

## Topic 1 Statement of Project Objectives

**STATEMENT OF PROJECT OBJECTIVES (SOPO)****Wildfire Mitigation and Extreme Weather Resilience for Xcel Energy****A. OBJECTIVES**

Xcel Energy seeks DOE funding to implement wildfire risk reduction, system hardening and targeted undergrounding projects in our service territories to accelerate and enhance ongoing resiliency programs to minimize grid impacts from wildfires, winter storms and other high-impact, low probability (HILP) environmental events. Xcel Energy also seeks funding as a part of the Extreme Weather Resilience Program to expand and accelerate our efforts to mitigate severe weather impacts in our service area. This work is broken down by workstreams, where the objectives for each workstream are:

<b>Workstream</b>	<b>Objectives</b>
<b>Grid Resiliency</b>	Increase resiliency on our current electric operations equipment, both distribution and transmission systems, through coating wood poles in areas with elevated wildfire risk, convert overhead distribution lines to underground, replacing distribution protective equipment with modern/non-expulsion devices, test to determine maximum wind and snow load for each pole in the system, and conduct vegetation management activities to remove hazards clear mainlines.
<b>Monitoring Technology</b>	Leverage enabling technologies such as drones and fire spread modeling software to develop and deploy semi-autonomous pole inspection workflow, fully automate restoration response operations for effect powerline segments, and establish industry-leading wildfire risk modeling software.
<b>Community Resiliency</b>	Partner with private companies, research entities, and communities to demonstrate community resiliency systems in DAC and BIPOC communities including electric vehicle driver wildfire alert structure, electric school buses as a resiliency asset, community microgrids that create resilience hubs, and a microgrid at a water treatment plant.

**B. SCOPE OF WORK**

The efforts for the wildfire mitigation and extreme weather resiliency fall into three project workstreams including:

**Grid Resiliency** – Work will include coating of wood poles, strategic undergrounding of high-risk circuits, replacement of non-expulsion fuses, vegetation management mainline reclamation, and clearing of hazardous trees.

**Monitoring Technology** – Work will include unmanned aerial system (UAS) pole inspection for distribution assets, executing a wildfire safety settings (WSS) restoration response program for electric transmission and distribution lines, expanding the use of fire spread modeling software across high-risk wildfire service territory, conducting wind strength testing, and hazard tree identification using satellite imagery analysis.

**Community Resiliency** – Work includes implementing [WeaveGrid] a wildfire alert structure for electric vehicle drivers, electric school buses as a resilience asset, four microgrid resiliency projects in black, indigenous, and people of color (BIPOC) communities, and a water treatment plan resiliency microgrid project in a disadvantaged community (DAC).

**C. TASKS TO BE PERFORMED****Task 1.0: Project Management and Planning**

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**Subtask 1.1: Project Management Plan (PMP)** - Within 30 days of award, the Recipient shall submit a Project Management Plan (PMP) to the designated Federal Project Officer (FPO). The Recipient shall not proceed beyond Task 1.0 until the PMP has been accepted by the FPO.

The PMP shall be revised and resubmitted as often as necessary, during the course of the project, to capture any major/significant changes to the planned approach, budget, key personnel, major resources, etc. The Recipient shall manage and direct the project in accordance with the accepted PMP to meet all technical, schedule and budget objectives and requirements. The Recipient will coordinate activities to effectively accomplish the work. The Recipient will ensure that project plans, results, and decisions are appropriately documented, and that project reporting and briefing requirements are satisfied.

**Subtask 1.2: National Environmental Policy Act (NEPA) Compliance** - As required, the Recipient shall provide the documentation necessary for NEPA compliance.

**Subtask 1.3: Continuation Briefing(s)** - The Recipient will brief DOE on roughly an annual basis to explain the plans, progress and results of the technical effort. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision point that are documented in the Project Management Plan (PMP).

**Task 2.0: Grid Resiliency**

**Subtask 2.1: Wood Pole Fire Resistant Coating** - Identify circuits and wood poles that are in the area of elevated wildfire risk (approximately 3000 poles each in PSCo and SPS). Once the target poles have been identified, each pole will be evaluated to determine the appropriate fire-retardant product and installation method (spray-on coating or fiber-mesh wrap).

**Subtask 2.2: Undergrounding High Risk Circuits on the Distribution System** - Risk of ignition and outage history will be reviewed to prioritize which circuits would benefit from undergrounding. Schedule of work, materials, and design will be executed.

**Subtask 2.3: Non-Expulsion Fuses** – Perform a comprehensive fuse coordination study on all identified wildfire feeders to ensure adequate system protection is maintained when performing a changeout of an expulsion type fuse with a non-expulsion type fuse. In conjunction with these replacements, locations for fault indicators (FIs) will be installed to ensure quick fault location identification occurs when line crews are working to restore power after a fault occurs.

**Subtask 2.4: Hazard Tree Clearing Program** - Expand a current, bi-annual program to become annual for the identification of high-risk hazard trees on T&D circuit-based projects. This program is currently referred to as the Mountain Hazard Tree Program and includes identification of hazard trees (i.e., trees that have an unacceptable level of risk scene or predicted within a targeted timeframe). All projects within the Company's WF risk zone would be patrolled annually for these trees, versus bi-annually today. Trees meeting the risk criteria would be mitigated through tree felling or reducing the tree's height

**Subtask 2.5: Vegetation Management Mainline Reclamation in High Reliability Risk Circuits** - perform more detailed tree inspections to identify failure risk, perform clearing to achieve 10-feet to 20-feet of clearance at time of maintenance through pruning and tree

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removals (compared to routine work which targets achievement of 6-feet minimum). Annually the program will be reviewed to assign overall budget and assess criteria used to determine highest priority circuits, i.e., those circuits and sections of circuits which have potential to have large contributions to SAIDI results and have trees present.

**Task 3.0: Monitoring Technology**

**Subtask 3.1: Unmanned Aerial System (UAS) pole Inspection for Distribution Assets** - jointly define scope of work and deliverables schedule with software development partner Airtonomy, internal Data Science team AI model development timeline, procure drones and sensory equipment. Start deployment of drones and sensory equipment to field; test, train and deploy end-to-end solution.

**Subtask 3.2: Wildfire Safety Settings (WSS) Restoration Response Program for Electric Transmission and Distribution Lines** - development of the end-to-end workflow to support autonomous BVLOS UAS operations; AI models for identification, classification, and ranking of line and equipment defects requiring immediate restoration response action; integration of priority work orders into enterprise asset management system; procurement of FAA waivers to enable BVLOS, Operations Over People, and One-to-Many Operations; acquisition and deployment of local radar systems, ADSB receivers and transmitters, and Detect-and-Avoid technology system.

**Subtask 3.3: Fire Spread Modeling Software** - purchasing the licensing for industry-leading wildfire spread modeling software that is commercially available and configuring it for the SPS service areas (Texas and New Mexico). In addition, the current advanced fire spread modeling software that has been implemented in Colorado will be expanded to cover additional square miles of the service territory for electric distribution and transmission assets that located within the eastern plains of Colorado.

**Subtask 3.4: Wind Strength Testing** - to inspect via LiDAR equipped helicopters the pole loading and strength of poles withing the wildfire zone. This inspection includes modeling of ice load and wind speed as well as an inspection of the integrity of the pole and the equipment on the pole.

**Subtask 3.5: Hazard Tree Identification Using Satellite Imagery Analysis** - Analytics of vegetation risk relative to infrastructure proximity (i.e., trees with fall-in risk to powerlines) and the tree(s)' health will be used to guide scheduling of projects and ordering of projects to be worked during each calendar year. Areas or projects with higher concentrations of hazard trees identified through the technology analytics will be prioritized sooner that projects with lower counts of identified hazard trees. The data and analytics deliverable coming from the technology partner, AiDash, will be reviewed regularly.

**Task 4.0 Community Resiliency**

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**Subtask 4.1: Electric Vehicle Drivers for Efficient and Effective PSPS Solutions** - defining eligible evacuation centers with proper access, identification of site critical loads relevant to evacuation activities, determination of system design, and project preparation activities. To provide resilience to the community, depleted ESB batteries must be recharged so they can be deployed again as needed. As the ESBs are typically stored and operated from depots with large parking lots, installation of renewable onsite power generation (typically solar canopies) and stationary battery energy storage systems (BESS) would allow ESBs to return to the depot, charge and be dispatched again to evacuation center. At the bus depot, numerous components will need to be installed and operational.

**Subtask 4.2: Electric School Buses as a Resilience Asset** - A collaboration with WRI aims to create a resilience center which can be provided with back-up power through a bi-directional electric school bus (EBS). The project has objectives to develop a process for dispatching ESBs to the resilience center in times of emergency and document the solution to create a blueprint to replicate these systems in other communities impacted by PSPS events.

**Subtask 4.3: Microgrids Supporting Black, Indigenous, People of Colors (BIPOC) Community Resilience** – Install four total microgrids (3 RMP sites plus one or more additional BIPOC community center sites) supporting community resilience in emergencies.

**Subtask 4.4: LaCrosse WI Water Treatment Plant Resiliency** - The City of La Crosse is working with Xcel Energy to install a microgrid - including a battery energy storage system, advanced microgrid controls, and system enhancements - to leverage renewable digester gas-fueled combined heat and power and standby generation to support the wastewater treatment plant in the event of a utility outage. A future phase would support additional grid modifications and components to include other facilities, including the all-electric municipal bus charger.

**Task 5.0: Community Benefits Plan**

**Subtask 5.1 Planning.** includes detailed community Outreach Plan for area wide and specific location project deployment, benchmark initial J40 metrics and internal workforce gaps.

**Subtask 5.2 Implement phase 2 of the Community Benefits Plan.** integrating the outreach plan, educating communities on project benefits, finalizing J40 metrics through community input, and creating workforce capable of operating new resiliency project technologies.

**Subtask 5.3 Implement Phase 3 of the Community Benefits Plan.** Continuing outreach through project deployment and using initial outreach to further Justice40, DEIA, and community engagement and consideration.

**Subtask 5.4 Implement Phase BP4 & BP5 of the Community Benefits Plan.** Continuing outreach through final project installations and continued project operations.

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**D. DELIVERABLES**

Subtask 1.1: Project management plan  
Subtask 1.3: Pre-continuation briefing document(s)  
Subtask 2.1: Workplans for wood pole coating, PSCo and SPS service territories  
Subtask 2.2: Report indicating 60 miles of undergrounding complete  
Subtask 2.3: Report indicating 100% of feeders scoped for non-expulsion fuses complete  
Subtask 2.4: Year-end hazard tree clearing results report  
Subtask 2.5: Year-end mainline reclamation results report  
Subtask 3.1: Initial AI imagery inspection model and ML pipeline

Subtask 3.2: Initial AI imagery inspection model and ML pipeline supporting restoration responses.  
Subtask 3.3: Final validation testing report of the fire spread model  
Subtask 3.4: Report indicating 100% of feeders scoped for wind strength testing complete  
Subtask 4.1: Report of 1,000 participants reached for electric driver resiliency program  
Subtask 4.2: EBS project design  
Subtask 4.3: Microgrid design document for each project site location  
Subtask 5.0: Report of completed outreach and J40 outcomes

In addition to the deliverables listed above, Xcel Energy shall submit all periodic, topical, final, and other reports in accordance with the Federal Assistance Reporting Checklist and accompanying instructions.

**E. BRIEFINGS/TECHNICAL PRESENTATIONS**

The Recipient shall prepare, and present periodic briefings, technical presentations and demonstrations as requested by the Federal Project Officer, which may be held at a DOE or the Recipient's facility, other mutually agreeable location, or via webinar. Such meetings may include all or a combination of the following:

**Kickoff Briefing:** Not more than 30 days after submission of the Project Management Plan, the Recipient shall prepare and present a project summary briefing as part of a Project Kickoff Meeting.

**Pre-Continuation Briefing:** Not less than 90 days prior to the planned start of a budget period, the Recipient shall brief the DOE on the results to date, and their plans for the subsequent periods of work. The DOE will consider the information from this briefing, as well as the content of deliverables submitted to date, prior to authorizing continuing the project.

**Final Project Briefing:** Not less than 30 days prior to the end of the project, the Recipient shall prepare and present a Final Project Briefing on the results and accomplishments of the entire project.

**Other Briefings:** The Recipient shall prepare and present technical, financial, and/or administrative briefings as requested by the DOE. Additionally, the DOE may require Recipients to make technical presentations at national and/or industry conferences.