

**Please Note:**

*This template is intended to provide the basis for a specification for Utilities and Consultants that reflect the general requirements of a fixed base AMI system. It incorporates handheld computers as a back up to the AMI system and the flexibility to implement existing mobile AMR integration in densely populated areas.*

*It includes general specifications for RF modules, data collectors, handheld computers, software, server hardware, electronic registers, PD Meters, specialty class meters, installation and training. Specifics for each component of all systems are found in the data sheets that accompany each response.*

*There are areas that require specific input from the utility based on its individual preferences and needs. Some of the requirements may not be applicable in every instance and can be modified or deleted as required.*

It is the (*Utility's*) intent to provide an open specification that is not so detailed that it limits potential new AMI solutions available to the (*Utility*). The (*Utility*) values new technology and the ability to expand upon the initial AMI solution it selects. As a result, the (*Utility*) has purposefully provided a general specification that encourages system providers to propose the strengths of the system they offer while still accommodating specific system requirements of the (*Utility*). In the interest of brevity and readability, vendor responses required for Exceptions and Alternate in Section 3 Technical Specifications should be minimal with attached data sheets and documentation providing specific technical detail.

**(Utility Name)**

**Request for Proposal**

**For Advanced Metering Infrastructure System**

**Project Number if Applicable**\_\_123456\_\_

**Proposed By** \_\_Vendor Name\_\_

**(DATE)**

Proposals must be delivered to:

\_\_\_\_\_, Purchasing Manager or Appropriate Title

City of \_\_\_\_\_

City Hall Building or Appropriate Site

1234 Any Street

Any Town, Any State, 12345

Proposal Due: Month, Date, Year, Time

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**1.0 - INVITATION TO SUBMIT PROPOSALS**

Sealed Proposals are requested and will be received by *(Utility Name)* for “Furnishing an Advanced Metering Infrastructure System.” Sealed Proposals will be accepted at the office of Purchasing, *Marty Metering* on 1/32/9008 until 4:00 p.m., local time. Proposals received after this time will be returned un-opened.

Each Proposal shall be submitted in a sealed envelope addressed to *(Utility Name)* and clearly marked “RFP for Advanced Metering Infrastructure System”.

*(Utility Name)* reserves the right to reject any or all Proposals and to award a contract to any vendor deemed to be in the best interests of the *(Utility Name)*.

All requests for information, clarification or related inquiries shall be submitted via email to *Marty Metering* at *mmetering@utilityusa.com* a minimum of one week prior to the proposed RFP opening date. Requests received after this date will go unanswered. All answers and clarifications shall be shared with all vendors.

**Proposed RFP Schedule:**

<b>Date</b>	<b>Milestone</b>
<i>(Insert actual dates)</i>	RFP Notice advertised and Distribution to Potential Vendors
2-weeks	Pre-Proposal Meeting
1-week	Inquiries and requests for information; final day
2-weeks	RFP Responses Due by 4:00 PM Local Time
<i>(Insert actual dates)</i>	Contract Awarded
<i>(Insert actual dates)</i>	Notice to Proceed
<i>(Insert actual dates)</i>	Project Completion

**2.0 - INTRODUCTION AND BACKGROUND**

The *(Utility)* is soliciting proposals for an Advanced Metering Infrastructure (AMI) in order to improve the process of collecting monthly water utility meter data and subsequent billing in order to enhance the level of service offered to its customers.

The *(Utility’s)* mission is to provide the most economical and reliable service available to its customers. The *(Utility)* expects that the AMI system will serve as a vital tool for achieving its vision as it moves forward. The AMI system is expected to provide information technology which will:

- Provide the *(Utility)* customers with messages and timely utility information in the home or business, thereby empowering the *(Utility’s)* residents and businesses to control utility usage, costs and advance “Green” initiatives.

- Significantly enhance service to (*Utility*) customers, including improved billing accuracy, faster customer response & more efficient customer service, on-demand move-in / move-out remote meter reads and improved reliability.
- Improve the (*Utility's*) operational efficiency and reduce costs through reliable interval data from water meter reads for right-sizing programs, prompt notification of leaks, tampering, and theft.
- Help the (*Utility*) achieve its goal of efficiency and concern for the environment by providing the infrastructure to support the (*Utility*) in its programs to involve customers in helping consumption on resources as the City grows and do so in an environmentally friendly way.

The successful respondent will be selected using the criteria set forth in this RFP based on the ability to meet the (*Utility's*) vision for the future.

## **2.1 - Utility Background**

The (*Utility Name*) utilizes water services with approximately xxxx water meters.

- See the attached electronic file for a synopsis of all meters, manufacturers, sizes, types of registers currently deployed within the system. *Used to assess retrofit and replacement options for existing meters. All files must be used solely for the express purpose of determining system characteristics and should not be shared or distributed.*

## **2.2 - Service Territory**

*In order to determine the service territory size, footprint and topographical characteristics, detailed files are provided to plot the location of meters within the service area and to estimate the number of data collectors required to cover the area.*

- The attached electronic file (or printed) map depicts the xx square miles service territory of the (*Utility*).
- See the attached electronic file for a complete list of meters, types and sizes with the latitude and longitude coordinates for the service location, including street, city, and zip code that should be used to plot the service territory of the (*Utility*).
- See the attached electronic file for a list of potential locations that the (*Utility*) owns or has access to that provide a suitable mounting location for the data collectors. The sites that have access to power are listed accordingly. The physical street address or alternately the longitude and latitude coordinates are listed. Additional sites may be selected at the vendors' request.

## **2.3 - Project Implementation**

Immediately upon receipt of Notice to Proceed, the Vendor shall develop and submit a critical path schedule. This schedule shall reflect the work authorized by the (*Utility Name*) under the schemes described herein. This schedule must be approved by the (*Utility Name*) prior to the

commencement of work. The mutually agreed upon critical path schedule will become an integral part of the contract and will be used to assess contract performance and measure progress. It may also be used to declare the Vendor in default of this contract.

In the event a mutually agreeable schedule cannot be produced, this contract shall become null and void.

#### **2.4 - Instruction to Vendors**

THE GENERAL TERMS AND CONDITIONS WHICH FOLLOW APPLY TO ALL PURCHASES AND SERVICES AND BECOME A DEFINITE PART OF EACH FORMAL INVITATION TO PROPOSE, PURCHASE ORDER, OR CONTRACT ISSUED BY (*UTILITY NAME*), UNLESS OTHERWISE SPECIFIED. BY SUBMITTING A PROPOSAL, THE VENDOR AGREES TO BE BOUND BY THESE TERMS AND CONDITIONS. VENDORS OR THEIR AUTHORIZED REPRESENTATIVES ARE EXPECTED TO FULLY INFORM THEMSELVES OF THE CONDITIONS, REQUIREMENTS, AND SPECIFICATIONS BEFORE SUBMITTING PROPOSALS. FAILURE TO DO SO WILL BE AT THE VENDORS OWN RISK AND WILL NOT SECURE RELIEF ON THE PLEA OF ERROR.

#### **2.5 – Preparation of Proposals**

The Vendor shall submit their sealed Proposal on the proposal forms provided. The Proposal shall be executed properly and all writing shall be ink or typewritten, except the signature of the Vendor that shall be written in ink.

The Vendor shall specify in figures, in the places provided, a price for each of the separate items called for in the proposal forms.

Vendors are requested to submit their Proposals directly to (*Utility Name*) in a properly sealed envelope. If the Vendor is a corporation, the legal name of the corporation, the state of incorporation and the business address shall be set forth together with signature of the officer or officers authorized to sign contracts on behalf of the corporation. The corporate seal shall also be affixed. If the Vendor is a partnership, the true name and address of the firm shall be set forth together with the signatures of authorized partners. If the Vendor is an individual, the signature and address shall be inscribed. If the signature is by an agent other than an officer of the corporation or member of the partnership, a power of attorney must be submitted with the Proposal; otherwise, the Proposal may be regarded as irregular. All names must be printed below the signature.

The (*Utility*) requests that vendor shall provide (1) original signed copy of their response and an electronic copy on CD organized in a fashion outlined below to conserve natural resources and demonstrate an ongoing commitment: to sustainability.

Table of Contents:

- Section 1: Executive Summary  
Include company contact name, address, e-mail, and phone number
- Section 2: Technology Solution Overview
- Section 3: Compliance Table for RFP Technical Specification 3.0 – 11.0  
Answers are to be in the form:
  - Comply
  - Alternate - Include explanation
  - Exception - Include explanation
  - Use the attached compliance form
  - All responses to sections 3.0 through 7.0 should be answered as Compliant or as Alternate or Exception with a short explanation as to why the vendor's system cannot provide what has been specified by the *(Utility)*.
- Section 4: System Pricing
- Section 5: Bidder's Financial Information
- Appendix A Client Reference List

The vendor's system shall meet the technical requirements outlined in this document:

Responses shall contain an explicit comply/exception assessment of whether your system meets each requirement and, whenever necessary, description of compliance to each point. If your system or any part of the system fails to meet any of the following requirements, explain the reasoning that substantiates the variation from these requirements is not critical.

**2.6 - System Evaluation and Scoring**

Proposals will be evaluated on the best probability of the Vendor meeting the Utilities objectives outlined in this request. The evaluation will be based on the system benefits and the Vendors qualifications. The Vendors response will be used to select a short list of candidates for presentations.

- AMI System Capabilities 20 points
- Compliance to the RFP technical Specifications 10 points
- AMI System Software 20 points
- Vendor History 10 points
- Training and ease of use 15 points
- Cost 25 points

### **3.0 – AMI MODULE TECHNICAL SPECIFICATIONS**

#### **3.1 – Water AMI Module Requirements**

- 3.1.1 The AMI Water Module shall be capable of receiving meter data from existing Badger, Hersey, Neptune and Sensus water meters equipped with encoder registers. Pulsing register technology shall not be utilized.
- 3.1.2 AMI Modules meters/service and other related endpoint devices shall be capable of being configured to communicate with the Gateway Collectors via a Mesh and Star topographical engineered network solution.
- 3.1.3 Communicate using unlicensed 900 MHz band, certified to comply with FCC Part 15 rules, utilizing frequency hopping data transmissions.
- 3.1.4 The AMI Module shall be designed and built for installation in outdoor water meter boxes as well as above ground mounted discretely on a wall to limit required inventory for various installations.
- 3.1.5 Water endpoint devices shall be housed in a single package design designed for rugged, harsh environments and capable of complete submersion in water without damage.
- 3.1.6 The AMI Module must function accurately and not be damaged over an operating temperature range of -40 deg C to +70 deg C.
- 3.1.7 The AMI modules shall be designed to operate in the above conditions and have a battery life of 20 years.
- 3.1.8 Battery life data shall be transmitted to the Host System alerting of low battery levels for preemptive maintenance.
- 3.1.9 Each AMI Module shall function as a true two-way network gateway and allow for an engineered Mesh Network configuration with a primary route to the collector and up to three (3) alternate routes that are automated if communication is interrupted to the primary routing.
- 3.1.10 Water AMI Modules shall be capable of communicating with electric meters and other AMI modules and vice versa in the network.
- 3.1.11 The AMI Module shall be capable of storing meter data including date and time stamps down to five (5) minute intervals for a minimum of 45 days in non-volatile memory.
- 3.1.12 The AMI Module shall have true two-way communication on-demand from the Host Software. This shall allow for obtaining real-time data upon request.
- 3.1.13 Systems that communicate one and a half way to the collector or update to the collector 1 to 6 times a day in multi-hour intervals are not acceptable.



- 3.1.14 The AMI module shall have the capability to receive and process commands from the host system for all firmware updates to eliminate the need to manually perform the update function at each locale. AMI modules must support group firmware updates to reduce system maintenance time.
- 3.1.15 The AMI Module shall be capable of listening for Mobile AMR modules in the network a minimum of once a day and reporting consumption and alarm data to the host system.
- 3.1.16 The AMI Module shall employ actionable alerts; indicate compliance with each below.
- Tamper Alert or Meter disconnected
  - Bad Read - ? or – marks
  - Small Leak Detected
  - Large Leak Detected
  - No Flow detected – Specific period of time set in the host software
  - Reverse Flow / Backflow
  - High Flow Rate Detected – Specifics set in host software
  - Battery Health
- 3.1.17 Each AMI module's clock date & time settings shall be updated to match reference Date & time that shall be regularly provided to the meter via the Host Server.
- 3.1.18 The AMI Module shall be capable of listening for Mobile AMR modules in the network a minimum of once a day and reporting consumption and alarm data to the host system.
- 3.1.19 Ability to use a hand-held device to upload data in the unit's memory.

## **4.0 – AMI NETWORK TECHNICAL SPECIFICATIONS**

### **4.1 – Gateway Data Collectors**

- 4.1.1 The Gateway data collectors shall be an AC or solar powered unit with optional battery backup, which communicates in the unlicensed 900 MHz range with all the AMI Modules in its assigned area.
- 4.1.2 The collector shall communicate via a universal wide area network (WAN) connection, such as GSM/GPRS cellular, Ethernet or fiber to allow communication with the Host Server Software.
- 4.1.3 The Gateway Data Collectors shall collect and aggregate the stored meter data from all the AMI Modules in its zone a minimum of once per day and upload the information to the Host server a minimum of once per day providing interval reads from each AMI module as programmed.
- 4.1.4 The Gateway Data Collectors shall communicate on demand to AMI Modules meters/service and other related endpoint devices via Mesh or Star configuration.
- 4.1.5 The Gateway Data Collectors Software shall allow self diagnosis of any problems associated with the back haul of the communication system and the ability to automatically seek an alternate communication path if initial daily or real-time upload is unsuccessful.

- 4.1.6 The Gateway Data Collectors shall use RC4 state-of-art data security techniques to prevent unauthorized access to the data.
- 4.1.7 The ability to time synchronize all devices to within 5 seconds once per day and allow daily upload of meter data and system health checks is required.
- 4.1.8 The Gateway Data collector shall allow remote firmware and software upgrades.
- 4.1.9 The Gateway Data Collector shall utilize an outdoor NEMA4 enclosure, rated for -40C to +85C, with remote antenna capability, which can be pole or wall mounted.

#### **4.2 – Head End Host Software and User Interface**

- 4.2.1 The Host Server shall act as the central collection point for the data within the system. The server collects data from all of the Gateway 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 an easy to use web based graphical interface.
- 4.2.2 The Vendor shall provide a managed hosting service, where the Vendor shall own and manage the server hardware and software including monitoring to ensure the server continues to work effectively, provides backup services, installation of security patches and various levels of technical support. The Vendor hosted solution shall utilizes a secure web based application.
- 4.2.3 As an alternate to hosting services, the Vendor shall offer a Perpetual License for the Host Software. The Host Software solution shall utilize a secure web based application user interface.
- 4.2.4 The data will be available via a user interface that will allow for analysis, as well as bill generation.
- 4.2.5 The Host Software server shall manage and archive data for two year such that it can be accessed by any Utility computers, handheld devices both locally and remotely via the web.
- 4.2.6 The Host system software must be web browser-based and shall have defined applications with standard interfaces to allow for existing and planned software applications.
- 4.2.7 The Host Software must have flexible meter reading data formats that are compatible with the Utilities current billing application
- 4.2.8 The Host Software shall be used to generate reports; view demand graphs, determine usage patterns and enforce watering restrictions.
- 4.2.9 Using information from alerts uploaded in the data, the Host Software shall have the ability to generate specific e-mail alerts or SMS messages for each status code, configured by the User Interface.

- 4.2.10 Each AMI Module generated alert shall be accompanied by a duration the alert has been active for, which shall be stored and optionally sent out by the server.
- 4.2.11 The Host Software shall include a GIS tool for network routing from Gateway Data Collectors to AMI Modules.
- 4.2.12 The GIS tool shall have icons that permit viewing system health of the star/mesh system components.
- 4.2.13 Routing distances from Gateway Data Collector to AMI modules shall be part of the GIS tool.
- 4.2.14 The GIS tool shall allow monitoring of performance and loading on the utility's infrastructure with the ability to display this information on GIS maps.
- 4.2.15 The GIS tool shall be capable of remotely reprogramming Gateway Data Collectors, Water Meter AMI Modules.
- 4.2.16 The User Interface shall permit the sending of alert outages, tampering, out-of-bounds system operating parameters to appropriate utility personnel via cell phone, pager or e-mail.
- 4.2.17 The User Interface shall allow the utility to correlate consumption with meteorological data available on the user interface.

#### **4.3 – User Interface Homeowner Access**

- 4.3.1 The vendor shall offer a secure web based application for homeowner access to consumption data.
- 4.3.2 The homeowner shall have access to reports for yearly, monthly and hourly data and be allowed to set parameters for email alerts when usage fails to meet the set parameters.
- 4.3.3 Consumption data shall be correlated with meteorological data.
- 4.3.4 Reports shall be available in graphical and table views for reading and consumption for various intervals.
- 4.3.5 Graphs shall be available to show high/low temperatures for each day and rainfall on a daily basis

#### **4.4 – Server Head End Hardware**

- 4.4.1 For Managed Hosting Solutions, the Host Server shall be an Intel and Windows based Microsoft SQL server managed by the Vendor in a secure location and monitored by the system provider.
- 4.4.2 The Host Server shall be accessible with a secure utility or customer log in and password to view the system data from any web enabled device.

- 4.4.3 For Perpetual License Solutions, the Vendor shall provide to the Utility a Windows based Microsoft SQL server.

## **5.0 – TRAINING AND IMPLEMENTATION**

- 5.0.1 The vendor shall be responsible for supplying and delivering the AMI System components complete, including training and ensuring the proposed AMI system is operational prior to full deployment. This includes, support for the development of an interface to the utility billing system and functional testing of the system.
- 5.0.2 The vendor shall have a proven program of professional project management to ensure successful system installation. Provide resumes for key managers involved.
- 5.0.3 Project managers shall be experienced in managing the design, installation and optimization of systems. Project management experience shall include system integration and training support.
- 5.0.4 Provide a proposed implementation schedule for a system such as that proposed here.

## **6.0 – WATER METER SPECIFICATIONS**

### **6.1 – Water Meter Compatibility**

- 6.1.1 The Utility is committed to selecting the technology that provides the most efficient, cost effective and flexible solution. Proposed radio AMI modules must be of an open architecture design and be compatible for use with water meters manufactured by Badger, Hersey, Neptune and Sensus capable of utilizing encoder registers. Proprietary systems, Multi-jet or Single-jet meters will not be considered.

### **6.2 – Absolute Encoder Register**

- 6.2.1 The register shall be a true absolute encoder register that provides direct electronic transfer of Meter data information to the AMI Module.
- 6.2.2 The encoder register shall send data in ASCII format (American Standard code for Information Interchange) to the AMI Module.
- 6.2.3 The encoder register shall transmit the complete odometer wheel reading, a minimum of 6 digits, all 10 positions and an 8-digit identification number that has been factory set and never duplicated.
- 6.2.4 A Locating Clip shall be affixed to each of the odometer wheels in close proximity to the Segment Pads located on the encoders printed circuit board.
- 6.2.5 When an AMI Module interrogates the encoder register, the microprocessor shall determine the true position of each number wheel, encode the reading and send it to the AMR device.

- 6.2.6 The Locating Clip shall not make physical contact with the Segment Pad in order to prevent wear of the clip and pads.
- 6.2.7 The encoder register shall be permanently factory sealed with an epoxy coating of all terminal connections. Encoder registers requiring field sealing of the wire connection will not be allowed.
- 6.2.8 Waterproof in-line connectors are permissible to facilitate the installation of the AMI Module.
- 6.2.9 No wire connections or wire splicing of any kind shall be required to be performed during installation.
- 6.2.10 The register shall be secured to the meter main case by a tamper resistant bayonet-style locking mechanism protecting against unauthorized removal of the register.
- 6.2.11 No special tools shall be required to remove the register.

**6.3 – PD Water Meters with Bronze Body Specification** This documentation is supplied as a sample specification only. Please insert the current meter specification of your choice here. The specifications are located at <http://www.muellersystems.com/specSheets.html>.

- 6.3.1 All meters shall meet or exceed the latest version of the American Water Works Association Standard C700 for positive displacement type meters.
- 6.3.2 The Main cases shall be composed of bronze containing not less than eighty percent (80%) copper.
- 6.3.3 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 F.
- 6.3.4 The manufacturer shall warranty the main case for a period of 25 years from the date of shipment.
- 6.3.5 The meter serial number shall be stamped on the main case of the meter.
- 6.3.6 Measuring chambers shall be made of a suitable engineered plastic as described in AWWA C-700. The chamber shall be of the Nutating Disc style.
- 6.3.7 The measuring chamber shall employ a stainless steel shaft for the drive magnet
- 6.3.8 The measuring chamber drive magnet shall be encapsulated in plastic
- 6.3.9 The measuring chamber shall incorporate a locating device that aligns to the main case of the meter to ensure proper chamber orientation and alignment.

- 6.3.10 The measuring chamber shall be locked into place with a chamber retainer.
- 6.3.11 The chamber shall be a large capacity chamber to reduce wear and must not exceed the following nutations per gallon.

Size	3/4"	1"	1-1/2"	2"
Nutations Per Gallon	22.4	11.7	6.47	3.92

- 6.3.12 All Meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
- 6.3.13 Meters shall be pressure tested to ensure against leakage.
- 6.3.14 Meters shall comply with the AWWA C700 accuracy requirements as specified in section 3.8 of the standard for a period of one year from the date of installation. Additionally, the manufacturer shall warranty the meter to meet or exceed AWWA repaired meter accuracy standards per the following:

Size of Meter	Years of Warranty or	Gallons Registered
5/8"	15	1,750,000
3/4"	15	2,000,000
1"	15	3,000,000
1-1/2"	15	5,500,000
2"	15	8,500,000

**6.4 – PD Water Meters with Composite Body Specification** This documentation is supplied as a sample specification only. Please insert the current meter specification of your choice here. The specifications are located at <http://www.muellersystems.com/specSheets.html>.

- 6.4.1 All meters shall meet or exceed the latest version of the American Water Works Association Standard C710 for displacement type meters.
- 6.4.2 The Main cases shall be composed of a suitable engineered polymer as specified in AWWA C-710
- 6.4.3 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 F.
- 6.4.4 The manufacturer shall warranty the main case for a period of 25 years from the date of shipment.
- 6.4.5 The meter serial number shall be stamped on the main case of the meter.

- 6.4.6 Measuring chambers shall be made of a suitable engineered plastic as described in AWWA C-710. The chamber shall be of the Nutating Disc style.
- 6.4.7 The composite body shall employ stainless steel meter threads
- 6.4.8 The meter shall be a true no lead meter without any metal coming in contact with the potable water in anyway.
- 6.4.9 The measuring chamber shall incorporate a locating device that aligns to the main case of the meter to ensure proper chamber orientation and alignment.
- 6.4.10 The measuring chamber shall be locked into place with a chamber retainer/strainer mechanism.
- 6.4.11 The chamber shall be a large capacity chamber to reduce wear and must not exceed the following fifty-eight (58) nutations per gallon.
- 6.4.12 All Meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
- 6.4.13 Meters shall be pressure tested to ensure against leakage.
- 6.4.14 Meters shall comply with the AWWA C710 accuracy requirements as specified in section 3.8 of the standard for a period of one year from the date of installation. Additionally, the manufacturer shall warranty the meter to meet or exceed AWWA repaired meter accuracy standards per the following:

Composite Meter		
Size of Meter	Years of Warranty or	Gallons Registered
5/8"	15	1,750,000

- 6.4.16 Meters shall be NSF-61 compliant

**6.5 - Specialty Class Meters Specification** This documentation is supplied as a sample specification only. Please insert the current meter specification of your choice here. The specifications are located at <http://www.muellersystems.com/specSheets.html>.

- 6.5.1 All Meters shall meet or exceed the latest version of the American Water Works Association Standard C701 Class 1 for Vertical Turbine Type in sizes 3/4" through 6".
- 6.5.2 The intended use of this specialty meter is to simplify applications by using one type of meter where three different types of meters would normally be used, Compound, Turbine and Residential Fire Service.
- 6.5.3 The meter must be highly accurate, light weight and have minimal maintenance.

- 6.5.4 Meters shall be of the Vertical Rotor Turbine type. All water must pass through a measuring element.
- 6.5.5 Multi-Jet and Single Jet meters are not Vertical Rotor Turbine Meters and will not be considered.
- 6.5.6 Meters 3/4" through 2" shall be of standard industry laying lengths as outlined in AWWA C-700.
- 6.5.7 Meters 3" through 6" shall be no longer than those listed below, including strainer.

Size	Length
3"	12"
4"	14"
6"	18"

- 6.5.8 The main case shall be constructed of a copper alloy containing not less than 81% copper.
- 6.5.9 The main case shall contain both the measuring element and the integral strainer for all sizes.
- 6.5.10 3/4" through 2" shall be bottom case entry and 3" through 6" shall be of the top case entry design.
- 6.5.11 The size, model, direction of flow shall be cast in raised characters on the case.
- 6.5.12 The serial number shall be imprinted on both the body and the lid.
- 6.5.13 All 1 1/2" through 6" meters shall be equipped with test ports as required.
- 6.5.14 Flanged ends for 1 1/2" and 2" meters shall be of the oval type, 3" through 6" shall be standard round flanges.
- 6.5.15 All Meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
- 6.5.16 Meters shall be pressure tested to ensure against leakage.
- 6.5.17 Meters shall comply with the AWWA C701 accuracy requirements as specified in the standard for a period of one year from the date of installation.
- 6.5.18 The measuring chamber shall be a turbine assembly mounted in a vertical orientation. All water must pass through the measuring element.
- 6.5.19 The turbine shall utilize a "Retro-Thrust" feature to reduce wear over the life of the meter. Low flows will cause the rotor to wear against a sapphire bearing mounted in the top case of meter. High flows will cause the turbine to pull down in the flow way to wear against a sapphire bearing located in the bottom of the hub assembly.



- 6.5.20 The inlet hub assembly shall include integral straightening vanes to eliminate the need for straight pipe diameters in front of or behind the meter.
- 6.5.21 All meters must be provided with integral strainers. Meters 3/4" through 1 1/2" shall have polymer type strainers while meters 2" and larger shall have stainless steel strainers.
- 6.5.22 All strainers must have an effective straining area of at least two (2) times the nominal pipe size of the meter. Meters ordered for Residential Fire Service shall be UL listed.
- 6.5.23 Meters may be installed vertically or horizontally

## **7.0 - WARRANTY**

Provide the warranties and any services, including additional costs, your firm will offer to ensure system functionality and availability of system components for 15 years. At a minimum, a 100% warranty on all equipment, software and labor on the AMI system will be in effect during the first 12 months following commissioning and acceptance. Provide a price for software support and upgrades following the initial warranty period.

**ATTACHMENT A: PRICE SCHEDULE**

The following Price Schedule shall be included in the Respondent's proposal.

**A. AMI Water Meter and AMI Retrofit**

Description	Qty	Unit Cost	Extended Cost
Water meter AMI Module			
5/8x3/4 Water Meter with Absolute Encoder			
List additional meter sizes			

**B. Network Equipment**

Description	Qty	Unit Cost	Extended Cost
Network Collectors			
Other			

**C. Host Server Hardware & Software**

Description	Qty	Unit Cost	Extended Cost
Host Server Hardware	1		
Host Software			
Host Application License			
Hosting fees (per year)			

**D. Annual Maintenance**

Description	Qty	Unit Cost	Extended Cost
Application Software License (including all software and firmware upgrades)	1		
Extended warranty	1		
Other			

Insert in section 3:

Compliance Table for RFP Technical Specification 3.0 – 7.5.23

	Comply	Alternate	Exception	Explanation
	x	x	x	Answer
<b>3.0 – AMI MODULE TECHNICAL SPECIFICATIONS</b>				
<b>3.1 – Water AMI Module Requirements</b>				
3.1.1				
3.1.2				
3.1.3				
3.1.4				
3.1.5				
3.1.6				
3.1.7				
3.1.8				
3.1.9				
3.1.10				
3.1.11				
3.1.12				
3.1.13				
3.1.14				
3.1.15				
3.1.16				
<b>4.0 – AMI NETWORK TECHNICAL SPECIFICATIONS</b>				
<b>4.1 – Gateway Data Collectors</b>				
4.1.1				
4.1.2				
4.1.3				
4.1.4				
4.1.5				
4.1.6				
4.1.7				
4.1.8				
4.1.9				
<b>4.2 – Head End Host Software and User Interface</b>				
4.2.1				
4.2.2				
4.2.3				
4.2.4				
4.2.5				
4.2.6				
4.2.7				
4.2.8				
4.2.9				
4.2.10				
4.2.11				
4.2.12				
4.2.13				
4.2.14				
4.2.15				
4.2.16				
4.2.17				

<b>4.3 – User Interface Homeowner Access</b>				
4.3.1				
4.3.2				
4.3.3				
4.3.4				
4.3.5				
<b>4.4 – Server Head End Hardware</b>				
4.4.1				
4.4.2				
<b>5.0 – TRAINING AND IMPLEMENTATION</b>				
5.0.1				
5.0.2				
5.0.3				
5.0.4				
<b>6.0 – WATER METER SPECIFICATIONS</b>				
<b>6.1 – Water Meter Compatibility</b>				
6.1.1				
<b>6.2 – Absolute Encoder Register</b>				
6.2.1				
6.2.2				
6.2.3				
6.2.4				
6.2.5				
6.2.6				
6.2.7				
6.2.8				
6.2.9				
6.2.10				
6.2.11				
<b>6.3 – PD Water Meters with Bronze Body Specification</b>				
6.3.1				
6.3.2				
6.3.3				
6.3.4				
6.3.5				
6.3.6				
6.3.7				
6.3.8				
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6.3.10				
6.3.11				
6.3.12				
6.3.13				
6.3.14				
<b>6.4 – PD Water Meters with Composite Body Specification</b>				
6.4.1				
6.4.2				
6.4.3				
6.4.4				
6.4.5				
6.4.6				
6.4.7				
6.4.8				

6.4.9				
6.4.10				
6.4.11				
6.4.12				
6.4.13				
6.4.14				
6.4.16				
<u>6.5 - Specialty Class Meters Specification</u>				
6.5.1				
6.5.2				
6.5.3				
6.5.4				
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6.5.7				
6.5.8				
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6.5.22				
6.5.23				