REQUEST FOR WRITTEN QUOTATIONS
CITY OF BOWLING GREEN
AUTOMATED METER READING (AMR)

The City of Bowling Green, Florida is soliciting quotes to furnish all labor, materials, equipment, management, administration, supervision, insurance coverage, and any other facilities and services necessary to successfully construct, start-up, and warranty the completed Project (**Automated Meter Reading (AMR) System changeout)**.

The City of Bowling Green requires a radio-based AMR system. This is not for an AMI system. The AMR system is understood to consist of:

    (a) Meters with direct read registers and integrated Meter Interface Units (MIUs) capable of output that can be captured by RF reading devices;

    (b) Mobile and/or fixed location data collection units (DCUs) capable of capturing the radio signals from the MIUs;

    (c) A communication system or data transfer system capable of transferring the data from the data collection units to the meter reading mobile system computer;

    (d) The Meter Data Management System is to provide interface to the City's information/ billing system;

    (e) Installation, training and documentation sufficient to enable the city personnel to adequately operate and maintain the system.

1) **Communication Channels –** The AMR system must operate in the 902-928 MHZ license free frequency range and shall operate under FCC Part 15 regulations. No FCC license shall be required to use any part of the system.

2) **Radio Modulation –** The radio based AMR system must utilize direct sequence spread spectrum technology.

3) **Accuracy and Security –** The system shall include provisions to ensure data accuracy (for example, error checking) and security (for example, over-the-air encryption) and to prevent accidental loss of data.

4) **System Integrity –** The system must ensure data integrity, accuracy (so that the reading on the meter, ID numbers, and other data are always correct) and data security (e.g., so transmissions of meter reading and customer data cannot be intercepted or accessed by unauthorized parties). The MIUs must ensure against loss of data.

5) **Environmental Tolerances –** All electronic system components must operate within a temperature range of -40° F to +140° F, and a humidity range of 0% to 100% non-condensing.

WATER METERS

1) Meters shall comply with the AWWA Standard C708 MultiJet (5/8" thru 2") and C715 Ultrasonic (2" thru 12") (latest revision). Electromagnetic not accepted.

METER ENDPOINT (TRANSCEIVER)

1) **Physical Characteristics (Integrated Unit) –** Meter Endpoints must be integrated and permanently sealed within the meter register using a stainless steel register base, wrap around gasket and tempered glass lens. The unit shall be battery operated using two 3.6volt Lithium Thionyl Chloride batteries for long operational life of approximately 10 to 20 years.

Integrated units shall be available for multiple brands of water meters. These units shall have programmable gear ratios and available with standard odometer wheel assemblies or with LCD displays. LCD models shall display both totalization and rate of flow without toggling. Each unit shall be supplied with an appropriate register housing and adapter to retrofit the current make and model of 5/8" through 2" meters of the following meter manufacturers: Master Meter, Sensus SRII, AMCO C700, Neptune T-10, Badger Recordall, Hersey PD.

2) **Physical Characteristics (Non-Integrated External) Unit –** Non-integrated or wired endpoints are acceptable for commercial meters or to provide connectivity to meter brands other than the brand proposed. Dimensions should measure 5"x3"x1.5". The MIUs shall be housed within a high density ABS plastic enclosure. The unit shall be battery operated using two 3.6volt Lithium Thionyl Chloride batteries for long operational life of approximately 10 to 20 years.

3) **ID Number –** Each MIU shall have a unique, non-programmable permanent ID number. However, the MIU must allow for a separate programmable ID number provided by the utility if required.

4) **Programmability –** Register integrated MIUs shall be ground shipped programmed and initialized. However, the MIU must be capable of two-way communication for field programming of a user selected ID number or for resetting specific alarm codes. Programming must be accomplished without removing the MIU from a pit, basement or wall application.

5) **Leak Detection –** The endpoints within the system should monitor water consumption through the meter and shall specifically indicate possible leaks, as alarm flags to the route management software, whenever the meter has not detected zero consumption for three hours within a single twenty-four hour time period.

6) **Tamper Detection –** The endpoints within the system shall contain tamper detection circuitry and software, which identifies tamper as alarm flags to the route management software, whenever the endpoint has been tampered with magnetically.

7) **Back Flow Detection –** The endpoints within the system should specifically indicate, as alarm flags to the route management software, whenever there is an unusual amount of counter clockwise registration or back flow.

8) **Data Logging –** All endpoints shall possess data logging capabilities with a minimum of 4,000 data points. Data shall be downloaded from the endpoints through use of the MDCU without the need for physical contact or connection with the endpoint.

9) **Environmental Tolerance –** The endpoints must operate in conditions subject to water submergence (i.e. meter boxes or vaults) with a water submergence rating consistent with IP68. External or wired MIU enclosures shall be composed of UV-inhibiting ABS or similar material further sealed and totally encapsulated with an electrostatic gel that eliminates moisture intrusion.

10) **Labeling –** The endpoint shall be permanently labeled with manufacturer's name, model number, Identification Number, required FCC labeling. External or wired MIUs must also include input/output connections and date of manufacture.

11) **Mounting –** The external endpoint shall include features to facilitate mounting to masonry, wood, pipe or any other building materials.

12) **Meter box installation –** The endpoint must operate from within a meter box/vault. No antenna or other portion of the MIU may project through the lid or cover unless the pit is continually submerged in water or there exists a harsh "RF interference" environment. The system must provide for optional external antennas for any "hard to read" units that meet these conditions.

13) **MIU Warranty –** All endpoints, register integrated or non-integrated, supplied in connection with this proposal shall be guaranteed to be free from defects in materials and workmanship for a period of 10 years from the date of purchase. Additionally, a 10-year pro-rated warranty shall also be provided increasing the total warranty period to 20 years.

MOBILE DATA COLLECTION UNIT (MDCU)

1) **Mounting and Power –** The MDCU must be a portable interrogator designed to operate from within a vehicle. The unit must be capable of transfer between vehicles without difficulty. The mobile interrogator should be powered from the vehicle battery. There must be a back-up battery to preserve internal memory.

2) **System Operation –** The MDCU will provide signals such as audible tones to the driver during the reading of a route so that the driver will not have to take his or her eyes off the road. The reading software shall process all incoming RF data within range of the Receiver. Readings shall be automatically inserted into the correct account records based upon an endpoint/Meter ID search. Once started, the reading software shall not require user intervention.

3) **System Software –** The reading system software shall be a true Windows 32bit application. Any databases used shall be ODBC compliant meaning the district can access their data without the reading system software *(i.e. Microsoft Office, Crystal Report Writer)*. Route data and incoming reading data shall be optionally displayed in a text format or, graphically displayed on maps showing water utility streets and roads. The reading system software shall provide a function to determine meter latitude & longitude based on meter service address. Read and unread meters shall be displayed at the same time. The reading system software shall flag all problem codes such as tamper detection, no-reads, etc.

4) **System Reports –** The reading system software must provide the ability to create and modify system reports with a third party report writer such as Crystal reports. Standard reports shall include but not be limited to the following:

    (a) **Reading Master Report –** Master list showing Customer Name, Service Address, Meter ID, Previous Reading and High Read Limit.

    (b) **Reading Exception Report –** A list showing all readings that failed the high/low limit test, zero usage test or unread meter.

    (c) **Meter Alert Report –** A report designed to list problem meters. Problems reported should include Leak Alarms, Back Flow or Tamper.

    (d) **Orphan Read Report –** A listing of radio readings received but not found in reading route.

5) **Control Computer –** The system should operate using a standard laptop computer with an RS-232 serial port. The MDCU shall include the Intel® Core™ Duo Processor, 512MB SDRAM minimum, easily removable and shock mounted hard drive with a minimum capacity of 60GB, integrated 1.44MB floppy drive, CD-ROM and a 3-Year manufactures warranty. Additional interfaces should include a wired and wireless network interface, modem, USB and serial ports. The display shall be a minimum 15" Active Matrix Color LCD and 128MB VRAM.

    (a) **Transceiver –** The Mobile Data Collection Unit (MDCU) shall utilize a transceiver that must operate in the 902-928 MHZ license free frequency range and shall operate under FCC Part 15 regulations. The transceiver shall connect to the control computer through the use of either a standard serial or USB port. It shall be capable of receiving either single channel or frequency hopping spread spectrum transmissions from the MIU. It shall be powered by the vehicle's 12volt cigarette lighter adapter with a reserve battery life of approximately 3 hours. The transceiver shall be furnished with all cables and suitable magnetic mount antenna.

    (b) **Migration to Fixed System –** The City of Bowling Green Utilities desires that the mobile AMR radio system be capable of conversion to a fixed network radio system as part of its future enhancement. Any future design or technological radio changes should be compatible with the current radio system being implemented to protect current investments in equipment and training.

    (c) **Field Programming and Testing –** The MDCU should include software for field programming and testing of the MIUs. The system must allow for single unit or batch programming. Please indicate if additional equipment is required for programming and testing MIUs.

    (d) **Manual Entry –** The system must permit manual entry of meter readings and comments.

    (e) **Software Documentation –** Documentation shall be and shall include at a minimum: system overview description, record layouts, description of program function and logic, operating procedures, screen layouts, data entry procedures, report descriptions and descriptions of all user options.

(f) **Software License and Support –** All software must be supplied with a perpetual license indicating the software's designer, owner and licenser, and detailing the manufacturers terms and conditions, including annual cost of maintenance by the Vendor.

(g) **Mobile Interrogator Warranty –** The control computer and data collection unit shall be covered by a manufactures warranty for a period of no less than one year.

TRAINING

1) **Training on installed equipment –** Vendor shall perform all training using the AMR system equipment. This includes the control computer, data collection unit and several meters with MIUs.

2) **Location –** All training shall be performed at the City's office.

3) **Curriculum –** The Vendor shall provide thorough training for all aspects of AMR system operation and must include the following.

(a) Obtaining readings and consumption data from the system.

(b) Transferring readings and other information between the AMR system and billing system.

(c) Creating reports.

(d) Troubleshooting and diagnostic procedures for all AMR system components.

(e) Changing or adding customer accounts/MIU/meters to the system.

(f) AMR installation procedures based on manufacturer documents and requirements.

4) **Training Checklist –** Vendor shall provide training checklist in order to review training topics covered. Upon completion of review both vendor and appropriate utility personnel shall initial checklist.

SUPPORT

1) **Telephone support –** Vendor shall provide trained persons to answer technical questions and guide the city employees through the use or diagnosis of the system through a toll-free number. Telephone support shall be available at a minimum from 8:00 a.m. through 6:00 p.m. Eastern time. Indicate telephone support hours proposed and response time expected.

2) **On-site support and additional training –** The city requires that a manufacturers representative visit the appropriate utility personnel on no less than a quarterly basis to provide service and support for the life of the system. Additional on-site training shall also be available for a daily fee if necessary.

Sealed quotes will be received at Bowling Green City Hall, ATTENTION: M. Carmen Silva, City Clerk, until 3:00 pm EST on **March 18, 2022**. Submittals may be either mailed or hand delivered prior to the above deadline. Postmarks will not be accepted. Quotes will be publicly opened and read aloud. It is the responsibility of the bidder to assure that quotes are received at City Hall no later than the specified time and date. Submittals received after this date and time will not be accepted or considered.

The City reserves the right to waive any informalities or minor irregularities; reject any and all quotes which are incomplete, conditional, obscure, or which contain additions not allowed for; accept or reject any quotes in whole or in part with or without cause; and accept the bid which best serves the interests of the City. Pursuant to the requirements of Section 287, Florida Statutes, all qualifiers are subject to those provisions pertaining to Public Entity Crimes and the Convicted Vendor List.