



Request for Qualifications  
(RFQ)

Advanced Metering Infrastructure (AMI)  
Full-Service Program  
Water Department

Project No. 9-23-007  
Deadline to submit qualifications:  
Thursday, February 16, 2023  
2:00 p.m.

City of Webster City  
Department of Public Works  
Attn: Birdiana Bishop  
400 Second Street  
PO BOX 217  
Webster City, IA 50595  
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## STATEMENT OF PURPOSE

The City of Webster City invites interested firms to submit qualifications for an Advanced Metering Infrastructure (AMI) Full-Service Program in order to improve the process of collecting monthly water utility meter data, enhance the level of service offered to water customers, and obtain more accurate water use information.

The AMI Full-Service Program shall consist of two components: the AMI Implementation Project and the AMI Maintenance Program, collectively called the AMI Full-Service Program.

## OVERVIEW OF PROJECT

The City anticipates the AMI Full Service Program will be implemented system wide in a short time frame, in order to maximize the benefits of the system. Interested parties are to submit qualifications for a turnkey deployment of approximately 3,725 metered accounts, followed by an ongoing maintenance program that includes network (including bandwidth needs), data collector units, AMI endpoints, and software maintenance; as well as full-service data hosting and delivery to the City. The AMI Full-Service Program should also integrate with electric utility meters and be compatible with the electric utility needs. The AMI Full-Service Program shall run for a term of at least 15 years and, at a minimum, include the following items.

1. Provide equipment, hardware and water meters needed to perform the initial replacement or retrofit of all existing water meters.
2. Provide a Radio Frequency Point to Multipoint Wireless network.
3. Provide and install radio transponder endpoints with two-way licensed communications.
4. Provide direction and guidance to City staff for the installation of a fixed based data collection system to collect readings and information from AMI modules and transmit to a hosted server.
5. Provide direction and guidance to City staff for the installation of all hardware and software that will receive meter readings, prepare reports, and interface with the City's billing and asset management systems. The City's Line Department will complete installation of the infrastructure and hardware.
6. Provide equipment, training, and implementation to migrate from the current system to the fixed base Full-Service Program.
7. Secure hosting of meter readings that can be accessed by the City at any time.
8. Provide a utility customer portal for City customers to view water usage data, both current and historical.
9. A Maintenance Program that provides replacement of failed components and software upgrades.

**The City is NOT interested in a cellular AMI solution.**

## BACKGROUND INFORMATION

The City of Webster City (City) is located approximately 22 miles southeast of Fort Dodge, IA and approximately 40 miles northwest of Ames, IA. The City is located in Hamilton County, IA. The City encompasses approximately 8.907 square miles.

The City owns and operates three water wells and a Lime Softening Water Treatment Plant which provides water to the entire City through approximately 3,725 service connections within the City limits. The City's existing meters are Badger and Sensus, and for the past several years, the City has been installing touch-read Badger meters when existing meters fail. The City plans to convert all of its existing water meters to AMI via replacement or conversion, whichever is most cost effective. The City prefers positive displacement water meters and will be seeking interested bidders to provide proposals that include positive displacement water meters. The city anticipates replacement of all water meters as part of this project. The prospective proposer shall assist the City with coordination of work tied to replacement. Meter sizes range from 5/8" to 8" water meters with approximately 95% of the water meters being 5/8" water meters.

The City currently uses AMR/drive-by handheld remote read devices and two full time staff members to conduct meter reads. The Full Service Program will transmit accurate meter reads to the billing system and transmit new meter information to the City's financial management software, Casselle Connect.

The City's wells pull water from the Jordan Aquaphor. The Project will provide real-time information about leaks, breaks, and other unusual consumption patterns.

Appendix B provides a quantity list of meters by size and relevant information the prospective bidder will need to put their proposal together.

#### SCOPE OF WORK

See Attachment A

#### SCHEDULE

The tentative schedule is listed below:

Release RFQ	January 17, 2023
Deadline to submit questions:	January 31, 2023 at 5:00 p.m.
Deadline to submit qualifications	February 16, 2023 at 2:00 p.m.
Interviews (if applicable)	February 22, 2023 to March 2, 2023
Select AMI firm/Consultant	Week of March 6, 2023
City Council meeting to approve agreement	March 20, 2023 (subject to change)
Project Completion	July 31, 2024

#### SUBMITTER'S CONTENT

The Submitter shall be the single point of responsibility on all components of the AMI Full-Service Program including but not limited to services, equipment, hardware, software, and warranties.

Submitters must clearly demonstrate an understanding of the City's objectives. Responding to this RFQ is the firm's responsibility and the City shall not bear any costs associated with its preparation or for any services provided before execution of an Agreement. Submission of a Qualification shall constitute Submitter's acknowledgement and compliance with the City's Conflict of Interest Policy.

Submitters shall submit questions about the meaning or intent of the RFQ to the Contact Person in **written format only**. It will be at the City's discretion whether questions received after the "deadline to submit questions" as noted in the tentative schedule will or will not be answered. Interpretations or clarifications considered necessary in response to such questions will be issued by written Addendum. **Only questions answered by formal written Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect.**

The submittal of a firm's qualifications shall be limited to 30 pages (single-sided), excluding appendices. Five copies of the submittal must be included as part of the submittal. The submittal should not include unnecessary promotional material, and shall be brief, precise, and organized as follows:

1. Title Page
2. Introduction
  - a. Introduce the firm and briefly state the understanding of the services to be provided and why they should be awarded the contract.
3. Submitter History
  - a. Include names, resume and contact information of the project manager and key personnel.
  - b. The firm shall have a proven project manager assigned to ensure successful completion of the AMI Implementation Project. Project managers shall be experienced in managing the design, installation, and optimization of systems. Project management experience shall include system integration and training support. Project managers shall be successful in meeting milestones.
  - c. Detail the firm's experience in the Midwest, preferably in Iowa, with communities of similar size as Webster City, IA.
  - d. Detail the project manager's AMI Implementation Project experience and capabilities. Provide a listing of a minimum of three (3) references of similar project scope and complexity with customer contact information (name, organization name, email, and phone number).
  - e. Detail the project manager's AMI Maintenance Program experience and capabilities. Provide a listing of a minimum of three (3) references of similar project scope and complexity with customer contact information. The installation and maintenance project managers may be two different people.
  - f. Provide details outlining the ability to provide maintenance from within the state of Iowa, including local offices and service centers, and minimum response times that can be met.
  - g. Provide documentation of ISO9001 certification for Asset Maintenance Programs.
4. Financial Stability
  - a. Provide a summary detailing year in business, number of customers, financial strength, corporate structure and reporting.
  - b. The Consultant must be able to delay the City's first payment of the project for at least one (1) year or until final completion of the meter installations and testing of the AMI network is complete.
  - c. The Consultant is to complete a financial analysis which will detail the expected financial benefits that the City can expect to realize. The Submitter shall project the analysis for a 15-year period. All assumptions used in the financial analysis must be clearly explained.
5. AMI Full-Service Program Capabilities
  - a. Include a summary of the firm's capabilities in accordance with the required implementation program services.
  - b. Include a summary of the firm's capabilities in accordance with the required maintenance program services.
  - c. Include product descriptions for the proposed AMI system components and software capabilities.
  - d. Include product descriptions for the proposed meter components and capabilities.
  - e. **Submittals for AMR/Drive-by or Hybrid AMI/AMR Systems shall not be accepted.**
  - f. **Submittals for cellular AMI Solutions will not be accepted.**
6. References
  - a. Include a list of at least three references for similar AMI Full-Service Programs, contact information, a brief description, and dates the projects were started and completed.
7. Cost of Full-Service Program - Include Appendix B
  - a. In a separate **SEALED** envelope provide the cost of the full-service program and financing options available. This will not count towards the 30 page limit identified as part of the submittal.

## SELECTION PROCESS AND CONTACT INFORMATION

Proposers must submit five copies of qualifications in a **sealed envelope** clearly marked, "AMI Full-Service Program." One copy of costs associated with the project must be provided in a **separate sealed envelope** clearly marked, "Cost to Provide AMI Full-Service Program" within the proposal package. Qualifications will be received up to **Thursday, February 16, 2023 at 2:00 PM**.

All submittals received by the specified deadline will be reviewed by the City for content, completeness, and experience. After those firms deemed the most qualified are selected, further evaluation and interviews of the selected firms may be conducted as part of the final selection process. However, the City reserves the right to complete the selection process without proceeding to an interview phase, and may choose to select the Consultant based upon information supplied in the proposer's qualification statement.

The following criteria will be used to evaluate responses to this RFQ:

1. Responsiveness to the RFQ, breadth and depth of response.
2. Reputation of the company, its sub-consultants, contractors, and key personnel.
3. Satisfaction of prior and current clients (references).
4. Experience related to project responsibilities per scope of work.
5. Proposed Schedule for Implementation.

All inquiries pertaining to this RFQ are to be emailed to the following:

1. Biridiana Bishop, Assistant City Manager [bbishop@webstercity.com](mailto:bbishop@webstercity.com)
2. Dedra Nerland, Public Works Management Assistant [dnerland@webstercity.com](mailto:dnerland@webstercity.com)

## CONTRACT PROCESS

The city intends to execute an Agreement with the most qualified Consultant. The Agreement will be awarded at the discretion of the Webster City City Council. The City reserves the right to accept or reject any or all qualifications received as a result of this request, to negotiate with any qualified source, or to cancel in part or in its entirety this RFQ. Materials submitted will become the property of the City and will not be deemed confidential or proprietary and are subject to public record and may be released upon request.

## APPENDIX A

### Advanced Metering Infrastructure (AMI) Full-Service Program Scope of Work

#### I. Maintenance Program

The Consultant shall provide a maintenance program that, at the option of the City, is renewable on an annual basis. The maintenance program will provide for the operation and long-term maintenance of the AMI Full-Service Program. The operational component of the Maintenance Program will include:

- a. All costs for operating, maintaining, and updating the backhaul communications system from the data collectors to the hosted software.
  1. The Consultant will repair or replace any failed component of the data collectors, including but not limited to the battery, power supply, solar panel, communications board and firmware upgrades. Should the communications protocol from the cellular company require updating, it will be at no additional installation costs to the City.
  2. Ongoing hosting costs. This will include managing the data, server replacement, backhaul costs from collectors, and back-office operations, such as, backups, software upgrades, and installation of software patches.
  3. Software upgrades: The Consultant will provide updates to the AMI software upon release by the manufacturer. Consultant will validate proper installation of the upgrade and the integration into the City's billing systems.
    - Consultant will provide on-site training, within 15 days of the upgrade, to City staff on the operation of the software, highlighting any changes or enhancements in the new version of the software.
    - Consultant will provide unlimited on-line and telephone support to address any questions or issues in the use of the software at no additional cost to the City.
  4. The repair or replacement of any failed component of the AMI system, for performance reasons including, but not limited to, water meters, endpoints, data collectors, and software. The maintenance will include replacement hardware to reinstall the failed component(s). The costs will be a lump sum amount that will safeguard the utility in the event of a higher than expected failure rate of any of the metering system components.
  5. Back office IT operations including backups, disaster recovery and server replacement
- b. System Performance: The Consultant will provide the following level of service to meet or exceed the following criteria:
  1. The system will deliver at least 98% of all expected reads. The expected number of reads for each endpoint is twenty- four (24) hourly reads daily.
  2. The Full-Service Program will deliver at least 99.5% of billing reads. Billing reads are defined as readings available to be used for calculation of utility bill.
  3. The Consultant will be required to take any action to remedy any issue(s) that hamper the AMI Full-Service Program from meeting the above criteria. The Consultant must have the financial strength to be able to support this requirement for a period of at least 15 years.
- c. Contractors: The Consultant will provide a list of sub-consultants and contractors that will be used to execute the project. Each sub-consultant and contractor will be identified by name and shall provide the following information: years in business, outline of similar experience and capabilities.
- d. Wages: All Consultants, sub-consultants, and contractors shall pay the appropriate prevailing wage rates (when applicable) to all craftsman, tradesman, laborers and mechanics that work on

the project. The project will be funded with State and Local Fiscal Recovery Funds.

- e. Payment and Performance Bonds: In the event any construction work is performed in connection with Consultant's scope of work, Consultant shall provide to City Payment and Performance Bonds for the full construction contract value in a form acceptable to the City.

## **II. Fixed Network Advanced Metering Infrastructure (AMI) System Specifications**

- a. The Fixed Network Advanced Metering Infrastructure (AMI) System will be compatible with both water and electric meters, with an expected reading accuracy of 98% or more for all meters in the system.
- b. The City will not consider technology that has not been field tested. The proposal shall be for new equipment. No used, rebuilt or refurbished equipment will be considered.
- c. When the project is completed, the City will own and operate a functional and upgradeable Fixed Network AMI System capable of utilizing several types of meters and meter manufacturers.
- d. The System shall be two-way and utilize leading technology and an open architecture to ensure compatibility with all identified meter types.
- e. The Fixed Network shall consist of a series of data collectors located strategically throughout the City service area. The locations shall be determined by the Fixed Network AMI System vendor as part of the bid. The data collectors will be powered using either AC/battery or solar/battery to retrieve meter readings and relay them to a hosted server. The data collectors, as well as the corresponding endpoint units, must operate on a licensed frequency that is the exclusive property of the City.
- f. Repeaters will not be permitted in the system.
- g. All Fixed Network AMI retrieved meter readings will be in a format compatible with the vendor supplied software for the Fixed Network system. The software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing. The Fixed Network AMI System shall provide, at minimum, the following:
  - 1. Provide for automatic, routine operation of the AMI System, including diagnostic procedures on all hardware, and logging of all known alerts, alarms and exceptions.
  - 2. Provide the ability to view specific account information.
  - 3. Process the readings and add them to the AMI database.
  - 4. The AMI System software shall be capable of providing individual account reports, flagging large usage, system status, detailed history for specific accounts, battery strength, and tamper alarms.
  - 5. Allow for the addition of distribution system leak detection.
  - 6. Enable provision of enhanced products and services to customers, such as internet-based information access.

## **III. AMI System Description**

- a. The Consultant shall provide a detailed description of the proposed Fixed Network AMI System, including a full system architecture diagram.
- b. AMI Hardware
  - Endpoints
    - 1. **Housing:** The endpoints will be housed in a molded plastic housing, hermetically sealed and resistant to rain, moisture, internal condensation, and temperature changes from -30 to +70 degrees C. The enclosure must house the complete unit, which includes electronics, battery compartment, antenna and wire connections.

2. **Battery Life:** The endpoints shall have a permanently installed non- field replaceable battery with twenty (20) year life cycle expectancy.
  3. **Maintenance:** The endpoints shall be maintenance free. After initial installation, Endpoints will continue to operate at optimal levels for the entire life of the product.
  4. **Read Interval:** The endpoints shall contain a radio that transmits a brief message containing the endpoint identification number and port number, the meter reading, and tamper flags at programmed intervals. The two-way water endpoints shall provide top-of-the-hour, time synchronized hourly reads (and, for short durations, fifteen (15) minute reads) to meet high interval reading requirements. The read interval shall be reconfigured over the air from the host server.
  5. **Diagnostic Information:** Endpoints shall provide diagnostic information, such as battery voltage, and tamper flags with every transmitted reading.
  6. **Meter Compatibility/Ports:** Endpoints shall be compatible with multiple makes and models of meters and shall be offered as single or dual-port units.
  7. **Installation:** Endpoints shall be easily installed and provide appropriate provisions to avoid installer mistakes in installation, connection to meters, and programming. The endpoints shall be configured with a Field Programmer that will take the operator through a series of simple steps. Each step shall include error checking and verification, where appropriate. The Field Programmer shall communicate with the endpoints to confirm proper configuration and wiring. The Field Programmer shall also have the ability to initiate communication between an endpoint and a collector to ensure successful communication. A confirmation message shall be received by the Field Programmer approximately one minute after initiation.
  8. **FCC Regulation:** All equipment must comply with current Federal Communications Commission (FCC) requirements, which include proper labeling of any system components and compliance with Part 90 of the FCC regulations. The vendor must have supporting documentation available upon request to verify compliance. The system proposed by the vendor must operate on a dedicated, licensed frequency to prevent erroneous reading errors. The Vendor must obtain said license on behalf of City including any and all fees.
  9. **Labeling:** The endpoints shall be labeled with the Manufacturer's name, ID number, date of manufacture, and required FCC labeling.
  10. **Warranty:** The endpoints shall be guaranteed for the entire life of the project (15 years minimum).
- c. Field Programmer / Handheld
1. The Field Programmer / Handheld shall have bar code scanning capability for serial number capture and other information directly into the application.
  2. The Field Programmer / Handheld unit shall be designed to operate in a harsh reading environment, resistant to dust and moisture, and be able to withstand temperature extremes from -20 degrees F to +140 degrees F.
  3. The Programmer shall contain its own software for programming, and be provided with easy instructions for operation.
  4. Main and back-up batteries must be readily available from local suppliers.
  5. Units shall be provided with any needed communications software, adapters, chargers, or accessories. All software shall be licensed to the City.
- d. Field Area Network Data Collectors
1. The Fixed Network shall consist of a series of data collectors located strategically throughout the City distribution system. Collectors must operate in temperature extreme ranges of -40° to 85° C.
  2. **Power Supply:** Collectors shall be powered using either AC/battery or solar/battery to

retrieve meter readings and relay them to a centralized location at City offices.

3. **Memory Capacity:** Each collector shall have the capacity to store approximately 30 days' worth of meter readings.
4. **Diagnostic Information:** Collectors shall measure and record battery strength, Radio Frequency (RF) signal strength and time and date stamp each inbound transmission. These records will be included with each transmission.
5. **Transmission Security:** Data transmission between endpoints and the collectors shall be in a secure encrypted format and not easily deciphered by outside sources.
6. **Network Plan and Coverage:** Collector locations shall be determined by the Fixed Network AMI vendor as part of the bid based on a propagation study performed by the Fixed Network AMI vendor. The proposed number of collectors shall provide 100% redundant coverage (two paths from the endpoint to different collectors) for the service territory without the need for any repeaters.
7. **Mounting:** Collectors shall be capable of being mounted on roofs, utility poles, towers, etc., to collect readings from all meters in the coverage area. No special tower construction will be allowed.
8. **Network Redundancy:** Redundancy will be incorporated into the collector placement process to accelerate the reading process and ensure all metering endpoints provide a reading.
9. **Installation:** Collectors shall be automatically recognized and installed onto the System network. Collector behaviors, including connection time, alarm message handling, alternative connection numbers, etc. shall be configurable, over the network.
10. **Scalability:** Collectors may be added to the Fixed Network AMI System at any time without need for significant system reconfiguration.
11. **Electrical Isolation:** All collector electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes.
12. **Maintenance:** After being installed, collectors shall require little to no maintenance for the life of the unit.
13. **WAN Technology:** Collectors shall be easily configured to utilize a variety of WAN technologies to communicate to the head end servers. Collectors shall have optional backhaul communication methods such as cellular, Wi-Fi, Ethernet, IP, and fiber optic and shall be easily upgraded from one WAN technology to another.
14. **Warranty:** Collectors shall be guaranteed for the entire life of the project (15 years minimum).

e. Head End Server Specifications

1. Managed Hosting Solutions are required, locally hosted data will not be considered.
2. The Head End Server shall act as the central collection point for the data within the system. All data hosting and delivery will be cloud based and is the responsibility of the Consultant to set up the software, hardware and hosting systems per the City requirements. The server collects data from all of the Collectors and stores the gathered data in a secure database. Once data is stored and analyzed on the server, the data shall be available for display via a web based graphical interface.
3. The Consultant shall offer a Perpetual License for the Head End Software. The Head End Software solution shall utilize a secure web-based application user interface and shall be accessible to the City on a continuous basis. The Consultant shall explain the host software security.
4. The Consultant shall provide a managed hosting service, where the Consultant shall own and manage the server hardware and software including monitoring to ensure the server continues to work effectively, provide backup services, installation of security patches and various levels of technical support. The Consultant hosted solution shall utilize a secure

web based application.

f. AMI Software

1. Software must be provided to perform the following functions:
  - i. The Software must be web browser-based and shall have defined applications with standard interfaces to allow for existing and planned software applications.
  - ii. Manage the database of meter readings and other related information about the meters and the AMI system.
  - iii. Interface with the City's billing Customer Information System (CIS), Cartegraph for asset management, GIS, customer portal (WaterSmart or other future portal) and other information systems. If the applications identified above are distinct and separate, Supplier shall respond to this subsection for each application.
2. The Software must be capable of handling the multiple utility reads simultaneously. The successful vendor shall install access to the hosted server at the City facilities and ensure the system can be accessed by all necessary departments. At a minimum, the AMI software will provide the following pieces of data:
  - i. Customer account number
  - ii. Customer address
  - iii. Meter serial number
  - iv. Date of system integration
  - v. System meter read history
  - vi. Collector I.D. number
  - vii. Endpoint I.D. number
  - viii. Customer consumption data
3. In addition to the required data noted above, as held within the meter reading software itself, the AMI vendor must support an interface with the City's billing system. The City will provide an input/output file format to the successful vendor. License to use said software will be issued to the City upon delivery of AMI server.
4. Any Supplier-supplied database used to store and manage meter readings should be non-proprietary, ODBC-compliant, SQL-compliant, or provided by a standard commercial database supplier.
5. The fixed network software solution must offer:
  - i. Rate information
  - ii. Customer information
  - iii. Service point information
  - iv. Meter data
  - v. Tamper data
  - vi. Event data
6. The fixed network software solution must offer the option for advanced capabilities (such as shut-offs and pressure readings) and alarms (such as continuous flow and backflow).
7. The solution must be able to store and archive multiple types of data for each individual endpoint including but not restricted to:
  - i. Rate information
  - ii. Customer information
  - iii. Service point information
  - iv. Meter data
  - v. Tamper data
  - vi. Event data
  - vii. Store/archive a minimum of 24 months of data. All data must be easily retrievable.

- viii. Accessible by a rich client or Web-browser based interface for the purposes of system administration and diagnostic troubleshooting.
- ix. Be designed as a robust and scalable data repository to leverage best practices of data warehousing. The database should support scalability and have a highly flexible data structure to allow new data elements to be created without changes in table structures.

g. Consumer Engagement

1. The solution must include a customer engagement web portal, either a stand alone portal from the AMI vendor, or integration to a web portal capable of providing both water and electric usage data, which includes:
  - i. Customer login/authentication
  - ii. Web based customer dashboard with:
    - AMI data presentment
    - Bill-to-date
    - Bill analysis
  - iii. Analysis module for customers to see how their homes compare to similar homes.
  - iv. Customer alerts
  - v. Proactive water conservation reports

h. Interface to Billing System

1. The AMI system supplier shall provide the appropriate software to automatically transfer appropriate data to the billing and Customer Information System (CIS) in a standard, nonproprietary format (e.g., fixed field ASCII) compatible with City existing formats. Each record provided to the CIS shall contain at a minimum: account number, endpoint ID number, route number, meter ID number, meter readings, date and time for each meter reading, and battery and tamper indications.

i. Water Capabilities

1. **Read Interval:** The solution shall be capable of collecting data in intervals of 15 or 30 minutes as well as hourly reads. Interval duration should be capable of being changed from the headend over the fixed network.
2. **Leak Detection:** The system shall monitor water consumption through the meter and indicate when there is an abnormal increase in water consumption, suggesting a leak within the customer's premise. The software must also provide meter reading management reports, usage analysis reports (leak detection, tamper detection and backflow conditions), and system management diagnostics.
3. **No Flow Detection:** The system (either through reports or alarms from the endpoint) shall indicate when there is an extended period of no flow or a minimum flow through the meter.
4. **High Flow Detection:** The system shall provide a report of accounts with abnormally high consumption during any billing period, suggesting a continuous flow condition.
5. **Constant Consumption:** The system shall provide a constant consumption report to identify locations which a potential leak had occurred by monitoring for constant usage or continuous flow with consecutive reads.
6. **Time Synchronization:** The system shall provide time synchronized meter reads that allow the City to obtain a snapshot of water consumption. Describe how the system maintains time synchronization across the network. All endpoints on the network must maintain time synchronization within 30 seconds of each other.

j. AMI Compatible Acoustic Leak Detection System

1. The system shall be capable of utilizing acoustic data loggers that connect magnetically to water distribution mains to be upgraded at a later date.
- k. AMI Back-up
  1. System shall have back-up capabilities and procedures to ensure that system and consumption data is not corrupted or lost.
- l. AMI System Diagnostics
  1. System diagnostics shall be collected at all device levels and transferred to the host server where several types of diagnostic reports shall be produced. Such reports shall indicate problems ranging from battery voltage to failure to recognize a proper communication with the meter.
- m. AMI System Maintenance
  1. In addition to warranty periods, the Consultant is required to supply information on required or optional maintenance programs beyond the warranty period for both hardware and software. Features of those programs shall also be included with any additional charges such as hourly rate for on-site and/or remote support. The location of and procedures for obtaining such support shall be stated.
- n. AMI Training
  1. The City requires training of all appropriate staff sufficient to enable them to effectively operate and maintain the system. To be effective, the City requires that training curriculum be provided in advance, that course workbooks and materials accompany training, and that experienced instructors provide training.
  2. During the 15-year time period a yearly refresher and or all new employees will be trained as well

#### **IV. Meter Specifications**

- a. The residential and light commercial meters will comply with the following specifications:
  1. All meters shall meet or exceed the latest version of the American Water Works Association (AWWA) Standard C700, C710, or C715 for cold water meters.
  2. All materials used in the construction of the main cases shall have sufficient dimensional stability to retain operating clearances at working temperature up to 105 degrees Fahrenheit.
  3. The meter serial number shall be stamped on the main case of the meter, and on the meter lid, if possible.
  4. The meter main-case shall be cast from NSF/ANSI 61 certified material. The serial number should be displayed in a permanent location on the meter or register. Meter markings shall indicate size, model, direction of flow, and NSF 61 certification.
  5. The meter electronic register enclosure shall be constructed of a durable engineered composite designed to last the life of the meter. The meter shall provide a fully potted wire connection for use with /AMI devices.
  6. The standard, advanced, and enhanced communication protocol for the water meter absolute encoder register shall be fully compatible and available for use with the selected AMI system and software.
  7. The AWWA C750 solid-state meters must feature fully potted electronics and battery and an IP68 rating for submersion in flooded meter pits.
  8. All meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.

9. Meters shall be pressure tested to ensure against leakage.
  10. Meters shall be guaranteed accuracy for a minimum 15-year period.
  11. All electrical components and batteries will be guaranteed for a minimum 15-year period.
- b. The commercial meters will comply with the following specifications:
1. Shall meet or exceed all requirements of ANSI/AWWA Standard C701, C702, C703 and C715 for cold water meters. Each meter assembly shall be performance tested to ensure compliance.
  2. The meter main case shall be stainless steel, bronze or epoxy coated ductile iron or epoxy coated fabricated steel composition.
  3. The meter package shall meet or exceed all requirements of NSF/ANSI Standard 61, Annex F and G.
  4. All meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
  5. Meters shall be pressure tested to ensure against leakage.
  6. Meters shall be guaranteed accuracy for a minimum 15-year period.
  7. All electrical components and batteries will be guaranteed for a minimum 15-year.

# Appendix B

## WATER METERS, Base Bid

Meter Size or Hardware Sought	# Units desired	Additional Units for Stock	Total	Meter Brand Proposed	Unit Cost	Total Cost
5/8	3488	18	3506			
3/4"	2	0	2			
1"	75	3	78			
1.5"	43	2	45			
2"	46	3	49			
3"	13	1	14			
4" Turbo	1	0	1			
4"	2	0	2			
4" Omni	4	0	4			
6"	1	0	1			
8"	1	0	1			
Multi	4	0	4			
Total Number of Meters	3680	27	3707			
Remote Service disconnect/reconnect hardware	150	5	155			
acoustic data loggers	2	1	3			
Installation and Data controllers	2	1	3			

## ELECTRIC METERS, Alternate 1

Meter Size	# Meters in use	Additional in Stock	Total	Meter Brand Proposed	Unit Cost	Total Cost
1S	41	5	46			
2S	4130	40	4170			
NW12S	98	35	133			
2S CL320	38	5	43			
4S CT 120/240	7	2	9			
4S CT 240	10	2	12			
12S 240 3 wire CL200	6	2	8			
9S	112	5	117			
16S CL200	72	5	77			
16S CL320	17	2	19			
45S	8	2	10			
Total Number of Meters	4539	105	4644			

**Remote Service Disconnect/Reconnect Hardware, Alternate 2**

	# of Units Sought	Unit Cost	Total Cost
Remote Service Disconnect/Reconnect Hardware	3,725		

# **Appendix C**

## Sample Agreement

**FIXED NETWORK ADVANCED METERING INFRASTRUCTURE (AMI) SYSTEM  
SERVICE AGREEMENT**

**THIS AGREEMENT**, made and entered into on this \_\_\_\_\_ day of \_\_\_\_\_ 2023, by and between \_\_\_\_\_, whose address for purposes of this Agreement is \_\_\_\_\_, hereinafter referred to as “Provider”, and the City of Webster City, Iowa, whose address for purposes of this Agreement is 400 Second Street, Webster City, Iowa, hereinafter referred to as “City”.

**WITNESSETH:**

WHEREAS, the City wishes to improve the process of collecting monthly water utility meter data, enhance the level of service offered to water customers, and obtain more accurate water use information; and

WHEREAS, the parties have reached an agreement on the terms and provisions for the advanced metering infrastructure services and wish to herein reduce their agreement to writing for formal execution and acknowledgement.

IT IS THEREFORE AGREED as follows, to-wit:

1. **SERVICES PERFORMED:** Provider shall perform the following services as part of said Agreement:

- a. Provide and perform a necessary maintenance program in accordance with the specifications, terms, responsibilities and guarantees as provided in Appendix A attached hereto.
- b. Provide a Fixed Network Advanced Metering Infrastructure (AMI) System, in accordance with the specifications, terms, responsibilities and guarantees as provided in Appendix B and Appendix C attached hereto.
- c. Provide the necessary residential, light commercial and commercial water meters in accordance with the specifications, terms, responsibilities and guarantees as provided in Appendix D attached hereto.

(the “Services Performed”).

Said Services Performed shall be completed by Provider no later than May 31, 2024 (date). Should Provider fail to complete said work by said date, Provider agrees to pay liquidated damages for noncompliance with said completion provisions to City at a rate of \$1,000.00 dollars for each calendar day that the work remains incomplete. Provider also agrees to comply with all federal, state and local laws in their performance of said services under this Agreement.

2. **WARRANTY PERIOD:** Provider herein agrees to warrant all Services Performed as outlined above for the life of this Agreement and/or as provided on the attached Appendix(s), whichever is longer. As part of said warranty, Provider herein agrees to remedy any

and all defects that may develop in or result from the Services Performed, by reason of defects in workmanship or materials used in construction of said work and/or equipment.

3. TERM OF AGREEMENT: This Agreement shall become effective on the Effective Date and shall terminate fifteen (15) years from said Effective Date, unless mutually renewed by both parties in writing.

4. COMPENSATION: In consideration for the services performed above by Provider, City agrees to pay Provider the quoted price of \_\_\_\_\_, which shall be paid in equal (monthly/yearly) installments. Provider shall submit a payment invoice upon completion of said Services Performed to City prior to receiving payment. Said invoice shall include an invoice number, the dates covered by the invoice, and a summary of the work performed. Upon receipt of said invoice, City shall inspect said Services Performed. Upon satisfactory approval by City, payment will be made to Provider within \_\_\_\_\_ business days of receipt by City.

5. PROVIDER EXPENSES: Provider shall be responsible for any and all expenses incurred while performing said Services Performed under this Agreement. This includes, but is not limited to, automobile and other travel expenses; vehicle maintenance and repair costs; vehicle and other license fees and permits; insurance premiums; road, fuel, and other taxes; fines; cell phone expenses; meals; and all salary, expenses, and other compensation paid to employees or contract personnel of Provider.

6. PROVIDER VEHICLE AND EQUIPMENT: Provider shall furnish all vehicles, equipment, tools, and materials they may need to provide the Services Performed required by this Agreement.

7. INDEPENDENT PROVIDER STATUS: Provider is an independent contractor, and neither Provider nor Provider's employees or contract personnel are, or shall be deemed, City's employees, now or into the future.

8. LICENSES: Provider and any of Provider's employees shall at all times maintain and pay for all required professional and personal licenses, comply with all federal, state, and local laws requiring drivers and other licenses, business permits, and certificates required to carry out the services provided under this Agreement.

9. STATE AND FEDERAL TAXES: City will not (1) withhold FICA (Social Security and Medicare taxes) from Provider's compensation payments or make FICA payments on Provider's behalf, (2) make state or federal unemployment compensation contributions on Provider's behalf, (3) withhold state or federal income tax from Provider's payments. Provider shall pay all taxes incurred while performing services under this Agreement, including all applicable income taxes and self-employment taxes. In requested, Provider shall provide City with proof that such payments have been made.

10. FRINGE BENEFITS: Neither Provider nor Provider's employees or contract personnel are eligible to participate in any employee pension, health, vacation pay, sick pay, or other fringe benefits provided by City.

11. UNEMPLOYMENT AND/OR WORKERS' COMPENSATION: As a result of Provider being an independent contractor, Provider shall not be entitled to any state or federal unemployment compensation benefits in connection with services performed under this Agreement. Additionally, City shall not obtain workers' compensation insurance on behalf of Provider or Provider's employees.

12. INSURANCE: City shall not provide insurance coverage of any kind for Provider or Provider's employees or contract personnel. Provider shall be responsible for obtaining and maintaining all necessary insurance coverage during the entire term of this Agreement, which shall include at a minimum, keeping in force at all times during this Agreement a commercial general liability insurance policy in the amounts of \$1,000,000.00 each occurrence and \$3,000,000.00 annual aggregate, in addition to all necessary vehicle insurance requirements. Further, Provider shall provide City a certificate of Insurance with City listed as an additional insured on said general liability policy.

13. LIABILITY FOR DAMAGE: Provider shall be liable for all personal, bodily injury, or property damage caused by Provider (or their agents, employees, etc) while performing the services under this Agreement.

14. INDEMNIFICATION: Provider shall indemnify, defend and hold harmless City from all claims, demands, causes of action, losses, damages, fines, liabilities and expenses, including, without limitation, reasonable attorneys' fees and court costs arising from any personal injury, property damage, or any other civil matters, that may arise as a result of this Agreement. Additionally, this shall include any actions brought against City as a result of the failure of Provider to carry out their contracted duties under this Agreement.

15. TERMINATION OF AGREEMENT BY CITY: City may terminate this Agreement at any time during the life of this Agreement, effective immediately, for any reason and without justification by providing Provider with written notice of said termination.

16. TERMINATION OF AGREEMENT BY PROVIDER: Provider may terminate this Agreement by notice to the City if (i) City commits a material breach of this Agreement and fails to cure such breach within thirty (30) days or (ii) City becomes the subject of a petition in bankruptcy or other similar proceedings.

17. EFFECT OF TERMINATION: If the Agreement is terminated in whole, City shall only be responsible for those fees owed up to the effective date of termination.

18. REPRESENTATIONS: Each party represents that: (i) it has full right, title and authority to enter into this Agreement; and (ii) this Agreement constitutes a legal, valid and binding obligation of both parties, enforceable against both parties in accordance with its terms.

19. NO PARTNERSHIP: This Agreement does not create a partnership relationship. Provider does not have authority to enter into any contracts on City's behalf.

20. ASSIGNMENT AND DELEGATION: Provider shall not assign any rights or delegate any duties under this Agreement to any third party without City's prior written approval.

21. ENTIRE AGREEMENT: This Agreement contains the complete Agreement between the parties and shall, as of the effective date of this Agreement, supersede all other Agreements between the parties. The parties stipulate that neither has made any representations including the execution and delivery of this Agreement except such representations as are specifically set forth in this Agreement, and each of the parties acknowledges he/it has relied on its own judgment in entering into this Agreement. The parties further acknowledge that any payments or representations that may have been made by either to the other prior to the date of executing this Agreement are of no effect and that neither has relied on such payments or representations in connection with his or its dealings with the other.

22. MODIFICATION OF AGREEMENT: Any modification of this Agreement or additional obligation assumed by either party in connection with this Agreement shall be binding only if evidenced in writing signed by each party.

23. EFFECT OF PARTIAL INVALIDITY: The validity of any portion of this Agreement will not and shall not be deemed to affect the validity of any other provision. In the event that any provision of this Agreement is held to be invalid by a court of competent jurisdiction, the parties agree that the remaining provisions shall be deemed to be in full force and effect as if they had been executed by both parties subsequent to the holding of the invalid provision.

24. GOVERNING LAW: This Agreement and rights and duties hereunder shall be construed in accordance with the laws of the State of Iowa.

25. NO WAIVER: The failure of either party to this Agreement to insist upon the performance of any of the terms and conditions of this Agreement, or the waiver of any breach of any terms and conditions of this Agreement, shall not be construed as thereafter waiving any such terms and conditions, but the same shall continue and remain in full force and effect as if no such forbearance or waiver had occurred.

26. FORCE MAJEURE: Subject to the limitations set forth below and except for fees due for Services performed, neither party shall be held responsible for any delay or default, including any damages arising therefrom, due to any act of God, act of governmental entity or military authority, explosion, epidemic casualty, flood, riot or civil disturbance, war, sabotage, unavailability of or interruption or delay in telecommunications or Third Party services, failure of Third Party software, insurrections, any general slowdown or inoperability of the Internet (whether from a virus or other cause), or any other similar event that is beyond the reasonable control of such party (each, a "Force Majeure Event"). The occurrence of a Force Majeure Event shall not excuse the performance by a party unless that party promptly notifies the other party of the Force Majeure Event and promptly uses its best efforts to provide substitute performance or otherwise mitigate the force majeure condition.

27. SECTION HEADINGS: The titles to the Sections of this Agreement are solely for the convenience of the parties and shall not be used to explain, modify, simplify, or aide in the interpretation of the provisions of this Agreement.

IN WITNESS WHEREOF, the parties hereto sign and execute this agreement on this \_\_\_\_\_ day of \_\_\_\_\_, 2023.

PROVIDER

CITY OF WEBSTER CITY, IOWA

By: \_\_\_\_\_

By: \_\_\_\_\_

John Hawkins, Mayor

\_\_\_\_\_  
Name and Title

ATTEST:

\_\_\_\_\_  
Karyl Bonjour, City Clerk

STATE OF \_\_\_\_\_, COUNTY OF \_\_\_\_\_: ss

This record was acknowledged before me on \_\_\_\_\_, 2023, by  
\_\_\_\_\_  
(Name and Title).

\_\_\_\_\_  
Notary Public in and for the State of Iowa.

## APPENDIX A

### **Maintenance Program:**

1. The Provider shall provide a maintenance program, including monthly and/or annual fees, term of maintenance program, etc., that will provide for the operation and long-term maintenance of the Advanced Metering Infrastructure (AMI) service. The operational component of the maintenance program shall include, but not be limited to:
  - a. All costs for operating, maintaining, and updating the backhaul communications system from the data collectors to the hosted software, including, but not limited to the following:
    - i. The Provider will repair or replace any failed component of the data collectors, including but not limited to, the battery, power supply, solar panel, communications board and firmware upgrades. Should the communications protocol from the cellular company require updating, it will be at no additional installation costs to the City, but shall instead be paid for by the Provider.
    - ii. Ongoing hosting costs: The Provider will provide ongoing hosting costs, including, but not limited to, costs associated with managing the data, server replacement, backhaul costs from collectors, and back office operations, such as, backups, software upgrades, and installation of software patches.
    - iii. Software upgrades: The Provider will provide updates to the AMI software upon release by the manufacturer. Provider will validate proper installation of the upgrade and the integration into the City's billing systems.
      1. Provider will provide on-site training, within 15 days of the upgrade, to City staff on the operation of the software, highlighting any changes or enhancements in the new version of the software.
      2. Provider will provide unlimited on-line and telephone support to address any questions or issues in the use of the software at no additional cost to the City.
    - iv. The repair or replacement of any failed component of the AMI system, for performance reasons including, but not limited to, water meters, endpoints, data collectors, and software. The maintenance will include replacement hardware to reinstall the failed component(s).
    - v. Back office IT operations including backups, disaster recovery and server replacement
  - b. System Performance: The Provider will provide the following level of service to meet or exceed the following criteria:
    - i. The system will deliver at least 98% of all expected reads. The expected

number of reads for each endpoint is twenty- four (24) hourly reads daily.

- ii. The system will deliver at least 99.5% of billing reads. Billing reads are defined as readings available to be used for calculation of utility bill.
2. The Provider will be required to take any action to remedy any issue(s) that hamper the AMI service from meeting the above criteria.

## APPENDIX B

### **Fixed Network Advanced Metering Infrastructure (AMI) System Specifications:**

1. The AMI System will be compatible with both water and electric meters, with an expected reading accuracy of 98% or more for all meters in the system.
2. The AMI System shall be comprised of all new equipment. No used, rebuilt or refurbished equipment will be allowed.
3. When the project is completed, the City will own and operate a functional and upgradeable Fixed Network AMI System capable of utilizing several types of meters and meter manufacturers.
4. The AMI System shall be two-way and utilize leading technology and an open architecture to ensure compatibility with all identified meter types.
5. The Fixed Network AMI System shall consist of a series of data collectors located strategically throughout the City service area. The locations shall be determined by the Provider to ensure adequate area coverage. The data collectors will be powered using either AC/battery or solar/battery to retrieve meter readings and relay them to a hosted server. The data collectors, as well as the corresponding endpoint units, must operate on a licensed frequency that is the exclusive property of the City.
6. Repeaters will not be permitted in the system.
7. All Fixed Network AMI System retrieved meter readings will be in a format compatible with the Provider supplied software for the Fixed Network AMI System. The software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing. The Fixed Network AMI System shall provide, at minimum, the following:
  - a. Provide for automatic, routine operation of the AMI System, including diagnostic procedures on all hardware, and logging of all known alerts, alarms and exceptions.
  - b. Provide the ability to view specific account information.
  - c. Process the readings and add them to the AMI database.
  - d. The AMI System software shall be capable of providing individual account reports, flagging large usage, system status, detailed history for specific accounts, battery strength, and tamper alarms.
  - e. Allow for the addition of distribution system leak detection.
  - f. Enable provision of enhanced products and services to customers, such as internet-based information access.

## APPENDIX C

### **Fixed Network Advanced Metering Infrastructure (AMI) System Description:**

1. The Provider shall provide a detailed description of the proposed Fixed Network AMI System, including a full system architecture diagram, which shall include, but not be limited to, the following:
2. AMI Hardware
  - a. Endpoints
    - i. Housing: The endpoints will be housed in a molded plastic housing, hermetically sealed and resistant to rain, moisture, internal condensation, and temperature changes from -30 to +70 degrees C. The enclosure must house the complete unit, which includes electronics, battery compartment, antenna and wire connections.
    - ii. Battery Life: The endpoints shall have a permanently installed non-field replaceable battery with twenty (20) year life cycle expectancy.
    - iii. Maintenance: The endpoints shall be maintenance free. After initial installation, Endpoints will continue to operate at optimal levels for the entire life of the product.
    - iv. Read Interval: The endpoints shall contain a radio that transmits a brief message containing the endpoint identification number and port number, the meter reading, and tamper flags at programmed intervals. The two-way water endpoints shall provide top-of-the-hour, time synchronized hourly reads (and, for short durations, fifteen (15) minute reads) to meet high interval reading requirements. The read interval shall be reconfigured over the air from the host server.
    - v. Diagnostic Information: The endpoints shall provide diagnostic information, such as battery voltage, and tamper flags with every transmitted reading.
    - vi. Meter Compatibility/Ports: The endpoints shall be compatible with multiple makes and models of meters and shall be offered as single or dual-port units.
    - vii. Installation: The endpoints shall be easily installed and provide appropriate provisions to avoid installer mistakes in installation, connection to meters, and programming. The endpoints shall be configured with a Field Programmer that will take the operator through a series of simple steps. Each step shall include error checking and verification, where appropriate. The Field Programmer shall communicate with the endpoints to confirm proper configuration and wiring. The Field Programmer shall also have the ability to initiate communication between an endpoint and a collector to ensure successful communication. A confirmation message shall be received by the Field Programmer

approximately one minute after initiation.

- viii. FCC Regulation: All equipment must comply with current Federal Communications Commission (FCC) requirements, which include proper labeling of any system components and compliance with Part 90 of the FCC regulations. The Provider must have supporting documentation available upon request to verify compliance. The system proposed by the Provider must operate on a dedicated, licensed frequency to prevent erroneous reading errors. The Provider must obtain said license on behalf of City including any and all fees.
- ix. Labeling: The endpoints shall be labeled with the Manufacturer's name, ID number, date of manufacture, and required FCC labeling.
- x. Warranty: The endpoints shall be guaranteed for the entire life of the project (15 years minimum).

b. Field Programmer / Handheld

- i. The Field Programmer / Handheld shall have bar code scanning capability for serial number capture and other information directly into the application.
- ii. The Field Programmer / Handheld unit shall be designed to operate in a harsh reading environment, resistant to dust and moisture, and be able to withstand temperature extremes from -20 degrees F to +140 degrees F.
- iii. The Field Programmer shall contain its own software for programming, and be provided with easy instructions for operation.
- iv. Main and back-up batteries must be readily available from local suppliers.
- v. Units shall be provided with any needed communications software, adapters, chargers, or accessories. All software shall be licensed to the City.

c. Field Area Network Data Collectors

- i. The Fixed Network AMI System shall consist of a series of data collectors located strategically throughout the City distribution system. Collectors must operate in temperature extreme ranges of -40° to 85° C.
- ii. Power Supply: Collectors shall be powered using either AC/battery or solar/battery to retrieve meter readings and relay them to a centralized location at City offices.
- iii. Memory Capacity: Each collector shall have the capacity to store approximately 30 days' worth of meter readings.
- iv. Diagnostic Information: Collectors shall measure and record battery strength, Radio Frequency (RF) signal strength and time and date stamp each inbound transmission. These records will be included with each transmission.
- v. Transmission Security: Data transmission between endpoints and the

collectors shall be in a secure encrypted format and not easily deciphered by outside sources.

- vi. Network Plan and Coverage: Collector locations shall be determined by the Provider based on a propagation study performed by the Provider. The proposed number of collectors shall provide 100% redundant coverage (two paths from the endpoint to different collectors) for the service territory without the need for any repeaters.
- vii. Mounting: Collectors shall be capable of being mounted on roofs, utility poles, towers, etc., to collect readings from all meters in the coverage area. No special tower construction will be allowed.
- viii. Network Redundancy: Redundancy will be incorporated into the collector placement process to accelerate the reading process and ensure all metering endpoints provide a reading.
- ix. Installation: Collectors shall be automatically recognized and installed onto the System network. Collector behaviors, including connection time, alarm message handling, alternative connection numbers, etc. shall be configurable, over the network.
- x. Scalability: Collectors may be added to the Fixed Network AMI System at any time without need for significant system reconfiguration.
- xi. Electrical Isolation: All collector electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes.
- xii. Maintenance: After being installed, collectors shall require little to no maintenance for the life of the unit.
- xiii. WAN Technology: Collectors shall be easily configured to utilize a variety of WAN technologies to communicate to the head end servers. Collectors shall have optional backhaul communication methods such as cellular, Wi-Fi, Ethernet, IP, and fiber optic and shall be easily upgraded from one WAN technology to another.
- xiv. Warranty: Collectors shall be guaranteed for the entire life of the project (15 years minimum).

d. Head End Server Specifications

- i. The Head End Server shall act as the central collection point for the data within the system. All data hosting and delivery will be cloud based and is the responsibility of the Provider to set up the software, hardware and hosting systems per the City requirements. The server collects data from all of the Collectors and stores the gathered data in a secure database. Once data is stored and analyzed on the server, the data shall be available for display via a web based graphical interface.
- ii. The Provider shall provide a Perpetual License for the Head End Software. The Head End Software solution shall utilize a secure web-based application user interface and shall be accessible to the City on a continuous basis. The Provider shall explain the host software security.

- iii. The Provider shall provide a managed hosting service, where the Provider shall own and manage the server hardware and software including monitoring to ensure the server continues to work effectively, provide backup services, installation of security patches and various levels of technical support. The Provider hosted solution shall utilize a secure web based application.
- e. AMI Software
- i. AMI Software must be provided to perform the following functions:
    - 1. The Software must be web browser-based and shall have defined applications with standard interfaces to allow for existing and planned software applications.
    - 2. Manage the database of meter readings and other related information about the meters and the AMI system.
    - 3. Interface with the City's billing Customer Information System (CIS), Cartegraph for asset management, GIS, customer portal (WaterSmart or other future portal) and other information systems. If the applications identified above are distinct and separate, Supplier shall respond to this subsection for each application.
  - ii. The Software must be capable of handling the multiple utility reads simultaneously. The Provider shall install access to the hosted server at the City facilities and ensure the system can be accessed by all necessary departments. At a minimum, the AMI software will provide the following pieces of data:
    - 1. Customer account number
    - 2. Customer address
    - 3. Meter serial number
    - 4. Date of system integration
    - 5. System meter read history
    - 6. Collector I.D. number
    - 7. Endpoint I.D. number
    - 8. Customer consumption data
  - iii. In addition to the required data noted above, as held within the meter reading software itself, the Provider must support an interface with the City's billing system. The City will provide an input/output file format to the Provider. License to use said software will be issued to the City upon delivery of AMI server.
  - iv. Any Supplier-supplied database used to store and manage meter readings should be non-proprietary, ODBC-compliant, SQL-compliant, or provided by a standard commercial database supplier.

- v. The fixed network software solution must offer:
    - 1. Rate information
    - 2. Customer information
    - 3. Service point information
    - 4. Meter data
    - 5. Tamper data
    - 6. Event data
  - vi. The fixed network software solution must offer the option for advanced capabilities (such as shut-offs and pressure readings) and alarms (such as continuous flow and backflow).
  - vii. The solution must be able to store and archive multiple types of data for each individual endpoint including but not restricted to:
    - 1. Rate information
    - 2. Customer information
    - 3. Service point information
    - 4. Meter data
    - 5. Tamper data
    - 6. Event data
    - 7. Store/archive a minimum of 24 months of data. All data must be easily retrievable.
    - 8. Accessible by a rich client or Web-browser based interface for the purposes of system administration and diagnostic troubleshooting.
    - 9. Be designed as a robust and scalable data repository to leverage best practices of data warehousing. The database should support scalability and have a highly flexible data structure to allow new data elements to be created without changes in table structures.
- f. Consumer Engagement
- i. The AMI System must include a customer engagement web portal, either a stand-alone portal from the Provider, or integration to a web portal capable of providing both water and electric usage data, which includes:
    - 1. Customer login/authentication
    - 2. Web based customer dashboard with:
      - a. AMI data presentation
      - b. Bill-to-date
      - c. Bill analysis
    - 3. Analysis module for customers to see how their homes compare to

similar homes.

4. Customer alerts

5. Proactive water conservation reports

g. Interface to Billing System

i. The Provider shall provide the appropriate software to automatically transfer appropriate data to the billing and Customer Information System (CIS) in a standard, nonproprietary format (e.g., fixed field ASCII) compatible with City existing formats. Each record provided to the CIS shall contain at a minimum: account number, endpoint ID number, route number, meter ID number, meter readings, date and time for each meter reading, and battery and tamper indications.

h. Water Capabilities

i. Read Interval: The AMI System shall be capable of collecting data in intervals of 15 or 30 minutes as well as hourly reads. Interval duration should be capable of being changed from the headend over the fixed network.

ii. Leak Detection: The AMI System shall monitor water consumption through the meter and indicate when there is an abnormal increase in water consumption, suggesting a leak within the customer's premise. The software must also provide meter reading management reports, usage analysis reports (leak detection, tamper detection and backflow conditions), and system management diagnostics.

iii. No Flow Detection: The AMI System (either through reports or alarms from the endpoint) shall indicate when there is an extended period of no flow or a minimum flow through the meter.

iv. High Flow Detection: The AMI System shall provide a report of accounts with abnormally high consumption during any billing period, suggesting a continuous flow condition.

v. Constant Consumption: The AMI System shall provide a constant consumption report to identify locations which a potential leak had occurred by monitoring for constant usage or continuous flow with consecutive reads.

vi. Time Synchronization: The AMI System shall provide time synchronized meter reads that allow the City to obtain a snapshot of water consumption. All endpoints on the network must maintain time synchronization within 30 seconds of each other.

i. AMI Compatible Acoustic Leak Detection System

i. The AMI System shall be capable of utilizing acoustic data loggers that connect magnetically to water distribution mains to be upgraded at a later date.

j. AMI Back-up

- i. The AMI System shall have back-up capabilities and procedures to ensure that the AMI System and consumption data is not corrupted or lost.

k. AMI System Diagnostics

- i. The AMI System diagnostics shall be collected at all device levels and transferred to the host server where several types of diagnostic reports shall be produced. Such reports shall indicate problems ranging from battery voltage to failure to recognize a proper communication with the meter.

l. AMI System Maintenance

- i. In addition to warranty periods, the Provider is required to supply information on required or optional maintenance programs beyond the warranty period for both hardware and software. Features of those programs shall also be included with any additional charges such as hourly rate for on-site and/or remote support. The location of and procedures for obtaining such support shall be stated.

m. AMI Training

- i. The Provider shall train all appropriate staff sufficient to enable them to effectively operate and maintain the AMI System. To be effective, the City requires that training curriculum be provided in advance, that course workbooks and materials accompany training, and that experienced instructors provide training.
- ii. During the 15-year time period a yearly refresher and or all new employees will be trained by the Provider as needed and requested by the City.

## APPENDIX D

### **Meter Specifications:**

1. The residential and light commercial meters will comply with the following specifications:
  - a. All meters shall meet or exceed the latest version of the American Water Works Association (AWWA) Standard C700, C710, or C715 for cold water meters.
  - b. All materials used in the construction of the main cases shall have sufficient dimensional stability to retain operating clearances at working temperature up to 105 degrees Fahrenheit.
  - c. The meter serial number shall be stamped on the main case of the meter, and on the meter lid, if possible.
  - d. The meter main-case shall be cast from NSF/ANSI 61 certified material. The serial number should be displayed in a permanent location on the meter or register. Meter markings shall indicate size, model, direction of flow, and NSF 61 certification.
  - e. The meter electronic register enclosure shall be constructed of a durable engineered composite designed to last the life of the meter. The meter shall provide a fully potted wire connection for use with /AMI devices.
  - f. The standard, advanced, and enhanced communication protocol for the water meter absolute encoder register shall be fully compatible and available for use with the selected AMI system and software.
  - g. The AWWA C750 solid-state meters must feature fully potted electronics and battery and an IP68 rating for submersion in flooded meter pits.
  - h. All meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
  - i. Meters shall be pressure tested to ensure against leakage.
  - j. Meters shall be guaranteed accuracy for a minimum 15-year period.
  - k. All electrical components and batteries will be guaranteed for a minimum 15-year period.
2. The commercial meters will comply with the following specifications:
  - a. Shall meet or exceed all requirements of ANSI/AWWA Standard C701, C702, C703 and C715 for cold water meters. Each meter assembly shall be performance tested to ensure compliance.
  - b. The meter main case shall be stainless steel, bronze or epoxy coated ductile iron or epoxy coated fabricated steel composition.
  - c. The meter package shall meet or exceed all requirements of NSF/ANSI Standard 61, Annex F and G.

- d. All meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
- e. Meters shall be pressure tested to ensure against leakage.
- f. Meters shall be guaranteed accuracy for a minimum 15-year period.
- g. All electrical components and batteries will be guaranteed for a minimum 15-year period.