

North Dakota Transmission
Authority

North Dakota Industrial
Commission

BIL 40101(d) Application

Project Title: Advanced Metering
Infrastructure

Applicant: City of Northwood

Date of Application: May 19, 2025

Date of Application Revision:

Amount of Grant Request: \$240,917.36

Total Amount of Proposed Project:
\$370,642.12

Duration of Project: 12 Months

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TABLE OF CONTENTS

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

Applicant Description	2,3
Project Description	3
Standards of Success	4
Project Timeline	5
Project Budget	5,6
EXHIBIT	7,8,9,10

Applicant Description

The City of Northwood is a resilient rural community located in Grand Forks County, with a population of approximately 930 residents. Proudly owning and operating its own electrical utility since 1912, the city provides over 1,500,000 kilowatt-hours (KWH) of electricity annually, supporting not only its residents but also key institutions including a local hospital, clinic, nursing home, school, and various businesses.

Northwood is governed by a mayor and a six-member city council, which meets monthly on the second Monday. The city employs a dedicated team of four full-time staff, two part-time employees, and two seasonal workers. City Hall is located at 512 Washington Avenue, and is open Monday through Thursday from 8:30 AM to 4:30 PM, and Friday from 8:30 AM to 12:00 PM.

Situated just 35 miles from Grand Forks Air Force Base and 40 minutes from the City of Grand Forks, Northwood offers both the charm of small-town living and convenient access to larger urban centers.

The City's Public Works Department is instrumental in providing essential services, including electrical, water, and wastewater utilities, along with the maintenance of city streets. These services support the overall well-being of the community and ensure high standards of living.

Northwood also boasts a wide range of amenities, including a K-12 school, a full-service healthcare facility (featuring a nursing home, clinic, hospital, and rehabilitation department), a public library, and a local museum. Recreational facilities include a beautiful park district with multiple baseball diamonds, a public swimming pool, a playground, a hockey arena, a well-maintained campground, and a scenic 9-hole golf course.

The local economy is driven by a blend of agriculture, service industries, and small businesses. Community organizations play a key role in promoting economic development and hosting events that foster civic pride and engagement.

In 2007, Northwood was struck by a devastating EF4 tornado. In the face of this tragedy, the community demonstrated remarkable strength and unity, coming together to rebuild a town that remains a safe, welcoming place to raise a family.

Project Description

The City of Northwood is planning to replace approximately 835 electrical meters as part of a critical upgrade to Advanced Metering Infrastructure (AMI). This project includes the installation of new AMI hardware and software, along with comprehensive training for city staff to ensure effective and sustainable operation of the modernized system.

Due to limited internal staffing and technical expertise in AMI implementation, the city will contract Braun Electric to lead and support the deployment. Braun Electric will provide the necessary electrical expertise to oversee the meter installations and actively participate in staff training.

Implementing AMI will significantly enhance the reliability, efficiency, and responsiveness of Northwood's electrical grid. AMI enables real-time monitoring, two-way communication, and centralized control, allowing for faster outage detection, accurate energy usage tracking, and more efficient grid management.

This upgrade is a technically feasible and straightforward enhancement to the city's existing Automated Meter Reading (AMR) system. It is expected to reduce the duration of power outages, contributing to a more stable and reliable power supply. Because the scope of work is limited to equipment upgrades and installations, no significant environmental impact is anticipated.

Beyond reliability, AMI improves asset management by providing detailed insights into energy consumption trends and stress on infrastructure. This data allows the city to make informed, proactive decisions about replacing or upgrading aging equipment based on real-time risk assessments.

AMI also enhances load balancing by identifying high-demand areas on the grid. This enables the city to shift electrical loads or reinforce vulnerable segments, helping to prevent outages caused by localized overloads.

Additionally, AMI supports predictive maintenance and early fault detection. By recognizing abnormalities such as voltage drops and sudden load changes, the system helps identify failing transformers, overloaded lines, and deteriorating infrastructure before they result in service interruptions.

In summary, the implementation of AMI will modernize Northwood's energy infrastructure, laying the groundwork for smarter grid operations, future growth, and evolving energy needs, all while improving service quality and maintaining fiscal and environmental responsibility, and enhancing the efficiency, responsiveness, and sustainability of Northwood's electrical infrastructure for years to come.

Standards of Success

The implementation of Advanced Metering Infrastructure (AMI) will bring numerous benefits to the City of Northwood, significantly improving the performance, reliability, and sustainability of the city's electrical grid.

AMI metering enables real-time outage detection, allowing immediate alerts when outages occur. This capability enables city personnel to respond to electrical issues more quickly and efficiently, reducing downtime and improving service reliability. The system also supports voltage monitoring and management, which helps ensure consistent power quality, prevent equipment damage, and maintain a stable electricity supply.

Furthermore, AMI enhances grid security and efficiency by detecting energy theft or technical losses through discrepancies in usage data. This reduces unaccounted-for energy and improves overall operational efficiency. The system also aids in maintenance planning, load forecasting, and demand response by providing detailed usage and voltage data. These insights allow the city to predict demand trends, adjust supply accordingly, and automate responses during peak usage periods, helping to avoid overloads and reduce strain on the system.

AMI also improves load balancing through trend analysis and supports predictive maintenance by identifying equipment at risk of failure before issues arise. This proactive approach enables targeted maintenance and strategic infrastructure upgrades, increasing the longevity and reliability of grid assets.

Most importantly, upgrading to an AMI system positions the City of Northwood to plan more effectively for future growth and evolving energy needs. Even modest development can place significant strain on small municipal grids like ours. With AMI, long-term usage data enables the city to anticipate where future load increases are likely to occur. This insight supports smarter, data-driven capital planning and helps prioritize infrastructure investments. Ultimately, AMI lays a strong foundation for modernizing Northwood's energy system in alignment with emerging technologies and environmental goals.

The City of Northwood has long recognized the value of transitioning from the current Automated Meter Reading (AMR) system to AMI. However, the significant cost of this upgrade has remained a key barrier for our small, rural community.

With a Low-to-Moderate Income (LMI) rate of 53.7%, more than half of Northwood's residents face economic challenges. The city is committed to avoiding any undue financial burden on its population. Receiving grant funding is essential to making this critical infrastructure upgrade possible without increasing costs to residents.

This investment will not only modernize Northwood's metering system but also align with the city's commitment to affordability, equity, and long-term sustainability for all residents.

Project Timeline

The City of Northwood intends to initiate the Advanced Metering Infrastructure (AMI) Project in December 2025, with an anticipated completion timeframe of twelve (12) months. The project schedule is structured as follows:

- **Equipment Delivery:** Five (5) months allocated for the procurement and delivery of AMI meters and associated infrastructure.
- **Installation Phase:** Six (6) months dedicated to the systematic installation of the AMI equipment across the city's utility service area.
- **Training and Integration:** One (1) month reserved for software training, system integration, and user onboarding to ensure operational readiness.

This timeline is designed to ensure a smooth, phased rollout and successful implementation of the AMI system within the proposed 12-month window.

Project Budget

Project Associated Expense	NDIC Grant	Applicant's Share (Cash)	Total
Set up and Mobilization	\$598.00	\$322.00	\$920.00
Installation of single phase & poly phase electric meters	\$25,601.55	\$13,785.45	\$39,387.00
Training & upgrading the system software	\$6,578.00	\$3,542.00	\$10,120.00
TRUConnect WAN/LAN Equipment	\$8,445.63	\$4,547.65	\$12,993.28
TRUEdge Endpoint Equipment	\$60,799.70	\$32,738.30	\$93,538.00
TRUConnect Server & Software	\$38,141.51	\$20,537.74	\$58,679.25
TRUConnect System Service	\$31,895.50	\$17,174.50	\$49,070.00
Itron Electric Meters	\$57,105.19	\$30,748.96	\$87,854.15
Banyon Conversion file	\$1,282.90	\$690.80	\$1,973.70
Shipping Fees	\$650.00	\$350.00	\$1,000.00

Tariff Fees	\$9,819.38	\$5,287.36	\$15,106.74
Total	\$240,917.36	\$129,724.76	\$370,642.12

The City of Northwood respectfully requests consideration for a 65% grant award to support the implementation of its Advanced Metering Infrastructure (AMI) Project. The total cost of the project has been carefully estimated, and the city is committed to contributing the remaining 35% through local funding sources. This investment reflects Northwood's dedication to modernizing its utility infrastructure, improving operational efficiency, enhancing customer service, and supporting long-term sustainability goals.