North Dakota Transmission Authority

North Dakota Industrial Commission

BIL 40101(d) Application

Project Title: Transmission Line

Applicant: City of Valley City

Date of Application: 11/16/23
Revised Application 10/1/24

Amount of Grant Request:
$1,053,000

Total Amount of Proposed Project:
$1,620,000

Duration of Project: 2 Years

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Valley City Public Works

254 2nd Ave NE

Valley City, ND 58072

TABLE OF CONTENTS

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

Applicant Description

The City of Valley City is a government entity. The structure of the City of Valley City is a City Commission. The commission consists of a President and 4 commissioners. 16

President – Dave Carlsrud
Commissioner – Duane Magnuson
Commissioner – Mike Bishop
Commissioner – Jeff Erickson
Commissioner – Dick Gulmon

City Hall includes an Assessor, Attorney, Auditor, Deputy Auditor, Police Department (14 officers), Volunteer Fire Department with chief and assistant chief, Building/Fire Inspector, City Administrator, City Commission and Forestry Department.

The City of Valley City has their own Public Works that provides electric, water, wastewater and sanitation services and maintains city streets for Valley City. The city operates an electrical distribution utility with long term purchase power contracts with Western Area Power Administration (WAPA) and Missouri River Energy Services (MRES). This provides over 8,000 MWh annually in electricity to our residents and businesses.

Project Description

Transmission and Insulator Replacement Project

Approximately 1.8 miles of 69KV transmission line poles and insulators will be replaced. The transmission line will be upgraded to 41 new steel poles replacing pole for pole. New hardware will be installed on the new poles using up to date material including 123 epoxy insulators that will replace old porcelain insulators. Grounding rods will be replaced on each of the new poles with proper copper weld that includes arrestor protection.

Given our limited staff, we will need to hire a contractor for this project, leveraging their technical expertise. Approximately **1,200 labor hours** will be dedicated to this effort, provided by a contractor outside our utility company.

With our experience in the City of Valley City's construction projects, we are well-versed in compliance with the **Build America/Buy America** provisions and the **Davis-Bacon Act**. We are committed to adhering to all requirements associated with those within this grant.

While the cost-benefit analysis for this project may be challenging to quantify, it is important to note that we are presenting it as a replacement and upgrade of an existing above-ground electrical transmission line, rather than a new installation. As such, the project scope is not expected to have any significant environmental impact. Should any environmental studies be required, we will ensure they are completed.

This project is both achievable and technically feasible, with a straightforward implementation process. Ultimately, it aims to reduce the frequency of outages, enhancing the reliability of our service.

The transmission line installed in 1969 has exceeded its expected lifespan. Over time, woodpeckers have damaged the poles, and the insulators have deteriorated, leading to cracks that require constant repairs. This ongoing wear increases the risk of frequent power outages. While the Public Works Department has been addressing these issues over the past five years, the fixes are temporary and do not ensure long-term reliability. Replacing the line now will save valuable employee time, reduce future repair costs, and improve system dependability.

Replacing our aging transmission line poles and insulators is essential for maintaining the safety, reliability, and efficiency of our electrical system. By upgrading this critical infrastructure, we will improve service quality, reduce risks, and meet the growing demands on the electrical grid.

Poles deteriorate due to environmental factors and wear, increasing the risk of collapse. Similarly, insulators degrade over time, raising the possibility of electrical failures or short circuits, which pose significant safety hazards. By replacing these components, it will mitigate such risks.

Aging infrastructure is more prone to failures that can result in power outages. By replacing the poles and insulators, we can enhance system reliability and minimize service disruptions. Additionally, planned replacements are more cost-effective than frequent repairs or emergency replacements due to sudden failures. Modern infrastructure is also more resilient to extreme weather, reducing the likelihood of damage during storms.

This replacement is a smarter investment, especially as we work with key customers who are requesting more power. The existing infrastructure may struggle to handle increased loads, but new poles and insulators will support higher-capacity transmission lines. Moreover, modern

equipment allows for the integration of smart grid technologies, further improving the efficiency and responsiveness of our electrical system.

Standards of Success

Objective 1: Reduce the magnitude and duration of grid outages caused by major disruptive storm and non-storm events.

We have 7 full-time employees in the field working with our electrical system who will be trained to manage the resilience project once it is finished.

Attached you will find a listing of totals of how many customers have lost power since 2018.

Power outages in Valley City are often caused by natural factors such as animals, high winds, storms, and flooding. The planned replacement of 1.8 miles of aging power lines will significantly reduce the frequency of outages, particularly those caused by the deterioration of our current infrastructure along that line.

Currently, we are proud to restore power within an average of one hour during outages. However, this infrastructure improvement will further enhance our ability to provide reliable service.

As part of this project, we will be transitioning from wood poles to steel poles, which offer a wide range of advantages. While both materials have their merits, steel poles provide superior durability, safety, and cost-effectiveness in electric service line installations. Their increased longevity and reduced maintenance requirements make them an ideal choice for modernizing our electrical infrastructure.

Steel poles are exceptionally resistant to rot, decay, and damage from pests like woodpeckers and insects, giving them a significantly longer lifespan than wood poles. The current condition of our wooden poles highlights the wear and tear these factors can cause over time. In addition to their durability, steel poles offer superior strength and load-bearing capacity, allowing them to support heavier electrical equipment—an essential feature in a region like ours, where severe weather is frequent. Furthermore, steel poles provide greater stability in high winds, minimizing the risk of downed lines during storms.

Steel poles require significantly less maintenance, as they do not need to be treated for pests or environmental degradation, leading to lower long-term costs. They are also inherently fire-resistant, eliminating the risk of pole failure due to fire—a concern with wooden poles. At the end of their lifecycle, steel poles can be fully recycled, making them a more environmentally sustainable option compared to wood, which relies on the continuous harvesting of trees.

Unlike wood, steel poles are less susceptible to environmental factors such as moisture and temperature fluctuations, allowing them to maintain structural integrity in a variety of climates.

Objective 2: Reduce the frequency and impacts of grid outages caused by major disruptive storm and non-storm events.

The City of Valley City is committed to reducing the frequency of power outages for its residents. In 2023 alone, 9,104 customers experienced power interruptions throughout the city.

While outages occur each month, they have become more frequent over time. We attribute this to the aging transmission line, particularly the last 1.8 miles that have yet to be replaced. The rest of the transmission line has already been upgraded, but the remaining section requires a complete overhaul to prevent further disruptions. While repairs have been made as necessary, these are temporary solutions, and a full replacement is essential for long-term reliability.

Winter weather in Valley City, especially the combination of ice, frost, and wind, poses a significant threat to our aging infrastructure. This harsh weather can cause older poles and insulators to fail. Additionally, sagging lines can clash during high winds, leading to power outages and surges. Upgrading these aging components will help safeguard against such weather-related failures and improve overall system resilience.

Objective 3: Implement grid modernization projects to develop energy solutions that provide lower-cost energy access to disadvantaged or underserved communities and promote energy sufficiency and energy justice in these communities while providing clean energy in alignment with the Biden Administration's Justice40 Initiative. Renewable energy (RE) and distributed energy resources (DERs) that are installed and managed locally give disadvantaged communities the opportunity to meet the energy needs of their community, take control of their energy resources, and enjoy the long-term environmental and economic advantages of these resources. These initiatives not only offer a source of clean, local, renewable energy but also reduce energy costs, generating savings that can be reinvested into the community.

Valley City, ND, faces significant socioeconomic challenges that hinder the well-being of its residents. Low income levels, an aging population, and high poverty rates create an environment of uncertainty and struggle. Receiving this grant would allow us to complete the project without the need to raise electrical rates, helping us maintain current rates and reduce the financial burden on our community.

The median household income is about $56,000, which might seem okay at first glance, but the truth is that many residents struggle to get by. This income just doesn't stretch far enough for a

comfortable lifestyle, especially with rising living costs and everyday expenses. The reality of many residents is they find it difficult to make ends meet especially when factoring in rising costs of living and essential expenses.

A good number of people earn less than $35,000 a year, which keeps many families stuck in a cycle of financial stress. There are not a lot of job opportunities, making it tough for residents to move up and improve their situation.

With an average age of 40 years**,** Valley City presents a demographic that is aging without attracting younger residents. This stagnation suggests a lack of opportunities for youth, leading many to leave the area in search of better prospects elsewhere. The aging population also raises concerns about future workforce sustainability and community vitality and the need for aging health care and services.

A poverty rate of approximately 12% indicates that a notable segment of the population is living in economic distress. This percentage is particularly alarming, as it reflects real families and individuals facing daily struggles for basic necessities.

Families, particularly single-parent households, are hit harder by poverty. These groups often don't have the support they need, which makes things even tougher and limits their chances for a better life.

The local economy, heavily reliant on agriculture and a few key sectors, offers few job prospects, leaving many residents with little choice but to accept low-wage positions. Even in this small town, the cost of living can be burdensome. Basic expenses such as housing, higher than average food costs and utilities can consume a significant portion of household incomes, making financial stability difficult.

In Valley City Schools, approximately 37% of students are eligible for subsidized meals. This statistic highlights the significant need for financial support among families in the district.

We offer a school education program for 5th graders called Smart Energy Squad. This program is the perfect opportunity to provide local students with invaluable knowledge for the future, and they will be taught the importance of energy efficiency, sources of electricity and renewable energy in a fun and interactive way. It offers digital tools, content customization and student kits.

Valley City participates in the scholarship program offerings through Missouri River Energy Services (MRES). Scholarships are awarded to students pursuing courses of study for careers related to the electric industry, such as an electrical technician (field service technician, wind turbine maintenance, power plant maintenance, etc.), electrical engineer or other engineering disciplines, mathematics, science or energy management.

In the past, we have successfully hired interns and provided students with opportunities to job shadow our crew. Notably, two of those interns went on to become full-time members of our team. Our internship program offers students a valuable chance to build credibility for their future careers. Participants gain essential skills such as effective communication, project ownership, deadline management, and teamwork.

Additionally, the program highlights the rewarding nature of a career in the electrical industry, especially given the growing demand for skilled workers in this field. For instance, we had an intern in early spring of 2024 who played a crucial role in our Ice Storm recovery efforts and he has full intentions of continuing on this career path after his time with our crew.

In the past, power outages and the resulting surges have caused significant damage to electronics and appliances. Upgrading our transmission line can help mitigate this risk and protect our valuable equipment.

Ensuring a continuous power supply is critical for the effective operation of hospitals, senior care centers, and health clinics. These facilities provide essential services to vulnerable populations, and any interruption in power can have severe consequences for patient care and safety.

The importance of maintaining an uninterrupted power supply in hospitals, senior care centers, and health clinics cannot be overstated. Reliable power is critical for ensuring patient safety, supporting emergency response, preserving medications, maintaining operational efficiency, securing data, and fostering public trust. Investment in backup power systems and infrastructure upgrades is essential to safeguard these facilities against power interruptions, ensuring they can provide the highest standard of care to the communities they serve.

Valley City has a Critical Access Hospital, 3 Assisted Living/Nursing Homes/Basic Care Facilities, along with 3 health clinics.

In healthcare facilities like these, power outages can jeopardize patient safety. Hospitals rely on electricity to power life-saving equipment, such as ventilators, infusion pumps, and monitoring systems. A sudden loss of power can lead to equipment failure, risking patient lives and compromising the quality of care. Similarly, in senior care centers, many residents depend on electrical devices for mobility and health monitoring. Maintaining a reliable power supply is paramount to ensuring that all patients receive uninterrupted care.

Many medications and medical supplies require refrigeration to remain effective. Power outages can lead to the spoilage of critical pharmaceuticals, potentially putting patients at risk. Hospitals and clinics must maintain proper storage conditions for vaccines, blood products, and other sensitive materials, all of which rely on stable power sources. A consistent electricity supply is essential for inventory management and ensuring that essential supplies are always available.

Modern healthcare relies heavily on electronic health records (EHR) and other digital systems to manage patient information. A power outage can compromise data integrity and security, risking the loss of crucial patient information. Ensuring an uninterrupted power supply is essential not only for maintaining operational efficiency but also for protecting patient privacy and confidentiality.

Maintaining a continuous power supply at water treatment plants is crucial for ensuring the delivery of safe and clean drinking water to communities. Any interruption in power can lead to significant public health risks, operational challenges, and environmental concerns.

The primary role of water treatment plants is to purify and deliver potable water to the public. A power outage can halt treatment processes, allowing contaminants to enter the water supply. This can lead to waterborne diseases, posing serious health risks, especially to vulnerable populations such as children, the elderly, and those with compromised immune systems. Ensuring a stable power supply is essential for protecting public health.

Water treatment plants must operate continuously to meet the demands of the community. Power outages can disrupt the pumping, filtration, and disinfection processes necessary for treating water. Interruptions can result in inadequate water pressure, leading to supply shortages and potentially impacting firefighting capabilities and other critical services that depend on a reliable water supply.

Our Water Treatment Plant relies on complex machinery and technology that requires a steady power supply to function efficiently. Valley City's Water Plant is unique due to its specialized ultra-filtration system, designed to manage higher concentrations of water from Devils Lake. This system faces challenges, requiring significant updates and maintenance to function effectively under varying conditions. Power outages can disrupt automated systems which would be detrimental to our complex system.

Project Timeline

The project would start in the spring of 2025, and it would take all summer to complete for a total time of 7 to 8 months.

We have asked for a 2-year project due to the possibility of products being unavailable or backordered with the anticipated supply chain constraints in our industry.

Project Budget

Please see attached estimate.

The budget estimates are:

Materials	$ 900,000
Labor and equipment	$ 450,000
Engineering and testing	$ 270,000
Total	**$1,620,000**

We are requesting a 65% grant for this project through NDTA. The total project cost is $1,620,000 and we are asking for a grant award of $1,053,000 with a 35% match of $567,000 from the applicant.

Valley City Public Works
Serving Valley City Since : 1893

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PO Box 240
Valley City, ND 58072
Phone (701) 845-0380
Fax (701) 845-4588
publicworks@valleycity.govoffice.com

Impacted Customers	Start Date Time	End Date Time
21	9/30/2024 10:30	9/30/2024 11:00
24	9/13/2024 12:00	9/13/2024 13:00
1	9/9/2024 21:30	9/9/2024 22:30
1	9/3/2024 16:30	9/3/2024 17:00
21	9/3/2024 13:30	9/3/2024 14:15
1	8/29/2024 8:30	8/29/2024 9:30
1	8/17/2024 11:30	8/17/2024 12:30
1	7/16/2024 8:30	7/16/2024 9:00
1	7/6/2024 16:30	7/6/2024 17:00
30	6/22/2024 9:30	6/22/2024 10:30
1	6/19/2024 21:30	6/19/2024 22:30
3	6/10/2024 19:00	6/10/2024 21:00
1	6/8/2024 16:30	6/8/2024 17:30
11	6/7/2024 9:00	6/7/2024 9:30
12	6/5/2024 10:00	6/5/2024 13:00
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27	6/2/2024 9:15	6/2/2024 9:45
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5	4/2/2024 11:00	4/2/2024 11:30
40	3/20/2024 20:00	3/20/2024 20:30
16	3/16/2024 21:00	3/16/2024 21:45
1	3/14/2024 15:10	3/14/2024 15:35
1	2/24/2024 12:00	2/24/2024 13:00
30	2/17/2024 14:00	2/17/2024 15:00
52	1/29/2024 9:30	1/29/2024 10:00
12	1/15/2024 18:45	1/16/2024 2:45
1	1/12/2024 16:00	1/12/2024 17:00
355	2024 Total as of 9/30/2024	

Impacted Customers	**Start Date Time**	**End Date Time**
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2	12/9/2023 2:30	12/9/2023 3:30
5	12/7/2023 2:30	12/7/2023 3:00
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17	11/19/2023 10:00	11/19/2023 10:45
17	11/17/2023 10:30	11/17/2023 11:00
12	11/11/2023 11:30	11/11/2023 12:00
18	10/22/2023 15:30	10/22/2023 17:30
24	10/12/2023 15:30	10/12/2023 16:00
6	10/10/2023 5:10	10/10/2023 6:10
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43	10/7/2023 12:00	10/7/2023 12:30
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40	9/27/2023 17:30	9/27/2023 19:00
3	9/25/2023 16:10	9/25/2023 17:10
1	8/8/2023 17:30	8/8/2023 18:00
52	7/17/2023 9:15	7/17/2023 9:45
17	7/8/2023 9:30	7/8/2023 10:00
1	7/1/2023 11:30	7/1/2023 12:30
43	6/19/2023 8:30	6/19/2023 9:00
11	6/16/2023 8:00	6/16/2023 8:30
7	6/11/2023 9:30	6/11/2023 11:30
30	6/10/2023 7:30	6/10/2023 8:30
1	6/8/2023 19:30	6/8/2023 22:30
1	6/7/2023 9:00	6/7/2023 9:30
15	5/29/2023 9:30	5/29/2023 13:30
8	5/26/2023 18:00	5/26/2023 18:45
2	5/2/2023 5:00	5/2/2023 6:00
80	4/2/2023 16:30	4/2/2023 19:30
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15	11/25/2022 9:30	11/25/2022 10:30
39	10/30/2022 11:00	10/30/2022 11:30
1	10/29/2022 11:00	10/29/2022 12:30
39	10/29/2022 9:00	10/29/2022 9:30
30	10/25/2022 12:30	10/25/2022 13:00
12	10/24/2022 15:10	10/24/2022 15:35
1	10/10/2022 8:00	10/10/2022 9:00
1	10/9/2022 14:15	10/9/2022 14:45
9	9/30/2022 13:00	9/30/2022 13:30
39	9/30/2022 10:00	9/30/2022 10:30
12	9/27/2022 11:00	9/27/2022 14:00
11	9/27/2022 11:00	9/27/2022 12:00
49	9/24/2022 8:30	9/24/2022 9:00
49	9/24/2022 8:30	9/24/2022 9:00
0	9/23/2022 10:45	9/23/2022 10:45
1	9/14/2022 11:30	9/14/2022 12:00
1270	9/13/2022 14:20	9/13/2022 14:25
10	9/1/2022 2:45	9/1/2022 3:45
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5180	2/16/2021 6:50	2/16/2021 7:40
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5562	2021 Total	
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6	11/23/2020 23:30	11/24/2020 0:30
5	11/15/2020 9:30	11/15/2020 10:30
10	11/7/2020 15:00	11/7/2020 17:00
15	11/7/2020 14:30	11/7/2020 15:00
1	11/1/2020 12:30	11/1/2020 14:00
19	10/14/2020 11:30	10/14/2020 12:30

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25	10/4/2020 8:30	10/4/2020 9:00
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10	10/1/2020 13:00	10/1/2020 14:00
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6	6/1/2020 22:30	6/2/2020 0:00
1	5/31/2020 7:45	5/31/2020 8:15
1	5/28/2020 6:15	5/28/2020 7:15
24	5/24/2020 12:00	5/24/2020 13:00
1	5/23/2020 14:00	5/23/2020 15:00
1	4/29/2020 4:00	4/29/2020 5:00
8	3/27/2020 15:00	3/27/2020 16:30
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1746	2020 Total	

Impacted Customers	Start Date Time	End Date Time
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1	9/24/2019 20:00	9/24/2019 21:00
1	9/24/2019 0:30	9/24/2019 1:00
4	9/2/2019 21:15	9/2/2019 22:00
4	9/2/2019 8:00	9/2/2019 10:00
1270	9/2/2019 5:20	9/2/2019 6:20
10	8/17/2019 8:00	8/17/2019 8:30
1	8/13/2019 7:00	8/13/2019 8:00
52	8/5/2019 3:30	8/5/2019 5:00
5	8/3/2019 9:00	8/3/2019 10:00
2	7/25/2019 9:30	7/25/2019 11:30
40	7/25/2019 7:00	7/25/2019 7:30
21	7/18/2019 9:00	7/18/2019 9:30
4	7/16/2019 23:30	7/17/2019 1:00
9	7/14/2019 21:30	7/14/2019 22:30
3	7/9/2019 12:30	7/9/2019 13:30
10	6/30/2019 9:00	6/30/2019 10:00
8	6/29/2019 23:30	6/30/2019 1:30
7	6/13/2019 22:00	6/13/2019 23:00
57	6/8/2019 7:30	6/8/2019 8:30
3	5/30/2019 17:30	5/30/2019 19:30
1256	5/29/2019 15:30	5/29/2019 16:00
42	5/12/2019 2:00	5/12/2019 2:30
4	5/10/2019 1:00	5/10/2019 3:00
4	4/25/2019 12:30	4/25/2019 13:30
8	4/23/2019 13:30	4/23/2019 14:00
1	4/19/2019 10:30	4/19/2019 11:00
1	4/2/2019 14:00	4/2/2019 15:00
12	3/1/2019 9:00	3/1/2019 9:30
18	1/8/2019 17:00	1/8/2019 18:30
2877	2019 Total	

Impacted Customers	Start Date Time	End Date Time
2	12/22/2018 8:00	12/22/2018 10:00
1	11/15/2018 13:00	11/15/2018 13:30
129	10/10/2018 5:00	10/10/2018 6:30
1	10/8/2018 22:00	10/9/2018 0:30
1	10/5/2018 8:30	10/5/2018 9:00
2	9/28/2018 19:00	9/28/2018 20:30
18	9/14/2018 10:30	9/14/2018 11:30
75	9/14/2018 0:00	9/14/2018 2:00
1	8/23/2018 15:00	8/23/2018 15:30
1	8/23/2018 12:30	8/23/2018 14:30
1	8/16/2018 12:00	8/16/2018 12:30
2	8/5/2018 7:30	8/5/2018 8:00
47	8/4/2018 22:00	8/5/2018 0:30
15	8/3/2018 22:00	8/3/2018 23:45
10	7/28/2018 7:00	7/28/2018 7:30
6	7/27/2018 9:30	7/27/2018 10:00
18	7/15/2018 7:00	7/15/2018 7:30
1	6/22/2018 10:30	6/22/2018 10:45
12	6/8/2018 7:00	6/8/2018 8:25
1627	4/30/2018 20:20	4/30/2018 20:50
1970	2018 Total	