

NORTH DAKOTA TRANSMISSION AUTHORITY

NORTH DAKOTA INDUSTRIAL COMMISSION

Bipartisan Infrastructure Law (BIL) – Section 40101(d) Application

Project Title: Upgrading Oil Circuit Reclosers to Dielectric Reclosers

Applicant: McLean Electric Cooperative, Inc.

Date of Application: May 29, 2025

Amount of Grant Request:

Phase 1: \$385,000

Phase 2: \$385,000

Total Project: \$770,000

Duration of Project:

Phase 1: 8 months – 2026

Phase 2: 8 months – 2027

Point of Contact (POC): Lucas Schaaf, PE

POC Contact Information:

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Applicant Description

Provide a description of the applicant (i.e., type of entity, corporate structure, MWh sold annually, etc.)

Project Description

Provide a description of the project with enough detail to allow the reviewers to adequately evaluate the project.

Standards of Success

Provide a description on how the proposed project will fulfill any or all the program objectives.

Project Timeline

Provide a project timeline including anticipated start date, significant project milestones, and anticipated project completion date or project duration.

Project Budget

Provide a total project budget, clearly describing the amount of funding requested from North Dakota Transmission Authority (NDTA).

APPLICANT DESCRIPTION

McLean Electric Cooperative, Inc. (MEC) provides electric service to McLean County in west central North Dakota. A small number of accounts exist in Mountrail, Sheridan, and Ward counties. The company headquarters is in Garrison, ND, and an outpost is in Turtle Lake, ND. MEC was formed on August 26, 1945, and currently serves approximately 4,264 meters. MEC sold approximately 193,697 MWh for the fiscal year of 2024. MEC owns and operates more than 1815 miles of Distribution Line with approximately 560 miles of underground facilities. MEC is a member of Central Power Electric Cooperative, Inc. which is an electric transmission cooperative headquartered in Minot, ND.

MEC has 20 full-time employees and is governed by a Board of Directors comprised of 7 member consumers. The Board meets monthly, and an annual meeting is held for our Membership. MEC's headquarters is located at 4031 Highway 37 Bypass, Garrison, ND 58540.



FIGURE 1: MEC'S SERVICE TERRITORY MAP

PROJECT DESCRIPTION

MEC's project proposal consists of changing approximately (14) three-phase sets of Oil Circuit Reclosers (OCR) to three-phase Dielectric Reclosers. Phase 1 would consist of changing approximately (3) three-phase sets of OCRs in Mercer Substation and (4) three-phase sets of OCRs in the Coleharbor Substation. MEC has had a long-term plan in place to proactively change the OCRs to Dielectric Reclosers, but the ability to receive grant funding would accelerate MEC's ability to complete this project. The GPS Coordinates for the proposed Substation Upgrades are as follows:

Mercer Substation

47.502430, -100.712396

(3) New Sets of Dielectric Reclosers

Coleharbor Substation

47.457952, -101.228558

(4) New Sets of Dielectric Reclosers

Phase 2 would consist of changing out 7 existing sets of three-phase OCRs down line of the substation to new Dielectric Reclosers. The following locations are slated for a replacement of existing OCRs to new Dielectric Reclosers:

Garrison Area Protection

47.646525, -101.527939

(1) New Set of Dielectric Reclosers

Garrison Area Protection

47.646302, -101.526505

(1) New Set of Dielectric Reclosers

Riverdale Area Protection

47.501548, -101.238573

(1) New Set of Dielectric Reclosers

Turtle Lake Area Protection

47.703144, -100.907833

(1) New Set of Dielectric Reclosers

Turtle Lake Area Protection

47.703880, -100.907817

(1) New Set of Dielectric Reclosers

Max Area Protection

47.746174, -101.272033

(1) New Set of Dielectric Reclosers

White Shield Area Protection

47.702966, -101.849685

(1) New Set of Dielectric Reclosers

All labor associated with the changeout would not be included in the grant application as this is routine operation and maintenance for MEC to ensure safe, reliable operation of Protection Equipment. Therefore, the Davis-Bacon Act would not be applicable to the internal labor required for the changeout of the new equipment. All equipment will be certified to be compliant with Build America / Buy America guidelines. All installations are compliant with the National Environmental Policy Act (NEPA) as no new structures will be installed. The OCRs are simply being removed and replaced with new Dielectric Equipment.

STANDARDS OF SUCCESS

Enhancing grid reliability is a key element of MEC's long-term planning. MEC has continuous improvement to infrastructure including doing proactive replacements of overhead cable to underground annually. Additionally, MEC has proven to be proactive in adopting technology to improve reliability, safety, and affordability demonstrated by previous investments into new Protection Devices and a new SCADA system installed in 2025. The success of the proposed project can be summarized by the following impacts:

1. Reduction in the magnitude and duration of grid outages:

The proposed project to install new Dielectric Reclosers will reduce the magnitude of existing outages by successfully opening on a single phase in lieu of multiple phases to minimize affected members. Additionally, the proposed Dielectric Reclosers will provide information back to SCADA system to provide real time information to our line personnel to reduce the duration of grid outages by pointing out the affected area of the system. The combination of proper sectionalizing with real time information will reduce the number of affected meters along with reducing the amount of time that the meters are down by minimizing troubleshooting time in the field. Lastly, the incorporation of this modern technology opens the opportunities of grid enhancing capabilities including Fault Location, Isolation, and Service Restoration (FLISR). This technology allows for enhanced capabilities of locating underground faults quickly and creating automatic service restoration based on fault location.

2. Reduction in the frequency and impacts of a major storm / non-storm event:

The proposed project will increase the sectionalizing capabilities of the system on any storm or non-storm situation by increasing the capability and effectiveness of the protection devices within our substations and on downline feeders. By having enhanced sectionalizing, the outage numbers at MEC will be minimized and allow our membership to utilize cheaper and more reliable power. With the enhanced technology, MEC will gain the capability to change the settings of the reclosers remotely. This will allow MEC to tune these reclosers to better sectionalize in events such as snowstorms, wind events, large rain events, ice storms, and Red Flag Warnings. With the onset of more frequent Red Flag Warnings within the state, the innovative technology can be used to mitigate the risk of wildfires caused by overhead utilities by changing settings remotely when the Red Flag Warnings are issued.

3. Providing Lower Cost Energy Access to Disadvantaged or Underserved Communities:

The proposed project will reduce the overall outage time for MEC which will reduce the overall cost of serving our membership. MEC serves a portion of the Fort Berthold Indian Reservation which is considered a disadvantaged community. With the integration of this project, (1) set of new reclosers would be installed in the Fort Berthold Indian Reservation

which will have direct impacts on reliability. The indirect impact will be a reduction in outages and costs to serve our system across our whole membership.

Another important differentiator for Dielectric Reclosers is the reduced need for maintenance. Legacy OCRs need a regular maintenance program to ensure the oil in the units is proper condition. With the replacement of OCRs to Dielectric Reclosers, the maintenance needs are reduced. With reduction in the maintenance, it allows MEC to reduce the Operation and Maintenance Costs required to maintain our system. This results in more affordable power delivery for our membership.

4. Increasing Safety Around MEC's Overhead Facilities

The proposed project will increase the safety around our existing power lines by opening faster than the previous OCRs. This not only reduces arc flash but decreases the chance of a fatal incident in the occurrence of a strike against our existing facilities. Additionally, the ability to adjust settings can allow the Cooperative to be more proactive than ever as conditions change to ensure safety is paramount.

5. Increasing System Data and Analytics

The proposed project will increase the ability to monitor load and fault currents to better plan for needed upgrades and identify inadequacies. Currently, the Engineering model is based on assumption-based calculations. With the addition of actual data, the model will become more advanced and allow MEC to become more proactive with system improvements. This allows MEC to become more efficient and allocate financial resources to the areas that need it the most.

PROJECT TIMELINE AND TEAM

MEC's proposed Phase 1 project will be completed in 2026 and Phase 2 will be completed in 2027. MEC has previous experience in designing, programming, and installing Dielectric Reclosers. MEC has completed successful installations at 10 of the current 12 substations. The proposed projects will take priority for both our Garrison and Turtle Lake Crews to ensure they take priority so MEC can maximize the benefit of these installations.

MEC has the following team prepared and ready to take on this project:

1. Lucas Schaaf, PE – Engineering Manager: Point of contact for the project. Responsible for design and programming of relays.
2. Levi Kinn – Metering Technician: Assist with the install and programming of the relays in the field.
3. Austin Dillard – IT & GIS Administrator: Assist with integrating all the devices into SCADA and ensure security is enhanced.
4. Operations Department including Operations Manager, Foremen, and Journeymen Linemen: The Operations Department will be responsible for installing the devices in the field. All field personnel in the Operations Department (excluding Operations Manager) participate in the Local Union 1593, International Brotherhood of Electrical Workers.

MEC's internal team are highly experienced in this type of installation. The engineering team utilizes software tools directly from the Original Equipment Manufacturers to ensure proper programming and sectionalizing. The Operations Department routinely installs and maintains Overcurrent Equipment. Safety is paramount to MEC. All safety opportunities are taken to ensure our personnel and all people around our lines are protected. Resumes of any person on this team are available upon request. MEC does not plan to hire additional staff to facilitate this project. To conclude, MEC is prepared and committed to completing Phase 1 by the end of 2026 and Phase 2 by the end of 2027.

PROJECT BUDGET

Due to the variation in equipment pricing, our vendors presented budgetary estimates of \$55,000 per three-phase unit. MEC is only submitting the costs of the material into this grant. The entire budget for Phase 1 and Phase 2 simply includes the acquisition of the material to facilitate this project. In terms of avoided cost by installing this equipment, outages will be minimized and avoided, which can add up overtime. A typical outage requires at least 2 Journeymen Linemen. A standard 4-hour outage window with 2 linemen can cost the Cooperative up to \$1200. This cost will continue to increase over time due to the increase in labor and equipment costs. Additionally, our membership will save money with increased reliability and minimized down time.

MEC is willing to provide 1/3 of the total project cost which would be anticipated to be \$254,100. MEC is looking to attain 2/3 of the total project from the North Dakota Transmission Authority which would be anticipated to be around \$515,900. These costs are derived from purchasing (14) total units valued at \$55,000 per unit.