North Dakota Transmission Authority

North Dakota Industrial Commission

BIL 40101(d) Application

Project Title:

VEC Ryder-Rader Overhead to Underground

Applicant:

Verendrye Electric Cooperative

Date of Application:

11/20/23 (Original Submission)

9/23/24 (Revised)

Amount of Grant Request:

$314,250

Total Amount of Proposed Project:

$628,500

Duration of Project:

Completed In 2025 Construction Season

Point of Contact (POC):

Wesley Mason

POC Telephone:

701-624-0374

POC Email:

wesleyrm@verendrye.com

POC Address:

615 Highway 52 West Velva, ND 58790-7417

TABLE OF CONTENTS

Please use this table to fill in the correct corresponding page number.

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 of how the proposed project will fulfill any or all of 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 NDTA.

Applicant Description

Background:

Verendrye Electric Cooperative (VEC) is an electric cooperative founded in 1939. It is located in north-central North Dakota. VECs system consists of 16,631 services in portions of Ward, Sheridan, Wells, McHenry, Pierce, and Renville counties, with general headquarters and operations located in Velva, an additional office in Minot, and outposts in Harvey and the Minot Air Force Base. VEC maintains a distribution system of 4,617 miles of which 2,415 miles are overhead and 2,202 miles are underground conductor. In 2022 VEC sold 587,906 MWhs of electricity with a coincident system peak of 122,624 KWs.

The majority of VECs service area is rural, but also serves the urban area surrounding the City of Minot. The majority of the system demand comes from that urban area around Minot. Approximately 38.3% of the energy sales are from residential-related activities. Small and large commercial and industrial energy sales comprise 47.0% of the sales. Energy sales from the Minot Air Force Base were 14.7%.

Qualifications:

VEC employs a dedicated team of 63 individuals, with a strong emphasis on skilled linemen. Additionally, VEC currently employs and has employed a licensed Professional Engineer with the state of North Dakota going back into the 1970's. Further VEC has demonstrated technical feasibility designing, constructing, and maintaining the current system of over 4,600 miles of primary distribution line. Along with the on staff experience and expertise, VEC routinely incorporates outside consultants for additional engineering related to specialty services such as environmental review and long-range planning. Verendrye typically installs approximately 80 miles of underground cable per year. Materials are kept in stock on hand and are continuously replenished. VEC has an on hand stock of American made conductor and associated equipment in anticipation of meeting the Build America/Buy American initiative. With the exception of boring, all labor is performed by VECs highly trained in-house line workers.

Project Description

Description:

Project activities include replacement of 3.5 miles of three-phase #4 ACSR (aluminum conductor steel reinforced) overhead distribution line with three-phase 4/0 AL-URD (aluminum underground) distribution cable. Additional equipment in this proposal includes the installation of a 3 phase bi-directional regulator bank for improved voltage support, and four PV4H reclosers for improved sectionalizing and protective functionality.

Location:

The project is located northeast of Makoti (47.993175, -101.559865) in Ward County, North Dakota. The Project is located in Sections 7, 8, 9, 10, 11, 16, and 17, T152N, R85W. The Project

runs parallel along the north side of 233rd Avenue SW from the west side of 198th Street SW to the east side of 156th Street SW, and then along the east side of 156th Street SW for approximately 0.25 miles.

Via the Justice40 and Energy Justice resources VEC identifies tract 38101011300 as the project location. There are no Disadvantaged communities designated in that tract. The substation that this project is located on reaches onto the Fort Berthold Reservation and supplies several services in that territory. The Energy Justice dashboard identifies the population of the tract as 5134 persons meeting the accepted criteria for a rural area.

Description of Need:
VEC proposes to convert 3.5 miles of overhead power line to underground. This is a 3-phase tie line that runs from the Ryder Substation to the Radar Substation. It was built predominantly in the 1960s as part of a 3 phase build out to support local military activity. It was constructed to the antiquated standards of that time. The older line design is considerably weaker than a modern design. VEC continues to maintain the existing line to its original function with well planned maintenance programs. But overhead power lines are susceptible to catastrophic weather events and vulnerable to damage from transportation and agricultural accidents. Converting these lines to underground will minimize weather events, environmental issues, and provides improved reliability and resiliency. This is part of a larger project developed by VEC while creating the long range work plan to underground the whole tie line. Due to the geography and climate of the local area, this area in particular has been shown historically to be susceptible to major winter storm events.

The 5 year average outage duration, including major storm events, for VECs system is 2.74 hours. The Ryder substation, due to its susceptibility to weather events and remote location to VECs outposts, 5 year average outage time is 11.34 hours. The 5 year average number of outages per substation per year for VEC is 27.76 occurrences, by the same metric the Ryder substation 5 year average is 36.2 occurrences. The 5 year average of consumers per outage for VEC is 23.38 consumers per outage, again by the same metric the 5 year average for Ryder substation is 38 consumers per outage.

Design and Engineering:
All design and engineering work will be performed by our in-house engineers and technicians. As an United States Department of Agriculture (USDA) borrower, through Rural Utility Services (RUS) department, all of VECs construction work meets or exceeds the applicable RUS and National Electric Safety Code (NESC) standards. This project will be completed to the same level of diligence and care to meet or exceed all applicable standards in the NESC and RUS.

Standards of Success

As demonstrated by the above data, the Ryder-Radar tie line on the Ryder substation is a prime candidate for improvement to 1) reduce the magnitude and duration of outages 2) reduce the frequency and impacts of outages. By utilizing this funding opportunity VEC can additionally offset the costs of the proposed project and avoid passing that funding requirement onto the members in this rural underserved community.

Utilizing these metrics, after the proposed undergrounding of the Ryder-Radar tie line, VEC expects to see a measured decrease in outage duration, frequency, and customers affected. Our goal with this initiative is to bring the Ryder substation outage metrics in line with the system average, VEC is confident this project is a crucial step in that goal and will yield a measurable outcome.

Project Timeline

Timeline:

The proposed project aims to increase the system's reliability by converting the 3.5 miles of tie line overhead 12KV 3-phase line to underground from the Ryder substation to the Radar substation in the existing route and existing right-of-way. This will involve retiring and removing the overhead system and installing a new 3-phase underground power line with associated equipment for underground construction. A NEPA compliant Environmental Study and Archeological Review are complete with no issues found, VEC expects Environmental Review approval from Rural Utility Services (RUS) in early 2025. The project will be implemented over the course of VEC's normal construction season from May-October 2025 pending grant approval. We are confident that the result will be a more reliable and robust electrical distribution system.

As is typical for projects of the size and scope VEC deals with, the project may be broken up into multiple work orders and completed in phases. This project will be worked in 3 distinct phases of construction, cutover, and retirement. With milestones for the completion of each phase.

Project Closeout:

When this project's construction, cut over, and retirement phases are done we will close out the project. This process includes facility inspections including photos of all structures installed, GPS coordinates of equipment, and diagrams of electrical switches and vaults.

When appropriate the work orders will be reviewed to ensure proper documentation of installed materials, equipment usage, and labor. Upon closeout of the work orders documentation is retained in perpetuity and will conform to all reporting requirements of the NDTA BIL 40101(d) Program.

Project Budget

VEC has a long history of managing projects of this nature and has historical cost justification for its estimates, the estimates contained herein are pulled from the RUS approved 2023-2026 Construction Work Plan for VEC. VEC meets the Davis-Bacon Act requirements for prevailing wage and requires all contractors do so as well.

The overall estimated budget of the project is $628,500.00, with a 50% proposed cost share this proposal is seeking $314,250.00 of funding from the NDTA. A breakdown of these costs is below.

In addition to the quantified budget items below VEC has and will be providing in-kind services not captured in this budget overview for this project and will be responsible for any cost overruns.

Item	Per Unit Cost	Quantity		Subtotal
Regulators	$30,000.00	3		$90,000.00
Reg Bypass SWs	$1,500.00	3		$4,500.00
Ground Sleeves	$1,000.00	3		$3,000.00
Protective Devices PV4Hs	$5,000.00	4		$20,000.00
4/0 UG Line	$146,000.00	3.5		$511,000.00
			Total	$628,500.00
			50% Cost Share	$314,250.00

PROJECT MAPS RYDER-RADAR TIE LINE