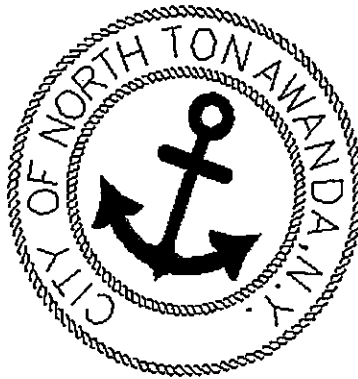


# CITY OF NORTH TONAWANDA, NEW YORK

## REQUEST FOR PROPOSAL

### City of North Tonawanda Automatic Meter Reading Solution



August 2023

**Mayor:** Austin Tylec

**Common Council:**

Common Council President & 2<sup>nd</sup> Ward Alderman  
Alderman at Large  
Alderman at Large  
1<sup>st</sup> Ward Alderman  
3<sup>rd</sup> Ward Alderman

Frank DiBernardo  
Joe Marranca  
Joe Loncar  
Robert Schmigel  
Joseph Lavey Jr.

**Superintendent of Wastewater/Water**

Jason Koepsell

**City Engineer:**

Chelsea L. Spahr, P.E.

**City Attorney:**

Edward Zebulske III

**City Clerk/Treasurer:**

Donna Braun

# City of North Tonawanda Automatic Meter Reading Solution

**PROJECT No. 2023-01**

## ***REQUEST FOR PROPOSAL***

### **1.0 Introduction**

The City of North Tonawanda, hereinafter referred to as the OWNER, is requesting proposals for a Automatic Meter Reading (AMR) system, that can integrate into a Fixed Network Advanced Metering Infrastructure (AMI) System that has the capability to continuously monitor the distribution network.

The AMR/AMI solution must be state-of-the-art, user-friendly, shall include features and/or tools that will simplify meter reading collection efforts and provide real time alarms to enable the OWNER to enhance service to its customers while improving efficiency and accuracy in utility operations and water usage accountability. Additionally, the solution shall provide the means for the OWNER to reduce their Unaccounted-for Water Loss through continuously monitoring the distribution system for leaks.

The proposed AMR/AMI solution shall include advanced utility tools and customer tools that provide:

- Timely consumption information and water exception event messages that can be used to improve customer service.
- Proactive water management functionalities to reduce service calls and truck roll outs.
- Reduce the City's unaccounted for water loss through sustained long term meter accuracy, improved low flow performance and continuous monitoring of the distribution system.

### **1.2 General Information**

#### **1.2.1. Issuing Department and Contact**

This request for proposal (RFP) has been issued by the OWNER's Water Department in conjunction with the Engineering Department. If there are any questions or comments relative to this RFP, the below listed individual is to be contacted: Jason Koepsell, Superintendent of Water/Wastewater 830 River Rd North Tonawanda, NY 14120 JKoepsell@northtonawanda.org Phone: 716-695-8560

#### **1.2.2. Delivery of Proposals**

If your organization is interested, please submit via email a PDF of your proposal to JKoepsell@northtonawanda.org or four (4) hard copies with a flash drive of the copy to the following address by 4:00 PM, September 15, 2023: North Tonawanda Water Department 830 River Rd North Tonawanda, NY 14120 Telephone (716) 695-8560 Attention: Jason Koepsell. Superintendent of

Water/Wastewater. Late or faxed submittals will not be considered. Proposals will not be read aloud on the proposal opening date but will be available for public inspection upon completion of the review process.

## **2.0 Back Ground**

### **2.1 Service population**

The City of North Tonawanda provides water to residential and commercial customers having approximately 11,107 residential water meters and 638 commercial/industrial/institutional water meters spread out over a 10.8 square mile area.

### **2.2 Infrastructure**

Meters – The OWNER has several types of water meters, the majority being mechanical. The meter size breakdown is as follows:

Meter Size	Total Qty	Meter Size	Total Qty
5/8"	1	3"	13
3/4"	11,106	4"	10
1"	409	6"	2
1.5"	43	8"	2
2"	159		

### **2.3 Customer Information (Billing) System**

The OWNERS utility billing system is KVS. The proposed meter reading system must be readily compatible with the OWNERS current billing system and provide necessary billing information to this system through compatible import/export files.

## **3.0 Scope of Work**

The proposal includes:

- 1) Furnishing of approximately 11,745 IP68 rated water meters with integral radio for easy installation, reduced labor cost/time and reduced tampering
- 2) AMI network infrastructure and software
- 3) Distribution Leak Detection infrastructure and software
- 4) Furnishing of required field installation devices
- 5) Development of the transfer file for billing system, data migration and verification,
- 6) Project management,
- 7) Software support and training for staff

#### **4.0 Technical Specifications – Water Meters**

- 4.1 All meters shall ultrasonic design type supporting enhanced low flow capabilities
- 4.2 All cold water meters furnished shall be produced from an ISO 9001C certified manufacturing facility and shall meet or exceed the accuracy requirements specified in the “Standard Specifications for Cold Water Meters – Electromagnetic and Ultrasonic Type” C715-18 latest revision issued by AWWA.
- 4.3 This project requires that all water meters submitted in this Proposal be compliant with NSF/ANSI 61. Meters shall be made of “lead free” Fiberglass-Reinforced Polymer, Stainless Steel, or Waterworks Bronze.
- 4.4 The meter main case shall be certified as lead free Fiberglass-Reinforced Polymer or shall be 316 lead-free Stainless Steel, or Waterworks Bronze. The threads on the unit shall not be susceptible to cross threading and shall be able to withstand a maximum torque of eighty foot pounds. The meter should be able to operate accurately under maximum pressure of 250 PSI for meter sizes 5/8”, 5/8”x3/4”, 3/4” and 300 PSI for 1”, 1.5”, and 2” meter sizes. The serial number should be displayed in a permanent location on the register. There shall be no corrosive materials used that comes in contact with any mounting hardware or atmosphere. The main case shall offer the following choices of threads 5/8”x1/2”, and 5/8”x3/4”.
- 4.5 Meter manufacturer’s residential solid state meters (5/8” – 1”) shall meet or exceed AWWA C715-18 accuracy standards and warrant their meter accuracy for 20 years to the AWWA published standard. Intermediate (1.5” – 2”) and large (3”+) meters shall warrant their meter accuracy for 10 years. The minimum start flow range should measure at .01 GPM for 5/8”, 5/8”x3/4” meter sizes, .015 for 3/4” meters and .04 GPM for 1” meters. The manufacturer shall have field proven experience in manufacturing solid state meters with documented failure rate of less than 0.5%.
- 4.6 The register shall provide at least a 9-digit visual registration at the meter and shall be programmable to display the units from non-fractional units to a minimum of three decimal place resolution. The meter shall be programmable to read in cubic feet, gallons, or other metric units. The system shall visually alert the following on the LCD screen: leak and burst alerts on the customer side, tampering with the meter, dry measurement chamber, and reverse flow. The meter shall have the ability to log total usage over various flow rates for historical analysis for right sizing and low flow analysis.
- 4.7 All meters shall be furnished with an electronic file of certified test results showing that every meter has been tested and compliant with meter accuracy and capacity requirements according to the most recent AWWA standards.

## **5.0 Technical Specifications – Meter Reading Solution**

### **5.1 Meter Reading Solution**

- 5.1.1 It is advantageous that the proposed system operates on a dedicated, FCC licensed frequency to prevent interference and protect the investment of the OWNER. The Proposer must obtain said license on behalf of the OWNER.
- 5.1.2 All equipment must comply with current Federal Communications Commission (FCC) requirements - Part 90 of the FCC regulations. The Proposer must have supporting documentation available upon request to verify compliance.
- 5.1.3 The RF transmitter must be integral to the meter design type with no external wire or connectors to prevent tamper and theft by the customer and limit multiple points of failure.
- 5.1.4 The system will be able to automatically adjust power of the meter to extend battery life and select the optimal collector to read the meter.
- 5.1.5 Systems utilizing cellular, mesh technology or repeaters will not be considered.

### **5.2 Collector Units/Repeaters**

- 5.2.1 Environmental conditions of the meter system network of collectors shall ideally be deployed on the OWNERS property located throughout the City. Collectors must operate in temperature extreme ranges of -22° F to 149° F.
- 5.2.2 Power Supply - The collector units shall be powered using AC to retrieve meter readings and relay them to a centralized location. Power input shall be 110-265 VAC 50/60 Hz. Power output 24 VDC/10A.
- 5.2.3 The collector will follow TLS 1.2 protocol with AES 256 bit encryption to the head end system.
- 5.2.4 The collector unit locations shall be determined by the reading solution Manufacturer as part of this proposal based on a propagation study performed by the manufacturer. The proposed number of collector units shall provide 95%+ successful daily read rate for the service territory without the need for any repeaters or boosters.
- 5.2.5 Collector units shall be capable of being mounted on roofs, utility poles, street lights, towers, etc., to collect readings from all meters in the coverage area. No special tower construction will be allowed.
- 5.2.6 Collector unit network redundancy will be incorporated into the collector unit placement process to accelerate the reading process, ensure all meters provide a reading and battery power is managed.
- 5.2.7 The metering reading network shall be capable of adding collector units at any time without need for system reconfiguration.
- 5.2.8 All collector unit electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes.

- 5.2.9 After being installed, collector units shall require minimal maintenance over the life of the unit.
- 5.2.10 Collector Units shall be easily configured to utilize a variety of WAN technologies to communicate to the head end computer.

### 5.3 Integral Meters & Field Programming Equipment

- 5.3.1 Warranty - The ultrasonic meter with integrated radio shall have a warranty of at least two years from date of installation against any defects in materials and workmanship. The residential ultrasonic meter (5/8" – 1") shall have a full ten (10) year battery warranty and an additional ten (10) years at a prorated replacement cost. Intermediate (1.5" – 2") and Large (3"+) meters shall have a ten (10) year battery warranty.
- 5.3.2 The meter with integrated radio shall provide the following features:
- **Housing:** The radio will be integral type within the meter register.
  - **Battery Life:** The meter shall have a permanently installed non-field replaceable battery with twenty (20) year life cycle expectancy.
  - **Maintenance:** The meters shall be maintenance free. After initial installation, meter with integrated radio will continue to operate at optimal levels for the entire life of the product.
  - **Read Interval:** The solution shall be capable of collecting data in intervals of hourly reads.
  - **Leak Detection:** The system shall monitor water consumption through the meter and indicate when there is continuous flow for the past 24 hours based upon configurable limit of greater than 0.1%, 0.25%, 0.5%, 1.0% or 2.0% of maximum flow for the meter size. Limit must be configurable through the network.
  - **Reverse Flow Detection:** The system shall indicate when there is a period of reverse flow. Reverse flow shall be logged in a separate register and shall indicate total of reverse flow through the meter.
  - **High Flow Detection:** The system shall provide an alarm of accounts with continuous flow for 30 minutes, configurable to 5%, 10% or 20% of max flow.
  - **Dry Pipe Detection:** The system shall provide a dry pipe alarm indicating air in the pipe and no water through the meter.
  - **Ambient Temperature alarm:** The system shall provide a low temperature alarm(configurable limit of 37 degrees F to 43 degrees F) to indicate possible freezing.
  - **Read Interval:** The meter shall contain a radio that transmits a brief message containing the endpoint identification number, meter reading, and tamper flags at programmed intervals. The meter shall provide time synchronized hourly

reads.

- **Low Battery Information:** meter with integrated radio shall provide alarm when battery is near end of life.

5.3.3 The Field Programmer / Handheld shall use a mobile application to confirm that the meters with integral radio signal is being received by one or more data collectors to determine whether the installation is good before leaving the installation site.

#### **5.4 Meter Reading System Software**

5.4.1 The Meter Reading Software must be cloud based.

5.4.2 The meter reading solution Manufacturer must support single record fixed width or delimited file formats that can be customized to easily integrate to the OWNERS billing system.

5.4.3 The software shall have search capabilities to search all or specific fields such as address, meter serial number, account number, customer name, etc. Software shall provide hourly readings, bar graph chart visualization of average flow per hour and hourly, daily, monthly, yearly consumption over a defined date range. Software shall prioritize between high and normal priority codes and be able to schedule frequency and time when notifications are delivered or send notifications when detected. Software shall allow for creation of meter groups manually, or automatically through imports.

5.4.4 The solution must be able to store and archive data for each individual meter:

- Store/archive a minimum 10 years of Monthly data, 5 years of Daily data and 13 months of Hourly data.

### **6.0 Distribution Leak Detection**

#### **6.1 Solution**

The proposed solution must be 100% compatible with the AMR/ AMI solution/network proposed and provide acoustic leak detection, or equal, on both utility service lines and distribution mains. It is preferred that the solution functionality may be activated immediately at time of purchase or offered as an upgrade at a later date without requiring a field visit or reprogramming of the meter. Only solutions that have been in continuous operation for at least 2 years will be accepted. Unproven products/solutions, or those under development will not be considered.

#### **6.2 Hardware**

It is considered highly advantageous if acoustic leak detection technology is integrated with the meter. Solutions that require installing additional third party devices or retrofitting AMI endpoints is not desirable.

#### **6.3 Installation and Maintenance**

Solutions with minimal labor installation and maintenance costs are preferred; technology integrated with meter and 20 year expected battery life is highly desirable. Solutions that require multiple battery changeouts to meet a 20 year life are not desired.

#### **6.4 Warranty**

The proposed solution shall have a minimum 10 year warranty. Warranties that exceed 10 years and are aligned with meter warranty are highly desirable.

#### **6.5 Software**

The software should support the collection of acoustic noise data from integrated acoustic smart meters and automatically prioritize them based on custom defined levels. Must allow for advanced filtering to provide quick identification of critical meters to investigate. The software should be intuitive, user friendly and accessed via a web or mobile browser such as Google Chrome, Microsoft Edge, Internet Explorer and supported on mobile platforms (iOS, Android and Windows.) The software should graph acoustic noise trends over time and allow the user to select the desired date range. The software should visually display meters color coded by noise level geographically in map view and allow customization of which meters are displayed or hidden. The software should allow for tracking meters of interest, comments, editing, categorization and resolution once the noise levels are investigated in the field. The software should provide auto-generated reports configurable by custom noise level and number of days. The software should allow for meters to be ignored. The software should provide a list view of meters with corresponding data including latest acoustic noise value, maximum value and average value.



### 7.0 Proposal Response to Technical & Functional Questions

All questions must be answered and the data given must be clear and comprehensive. Any references to "equipment being proposed," "equipment," etc. refers to the meter reading system components and its operating software. Proposers may submit additional information if appropriate.

Technical Specifications - Water Meters
What brand and type of water meter is being proposing? Is the radio integral to the meter?
What is the published starting/low flows for the proposed meter by size?
Discuss the manufacturer's experience with the proposed ultrasonic meter technology and any unique features it presents?
What is the published failure rate for the proposed meter?
Meter Reading Solution
Who is the Manufacturer of the proposed AMR/AMI solution and meter?
Does the proposed system operate with an FCC license?
Describe the proposed system architecture and how often reads are transmitted to the collectors and back to the head end computer. What is the expected battery life of the meter and explain any features of the system to achieve a long term battery life?

### Meter with Integrated Radio & Field Programming/Installation Equipment

Is the proposed meter with integrated radio a sealed enclosure capable of being submerged underwater without damage

Does your meter reading system provide alarm notifications? Describe all available alarms delivered through the network, and whether they are configurable.

Define the expected battery life of the meter with integrated radio in relation to transmission frequency?

Describe the meter installation process and how the installer receives positive confirmation the meter is in successful communication with the network prior to the installer leaving the site?

### AMI System Software

Describe the AMI Software Storage Capacity.

Describe the AMI system software that provides management reports and/or alarms to assist the City in identification of customer problems

### Distribution Leak Detection

Provide a brief overview of the solution.

Who is the manufacturer of the proposed distribution leak detection solution if different than the AMI solution provider?

List all hardware components of the solution and discuss ease of installation and maintenance required for a 20 year solution life. Include details on battery warranty and required battery changes to keep solution in operation.

Discuss solution software in detail and describe how it will help monitor, manage and reduce water loss.

## General

In an appendix to your response, provide specification sheets for meters with integrated radio, system software, collectors and distribution leak detection.

List the local distribution centers in proximity of the City of North Tonawanda to support this project.

Provide 3 required AMI system references deployed in a Water Utility using meter with integrated radio and distribution leak detection.

[illegible]



## **8.0 General Conditions**

### **8.1 Limitations**

The OWNER reserves the right to reject any and/or all proposals or to waive any irregularity or information in any proposals or in the RFP procedure and to be the sole judge of the responsibility of any proposer and the suitability of the materials and/or services to be rendered. The OWNER reserves the right to select portions of the proposer's solution and not the entire meter reading system solution.

### **8.2 Knowledge of Conditions**

At the time of the opening of the proposals, each proposer will be presumed to have read and to have become thoroughly familiar with the specifications.

The proposer shall satisfy himself as to the nature and location of the requested work and all applicable general and local conditions. He or she shall gain full knowledge of working conditions and other facilities in the area which will have a bearing on the performance of his or her work. Any failure by the proposer to acquaint himself/herself with all of the available information shall not relieve that proposer from any responsibility for performing all work properly and in conformity with the submitted proposal.

### **8.3 Contractual Conditions**

For this RFP, the proposal must remain valid for at least **360 days**. Moreover, the contents of the proposal of the successful bidder may become contractual obligations if a contract is entered into.

The costs for the equipment **shall be fixed for one year**. If a satisfactory contract cannot be negotiated, negotiations will be formally terminated. The city reserves the right to make no selection if reasonable terms cannot be negotiated with interested Proposer or not in the best interests to the OWNER.

### **8.4 Award**

The OWNER reserves the right to accept or reject any or all proposals received as a result of this request, accept the proposal of a vendor other than that of the lowest bidder, and award a contract, based on initial offers received from bidders.

**Pricing Format**

<b>Item No.</b>	<b>Item</b>	<b>Estimated Quantity</b>	<b>Unit Price</b>	<b>Extended Price</b>
<b>WATER METERS w/INTEGRAL RADIO</b>				
1	5/8"x3/4" Meter with integrated radio			
2	3/4" Meter with integrated radio			
3	1" Meter with integrated radio			
4	1.5" Meter with integrated radio			
5	2" Meter with integrated radio			
6	3" Meter with integrated radio			
7	4" Meter with integrated radio			
8	6" Meter with integrated radio			
9	8" Meter with integrated radio			
<b>Total Meter Cost</b>				
<b>METER READING SYSTEM EQUIPMENT</b>				
10	Collectors			
11	Meter Reading System Software			
12	Field Programmer Equipment			
<b>Total Meter Reading System Equipment Cost</b>				
<b>INFRASTRUCTURE INSTALLATION, SOFTWARE TRAINING, PROJECT MANAGEMENT</b>				
		TBD by Proposer		
13	Billing interface			
14	AMI Software Installation and Training			
15	Collector installation			
16	Project Management			
<b>Total Installation &amp; Training Cost</b>				
<b>ANNUAL SERVICE CONTRACT</b>				
17	AMI Annual Software Hosting	1		
18	Collector Service Agreement	1		
19	Field Programmer/Handheld Service Agreement	1		
20	Other	1		
<b>Total AMI Annual Operating Cost</b>				
<b>DISTRIBUTION LEAK DETECTION</b>				
21	Hardware			
22	Annual Software Hosting			
23	Installation of Solution Hardware			
24	Software Training and Installation			
25	Hardware Service Contract			
<b>Total Distribution Leak Detection Cost</b>				
<b>Total Proposal Cost</b>				