60 Minutes based on Location)	719-364-9560
Hospital/Medical Facility, Pueblo (Segment 5)		
Common Spirit St Mary Hospital	1008 Minnequa Ave, Pueblo, CO 81004	800-228-4039
Local Police / Sheriff		
El Paso County Sheriff's	7 East Vermijo Avenue Colorado Springs, CO 80903	719-520-7100
Pueblo County Sherriff's Office	909 Court St, Pueblo, CO 81003	719-583-6125

Emergency Action Plan

Fire & Rescue Squad		
Tri-County Fire Department	590 N Rush Rd, CO 80833 1.5 miles	911 or 719-478-2345
Big Sandy Fire Protection District	219 Sioux Ave, CO 80835 1 mile	911 or 719-541-2883
Edison Volunteer Fire Department	14550 Edison Rd, CO 80864 4 miles	911 or 719-390-5555 (El Paso Co Sheriff's Office Communication Center)

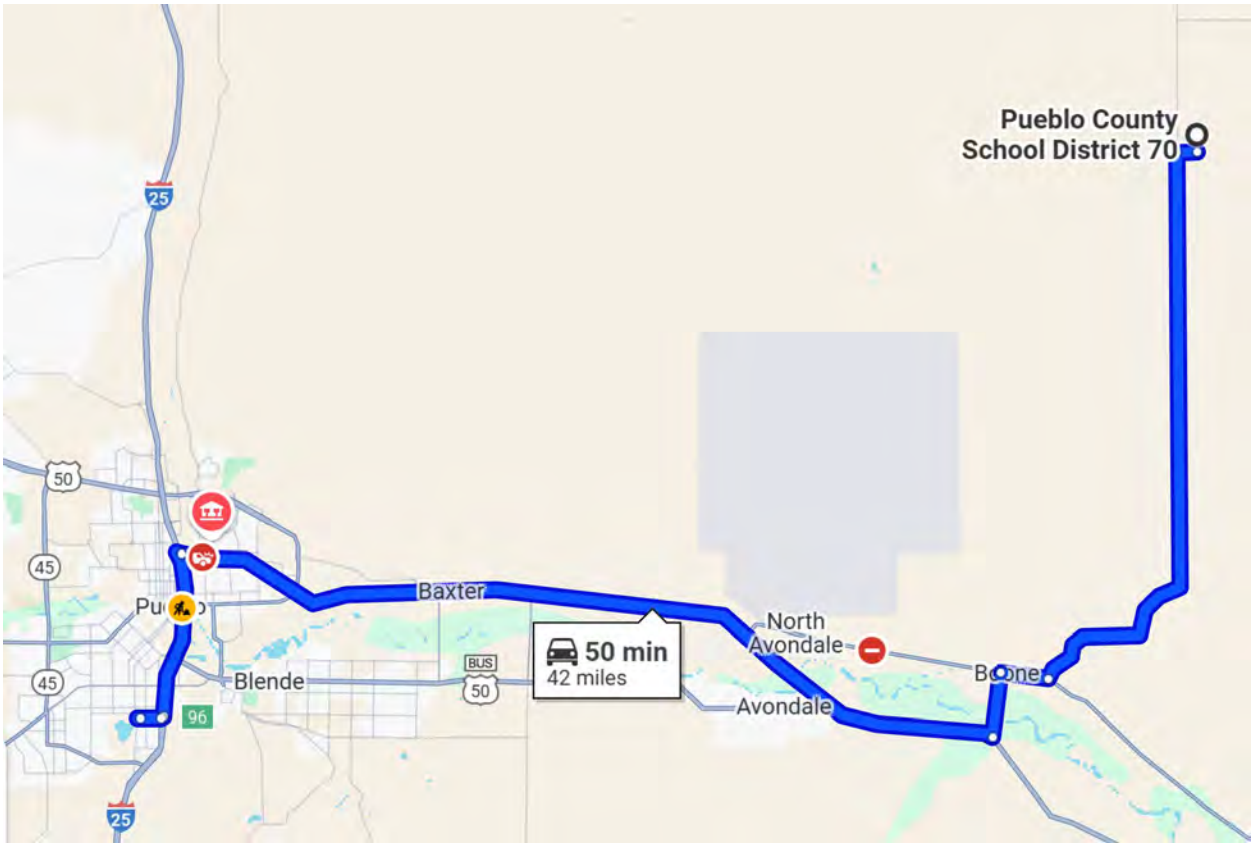




Segment 5 “TBD Yard” to Hospital

Yet to be determined laydown yard will not be located within El Paso Co.

Segment 5, “Hodges Yard” to Common Spirit St Marys Hospital



Pueblo County School District 70
Colorado

- Take Boone Rd to US-50 W
  22 min (17.3 mi)
- Continue on US-50 W to Pueblo. Take exit 96 from I-25 S
  25 min (24.1 mi)
- Continue on Minnequa Ave to your destination
  2 min (0.6 mi)

CommonSpirit St. Mary-Corwin Hospital
1008 Minnequa Ave, Pueblo, CO 81004

Segment 5 "TBD Yard" to Hospital

Yet to be determined laydown yard will not be located within El Paso Co.

Contractor Event Reporting (CER) Guidelines

Refer/reference Contractor Reporting Procedures

Incident/Event Response and Reporting Guidelines

If you are involved in, witness, or discover an incident/event:

- Assess the scene and verify that it is safe to provide help.
- Check the scene for any injured person(s) and assess their status.

  The actions in the bullet points may happen simultaneously depending on available help (personnel), event assessment, and the status of individuals.

  - If the scene cannot be safely entered or secured so that it can be entered, contact the designated emergency contacts, your next inline management/local safety personnel, and **911** for life-threatening Conditions.
  - If it is safe to enter and the event results in an injury(ies), CPR and First Aid should be given. Contact the designated emergency contacts, your next inline management/local safety personnel, and **911** (for life-threatening Conditions).

Complete appropriate post-incident forms and a person trained in Reasonable suspicion needs to complete the Reasonable Cause/Red packet. If you have any questions, consult your local Field Safety Coordinator or Safety Manager/Division Management.

Vehicle Incident (in a company vehicle)

- When involved in a vehicle incident, remain at the scene. Check yourself for injuries and the vehicle for damage, and if possible, pull to a safe area and **call 911.**
  - Follow other applicable post-incident procedures as needed. If you have any question consult your local Field Safety Coordinator or Safety Manager/Division Management.
- If it is safe to do so, check the status of others that may be involved at the scene to give emergency response a better overall picture of the incident.

- Take photographs of the vehicles, scene, and information given to you by others, like their insurance, registration, and license, if you are able to exchange information. If you are unable to exchange information because emergency services are collecting it or because of injuries sustained at the scene, request a case number from the officer(s) on the scene or from the local police station.
- If the owner is not present, attempt to locate them or leave contact info.
- Notify your supervisor and safety as soon as possible to initiate an incident response.
- Fill out the "Driver Report of Vehicle Accident" form.

Note: Persons involved in, or suspected to have been involved in, an incident resulting in injuries to the head, spine, or other injuries that if the individual were moved could cause life-threatening damage, should not be moved. This may include, but not be limited to, persons involved in a fall to a lower level. First Aid and CPR should be given as needed and examined and transported by Emergency Response Personnel to a medical facility.

Media Relations

If the news media arrives on the scene of an incident, contact your supervisor immediately.

Do not answer questions or give statements, on or off the record. Refer all questions/ inquiries to the senior member of the PAR management team on site.

Only the authorized PAR representatives shall answer any questions or make any statements.

Fax all inquiries to:
Fax: (816) 691-4242
Vice President of Safety and Environmental Compliance
PAR Electrical Contractors
4770 N. Belleview Ave Suite 300
Kansas City, MO 64116-2188

Other Incident Scenarios

Several unplanned emergency events have been identified and guidance has been listed to help provide safe direction on identifying, communicating, executing, and following up on unplanned events. Depending on the situation PAR Electrical Management will determine if this Incident Response Guidance needs to be initiated

Discovery of Unknown Utilities: In the event that unknown utilities are discovered, immediately cease all operations and notify Project Management. This includes but is not limited to foundations, underground pipelines or storage tanks, conduits, or other unidentified structures.

Discovery of Suspect Materials: In the event that a suspect material is discovered, immediately cease all operations and notify Management. Suspicious materials include but are not limited to, free petroleum products in soil, unmarked drums or waste containers, underground storage tanks,

unexploded ordinance, or other suspicious materials. Do not disturb the suspect materials. Keep clear of the area. Management will give directions and contact the proper authorities.

Incidents involving or affecting multiple Persons
As soon as possible after an emergency, the foreman (or designee) should gather the crew at the rally point and take a roll call. The individual taking roll needs to visually confirm the person(s) being accounted for. The day's Tailboard (or other employee tracking mechanism) should be used. If multiple contractors are on site each crew should conduct a separate roll call and report their findings to Project Management. If an employee is unaccounted for, Project Management must notify emergency services. Never re-enter an emergency area to find a missing employee. No one, including non-essential employees may be released unit Project Management gives an "all-clear."

Remote Locations
Some job sites may be in remote locations lacking a formal address, not visible from the road, or difficult to reach by vehicle. If these characteristics apply, during the daily tailboard the Foreman will assign emergency duties to competent employees and communication methods will be established. In the event of an emergency, an employee shall be present at the access point near a known address to place an obvious marker, such as a cone or flag, and have knowledge of how to reach the work site promptly to assist emergency services.

Bloodborne Pathogens are microorganisms carried by human blood and other bodily fluids that can cause disease. These pathogens include but are not limited to HIV/AIDS, Hepatitis B &C, malaria, and syphilis. Any materials such as bandages, clothing, gloves, gowns, or tools that have come into contact with blood or other bodily fluids are considered infectious.

- All blood or other potentially infectious materials shall be considered infectious regardless of the perceived status of an individual
- In areas where blood or bodily fluids are present, such as the site of an injury or where the injured report, there is to be no eating, drinking, application of cosmetics or lip balm, smoking, or handling of contact lenses.
- Employees coming into contact with infectious fluids shall wear appropriate PPE and dispose of infectious waste/materials in a regulated and leak-proof container for handling, storage, transport, and disposal.
- All procedures for handling the injured or infectious materials are to be conducted to minimize splashing, spraying, splattering, or generation of droplets of infectious body fluids.
- Contaminated hard surfaces or equipment shall be disinfected with an appropriate germicide.
- Employees having come in contact with infectious materials must wash hands or other body parts following exposure to reduce the risk of infection and transmission. Any infected clothing should also be removed and properly cared for. Keeping a spare set of clothing for emergencies is always recommended.

Medical Supplies

PAR vehicles shall be equipped with well-stocked first aid kits and a means to summon additional support. PAR foremen vehicles are typically equipped with AEDs. During the Job Briefing/ Tailboard, the foreman shall provide the following:

- Physical Job Location
- Location of medical supplies
- Emergency Contact Numbers (i.e., 911)
- Location of nearest hospital/ medical facility

Hazardous Substance Release

Definition of Hazardous Materials:

The Occupational Safety and Health Administration (OSHA) define a hazardous material as "any substance or chemical which has been determined to be either a health hazard or a physical hazard."

Hazardous materials include, but are not limited to, chemicals that are:
- Carcinogens
- Irritants
- Corrosives
- Combustible
- Flammable
- Oxidizers

The accidental spill of hazardous material must be handled by qualified personnel only. Employees must contact emergency services immediately to report a spill and follow the below steps:

- Do not put yourself in harms way. Understand the hazardous substance before attempting clean-up
- Contact 3E at 1-800-451-8346 for SDS information.
- Instruct others in the immediate area to vacate the contaminated area immediately. Upon leaving the contaminated site, close doors and, if possible, prevent entry into the area.
- Inform emergency services of the location of the spill and, if possible, the chemical and amount spilled.
- If possible, remove ignition sources and unplug electrical equipment in the immediate area. Do so only if you are not in danger.
- If employee(s) have been exposed to a hazardous material, they should be instructed to remove contaminated clothing immediately and directed to the nearest safety shower/eye wash station. The affected area should be rinsed for a minimum of 15 minutes.
- If employee(s) are injured, move the victim from the immediate area if this can be done without further injury to you or the victim.
- Await direction from emergency services.
- Do not enter the contaminated area until emergency services have given the all-clear.

Release of Liquid Waste: In the event of a liquid waste release, cease all operations notify Project Management as soon as possible, and make every attempt to safety control, isolate, and limit exposure to released material(s) before evacuating the affected area. If attempts to control, isolate, and/or limit the release cannot be achieved safely, keep clear of the area. Management will give further direction as needed.

Spill or Release of Fuel: Spill kits shall be available as needed before starting work. A piece of equipment must always be supervised during fueling. In addition, fuel nozzles shall be equipped with automatic shut-off valves. Drip pans or other devices shall be used during maintenance operations. If a spill or release occurs, isolate the source as soon as possible. Once the source of the release has been isolated, an attempt should be made to contain the spill. If this is not possible, keep clear of the area. Management will give further direction as needed.

When a Large Chemical Spill has occurred:

- Immediately notify Supervision.
- Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.)
- Secure the area and alert other site personnel.
- Do not attempt to clean the spill unless trained to do so.
- Attend to injured personnel and call the medical emergency number, if required.
- Call a local spill cleanup company or the Fire Department (if the arrangement has been made) to perform a significant chemical (e.g., mercury) spill cleanup.
- Evacuate building as necessary

When a Small Chemical Spill has occurred:

- Notify Supervision.
- If toxic fumes are present, secure the area (with caution tapes or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the SDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.
- Review the general spill cleanup procedures.

Spill Response Quick Guide

CONTROL	NOTIFY	CLEAN-UP
Initiate immediate actions: • Follow proper safety procedures • Stop leak, shut off equipment, close valves. • Remove all non-essential personnel. • Use a container or absorbent pad to catch leak or spill-prevent contact with soil. Use speedy dry, sorbent socks, sand, or dirt berm to prevent the spread.	CALL Safety Coordinator Provide the following • Location or structure# • Material(s) involved • Quantity spilled and maximum likely release • Time of release/discovery	• Place contaminated soil & absorbents into labeled containers, or cover stockpiled soil with plastic sheeting. • Restore the affected area. • Decontaminate tools & equipment used to clean up. • Arrange for proper disposal of any waste materials. If necessary, PAR will employ a contractor for spill clean-up.

Environmental Impact Control Matrix

Significant Aspect	Potential Impact	Controls in Place
Equipment Leaks and Spills	Water Pollution Soil Contamination	Equipment is equipped with spill kits Contaminated soil shall be removed and sent out for disposal Management and utility will be informed of all large spills
Disposal of Lead Containing Materials, and Wire	Water Pollution Soil Contamination	These materials will be separated and turned in to the nearest utility work center for disposal
Human Waste	Water Pollution Soil Contamination Nuisance	Portable bathroom facilities shall be provided in the show-up for employee use
General (non-hazardous) waste	Landfill/ Waste Disposal Nuisance	All show- up sites are equipped with a dumpster for non-hazardous waste disposal
Work in designated wetlands	Water Pollution Soil Contamination Habitat Degradation	Equipment will be utilized at a minimum Worksite shall be cleaned upon the completion of work. All tire ruts will be raked and area returned to pre-work state Applicable permits will be obtained
Impact on Protected Wildlife	Habitat Degradation	Crews will participate in training on local protected wildlife Environmental team will identify areas containing protected wildlife and demarcate them to alert crews working in these areas If a protected animal is found on the worksite, work will cease until it is safe to continue

Hazard Communication

Precautionary measures can be taken to mitigate the exposure to hazards involving hazardous substances. Employees should perform these measures and report any unsafe situations to their Supervisor or Safety Coordinator.

PAR is committed to maintaining a clean and healthy environment. PAR integrates environmental values into it's the decision-making process, by considering the environmental impacts of activities and finding reasonable alternatives to those actions. All employees shall be given awareness training on environmental policies, and in containment/ site cleanup. Employees have the right to understand the

chemicals and the measure it takes to safely work with them. Always know and understand what you are working with before you work with it.

- Leaks and spills shall be contained/ cleaned immediately upon discovery. In the event the material cannot be cleaned by the employees on-site. An approved environmental cleanup contractor shall be brought in. A containment area shall be established to protect the public and prevent the further spread of the contamination.
- All PAR vehicles shall be equipped with a well-stocked spill containment/ site cleanup kit.
- All spills and leaks shall be reported to the on-site supervisor. In the event it is not possible to contain or effectively clean the exposed area the General Foreman and Safety Coordinator shall be contacted. The Safety Coordinator will make the appropriate arrangements to clean the site, and inform the appropriate members of management and the local utility.
- When it is required for work to be completed in a designated wetland, care shall be taken to limit the impact of the work being performed on the site. Upon the completion of work, care shall be taken the return the site to its original state.
- If a spill occurs, immediate steps will be taken to barricade the spill from affecting running streams or wetlands.
- PAR recognizes that a primary part of its environment strategy is sustainable waste management and as such recognizes its responsibility to recycle materials wherever possible.
- PAR works to minimize waste, especially hazardous waste, and whenever possible recycle materials.
- PAR will dispose of waste though safe and responsible methods.

Safety Data Sheet

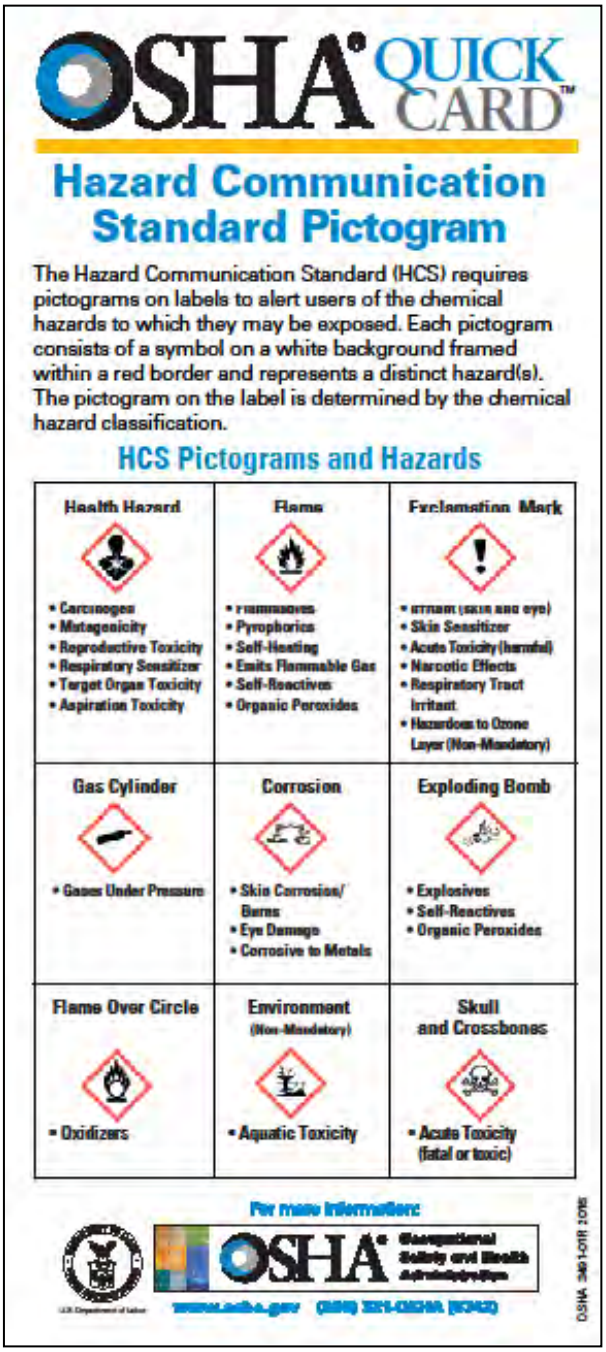
Safety Data Sheet Compliance
Fax on Demand System Contact:
3E Company 1-800-451-8346
24 Hours a Day, 7 Days a Week

4920 Carroll Canyon Road
San Diego, CA 92121
Fax: (619) 677-0270

Information Needed When You Call:
Facility Name: PAR
Product Name:
Product Number:
Manufacturer Name:
UPC Number:
Or contact Adam Parker 720-951-6130
DO NOT fax emergency requests.

The internet is it another great resource for chemical information. In your web browser type in "SDS and the chemical name" typically a Pdf. document of the SDS sheet will be found for you to reference.

Attached are a few OSHA Reference cards to help with understanding chemical labeling and SDS sheets.



OSHA® QUICK CARD™

Hazard Communication Standard Pictogram

The Hazard Communication Standard (HCS) requires pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

Health Hazard	Flame	Exclamation Mark
• Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	• Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	• Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder	**Corrosion**	**Exploding Bomb**
• Gases Under Pressure	• Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	• Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle	**Environment** (Non-Mandatory)	**Skull and Crossbones**
• Oxidizers	• Aquatic Toxicity	• Acute Toxicity (fatal or toxic)

For more information:

OSHA Occupational Safety and Health Administration

www.osha.gov (800) 321-OSHA (6742)

OSHA 3637-10R 2015

OSHA® QUICK CARD™

Hazard Communication Standard Labels

OSHA has updated the requirements for labeling of hazardous chemicals under its Hazard Communication Standard (HCS). All labels are required to have pictograms, a signal word, hazard and precautionary statements, the product identifier, and supplier identification. A sample revised HCS label, identifying the required label elements, is shown on the right. Supplemental information can also be provided on the label as needed.

For more information:

OSHA Occupational Safety and Health Administration

www.osha.gov (800) 321-OSHA (6742)

SAMPLE LABEL

Product Identifier

Supplier Identification

Signal Word

Danger

Hazard Pictograms

Highly flammable liquid and vapor
May cause liver and kidney damage

Hazard Statements

Precautionary Statements

Supplemental Information

SAMPLE

OSHA 3492-01R 2016

OSHA QUICK CARD™

Hazard Communication Safety Data Sheets

The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products. The HCS requires new SDSs to be in a uniform format, and include the section numbers, the headings, and associated information under the headings below:

Section 1, Identification includes product identifier; manufacturer or distributor name, address, phone number; emergency phone number; recommended use; restrictions on use.

Section 2, Hazard(s) identification includes all hazards regarding the chemical; required label elements.

Section 3, Composition/information on ingredients includes information on chemical ingredients; trade secret claims.

Section 4, First-aid measures includes important symptoms/effects, acute, delayed; required treatment.

Section 5, Fire-fighting measures lists suitable extinguishing techniques, equipment; chemical hazards from fire.

Section 6, Accidental release measures lists emergency procedures; protective equipment; proper methods of containment and cleanup.

Section 7, Handling and storage lists precautions for safe handling and storage, including incompatibilities.

(Continued on other side)

For more information:

OSHA Occupational Safety and Health Administration
www.osha.gov (800) 321-OSHA (6742)

OSHA 3493-01R 2016

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Hazard Communication Safety Data Sheets

Section 8, Exposure controls/personal protection lists OSHA's Permissible Exposure Limits (PELs); ACGIH Threshold Limit Values (TLVs); and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the SDS where available as well as appropriate engineering controls; personal protective equipment (PPE).

Section 9, Physical and chemical properties lists the chemical's characteristics.

Section 10, Stability and reactivity lists chemical stability and possibility of hazardous reactions.

Section 11, Toxicological information includes routes of exposure; related symptoms, acute and chronic effects; numerical measures of toxicity.

Section 12, Ecological information*
Section 13, Disposal considerations*
Section 14, Transport information*
Section 15, Regulatory information*

Section 16, Other information, includes the date of preparation or last revision.

*Note: Since other Agencies regulate this information, OSHA will not be enforcing Sections 12 through 15 (29 CFR 1910.1200(g)(2)).

Employers must ensure that SDSs are readily accessible to employees.
See Appendix D of 29 CFR 1910.1200 for a detailed description of SDS contents.

For more information:

OSHA Occupational Safety and Health Administration
www.osha.gov (800) 321-OSHA (6742)

Discovery of Weapons/Illicit Drugs or Violence: In the event of the discovery of weapons or illicit drugs on the work site, the Management must be notified immediately. Do not disturb the weapon or drugs and do not alarm other employees by indicating their presence. It is the responsibility of the Management to notify the proper authorities, be it the local or state police. If an employee becomes violent or makes threats of violence, notify Project Management immediately, who must than contact local authorities. Management will determine if a location change needs to happen and account for the crew.

Bomb Threat/Violent Incidents: In the event there is a bomb threat, or a violent situation Management needs to be notified as soon as possible so that 911 or other proper authorities can be contacted to handle the situation. Management will determine if a location change needs to happen and account for the crew.

How to Respond When an Active Shooter is in Your Vicinity

Quickly determine the most reasonable way to protect your own life. Remember that customers and clients are likely to follow the lead of employees and managers during an active shooter situation.

https://www.youtube.com/watch?v=5VcSwejU2D0&t=2s
Video on Run, Hide, Fight

1. RUN

If there is an accessible escape path, attempt to evacuate the premises. Be sure to:

- Have an escape route and plan in mind
- Evacuate regardless of whether others agree to follow
- Leave your belongings behind
- Help others escape, if possible
- Prevent individuals from entering an area where the active shooter may be
- Keep your hands visible
- Follow the instructions of any police officers
- Do not attempt to move wounded people
- Call 911 when you are safe

2. HIDE

If evacuation is not possible, find a place to hide where the active shooter is less likely to find you. Your hiding place should:

- Be out of the active shooter's view
- Provide protection if shots are fired in your direction (i.e., an office with a closed and locked door)
- Not trap you or restrict your options for movement

To prevent an active shooter from entering your hiding place:

- Lock the door
- Blockade the door with heavy furniture

If the active shooter is nearby:

- Lock the door
- Silence your cell phone and/or pager
- Turn off any source of noise (i.e., radios, televisions)
- Hide behind large items (i.e., cabinets, desks)
- Remain quiet

If evacuation and hiding out are not possible:

- Remain calm
- Dial 911, if possible, to alert police to the active shooter's location
- If you cannot speak, leave the line open and allow the dispatcher to listen

3. FIGHT

As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter by:

- Acting as aggressively as possible against him/her
- Throwing items and improvising weapons
- Yelling
- Committing to your actions

https://www.dhs.gov/xlibrary/assets/active_shooter_booklet.pdf

Fire Prevention Plan

Purpose
The purpose of this Fire Prevention procedure is to identify hazards and seek to eliminate the causes of fire and prevent loss of life and property by fire. It provides employees with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards.

Scope
All managers and supervisors are responsible for implementing and maintaining a Fire Prevention process at their company location and for all project site areas. A copy of this Fire Prevention Procedure is available from each manager and supervisor.

Fire Prevention Plan
Fire safety is everyone's responsibility and while policies, plans, and procedures are all necessary and appropriate tools, there is no substitute for common sense and general awareness. All employees should know how to prevent and respond to fires and are responsible for adhering to company policies regarding fire emergencies. The following fire prevention guidelines should be followed in order to properly identify hazards and prevent unnecessary ignitions.

A. PAR will conduct a Job Site Fire Safety Analysis to identify major fire hazards, coordinate handling and storage procedures for hazardous materials, identify potential ignition sources and their control, and provide for the appropriate fire protection equipment.
B. PAR will implement procedures to control accumulations of flammable or combustible waste material.
C. PAR supervision will work with the job site Foreman, along with the Equipment Manager to complete regular maintenance of safeguards installed on heat-producing tools and equipment to prevent accidental ignition of combustible materials.
D. PAR management team will provide Fire Awareness training to all on-site employees.
E. Field leadership will implement, discuss and document that emergency plans are in place, discussed, and documented in advance of work being performed.
F. Trucks mobilized for projects are required to be equipped with the following fire suppression items, when deemed necessary by the Fire Safety Coordinator:
    1. Fire Extinguisher
    2. Shovel
    3. Axe
    4. 5 Gallon Water Can
G. When equipment with internal combustible engines is parked over or near light vegetation fire blankets will be placed under any heat source to prevent ignition of fuels.
H. PAR supervision will work with Customer, as deemed necessary, to discuss, evaluate, consider, and implement, as applicable, additional fire safety considerations.
I. The regional PAR office will daily monitor appropriate news, weather, and fire related information from the governing authorities in order to assess fire hazards and communicate this information directly to our field supervision. Additionally, field crews will monitor local conditions.

J. Field crews will discuss potential fire hazards and required mitigation measures during the daily tailboard.
K. In the event of a fire the following steps will be taken:
    1. Notify first responders
    2. Notify Xcel leadership
    3. **Notify Xcel Security Operations Center 612-330-6900**
    4. If the fire is manageable, use tools and equipment to extinguish
    5. If fire spreads or becomes unmanageable, move all personnel to safety zone

General Workplace Hazard Controls

Actions designed to prevent accidents:

- All flammable materials will be stored in a designated area or flammable storage cabinet.
- Waste materials are to be discarded in the proper locations.
- Turn off any equipment that does not need to be on.
- Walkways are to be kept clear at all times.
- Fire extinguishers should be kept clear at all times for easy access.
- All employees should be familiar with the evacuation routes and should proceed to the exits when instructed in an emergency.
- Each supervisor shall be responsible for informing his or her shift employees on the safe handling of hazardous materials.
- Good housekeeping is the responsibility of all employees.

Environmental/Biological Hazards

Biological Hazards

Poisonous Plants

Poison ivy, poison oak, poison sumac, stinging nettle and poison hemlock are among the plants that can cause skin irritation lasting a week or more. Irritation can be caused by brushing against a plant or from secondary contact with contaminated clothing.

Several plants may look different throughout the seasons, so precaution should be taken to avoid potential exposure and protective equipment and clothing may be needed.

- Eye and face protection
- Long-sleeved shirts, pants, hats and gloves

Use caution when disposing of woody material left over from clearing trees or brush by burning the debris. Toxic plant might be on the tree trunks or mixed into the brushy material, burning poisonous plants may cause serious respiratory problems in some individuals. Poison ivy can remain on a surface for weeks and possibly months.

If exposed to a poisonous plant

- Immediately rinse his or her skin with rubbing alcohol, specific plant washes or degreasing soap (such as dishwashing soap) – and use lots of water
- Use calamine lotion to reduce the itching
- Use antihistamines to reduce inflammation and swelling, but is NOT to be used while operating machinery

Dog

Ideally, all dogs should be properly restrained by a leash or a fence but, in reality, this is not the case. Being aware and alert to what dogs are around can help prevent an attack.

If attacked:

- Never run away from a dog
- Be more aggressive than the dog
- Stay forward, stay tall and stay big while shouting "NO"
- Use an aggressive frontal posture
- If dog keeps coming, turn to the side to protect your vital organ area and to get a better stance for the impact
- Use an object to steer yourself to a safe place.
- Keep your back against something. If you back up against a house or a fence, you should then be able to move sideways toward an exit.
- Find anything to put between you and the dog. Any barrier is a good barrier.
- Never reach for the attacking dog's eyes, head or nose
- Grab a paw to get a dog to back off
- If in a pack attack, pick one dog and hurt it.
- Try to stay on your feet and keep your face and neck covered.

Things to Remember

- Dogs are more likely to attack if the owner is present.
- Before entering any area, make noise – such as jingling your keys or yelling to let the dog know you are there and to give you a chance to see the types and number of dogs present
- Issue letters or warning cards to homes where a dog could pose a threat
- Do not approach a strange dog, even if it is chained or restrained behind a fence
- Always carry pepper spray
- Do not run past a dog – the animal's natural instinct is to chase its prey.
- When threatened by a dog, do not make eye contact
- Remain motionless until the dog is gone
- Slowly back away until you are out of danger

Venomous Spiders

Encountering a spider is not an ideal situation for most people. And for employees spiders can present an occupational hazard. With the United States being home to venomous arachnids such as the black widow, brown recluse and hobo spiders, and the danger is real.

Symptoms of a spider bite

- Pain
- Itching

- Muscle cramps
- Sweating
- Difficulty breathing
- Vomiting
- Fever
- High blood pressure

If you are bitten by a spider, take the following steps:

- Do not panic
- If the spider is still nearby, do your best to identify it
- Wash the bite area with soap and water
- Use an ice pack or cool or damp cloth to help reduce swelling
- Keep the bite area elevated
- Never try to remove venom
- Contact your supervisor
- Seek professional medical help

To help prevent spider bites:

- Give your work clothes, shoes and equipment a thorough shake before use
- Wear long-sleeved shirts and long pants
- Wear gloves and boots if spiders are in the area
- Remove piles of debris from outdoor jobsites, and trim tall grasses
- Stay up to date with your tetanus boost0065rs, because spider bites can become infected with tetanus spores

Venomous Snakes

- Call for emergency services (911)
- Keep the victim still and calm to slow down the spread of venom
- Lay or sit the person down with the bite at or below the level of the heart
- Administer first aid if the victim cannot be taken to the emergency department immediately
- If the bite is on a limb, wrap the bite with a loose-fitting clean, dry dressing and immobilize the limb, if possible
- Mark the advancing edge of the swelling with a marker at 15- to 20-minute intervals to help the treating physician with determining the bite severity

NOTE: If possible, take pictures of snake, so that medical professionals can better identify the species of the snake and the type of anti-venom to administer the injured employee.

- Insects and Scorpions

Bees, wasps and other stinging insects are found throughout the United States. These insects will sting if they are disturbed as they go about their activities, especially while foraging for food.

- When in an area where there are bees or wasps or hornets, employees should watch for a pattern of movement to identify the location of a colony
- When eating outside, use caps for bottles and cover all food items with a lid to prevent attracting insects

If stung, employees may experience:

- Dangerous drop in blood pressure
- Fluid build up in the lungs

- Shock
- Suffocation, if stun on the neck or mouth

First Aid
- Clean area with soap and water
- Removed stinger with gauze or by using a fingernail
- Apply ice to reduce swelling,

NOTE: Employees who are allergic should carry an epinephrine injection, at all times. Employees who think they may be allergic should be tested.

Vector-Borne Diseases

- Mosquito-Borne Diseases
- Tick-Borne Diseases

  Ticks present a concern for employee because they can cause Lyme disease when they attach themselves to a host and feed for six to 13 days. They may be found in tall grass areas, shrubs, brushy areas, river bottoms and woodlands. They are most active in the spring, summer and fall, but can be active for the entire year in warmer parts of the United States.

  Prevention
  - Tie or tape pant legs tight around the ankle
  - Wear light-colored clothing and tuck in shirts
  - Wash clothing regularly
  - Use repellants containing permethrin
    - DO NOT apply directly to the skin
  - Use repellents containing DEET to protect exposed skin
  - Read and follow all instructions on the repellant packaging
  - Check clothing regularly

  If bitten:
  - Use tweezers to remove attached ticks
  - Use a slow and steady motion & pull away from your body
  - Do Not use a twist and jerk motion
  - Remove any remains from skin
  - Keep tick for a few weeks in a container labeled with the date and location of the bite.
  - This may be helpful to medical professionals, if needed.

  NOTE: Personnel who develop a rash or fever within several weeks of removing a tick need to visit a doctor.
- Lyme Disease

https://www.cdc.gov/niosh/topics/outdoor/

Contact PAR *Management or* PAR *Safety for more info*
Reference PAR Safety Manual – First Aid and Emergency

Hot and Cold

Work Description	Potential Accidents or Hazards	Preventative Measures
Hot Weather Safety	Dehydration	Drink Some Water Before Beginning Work In Hot Weather. Do Not Wait To Feel Thirsty While Working In Hot Weather. Consume 8 oz Of Water Every 20 Min's. Limit Intake Of Sodium, Sugar and Caffeine. Low Sugar Commercial Sport Drinks Are Ok. Do Not Consume More Than One Quart Per Hour
	Heat Cramps	Sit Or Lie In Cool Shaded Area Drink Cool Water, Stretch Effected Muscles.
	Heat Stroke	Symptoms: Skin Feels Hot To The Touch Behavioral Confusion - Disorientation, Irrational, Agitated Or Aggressive Behavior. Seizure. Seek Emergency Help Immediately
	Heat Syncope	Symptoms: Dizziness or Fainting. Lie In A Cool Place. If Unaccompanied By Nausea, Drink Water.
	Heat Edema	Symptoms: Swollen Ankles or Feet. Elevate Legs - Support Stockings Helpful.
	Prickly Heat (Heat Rash)	Symptoms: Itchy Rash On Sweaty Skin Dry And Cool The Skin.
	General	Dress In Light Colors Consume One Cup Of Water Every 20 min's. Wear Porous Clothing That Will Breath Easily. Avoid Tight Fitting Clothing. Spend Lunch & Breaks In The Shade. Wipe Cool Water On Exposed Skin. Victims Can Be Sprayed With Cool Water And Fanned. Apply Cooling Methods While Waiting For Emergency Treatment - Apply Ice Packs To Neck and Arm Pits. Do Not Use Rubbing Alcohol To Cool Skin, Do Not Use Aspirin On Victims
Cold Weather Safety	Heating Equipment Hazards	Keep Combustible Materials Away From Furnaces and Heaters. Keep Portable Heaters 3' From Combustible Surfaces. Keep Flammable Liquids In Tightly Capped Containers and Away From Heating Devices. Styrofoam Packaging Emits Noxious or Deadly Gases When Exposed To Heat. Equipment That Burns Gases or Liquids Produce Carbon Monoxide - Use Only In Well Ventilated Areas. Use Only Equipment That Turns Off Automatically If Tipped or When Desired Temperatures Are Reached. Check Heaters For Frayed Cords or Broken Elements. Keep Properly

		Maintained Fire Extinguishers Near All Heating Devices That Operate With Open Flame.
	Slippery Surfaces, Falls	Keep Walkways, Steps, Porches and Landings Free From Ice and Snow. Keep Supply Of Salt and Sand On Hand. Watch For Places In The Yard Where Low Spots Have Allowed Rain or Melt To Accumulate - These Can Be Hidden By New Snow and Should Be Salted, Sanded or Removed. Watch Areas Where Overhead Ice Can Accumulate and Fall During Wind or Melting. Such Areas Should Be Taped Off and Avoided Until Ice Melts or Has Been Removed.
	Exposure To Cold	Hazards Increase Proportionately With Wind Chill Below Zero Degrees Fahrenheit. Wear Layers Of Light Clothing Rather Than A Single Heavy Garment. Use Helmet Liners Inside Of Hard Hats To Reduce Heat Loss. Wear Warm Leg Coverings and Heavy Socks Or Multiple Lighter Socks. Wear Water Proof Boots With Good Traction Tread Patterns - Avoid Smooth Leather Soles. Cover Face In Extreme Cold To Avoid Frost Bite. Cover Mouth To Protect Lungs From Inhaling Extremely Cold Air. Wear Safety Glasses With Tinted Lenses To Protect Eyes From Winter Glare.
	Colds & Influenza	To Avoid A Cold or Flu: Keep Resistance High Through Good Nutrition. Keep Resistance High By Getting Plenty of Sleep. Keep Resistance High By Getting Good Exercise. Keep Heat Low and Humidity High At Home. Avoid Contact With Those Who Are ill With Colds. Get Flu Shots Early In The Season. Average Cold Flu Season Lasts From Mid-November Until Mid-April. To Treat A Cold or Flu: Use Mild Pain Reliever For Aches, Pains and To Reduce Fever. Avoid Unnecessary Activity. Get As Much Bed Rest As Possible Consume Extra Fluids - Fruit Juices Are Best.
	Hypothermia (Drop in body temperature)	Symptoms: Forgetfulness Drowsiness Slurred speech Change in appearance - (puffy face) Weak pulse Slowed heartbeat Very slow shallow breathing Coma or deathlike appearance in extreme cases. Call for emergency help if body temperature is below 95 degrees Fahrenheit. Wrap patient in a warm blanket. Apply hot water bottle or heat pad to victim's abdomen. Give small quantities of warm food or drink if alert. Do not give alcoholic beverages. Do not give hot shower or bath - shock could result. Condition should be treated in a hospital.

Reference: PAR Safety Manual
PAR - Heat Illness Prevention Plan

Severe Weather

A Designated person(s) will be identified by project management, to monitor weather via the radio, internet, or television. If work needs to be suspended, all equipment should be secured if it is safe to do so. Prior to anyone leaving the jobsite roll call should be taken to ensure everyone is accounted for. Management will determine if it is necessary to go to the designated rally point, storm shelter or other perceived safe location.

Lightning

Lightning strikes within 50 miles of the job site will monitored. Lightning within 30 miles of the job site or that which can be seen from the job site will result in cessation of all work. If it is safe to do so, the equipment should be secured and the crewmen should cab up. Work can resume once lightning is not seen for at least 30 minutes. If the condition worsens, Management will determine if a location change needs to happen and account for the crew.

- Proper Shelter: Best Shelter Is Large, Fully Enclosed, Substantially Constructed Building. Do Not Use "Corded" Telephone. Stay Away From Electrical Appliances, Lighting & Electrical Outlets. Stay Away From Plumbing. Do Not Watch Lightning From Windows or Doorways. Vehicle With Solid Metal Roof and Sides Is A Good Second Choice. Close Vehicle Windows. Lean Away From Vehicle Doors. Keep Hands In Your Lap. Do Not Touch: Steering Wheel, Ignition, Gear Shift Radio
- Places To Avoid: Avoid Higher Elevations Avoid Wide - Open Areas Trees, Lighting Poles, Vertical Steel Structures. Avoid Activities, I.e. Swimming, Boating Fishing, Golfing, etc. Avoid Open Type Vehicles Avoid Pavilions, Rain Shelters and Bus Stops Avoid Metal Fences and Bleachers.
- Lightning Strike Is Imminent When: Your Hair Stands Up You Feel Your Skin Tingling You Hear A Crackling Sound If You Experience Any Of The Above: Spread Out By Several Body Lengths If You're In A Group. Put Your Feet Together, Squat Down, Tuck Your Head, And Cover Your Ears. Leave the Area Immediately After the Threat Has Passed.
- Lightning First Aid: CPR And Mouth to Mouth Resuscitation 911 For Immediate Medical Attention Move Yourself and Victim From The Area If Storm Is Still Active. LIGHTNING STRIKE VICTIMS ARE NOT ELECTRIFIED.

Tornado

- When a warning is issued by sirens or other means, seek inside shelter. Consider the following:
  - Small interior rooms on the lowest floor and without windows,
  - Hallways on the lowest floor away from doors and windows, and
  - Rooms constructed with reinforced concrete, brick, or block with no windows.
- Stay away from outside walls and windows.
- Use arms to protect head and neck.
- Remain sheltered until the tornado threat is announced to be over.
- A headcount should be taken at the emergency shelter.

Tornado Safety Tips: Vehicles are extremely risky in a tornado event. There is no safe option when caught in a tornado in a car, just slightly less-dangerous ones. If the tornado is visible, far away, and the traffic is light, you may be able to drive out of its path by moving at right angles to the tornado. Seek shelter in a sturdy building, or underground if possible. If you are caught by extreme winds or flying debris, park the car as quickly and safely as possible -- out of the traffic lanes. Stay in the car with the

seat belt on. Put your head down below the windows; cover your head with your hands and a blanket, coat, or other cushion if possible. If you can safely get noticeably lower than the level of the roadway, leave your car and lie in that area, covering your head with your hands. Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.

Earthquake

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Keep away from overhead fixtures, windows, filing cabinets, and electrical power.
- Assist people with disabilities in finding a safe place.
- Evacuate as instructed by the Emergency Coordinator and/or the designated official.
- Attempt to get under a table or desk. NO ONE SHOULD GO OUTSIDE THE BUILDING unless a gas leak is detected. After the conclusion of the earthquake, the following procedures should be initiated:
  1) All employees should remain calm and help injured employees.
  2) Check for injuries and provide first aid as needed.
  3) The building should be inspected for structural damage. If major structural damage is determined, order an evacuation.

Notify the proper utility companies or other services as needed

Flood

If indoors:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Follow the recommended primary or secondary evacuation routes.
- If outdoors:
- Climb to high ground and stay there.
- Avoid walking or driving through flood water.
- If car stalls, abandon it immediately and climb to a higher ground.

Hurricane

The nature of a hurricane provides for more warning than other natural and weather disasters. A hurricane watch issued when a hurricane becomes a threat to a coastal area. A hurricane warning is issued when hurricane winds of 74 mph or higher, or a combination of dangerously high water and rough seas, are expected in the area within 24 hours.

Once a hurricane watch has been issued:

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Moor any boats securely, or move to a safe place if time allows.
- Continue to monitor local TV and radio stations for instructions.
- Move early out of low-lying areas or from the coast, at the request of officials.
- If you are on high ground, away from the coast and plan to stay, secure the building, moving all loose items indoors and boarding up windows and openings.
- Collect drinking water in appropriate containers.

Once a hurricane warning has been issued:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Leave areas that might be affected by storm tide or stream flooding.

During a hurricane:
- Remain indoors and consider the following:
  - Small interior rooms on the lowest floor and without windows,
  - Hallways on the lowest floor away from doors and windows, and
  - Rooms constructed with reinforced concrete, brick, or block with no windows.

Blizzard

If indoors:
- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Stay indoors!
- If there is no heat:
  - Close off unneeded rooms or areas.
  - Stuff towels or rags in cracks under doors.
  - Cover windows at night.
- Eat and drink. Food provides the body with energy and heat. Fluids prevent dehydration.
- Wear layers of loose-fitting, light-weight, warm clothing, if available.

If outdoors:
- Find a dry shelter. Cover all exposed parts of the body.
- If shelter is not available:
  - Prepare a lean-to, wind break, or snow cave for protection from the wind.
  - Build a fire for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.
  - Do not eat snow. It will lower your body temperature. Melt it first.

If stranded in a car or truck:
- Stay in the vehicle!
- Run the motor about ten minutes each hour. Open the windows a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked.
- Make yourself visible to rescuers.
  - Turn on the dome light at night when running the engine.
  - Tie a colored cloth to your antenna or door.
  - Raise the hood after the snow stops falling.

Exercise to keep blood circulating and to keep warm.

Muster/Rally Points

a **Severe weather rally point:** Rally at the work location, account for the team, contact project management, if safe travel back to the laydown yard unless directed otherwise.

b **Evacuation rally point:** Rally at the work location account for the team, contact project management, if safe travel back to the laydown yard unless directed otherwise.

c **Tornado Shelter:** Rally at the work location account for the team, contact project management, if safe travel back to the laydown yard unless directed otherwise.

Onsite management will assess the hazard and dispatch the crew members accordingly

Reference: PAR – Environmental Compliance Program CDC – Center for Disease Control Homeland security

Report Unsafe Conditions

If you become aware of any unsafe or hazardous situation in the offices or property in general, it is YOUR responsibility to inform a member of management.

Job Briefing(s)

The daily job briefing is the *key* to completing a job safely.

The employee in charge shall discuss the tasks to be performed. The briefing shall be documented and include an explanation of how the tasks shall be achieved, hazards expected to be encountered, and steps to be taken to eliminate or control the hazards.

Tasks to be performed

A. Any Critical Steps for the task
B. How the crew shall complete the tasks with "Positive Control": the key steps that must be done correctly to ensure the planned outcome of the task
C. Existing worksite conditions or characteristics, including any information provided by the host employer
D. Specific roles and responsibilities for each employee for completing the tasks
E. Existing and predictable hazards
F. Which situations require heightened awareness, e.g., Qualified Observer, Spotter, Confined Space Attendant, etc.
G. Hazard/Risk mitigation
H. The required protective methods (where applicable) to be used, which include but are not limited to the following:
    - Insulation
    - Isolation
    - Grounding
    - Equal Potential Zone
I. Personal Protective Equipment (PPE) required
J. Emergency response information

Task specific job briefings shall be held:

- at the start of the work shift,
- at the location of the tasks,
- whenever tasks, key steps or scope of work changes,
- hazards differ from the original briefing,
- as additional personnel arrive at the job site, and
- after extended work pauses (work breaks, weather delay, etc.).

The briefing form shall have a provision for each employee to sign to verify they have participated in the briefing. Each ET&D Partnership company's management shall establish a review process to ensure that the documented task briefing process is effective

Debrief

At the end of the workday or prior to work beginning the following day, employees shall convene to debrief. Debriefing discussions may include successful or unsuccessful work methods, special site conditions to be considered, accomplishments and/or accolades, or goals moving forward. All debriefing discussions shall be noted on the task briefing form and lessons learned considered for all future work.

BENEFITS:

- Provides essential job safety planning guidelines and lists key elements.
- Incorporates use of a specific hazards identification process in the job planning process that will provide for enhanced controls for risks.
- The process and required documentation encourages inclusion and participation of job team members in the specific task hazard identification and mitigation associated with the overall job.

Reference:
PAR Safety Manual
Electrical Transmission and Distribution Partnership (Job Briefing)
National Electric Safety Code (NESC, ANSI C2 – Part 4)

OSHA Investigation

In the event an OSHA Compliance Officer (CHSO) visits the job site or responds to an incident:

- Ask to see official credentials (Identification)
- Be courteous and business-like. Give no information unless it is asked for specifically
- Inform them that the employer representative is on their way
- Call the General Foreman and Safety Coordinator Immediately
- Insist that inspectors not wander off alone
- Remember that as an employee you are entitled to certain rights
- Not required to perform work in front of the (You can cab up)

- Not required to answer questions without employer representative
- If the CHSO takes a photo, take one as well
- Accompany the CHSO as they walk around the job site
- learn what you can about the inspector's background
- note all of the inspector's observations
- Produce no documents during the walk-through. Insist that the document control procedures be adhered to during the inspection.
- If possible, correct any deficiencies the inspector notes *before* he leaves
- Do not argue with the inspector about whether something is a violation

PPE

Personal Protective Equipment

PAR's standard issued Personal Protective Equipment (PPE) will be **required on this project as follows:**

- Head Protection – Hardhat Class E, Class E Fly Helmets, Chin straps to be worn around helicopter operations
- Safety Glasses – Any ANSI Z-87 rated Safety Eyewear with Side Shields (PAR standard issue preferred)
- Hand Protection – Work Gloves
- Foot Protection – Protective footwear (meeting ASTM F2413) is required when working in areas where there is a danger of foot injuries due to falling or rolling objects, sole piercing objects and exposure to electrical hazards. EH rated or dielectric boots are required where special hazards exist.
- FR (Arc-rated) Clothing, Outer Layer as Minimum – 8 Calorie, Arc-rated category 2 is required.
- 100% Fall Protection Required – Primary use of "Pole Choker Devices" with Secondary Safety Devices for all climbing of poles and structures from 4 ft. and higher. All climbing gear and harnesses need to be rated at a minimum for ASTM F887 (Arc Rated).
- High Visibility Clothing – Required on all projects per customer requirement
- Insulating Rubber Gloves and Sleeves with protectors – Lock to Lock / Cradle to Cradle for any exposures to distribution circuits and distribution grounded conductors/neutrals. Rubber gloves with protectors are required for ALL line testing, application, and removal of protective grounds

As Necessary or Preferred:

- Respiratory protection
- Disposable hand warmers, toe warmers
- Arc Flash Rated balaclavas, Arc Flash rated face shields
- Arc Flash Rated hard hat liners
- Ice cleats
- Hearing protection
- FR rated insect / tick repellants for FR clothing and skin use

Arc Rated/Flame resistant (AR/FR) Clothing

All PAR employees in the field shall wear Arc/Flame Resistant (AR/FR) outer clothing consisting of an AR/FR long sleeved shirt with AR/FR pants or an AR/FR jacket (AR/FR rain gear) with AR/FR pants or AR/FR coveralls. The AR/FR clothing shall be issued by PAR, or a plan that PAR contributes to, or is a participant of. The AR/FR clothing shall be worn in accordance with the manufacturer's recommendations while on all PAR jobsites. This is required of all PAR employees (including support personnel), on *all* PAR jobsites.

All outer AR/FR clothing shall have, at a minimum, either an ARC Rating of 8 cal/cm2 or an HRC (Hazard Risk Category) of 2. Additional arc rated clothing (additional clothing layer) or other protective equipment (e.g. arc rated face shield, arc rated balaclava, or arc rated hood) may be required when either of the following apply:

A. Customer mandated protective clothing/equipment; or
B. Assessment of workplace determines an incident energy exposure greater than 8 cal/cm2

Non-AR/FR clothing is permitted only when all of the following requirements are met:

1. The job site/work location is utilized in connection with a PAR project that is covered by a Site Specific Health and Safety Plan (SSHSP) that meets the host employer's safety and AR/FR clothing or arc hazard assessment requirements; and
2. The area in which the job site/work location is located is specifically identified in the SSHSP as having been assessed for potential exposure to hazards from flames or electric arcs, and as having been designated as exempt from AR/FR clothing requirements following such assessment.
3. Completed documents associated with a Non-AR/FR clothing exemption (items #1 and #2 of this section) shall be referred to PAR Corporate Safety for review and approval prior to implementation.

Undergarment clothing made of 100% natural fibers is permitted; example: cotton. Non-AR/FR synthetic fabrics shall not be worn because they melt, drip, or continue to burn after an exposure, example: rayon, polyester, acetate, nylon, etc. AR/FR clothing shall be laundered and cared for as instructed by the manufacturer's directions.

Subcontractors and vendors shall be made aware of the PAR AR/FR Policy and will be required to develop and submit a job or project specific AR/FR Clothing Policy prior to work on any PAR project. All plans submitted shall at a minimum meet the more stringent standards of State or Federal OSHA, PAR, or customer AR/FR clothing requirements.

All visitors shall be escorted at all times by a qualified PAR employee. If visitors will not be in an energized area, they are not required to wear AR/FR clothing.

Fall Protection

Personal fall arrest system, work-positioning equipment, or fall restraint system shall be inspected before use each day to determine that the equipment is in safe working condition. Work-positioning equipment that is not in safe working condition may not be used.

Each employee in an elevated locations more than 4 feet above the ground on poles, towers, or similar structures shall use a personal fall arrest system, work-positioning equipment, or fall restraint system, or other suitable fall protection when climbing or changing location unless the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard than climbing or changing location without it.

Prior to operating any aerial lift fall protection harnesses shall be donned and fall restraint or personal fall arrest system shall be secured to an approved attachment point.

Reference: PAR Safety Manual PAR - Fall Protection Program PAR - Climbing and Fall Protection Requirements

Prescription Safety Glasses Program

PAR engages the services of ORR Safety to administer its prescription safety glass program. Authorized eye care professionals (Providers) have been established by ORR Safety, throughout PAR Electric's areas, to service the safety eyewear needs of PAR employees.

How To:

1. Contact Anne Barry - PAR Corporate at 816-691-4295 (Contact for all questions)
2. Employee Responsibility - Obtain a corrective lens prescription from your personal eye care professional. Workers may choose to have their personal eye doctor or the eye care professionals at the authorized Provider office, perform the eye exam. However, written prescriptions for safety glasses must be fulfilled by a participating Provider. Prescriptions over two (2) years old or expired will not be accepted under the program.
3. At a local authorized Provider, present your eyeglass prescription, your employee identification number and the division# for the plant you are working at when ordering your safety eyewear. Use ORR Safety's Provider Locator to quickly locate a Provider in your area. Be sure you inform the Provider that you wish to get SAFETY GLASSES under PAR Safety Eyewear Program, particularly if you will also be purchasing personal eyewear. Please make sure to inform the Provider of what division you are working at when ordering your safety glasses. It's always wise to call ahead and make an appointment.
4. Select a frame from ORR Safety's occupational display case. You may preview frames provided by PAR and ORR Safety online or from printed catalogs located at your safety office.
5. Have the provider measure your face for proper fit and complete the order. There are no forms for employees to complete. The provider will verify eligibility and complete the order form for your safety glasses.

6. Upon notification by the Provider, return to their office and pick up your safety glasses. Generally, it will take 7-10 business days for ORR Safety's lab to construct the glasses and ship them back to the provider.

General Requirements – Civil Work / Excavations

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated. (CFR 1926.651(k)(1))

Drilled excavations 6 feet or more in depth shall be protected from falling by guardrail systems, fences, hard barricades or covers. *(CFR 1926.501(b)(7)(ii))*

Special Notes:

Before soil is broken, dig permits need to be obtained and verified to be within the permit date. Dig Laws shall be followed. If dig alerts cannot be obtained (in situations like private property) project management will visually survey the area for signs of buried utilities and develop a plan to safely complete the task. Involve the customer with the process as need.

Reference:
https://www.colorado811.org/

Reference: PAR Safety Manual
Best Practice: Drilled Hole – Pier of Direct Embed Foundations
PAR Equal Potential Grounding and Bonding Work Zone Safety

Equipment

Wind

The qualified person and Foreman on site are responsible for verifying that it is safe to operate based upon the manufactures recommended specifications

Crane Operations with Personnel Platform

1926.1431(k)(8)
Environmental conditions.

1926.1431(k)(8)(i)

Wind. When wind speed (sustained or gusts) exceeds 20 mph at the personnel platform, a qualified person must determine if, in light of the wind conditions, it is not safe to lift personnel. If it is not, the lifting operation must not begin (or, if already in progress, must be terminated).

1926.1431(k)(8)(ii)
Other weather and environmental conditions. A qualified person must determine if, in light of indications of dangerous weather conditions, or other impending or existing danger, it is not safe to lift personnel. If it is not, the lifting operation must not begin (or, if already in progress, must be terminated).

Electrical Safety

PAR will follow Customer Minimum Approach Distances –While taking into consideration PAR expected work practices.

Non-reclosure order: Verify non-reclosure order paperwork

Outage:

Clearance, Testing, Grounding Procedure

- Verify your clearance (procedures, paperwork/orders, open points, etc.)
- Understand how your voltage detectors work.
- Verify that the detector and accessories appropriate for the voltage and task.
- Verify that equipment is in proper working condition.
- Use voltage detectors when test verifying clearances. The detectors must provide a numeric reading (digital or analog).
- Test a known energized source with instrument to verify it is working properly, test the de-energized equipment and/or conductors with instrument, and then retest instrument on a known energized source.
- Complete clearance and grounding paperwork/logs throughout the process.
- Ground verified and tested de-energized equipment and/or conductors.

No worker shall approach or take any conductive object closer to exposed
energized parts than the minimum approach distances unless:

- The worker is insulated from the energized part with rubber gloves or rubber gloves and sleeves AND the worker has positive control of the energized part.
- The energized part is insulated from the worker and from any other conductive object at a different potential OR
- The worker is insulated from any other exposed conductive object in accordance with requirements for live line bare hand work.

Voltage Phase-to-Phase	Distance Phase-to-Ground Exposure	Distance Phase-to-Phase Exposure
0.301 to 0.750 kV	1ft - 1in	1ft - 1in
0.751 to 5.0 kV	2ft – 1in	2ft – 1in
5.1 to 15.0 kV	2ft – 2in	2ft – 3in
15.1 to 36.0 kV	2ft – 7in	3ft – 0in
36.1 to 46.0 kV	2ft – 10in	3ft – 3in
46.1 to 72.5 kV	3ft – 4in	4ft – 0in
These minimum approach distances can be used provided the jobsite is at an elevation of 3000 feet (900 meters) or less. If working above 3000 feet (900 meters) above mean sea level, the distances must be calculated using the altitude correction factor from Table 43-3 for the elevation of the work.		

For voltages over 72.5 kilovolts, the minimum approach distance can be calculated by determining the maximum anticipated per-unit transient overvoltage, phase to ground, through an engineering analysis or assume a maximum anticipated per-unit transient overvoltage, phase to ground or use the minimum approach distance found in Table 42.2.

Table 42-2 AC Minimum Approach Distances – above 72.5 kV

Voltage Phase-to-Phase	Distance Phase-to-Ground Exposure	Distance Phase-to-Phase Exposure
72.6 to 121.0 kV	3ft – 9in	4ft – 8in
121.1 to 145.0 kV	4ft – 4in	5ft – 5in
145.1 to 169.0 kV	4ft – 10in	6ft – 5in
169.1 to 242.0 kV	6ft – 8in	10ft – 2in
242.1 to 362.0 kV	11ft – 3in	18ft – 2in
362.1 to 420.0 kV	14ft – 0in	22ft – 5in
420.1 to 550.0 kV	16ft – 8in	27ft – 1in
550.1 to 800.0 kV	22ft – 7in	37ft – 5in
1. These minimum approach distances can be used provided the jobsite is at an elevation of 3000 feet (900 meters) or less. If working above 3000 feet (900 meters) above mean sea level, the distances must be calculated using the altitude correction factor from Table 42-3 for the elevation of the work. 2. The phase to phase minimum approach distances may be used provided that no insulated tool spans the gap and no large conductive object is in the gap. 3. The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.		

The minimum approach distances in Table 42-2 are taken directly from federal OSHA regulations. These distances are based on specific transient overvoltage values required by the regulations. It is permissible to use different transient overvoltage values that may significantly reduce the calculated minimum approach distance for a given voltage range. To use a minimum approach distance lower than the distances shown in Table 42-2, engineering data indicating conditions providing evidence of a lower transient overvoltage value must be received from the customer owning the system. The reduced calculated minimum approach distance must be approved by the customer and also approved by PAR management.

Refer to the PAR Minimum Approach Distance (MAD) Best Practice on for additional information on reducing minimum approach distances.

Table 42-3 Altitude Correction Factor

Altitude Above Sea Level	Factor
3000 ft.	1.00
4000 ft.	1.02
5000 ft.	1.05
6000 ft.	1.08
7000 ft.	1.11
8000 ft.	1.14
9000 ft.	1.17
10,000 ft.	1.20
12,000 ft.	1.25
14,000 ft.	1.30
16,000 ft.	1.35
18,000 ft.	1.39
20,000 ft.	1.44

Clearances for Equipment under Subpart O

This table is applicable for operators that are not qualified employees per Subpart V

Equipment Operator is NOT a Qualified Electrical Worker Subpart O – 1926.600	
Voltage Range (phase to phase)	Minimum working and clear hot stick distance
<50 kV	10 ft.
69 kV	11 ft.
138 kV	13 ft.
230 kV	16 ft.
345 kV	20 ft.
500 kV	25 ft.
765 kV	35 ft.
NOTE: 1926.600(a)(6) - For lines rated over 50 kV, minimum clearance between the lines shall be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than 10 feet;	

Crane Clearances

This table is applicable for operators that are not qualified employees per Subpart V

TABLE A—MINIMUM CLEARANCE DISTANCES

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

1926.1411 – Traveling under or near power lines with no load

Table T-Minimum Clearance Distances While Traveling With No Load

Voltage (nominal, kV, alternating current)	While traveling-minimum clearance distance (feet)
up to 0.75	4
over .75 to 50	6
over 50 to 345	10
over 345 to 750	16
Over 750 to 1,000	20
Over 1,000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

1926.1411(b)(4)
Dedicated spotter. If any part of the equipment while traveling will get closer than 20 feet to the power line, the employer must ensure that a dedicated spotter who is in continuous contact with the driver/operator is used. The dedicated spotter must:
1926.1411(b)(4)(i)
Be positioned to effectively gauge the clearance distance.
1926.1411(b)(4)(ii)
Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
1926.1411(b)(4)(iii)
Give timely information to the operator so that the required clearance distance can be maintained**.**

Reference: PAR Safety Manual
PAR – MAD Best Practices
PAR – Requirements for Establishing EPZ
PAR - Equal Potential Grounding and Bonding Work Zone Safety

Grounding

Equipotential grounding will be used when grounding is needed for the protection of the employees. All PAR employees will be trained in grounding. Our grounding program addresses the exact electrical hazards of fault current and matches grounding jumpers in accordance with ASTM F855.

The training program discusses the advantages of single point grounding and additional electrical

hazards that are created while grounding such as step and touch potential. The program demonstrates how to establish equipotential for all workers on the ground.

Another important aspect of the program is the use of testers and the importance of knowing single phase voltage in transmission work. Equipotential is the most important personal protection that can be established. Knowledge of and the importance of equipotential is the most important part of our program.

A daily grounding plan will be completed by on site supervision. Any change to the grounding plan must be approved by the General Foreman and or the Safety Department.

Equipment and Vehicle Grounding

Vehicles or equipment that are operating in the proximity of energized lines and have a reach capability of coming in contact with energized lines shall be barricaded. The barricade should be placed far enough away from the truck so that no body part can reach into the MAD distance of the truck. This is the best method of preventing an accidental contact injury or fatality. We need to apply the same logic of not allowing contact with our aerial trucks, diggers and cranes as we already do with our wire stringing operations; no one is allowed to make contact with that equipment.

It is strongly recommended to use vehicle grounds; however, they will not be mandatory due to barricading. This will not be the case if a client requires us to ground the vehicle; in that case vehicle grounds and barricading will be required. Nevertheless, the only sure way to protect our employees is to barricade the vehicles when working in proximity to energized lines. Barricading will still be required regardless if the vehicle is grounded or not.

When an un-insulated part of any equipment is being used in a manner which could result in contact with an energized overhead or underground conductor, the equipment shall be considered energized. The following work practices shall apply:

Barricading shall be used to keep all persons clear of equipment that could become energized.

Grounding and Bonding of Utility Vehicles and Equipment

General Requirements

- A Job Task Safety Analysis (JTSA) must be documented and presented to all workers involved before beginning any job to discuss potential hazards. When the task includes working around utility vehicles operating near energized lines and devices, the safe work methods for working around utility vehicles and equipment must be understood by everyone involved with the task.
- During the Job Task Safety Analysis (JTSA), the following electrical hazards must be considered regarding utility vehicles and equipment:
  - Touch and step potential should the equipment become energized.
  - Means of ingress and egress during normal operation.
  - Means of ingress and egress during emergency situations.
- During the Job Task Safety Analysis (JTSA), the following factors must be considered to determine minimum approach distance:
  - Is the operator a qualified electrical worker?
    - Electrically qualified operators can work within the prohibited zone as stated in 29 CFR 1926.1408.
    - Non-electrically qualified operators must work off distances stated in 29 CFR 1926.1408 Table A.
- Utility vehicles and equipment have the potential to become energized by:
  - Contact with an energized line.
  - Contact with a grounded line under induction or fault conditions.
  - Contact with a grounding system the line is connected to during induction or fault conditions.
- Whenever a utility vehicle or equipment has the potential to become energized, barricading shall be used. Barricading provides a physical and visual obstruction to warn workers of possible danger.
- Barricaded areas shall not be entered by employees unless the following rules are followed:
  - Establish verbal communications with the person operating the controls.
  - Ensure the equipment and/or load is not within the minimum approach distance (MAD).
  - Ensure the operator's hands are off the controls and will remain off and all work is stopped while the employee is within the barricaded work zone.
- Barricades shall be placed such that workers positioned outside the barricade cannot reach across and contact equipment or personnel inside the barricade. In addition, precautions shall be taken to protect the general public from entering the work zone.

When it is required for an employee to operate or assist in the operation of equipment from the ground within the barricaded area, the employee shall be protected from hazardous differences in potential.

Equal Potential Grounding and Bonding Work Zone Safety

- If an insulated aerial manlift is operated where it may encroach the applicable minimum approach distance (MAD) to exposed energized lines and equipment, the operation must comply with either of the requirements listed below:
  - The energized lines and electrical equipment exposed to contact must be covered with insulating protective material rated for the voltage involved, and/or
  - The equipment must be insulated for the voltage involved.
- Uninsulated equipment must maintain minimum approach distance (MAD) from exposed energized parts.
- While performing energized work, or work near, over or under energized lines or electrical equipment, all vehicles that have the potential to become energized shall be barricaded and grounded. Grounds shall be capable of conducting maximum anticipated fault current.
- While performing de-energized work on properly grounded lines and equipment, all vehicles shall be barricaded.
- When grounding utility vehicles and equipment, use the best available ground source at the worksite to minimize the time that the energized circuit or parts remain energized in case of unintentional contact.
- Utility vehicle grounds must be located so that, during a fault, they will not injure workers.
- Utility vehicle grounds shall be capable of conducting the maximum anticipated fault current.
- Utility vehicle grounds, if used, must not be removed until all vehicles that may be bonded together are clear of lines or devices.
- Under normal operating conditions, employees shall not contact or make an attempt to get on/off any piece of equipment that has the potential to become energized unless the employee is protected from differences in electrical potential.
- There are three (3) acceptable methods of making contact with a utility vehicle, structure or driven ground rod while it has the potential to become energized. By level of protection:
  1. Employees may stand on a conductive mat that is electrically bonded to that equipment. When accessing the conductive mat, employees must first step from the earth to a dielectric transition step or bridge before stepping onto the conductive mat. Egress from conductive mat shall be done in reverse order.
  2. Employees may access/egress the equipment by means of a dielectric transition step or bridge, provided that the employee cannot contact both the equipment and earth during transition.
  3. Employees may wear rubber insulating gloves and rubber insulating overshoes that are rated for the voltage of the potential exposure.
- In an emergency situation, employees may get on/off a piece of equipment to operate the lower controls to perform a bucket rescue provided that one of the above personal protective measures is taken.
- If line conductors and utility vehicles are grounded to the same point, the equipment ground should be identified by use of a flag, ribbon, or some other device.

Reference: PAR Safety Manual
PAR – MAD Best Practices
PAR – Requirements for Establishing EPZ
PAR - Equal Potential Grounding and Bonding Work Zone Safety

Ground Testing

Grounds: Grounds are tested annually. Prior to use crewmen are to inspect are to inspect the grounds to verify they are in proper working condition and within the test dates.

Hot/Energized Work Equipment Dielectric Testing

Gloves: Rubber insulating gloves are tested before first issue and every 6 months thereafter, upon indication that insulating value is suspect and after use without protectors. Rubber insulating gloves will be inspected prior to use to verify they are in proper working condition and within the test dates. Rubber insulating gloves are also changed out every 90 days form their issue date per IBEW contract.

Sleeves: Rubber insulating sleeves are tested before first issue and every 12 months thereafter, upon indication that insulating value is suspect and after use without protectors. Rubber insulating sleeves will be inspected prior to use to verify they are in proper working condition and within the test dates. Rubber insulating gloves are also changed out every 90 days form their issue date per IBEW contract.

Hot Sticks: Hot sticks shall be removed from service every year for examination, cleaning, and testing. Hot sticks will be inspected prior to use to verify they are in proper working condition and within the test dates.

Blankets: Rubber blankets are tested before first issue and every 6 months thereafter and upon indication insulating value is suspect. Rubber insulating blankets will be inspected prior to use to verify that they are in proper working condition and within the test dates.

Cover-up: Rubber insulating cover is to be tested upon indication that the insulating value is suspect. Rubber insulated cover will be inspected prior to use to verify it is in proper working condition. Rubber insulating line hose will be annually tested.

Other: Plastic guard equipment shall meet ASTM F12-06 testing standards. Plastic guard equipment is to be inspected prior to use to verify that it is in proper working condition.

Industry Guidelines and Standards

The following tables list the documents that contain standards covering the work performed. Those areas that do not have their own standards should follow the guidelines referenced below. Use the latest version of the standards.

- ANSI is the American National Standards Institute
- ASTM is the American Society for Testing and Materials
- NFPA is the National Fire Protection Association

IEC is the International Electro-technical Commission

Table 1: Codes and Regulations

Code	Title
National Fire Protection Association NFPA 70	*National Electrical Code (NEC)*
National Fire Protection Association NFPA 70B	*Electrical Equipment Maintenance*
National Fire Protection Association NFPA 70E	*Electrical Safety Requirements for Employee Workplaces*
American National Standards Institute ANSI C2	*National Electrical Safety Code (NESC)*
American Petroleum Institute Recommended Practice API RP14F	*Recommended Practice for Design and Installation of Electrical Systems for Offshore Production Platforms*
American Petroleum Institute Recommended Practice API RP 54	*Recommended Practices for Oil and Gas Well Drilling and Servicing Operations*
American Petroleum Institute Recommended Practice API RP540	*Electrical Installations in Petroleum Processing Plants*
American Petroleum Institute Recommended Practice API RP500	*Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities*
29 CFR 1910.301-399 Subpart S	*Code of Federal Regulations: Electrical General Industry Standards*
29 CFR 1926.400-449 Subpart K	*Code of Federal Regulations: Electrical Construction Industry Standards*
29 CFR 1926.950-999 Subpart V	*Code of Federal Regulations: Electrical Power Transmission and Distribution*
29 CFR 1910.268 Subpart R	*Code of Federal Regulations: Electrical Telecommunications*
29 CFR 1910.269 Subpart R	*Code of Federal Regulations: Electric power generation, transmission, and distribution*

The table below lists the documents that contain the standards for PPE. Use the most current version of the various standards.

Table 2: PPE Standards

Subject	Document
Head protection	ANSI Z89.1*, Requirements for Protective Headwear for Industrial Workers*
Eye and face protection	ANSI Z87.1*, Practice for Occupation and Educational Eye and Face Protection*

Gloves	ASTM D120, *Standard Specification for Rubber Insulating Gloves*
Sleeves	ASTM D1051, *Standard Specification for Rubber Insulating Sleeves*
Gloves and sleeves	ASTM F 496, *Standard Specification for In-Service Care of Insulating Gloves and Sleeves*
Leather protectors	ASTM F 696, *Standard Specification for Leather Protectors for Rubber Insulating Gloves and Mittens*
Footwear	ASTM F 1117, *Standard Specification for Dielectric Overshoe Footwear ANSI Z41, Personal Protective Footwear ANSI Z41, Personal Protective Footwear*
Flash suits	ASTM F 1506, *Standard Specification for Protective Wearing Apparel for Use by Electrical Workers When Exposed to Momentary Electric Arc and Related Thermal Hazards ASTM F1891-A, Standard Specification for Arc and Flame-Resistant Rainwear*
Visual inspection	ASTM F 1236, *Standard Guide for Visual Inspection of Electrical Protective Rubber Products*
Safety belts, harnesses, and lanyards	ANSI Z359.1, *Fall Protection and Arresting Equipment*
Climbing equipment	ASTM F887, *Standard Specification for Personal Climbing Equipment*

The following table lists the documents applicable in the United States that contain the standards for other protective equipment. Those areas that do not have their own standards should follow the guidelines referenced below. Use the latest version of the standards.

Table 3: Standards for Other Protective Equipment

Subject	**Document**
Ladders	ANSI A14.1, *Safety Requirements for Portable Wood Ladders*
Safety signs and tags	ANSI Z535, *Series of Standards for Safety Signs and Tags*
Mats	ASTM D178, *Standard Specification for Rubber Insulating Matting*
Blankets	ASTM D1048, *Standard Specification for Rubber Insulation Blankets* ASTM F479, *Standard Specification for In-Service Care of Insulating Blanket*
Insulating Sheeting	ASTM F1742, *Standard Specification for PUC Insulating Sheeting*
Rope	ASTM F1701, *Standard Specification for Unused Polypropylene Rope with Special Electrical Properties*
Covers	ASTM D1049, *Standard Specification for Rubber Covers*

Line hoses	ASTM D1050, *Standard Specification for Rubber Insulating Line Hoses*
Line hoses and covers	ASTM F478, *Standard Specifications for In-Service Care of Insulating Line Hose and Covers*
Fiberglass tools and ladders	ASTM F711, *Standard Specification for Fiberglass-Reinforced Plastic (FRP) Rod and Tube Used in Line Tools*
Plastic guards	ASTM F712, *Test Methods for Electrically Insulated Plastic Guard Equipment for Protection of Workers* ASTM F968, *Standard Specification for Electrically Insulating Plastic Guard Equipment for Protection of Workers*
Temporary grounding	ASTM F855, *Standard Specification for Temporary Grounding Systems to be Used on De-energized Electric Power Lines and Equipment*
Insulated hand tools	IEC 900, *Specification for Insulated Hand Tools* ASTM F1505, *Standard Specification for Insulated and Insulating Hand Tools*
Telescoping live line tools	ASTM F1826, *Specification for Live Line and Measuring Telescoping Tools* ASTM F1825, *Standard Specification for Fixed Length Clamp stick Type Live Line Tools*
Bucket truck	ASTM F914, *Standard Test Method for Acoustic Emission for Insulated Aerial Personnel Devices*

Addition Information/ Consent for Use

Additional information, interpretations, and consent to use the information herein can be obtained by contacting:

Vice President of Safety & Environmental Compliance
4770 N. Belleview Ave, Suite 300
Kansas City MO 64116
Phone: 816-691-4236
Fax: 816-691-4242

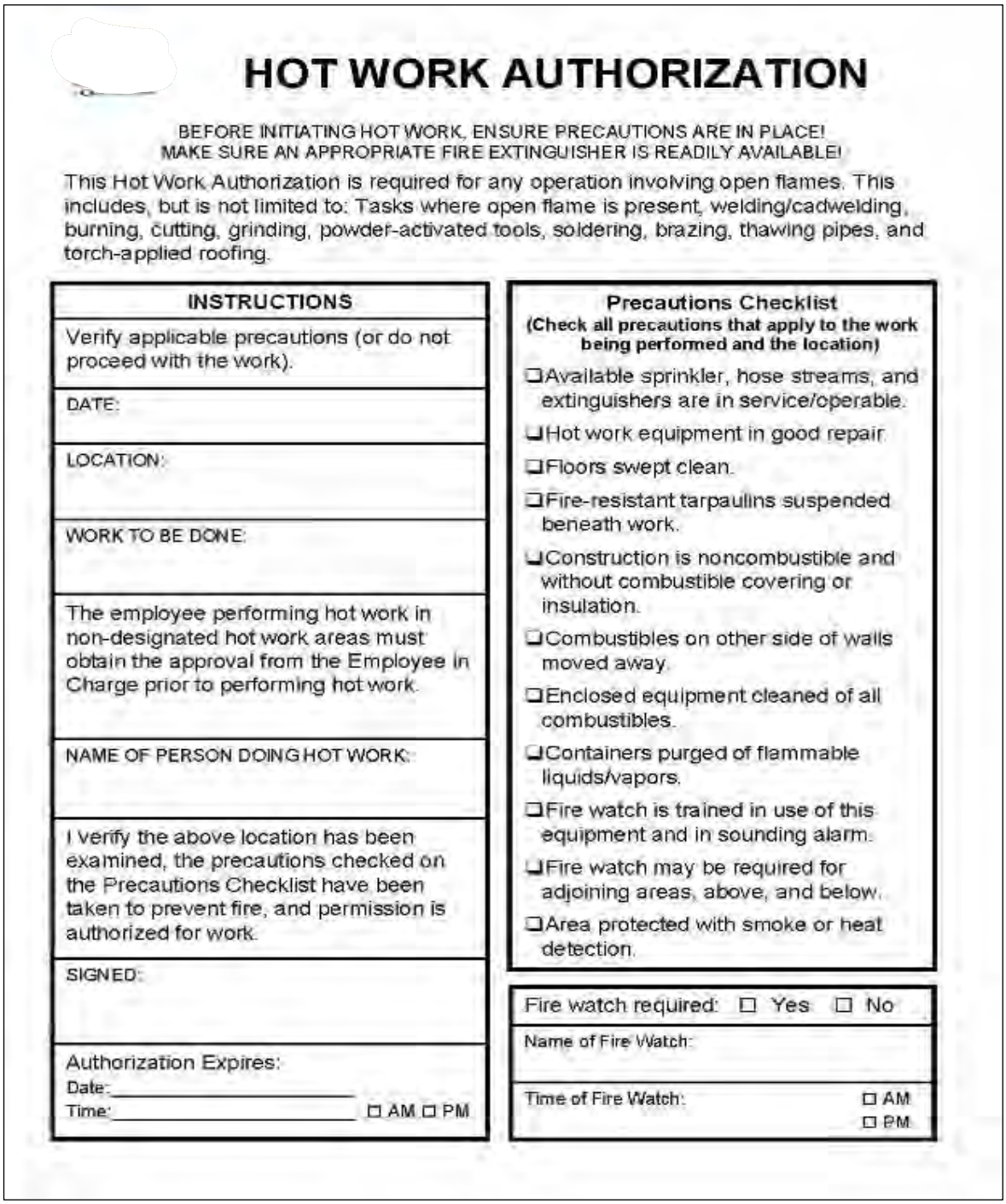
Addendum A – Record of HASP Review

Record of HASP Review			
Company	Print	Sign	Date

Record of HASP Review			
Company	Print	Sign	Date

Addendum B – License and Permits

Addendum C – PAR Documents



HOT WORK AUTHORIZATION

BEFORE INITIATING HOT WORK, ENSURE PRECAUTIONS ARE IN PLACE!
MAKE SURE AN APPROPRIATE FIRE EXTINGUISHER IS READILY AVAILABLE!

This Hot Work Authorization is required for any operation involving open flames. This includes, but is not limited to: Tasks where open flame is present, welding/cadwelding, burning, cutting, grinding, powder-activated tools, soldering, brazing, thawing pipes, and torch-applied roofing.

INSTRUCTIONS
Verify applicable precautions (or do not proceed with the work).
DATE:
LOCATION:
WORK TO BE DONE:
The employee performing hot work in non-designated hot work areas must obtain the approval from the Employee in Charge prior to performing hot work.
NAME OF PERSON DOING HOT WORK:
I verify the above location has been examined, the precautions checked on the Precautions Checklist have been taken to prevent fire, and permission is authorized for work.
SIGNED:
Authorization Expires: Date: _____ Time: _____ ☐ AM ☐ PM

Precautions Checklist
(Check all precautions that apply to the work being performed and the location)

- ❑ Available sprinkler, hose streams, and extinguishers are in service/operable.
- ❑ Hot work equipment in good repair.
- ❑ Floors swept clean.
- ❑ Fire-resistant tarpaulins suspended beneath work.
- ❑ Construction is noncombustible and without combustible covering or insulation.
- ❑ Combustibles on other side of walls moved away.
- ❑ Enclosed equipment cleaned of all combustibles.
- ❑ Containers purged of flammable liquids/vapors.
- ❑ Fire watch is trained in use of this equipment and in sounding alarm.
- ❑ Fire watch may be required for adjoining areas, above, and below.
- ❑ Area protected with smoke or heat detection.

Fire watch required: ☐ Yes ☐ No
Name of Fire Watch:
Time of Fire Watch: ☐ AM ☐ PM

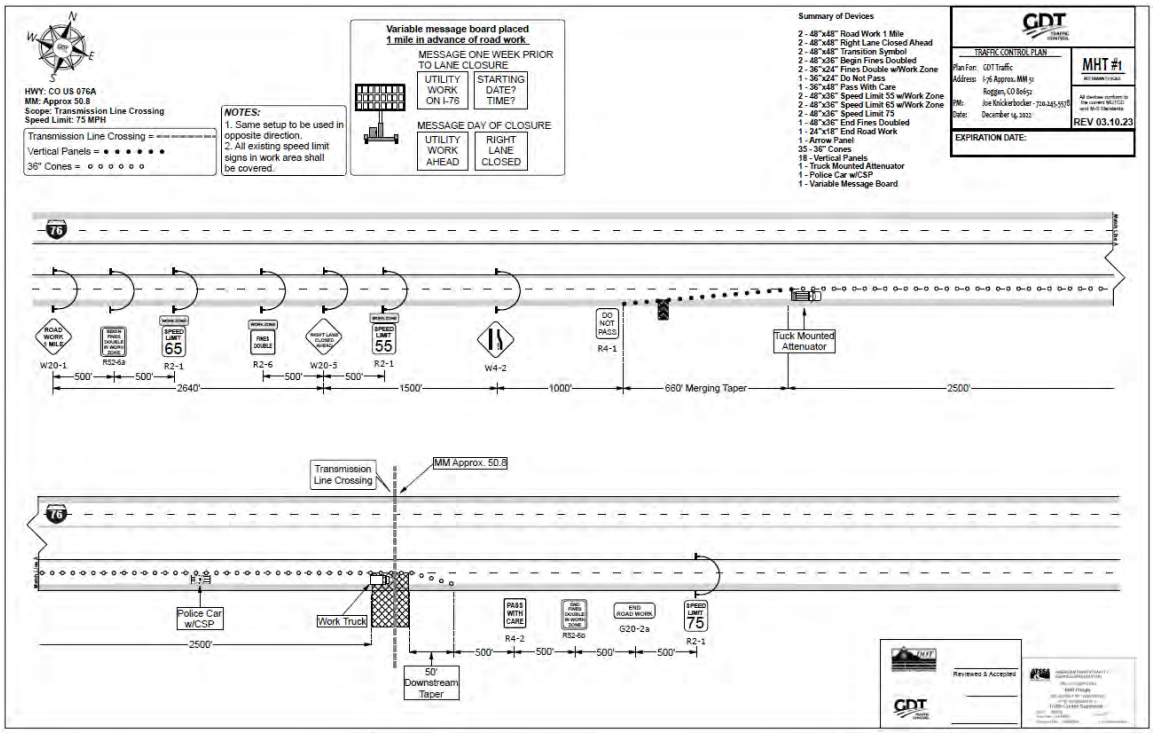
Addendum D – Resources

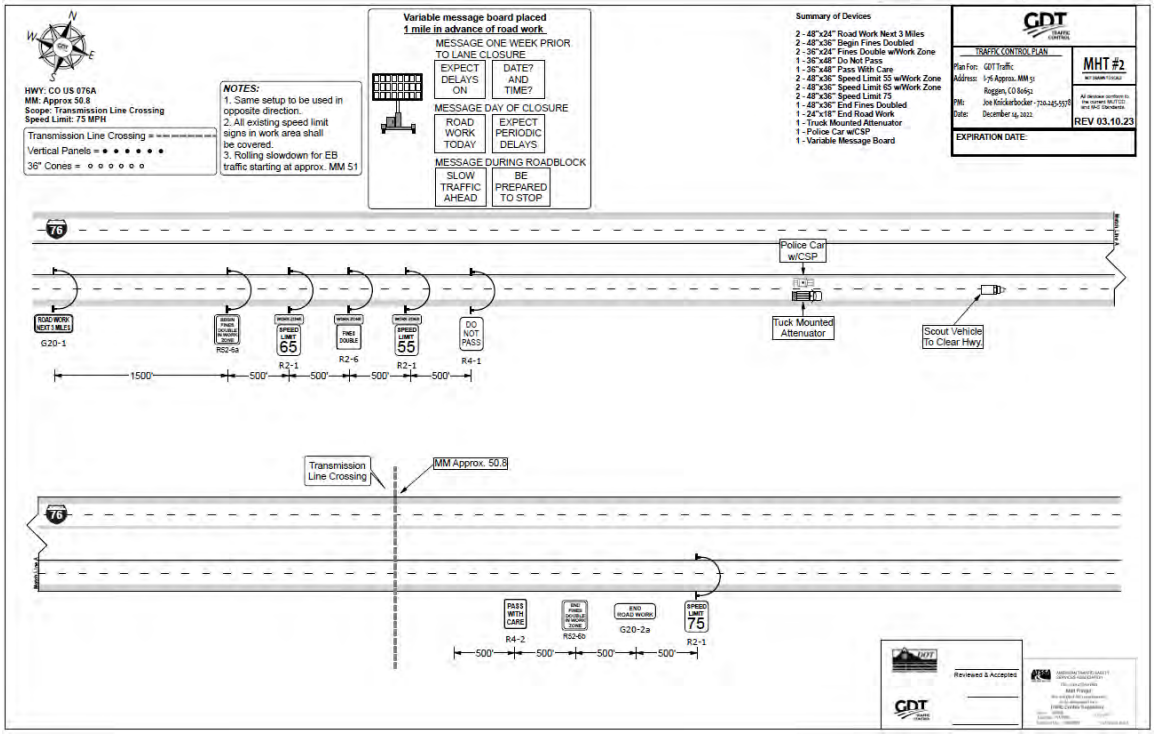
Document Name
PAR
HASP
Site Specific Plans
PAR Forms
Event Report forms in Origami
Event Checklist
Case Management At-a-Glance
Clinic Doctor Introductory Billing Information Letter Locked Distribution Copy
Initial WC Prescription Authorization Procedure - English
PAR Programs
PAR Safety Manual
PAR Fall Protection Program
PAR - Climbing Fall Protection Requirements
PAR - MAD Best Practices
PAR - Requirements for Establishing EPZ
PAR - Equal Potential Grounding and Bonding Work Zone Safety
PAR Corporate Operations Safety Management System
ET&D Partnership Best Practices
Quant Best Practices for Drilled Holes
PAR - Arc Resistant/Flame Resistant (AR/FR) Clothing Policy
Silica Exposure Program
PAR Fleet Safety Program
PAR Alcohol and Drug Abuse Policy
North American Standards for Cargo Securement: Driver's Handbook on Cargo Securement
OSHA Inspection Information & Forms
OSHA Inspection Procedure Instructions
PAR OSHA Compliance Officer Handout
PAR OSHA Inspection Report
OSHA Inspection Advice Checklist
PAR OSHA Inspection Information Label
Customer Specific Documents

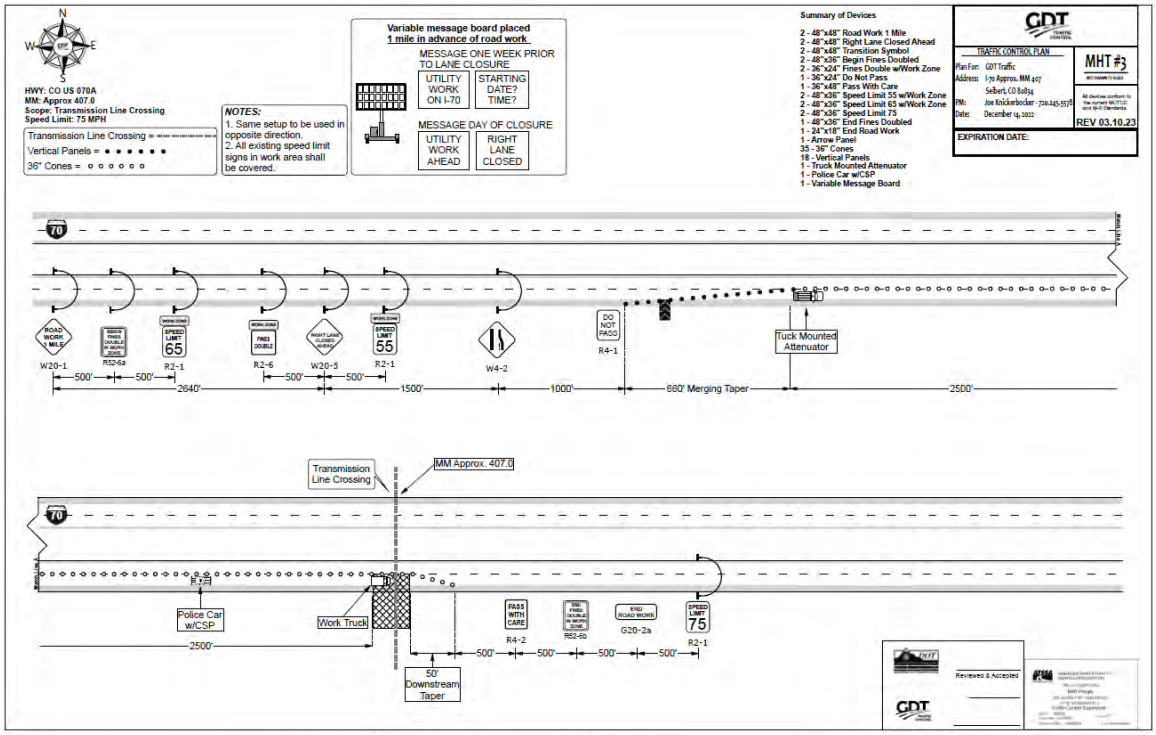
Addendum E – Task Plan Index

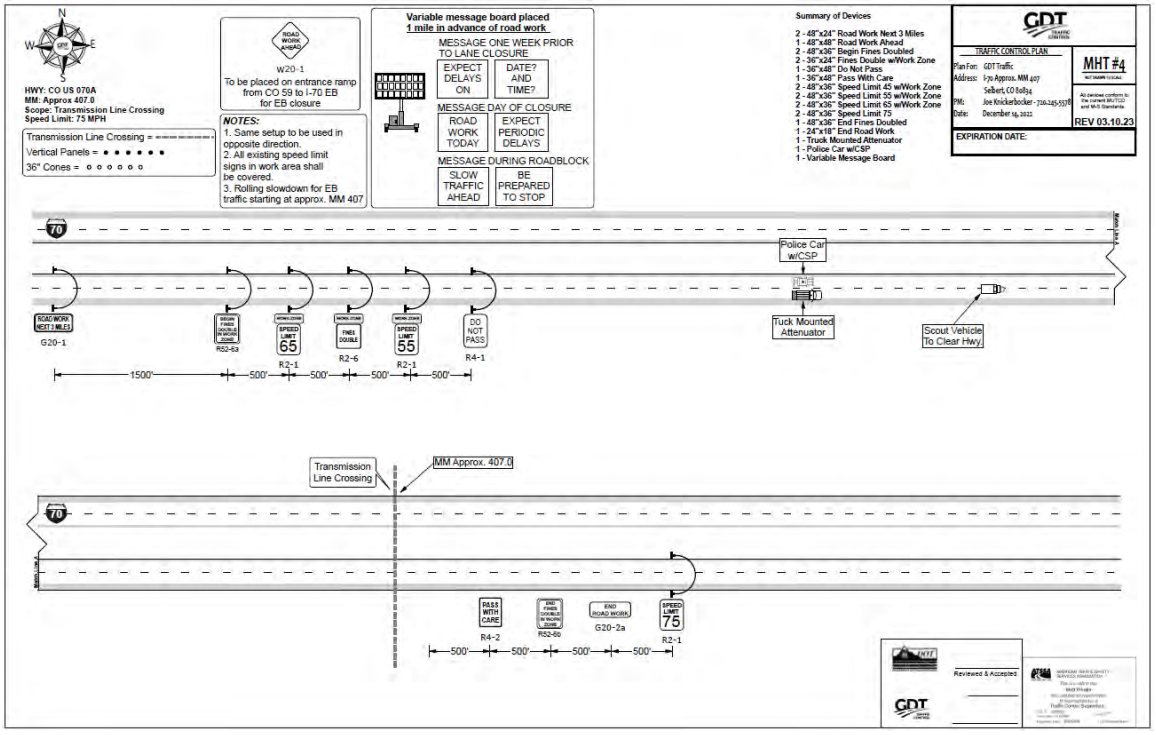
Document Name	Date	Revision Number and Date

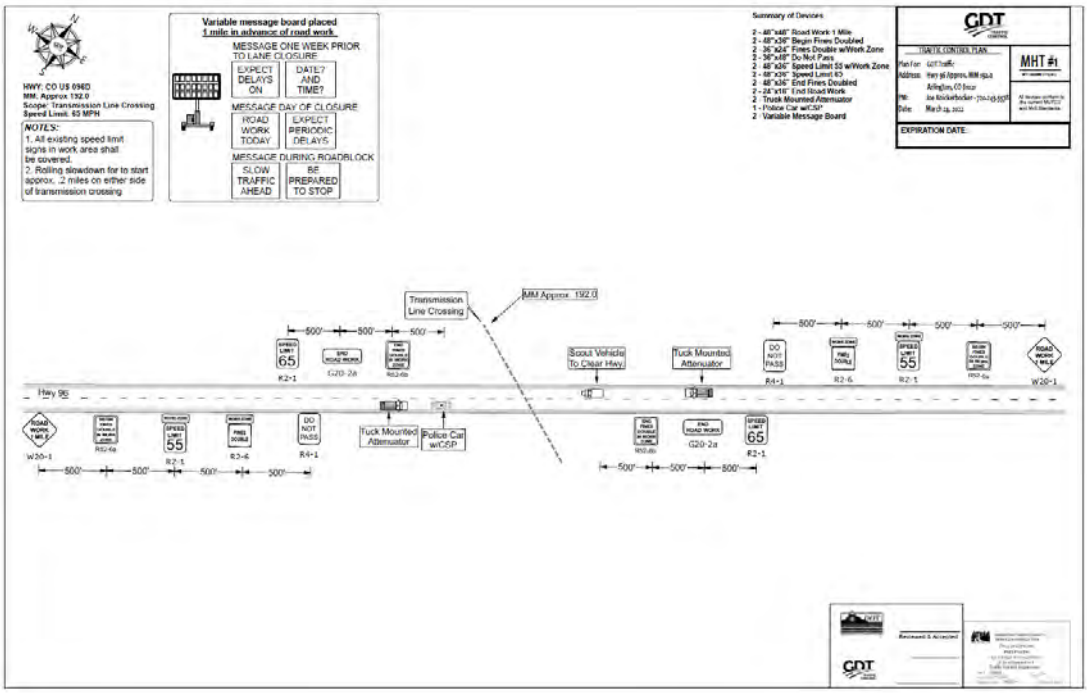
Addendum F – Traffic Control Plans






HWY: CO US 070A
MM: Approx 407.0
Scope: Transmission Line Crossing
Speed Limit: 75 MPH
Transmission Line Crossing
Vertical Panels = ● ● ● ● ● ●
36" Cones = o o o o o o
NOTES:
1. Same setup to be used in opposite direction.
2. All existing speed limit signs in work area shall be covered.
Variable message board placed 1 mile in advance of road work
MESSAGE ONE WEEK PRIOR TO LANE CLOSURE
UTILITY WORK ON I-70
STARTING DATE? TIME?
MESSAGE DAY OF CLOSURE
UTILITY WORK AHEAD
RIGHT LANE CLOSED
Summary of Devices
2 - 48"x48" Road Work 1 Mile
2 - 48"x48" Right Lane Closed Ahead
2 - 48"x48" Transition Symbol
2 - 48"x36" Begin Fines Doubled
2 - 36"x24" Fines Double w/Work Zone
1 - 36"x24" Do Not Pass
1 - 36"x48" Pass With Care
2 - 48"x36" Speed Limit 55 w/Work Zone
2 - 48"x36" Speed Limit 65 w/Work Zone
2 - 48"x36" Speed Limit 75
1 - 48"x36" End Fines Doubled
1 - 24"x18" End Road Work
1 - Arrow Panel
35 - 36" Cones
18 - Vertical Panels
1 - Truck Mounted Attenuator
1 - Police Car w/CSP
1 - Variable Message Board
GDT
TRAFFIC CONTROL PLAN
Plan For: GDT Traffic
Address: I-70 Approx. MM 407
Selbert, CO 80834
PM: Joe Knickerbocker - 720-245-5578
Date: December 19, 2022
MHT #3
REV 03.10.23
EXPIRATION DATE:
W20-1
R52-6a
R2-1
65
R2-6
W20-5
R2-1
55
W4-2
R4-1
DO NOT PASS
Tuck Mounted Attenuator
500'
2640'
1500'
1000'
680' Merging Taper
2500'
Transmission Line Crossing
MM Approx. 407.0
Police Car w/CSP
Work Truck
R4-2
PASS WITH CARE
R52-6b
G20-2a
END ROAD WORK
R2-1
75
50' Downstream Taper
Reviewed & Accepted
GDT


HWY: CO US 070A
MM: Approx 407.0
Scope: Transmission Line Crossing
Speed Limit: 75 MPH
Transmission Line Crossing = ========
Vertical Panels = ● ● ● ● ● ●
36" Cones = o o o o o o
W20-1
To be placed on entrance ramp from CO 59 to I-70 EB for EB closure
NOTES:
1. Same setup to be used in opposite direction.
2. All existing speed limit signs in work area shall be covered.
3. Rolling slowdown for EB traffic starting at approx. MM 407
Variable message board placed 1 mile in advance of road work
MESSAGE ONE WEEK PRIOR TO LANE CLOSURE
EXPECT DELAYS ON
DATE? AND TIME?
MESSAGE DAY OF CLOSURE
ROAD WORK TODAY
EXPECT PERIODIC DELAYS
MESSAGE DURING ROADBLOCK
SLOW TRAFFIC AHEAD
BE PREPARED TO STOP
Summary of Devices
2 - 48"x24" Road Work Next 3 Miles
1 - 48"x48" Road Work Ahead
2 - 48"x36" Begin Fines Doubled
2 - 36"x24" Fines Double w/Work Zone
1 - 36"x48" Do Not Pass
1 - 36"x48" Pass With Care
2 - 48"x36" Speed Limit 45 w/Work Zone
2 - 48"x36" Speed Limit 55 w/Work Zone
2 - 48"x36" Speed Limit 65 w/Work Zone
2 - 48"x36" Speed Limit 75
1 - 48"x36" End Fines Doubled
1 - 24"x18" End Road Work
1 - Truck Mounted Attenuator
1 - Police Car w/CSP
1 - Variable Message Board
GDT
TRAFFIC CONTROL PLAN
Plan For: GDT Traffic
Address: I-70 Approx. MM 407
Selbert, CO 80834
PM: Joe Knickerbocker - 720-245-5578
Date: December 19, 2022
MHT #4
REV 03.10.23
EXPIRATION DATE:
G20-1
R52-6a
R2-1
65
R2-6
R2-1
55
R4-1
DO NOT PASS
Police Car w/CSP
Tuck Mounted Attenuator
Scout Vehicle To Clear Hwy
1500'
500'
Transmission Line Crossing
MM Approx. 407.0
R4-2
PASS WITH CARE
R52-6b
G20-2a
END ROAD WORK
R2-1
75
Reviewed & Accepted
GDT


Variable message board placed
1 mile in advance of road work
MESSAGE ONE WEEK PRIOR TO LANE CLOSURE
EXPECT DELAYS ON
DATE? AND TIME?
MESSAGE DAY OF CLOSURE
ROAD WORK TODAY
EXPECT PERIODIC DELAYS
MESSAGE DURING ROADBLOCK
SLOW TRAFFIC AHEAD
BE PREPARED TO STOP
HWY: CO US 09D
MM: Approx 192.0
Scope: Transmission Line Crossing
Speed Limit: 65 MPH
NOTES:
1. All existing speed limit signs in work area shall be covered.
2. Rolling slowdown for to start approx. .2 miles on either side of transmission crossing
Summary of Devices
2 - 48"x48" Road Work 1 Mile
2 - 48"x36" Begin Fines Doubled
2 - 36"x24" Fines Double w/Work Zone
2 - 36"x48" Do Not Pass
2 - 48"x36" Speed Limit 55 w/Work Zone
2 - 48"x36" Speed Limit 65
2 - 48"x36" End Fines Doubled
2 - 24"x18" End Road Work
2 - Truck Mounted Attenuator
1 - Police Car w/CSP
2 - Variable Message Board
GDT
TRAFFIC CONTROL PLAN
MHT #1
Plan for:
Address:
Date:
EXPIRATION DATE:
Transmission Line Crossing
MM Approx 192.0
Scout Vehicle To Clear Hwy
Truck Mounted Attenuator
Hwy 96
Truck Mounted Attenuator
Police Car w/CSP
500'
W20-1
R2-6a
R2-1
55
R3-6
R4-1
DO NOT PASS
G20-2a
65
R2-6
W20-1

Addendum 1 – Customer