

GENERAL CONDITIONS FOR Automatic Meter Reading (AMR) System

I. CONTRACT PERIOD

The period of this contract will be for **ONE (1) Year** from the date the bid is awarded. This contract may be renewed for up to **THREE (3) Years** from the initial award date upon the agreement of both parties. The bid price will remain firm during the period of the contract.

II. DELIVERY

Deliveries shall be made within seven (7) working days from the date of order. The vendor shall notify Water Plant Operator or Shelby County Water Services personnel (the person who ordered the product) of any problems in meeting the mandatory seven (7) working day deadline and the vendor must schedule a specific delivery day and time with personnel if the deadline is not met. Excessive failure to deliver within seven (7) working days shall be grounds for rejection of the vendor for future purchases, at the sole discretion of Shelby County.

Rejection of an unacceptable delivery method shall not excuse the vendor from the seven (7) working day delivery requirement.

All quoted prices shall include delivery charges (including, but not limited to, shipping charges and surcharges). Deliveries shall be made to the following addresses:

Shelby County Field Operations – Westover
82 Big Oak Circle
Westover, AL 35185

Shelby County Field B2 Office
10610 Old Hwy 280
Chelsea, AL 35043

III. BILLING

Invoice payments shall be based solely on the quantity of items received and the vendor's stated bid price. Product shall be billed by **items received** and all prices shall include shipping. ***Shelby County Water Services does require a Purchase Order for every order placed.*** Shelby County Water Services is tax-exempt (tax-exempt #63-6001694).

All invoices shall be billed to:

Shelby County Water Services
200 West College Street, Room 145
Columbiana, AL 35051
ap-water-landfill@shelbyal.com - preferred delivery method

IV. ESTIMATED ANNUAL USE

Products will be ordered on an **AS NEEDED** basis. Quantities for products are on attached bid documents.

V. BID QUALIFICATIONS

All BIDDERS must submit product information with bids. Information to be submitted must show that the product proposed meets all the specifications listed below and list **ALL EXCEPTIONS** to the specifications in a separate document.

Shelby County Water Services

BID: AUTOMATIC METER READING (AMR) SYSTEM – MARCH 2023

THE UNDERSIGNED OFFERS THESE PRICES, TERMS, AND DELIVERY AS PER BID
GENERAL CONDITIONS AND SPECIFICATIONS:

NAME OF COMPANY: _____

BY: (Please Print): _____

SIGNATURE: _____

COMPANY ADDRESS: _____

PHONE: _____

E-MAIL: _____

**BIDS SUBMITTED ARE FIRM AND NO CLAIMS FOR ERRORS WILL BE MADE AFTER BIDS
ARE OPENED AND SUBSEQUENT THEREOF.**

Sworn to and subscribed before me this

the _____ day of _____, _____.

_____, Notary Public

My Commission Expires: _____

SHELBY COUNTY WATER SERVICES BID FOR AMR SYSTEM					
BID ITEM	MAKE OR MANUFACTURER	MODEL #	QUANTITY NEEDED	UNIT PRICE EACH (DELIVERED)	TOTAL COST
M4600 VGB MAS1 Laptop & Case			2		
Autoread Software			2		
AutoVU Software for VGB			2		
AutoVU Mapping Module			2		
Billing Integration Fee for AMR system to CNI			1		
FLEXNET M2 SOFTWARE SUPPORT			1		
ANNUAL SUPPORT CONTRACT			1		

In the event of discrepancies, Unit Prices shall govern.

Mobile Automatic Meter Reading Bid Specification

SPECIFICATIONS

This document is intended to provide specifications for a Walk-by/Drive-by Radio AMR system that is upgradable to a Fixed Base AMI System without a site visit to reprogram or replace the water meter, register, or radio transmitter once installed.

Residential Electromagnetic Flow Water Meters

3/4"(DN20mm) and 1"(DN25mm) Sizes

TYPE

Solid state, battery-operated electromagnetic flow measurement system with a hermetically sealed, glass-covered, electronic register with a programmable 9-digit display.

CONFORMANCE TO STANDARDS

Must conform to American Water Works Standard C-700 and C-710 as most recently revised with respect to accuracy and pressure loss requirements, or other appropriate American Water Works Standard. Must be compliant with NSF/ANSI Standard 61 Annex F and G.

PERFORMANCE

Meter shall have a 20-year life cycle, along with a 20-year battery life guarantee. In evaluating bid submittals, warranty coverage will be considered. All bidders are required to submit their most current nationally published warranty statements for water meter maincases, registers, and measuring chambers.

ELECTRONIC REGISTER

The register must be an electronic device encapsulated in glass with 9 programmable digits utilizing a liquid crystal display (LCD). It will have indicators for flow direction, empty pipe, battery life, and unit of measurement. The register must be hermetically sealed with a heat-tempered glass cover and be tamper resistant. The register shall not be removable from the measuring sensor. The register shall utilize a magnetic coupling technology to connect to a touch read, radio read, or fixed base meter reading system in either an inside or pit set installation. The register shall also have data logging of 1056 data points minimum and be configurable in 15-minute intervals (11 days), hourly intervals (45 days), or daily intervals (3 years). The data log will contain the following information: date, time, hourly max flow, hourly consumption, and max flow, average flow, average consumption, and total consumption over the programmed timeframe interval.

MEASURING ELEMENT

The measuring shall be comprised of a polyphenylene sulfide alloy flow tube. The measuring element shall be made of a noncorrosive, lead-free glass reinforced, composite alloy material with externally-threaded spud ends. A battery-powered magnetic flow sensor will utilize silver/silver chloride electrodes to measure the velocity of the water, which is linearly proportional to the volume. The measuring element will have no moving parts and will be specific for each size.

EXTERNAL HOUSING

The meter shall be an integrated unit that incorporates an electronic register and measuring device encased in an external thermal plastic external casing. This integrated unit will not be removable from the external housing. The systems shall have the size and direction of water flow through the system imprinted on the external housing.

PRESSURE CAPABILITY

System shall operate up to a working pressure of 200 pounds per square inch (psi), without leakage or damage to any parts. The accuracy shall not be affected by variation of pressure up to 200 psi.

OPERATING CHARACTERISTICS

Meter Size	Low Flow (95% min)	Operating Range 98.5% - 101.5%	Pressure Loss (Not to exceed)
3/4"	0.03gpm	0.11 to 35gpm	2psi @ 15gpm
1"	0.11gpm	0.4 to 55gpm	2psi @ 25gpm

Radio Transmitters

These specifications cover the radio transceiver units being used in a radio-based automatic meter reading system.

1. The radio AMR system shall have the ability to read absolute encoder registers using either a hand-held interrogation device or a mobile interrogation unit. The encoded register will be connected to an MXU that will provide the link from the meter register to the interrogation unit.
2. The radio AMR system must utilize a true two-way (interrogate and respond) communication protocol, which enhances system integrity and reliability.
3. The MXU will power up when a valid alert signal is received from an interrogation unit. Following the alert signal and transmission of meter reading data, the interrogation unit will signal to the MXU that valid reading parameters were met and instruct the MXU to power down.
4. The MXU must have the ability to utilize a reading cycle code which is part of the transmission protocol. The reading cycle code is to be utility-controlled and change with each reading cycle. After the MXU has been interrogated and powered down, the MXU will not be alerted again until the cycle code has changed.
5. The MXU shall have a fixed, factory set, non-programmable factory identification number.
6. The MXU shall be capable of storing a programmable class code. The class code will be used to differentiate different classes of meters and to differentiate MXUs in any multi-utility areas that may exist.
7. All MXUs must meet current FCC regulations, which include proper labeling. Bidder shall supply supporting documents at City's request.
8. The entire Radio System, including walk/drive-by and fixed base, shall operate on a primary licensed FCC frequency within the 900-950 MHz band and operate within FCC CFR 47: Part 90 regulations for this band. Failure to comply with this section will result in proposal rejection.
9. Both the alert signal from the interrogation unit (VGB) and the response for the (MXU) must be in the FCC-owned frequency band.
10. Radio transmitters must be available for both pit and non-pit applications.
11. Radio transmitters must be able to support single or dual-port applications.
12. Radio transmitters must be able to support the reading of up to two meters.
13. Radio transmitters shall be housed in High-Density Polyethylene – HDPE, to provide protection for the electronic components and be capable of being submersed in a water-filled pit environment without being damaged.
14. For AMR installations, the radio transmitter shall be capable of being installed in a meter pit lid or under the lid as conditions require. For AMI installations, the radio transmitter should be located through the lid to maximize reading distance. The pit lid installation shall be accomplished with a threaded nut bulkhead type fitting. Non-pit units shall be factory potted to provide corrosion protection. The non-pit unit shall not be accessible by non-utility personnel. This shall be accomplished by use of a non-commercially available tool and a corrosion-resistant tamper-resistant screw.

15. All radio transmitters must be capable of attaching to existing Sensus Metering System encoders utilizing a 2-wire inductive coupling TouchRead system components, without the use of a wire splice. The radio transmitter must also be capable of connecting to a 3-wire connection if necessary.
16. Radio transmitters shall have a battery cartridge available which can be installed in the field.
17. Provide length of radio transmitter warranty. Provide a copy of the published warranty for radio transmitters.
18. Once the Radio Transmitters are installed must be able to migrate to a Fixed Network Design without the need for replacement.

Vehicle Based Interrogation Unit

The following section will describe the specifications for a vehicle-based interrogation unit.

1. The vehicle-based interrogation unit shall be provided complete with a laptop computer, operating software, magnetic mount antenna, power cable to connect to a 12-volt power supply, cables to connect to the laptop computer, and a carrying case.
2. The vehicle-based interrogation unit shall be capable of collecting and storing meter reading data from a radio transmitter-equipped encoder register meter at any time along the meter reading route.
3. The vehicle-based interrogation unit will send an alert signal to the radio transceiver attached to the water meter. After validation of transmission from the transceiver, the vehicle-based interrogation unit will power down the transceiver unit.
4. The vehicle-based interrogation unit shall be capable of processing multiple transceiver transmissions simultaneously.
5. The vehicle-based interrogation unit shall transfer data to the computer hard drive or a removable storage media on a periodic basis to maintain meter readings in the case of power failure.
6. The vehicle-based interrogation unit shall be capable of interrogating and reading meters in a mode that allows segregation of meters to be read, as well as a mode that allows the interrogation and reading of all meters within range of the unit.
7. The vehicle-based interrogation unit must be capable of interrogating a single radio transmitter on demand by the operator.
8. For optimum performance, the vehicle-based interrogation unit must be able to analyze the available RF bands to determine which one permits the best transmission quality. The vehicle-based interrogation unit must be capable of transmitting this information to the radio transmitter attached to the water meter.
9. Provide length of warranty for vehicle-based interrogation unit. Provide published warranty for vehicle-based interrogation unit.

HANDHELD DEVICE

This section covers the hand-held device for AMR installation programming and the mobile drive-by system for the routine collection of meter readings.

1. The handheld device shall store a history of all installed endpoints with a time stamp and summary of all pertinent information.
2. The handheld device shall be available for primary or back-up meter reading.
3. The handheld device shall connect to an endpoint communication device via Bluetooth.
4. The reading process with the handheld device shall be automatic, hands-free, and continual unless it is halted by the operator.
5. A list of meters to be collected shall be displayed on the handheld device.
6. Meters shall be removed from the list on the handheld device once collected.
7. The handheld device software shall be simple and intuitive.
8. The handheld device shall have endpoint audit capability.
9. The handheld device software shall allow for the entry of messages and service repair codes.

10. The handheld device shall have options for a GPS receiver, barcode scanner, and digital camera.
11. The handheld device software shall be integrated with Work Order Management software.
12. The handheld device shall carry a standard one-year warranty.
13. The handheld device shall be housed in weather-resistant, high-impact, UV-stabilized plastic.
14. The handheld device shall automatically adjust the contrast value of the LCD based on ambient temperature and have the ability to be manually adjusted as well.
15. The handheld device shall include a backlight feature for areas with insufficient lighting.
16. The handheld device shall weigh no more than 30 ounces.
17. The handheld device shall include alpha and numeric keys that can be operated while wearing gloves.
18. The handheld device shall feature at least a 624 MHz microprocessor.
19. The handheld device shall feature an operating memory of 128 MB SDRAM.
20. The handheld device shall feature 1 GB of data storage memory.
21. The handheld device shall feature Lithium-ion batteries that are field-replaceable.
22. The handheld device shall maintain functionality for up to 1,500 readings for at least 12 hours.
23. The handheld device shall operate from -22°F to 130°F (-30°C to 54°C).
24. The handheld device shall be tested to MIL-STD 810F and IP67 for waterproof, dustproof, and shockproof (drop testing) standards.

GPS Based Meter Reading Route Enhancement Software

This section covers specifications for a GPS-based meter reading route enhancement software package.

1. Software package shall graphically depict GPS locations for each water meter in the reading route.
2. Software package shall have the option for the utility to control the depiction of unread meters and read meter differently. Example: changing color or disappearing.
3. The software package shall graphically depict the meter reader in the route and automatically reposition the meter reading vehicle and the map as the reader moves along the route.
4. Software package shall be capable of displaying multiple map layers. Example: street names, water system, etc.
5. Software package shall be capable of displaying critical data from the radio reading system software. Example: High / Lo Readings, Low Battery, etc.

Training & Support

This section addresses various training and system support issues.

1. The successful bidder must provide on-site training for the County personnel who will be responsible for operating the software and meter reading hardware. A minimum of 2 full days would be expected.
2. The successful provider should be able to resolve the County's problems via the customer support line within one day a minimum of 98% of the time.
3. The successful bidder must supply information on required or optional maintenance programs beyond the warranty period for both hardware and software