

CITY OF DELAWARE, OHIO

**REQUEST FOR PROPOSAL
FOR
METER AUTOMATION**

AUGUST 2015

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1. LIST OF ABBREVIATIONS

ALD	Acoustic Leak Detection
AMI	Automated Metering Infrastructure
AMR	Automatic Meter Reading
AWWA	American Water Works Association
CFR	Code of Federal Regulations
CIS	Customer Information System
DCU	Data Collection Unit
DST	Daylight Savings Time
FCC	Federal Communications Commission
GIS	Geographic Information System
GPS	Global Positioning System
HES	Head End System-Control System
ID	Identification
IP	Internet Protocol
IT	Information Technology
LAN	Local Area Network
MIU	Meter Interface Unit
EST	Eastern Standard Time
ODBC	Open Database Connectivity
OSHA	Occupational Safety and Health Administration
PFTU	Portable Field Testing Unit
RFID	Radio Frequency Identification
RFP	Request for Proposal
SCADA	Supervisory Control and Data Acquisition System
UV	Ultraviolet
SQL	Structured Query Language
WAN	Wide Area Network

2. INTRODUCTION

The City of Delaware (the City) is soliciting proposals for an AMI system. The purchase and installation of this system is known as the Meter Automation Project (the Project). This document identifies the functional requirements of the AMI system and specific topics to be addressed by the responder.

Noteworthy elements of this RFP and project:

- The City is interested in an AMI solution capable of providing daily reads to support move-in/move-out activities.
- The City is requesting the prime contractor to supply the AMI solution, installation services, on-call emergency service, and preventative maintenance work under one contract.
- Approximately 75% of the existing meters will not be replaced and will only require an MIU. The remaining one-quarter will require both a meter and MIU.
- An online customer facing portal will be evaluated as a separate task order.
- The City is interested in a hosted Meter Data Management (MDM) solution and other creative approaches such as AMI as a Service that allow for minimal upfront capital investment.

Table 1 identifies the minimum acceptable requirements for certain critical components of the AMI system.

Criteria	Minimum Requirement
Experience	Three installations totaling more than 50,000 endpoints
Water Audit	Timestamps must be accurate within 30 seconds of true time
Quality	Manufacturing facilities shall be ISO9000 certified
Read Performance	98.5% within 72 hours; 97.5% within 48 hours; 95% within 24 hours
Compatibility	Zenner C700 and Elster/Amco

Table 1: Minimum Acceptable Requirements

2.1 EVALUATION CRITERIA

Vendor responses will be evaluated using the criteria summarized in Table 2 below.

Criteria	Definition
Clarity of Proposal	Degree to which proposal clearly and concisely follows RFP and is responsive to all questions.
Strength of the Proposer	References, experience, financial stability and solvency, revenue growth and profitability, relative R&D investments, and ability to acquire bonding and insurance
Installation Management System Capabilities	Degree to which installer's project control system and procedures meet technical specifications and desired functionality
Experience of Proposed Staff	Experience of Project Manager and staff proposed for this project
System Capabilities	Degree to which proposed system addresses technical specifications, performance requirements, and desirable functions
Ease of Operation and Maintenance	Ease of ongoing use and maintenance of system, including component installation, programming and repair; use of software; and diagnostic and reporting capabilities.
Integration Support	Vendor's ability to develop, document, and support interfaces with the City's billing system and other IT systems
Data Management	Data integrity, security, accessibility, backup/recovery, flexibility, cross system balancing, auditing capabilities, report generation, and queries. Nonproprietary interfaces.
Support	How the Proposer will deliver maintenance and operational support, as well as training. Response modes and times.
Warranty	Period and extent of warranty coverage on meter reading system components. Overall system performance guarantees. Protection in the event of excessive failures.
Lifecycle Cost	Total cost of the proposed system over the expected 20 year life.

Table 2: Criteria for Evaluating Proposals

2.2 REQUEST FOR RFP CLARIFICATION

The City appreciates your interest in this RFP and looks forward to evaluating your proposal. Any questions regarding the content of this RFP should be submitted in writing, no later than 12:00 Noon EST, 18 August 2015 to:

Brad Stanton
City of Delaware
Public Utilities Director
225 Cherry Street

Delaware, OH 43015
bstanton@delawareohio.net

3. SYSTEM OVERVIEW

The City is a progressive and growing community with a dynamic plan for the future. It is located in Delaware County on the outskirts of the Columbus (COL) metropolitan area. With a land area of 19 square miles, it has a population of approximately 34,000 totaling 12,500 metered accounts.

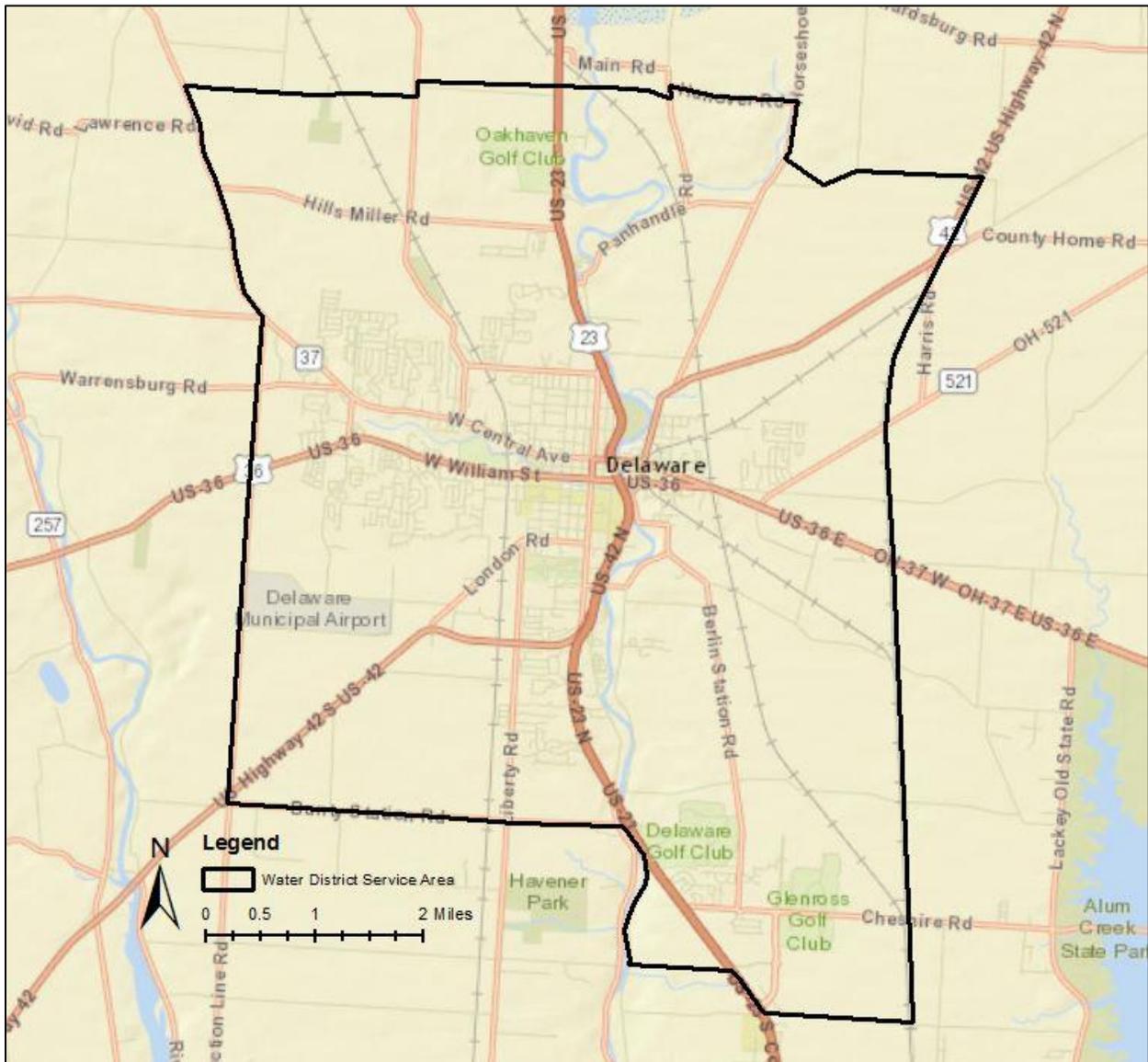


Figure 1: Service Area

3.1 THE CITY BILLING SYSTEM

The City uses Creative Microsystems Inc. (CMI) software as their CIS system which will need to interface with the AMI system.

3.2 METER READING OPERATION

The City has approximately 12,000 retail meters, ranging in size from 5/8" to 8". The City is currently reading the majority of the meters using a Datamatic ROADRUNNER X7-CX handheld system. The manually collected reads are validated and exported to the City's billing system.

As part of this Project, all meters are to be enabled for AMI by the addition of an MIU (est. 12,000 MIUs) and residential meters installed before Jan 2000 shall be replaced along with potentially newer meters that have incompatible registers (est. 3,000 meters).

The approximate meter population for budgetary purposes is summarized in Table 4a below:

Meter Size	Before Jan 2000	After Jan 2000	Totals
5/8	2,965	8,452	11,417
3/4	13	55	68
1	96	156	252
1-1/2	18	151	169
2	24	73	97
3	9	32	41
4	7	13	20
6	5	8	13
8	4	4	8
Totals	3,141	8,944	12,085

Table 4a: Meter Population

3.3 METER LOCATIONS AND JOB TYPE

The City will be responsible for completing installations that are located inside the buildings (est. 4,500) and is only requesting the Proposer to provide installation services for the remaining accounts that are located outside the buildings (est. 7,500).

The approximate meter locations for level of effort purposes is summarized below:

Location	Meter + MIU Before Jan 2000	MIU Only After Jan 2000	Totals
Outside	1,043	6,402	7,445
Inside	2,098	2,542	4,640
Totals	3,141	8,944	12,085



Figure 2: Typical residential meter pit lid with 1-7/8" hole diameter



Figure 3: Typical lid on larger diameter pit

4. GENERAL PROVISIONS

The Proposer should pay close attention to the following provisions. These provisions have significant implications on the evaluation of the proposal and on the contract language and the means by which the City will administer the contract.

4.1 APPLICABLE LAWS

The Proposer shall comply with all Federal, State, County and Municipal laws, ordinances, regulations, safety orders, resolutions and building codes relating or applicable to services to be performed during the Project. The laws of the State of Ohio shall govern the contract.

4.2 PROPOSER'S INSURANCE

The Proposer shall be required during the term of the Project to maintain in full force and effect the following insurance: (i) a comprehensive general liability policy of insurance for bodily injury, death and property damage insuring against all claims, demands or actions relating to the proposer's performance of services pursuant to the Project with a minimum combined single limit of not less than \$1,000,000.00 per occurrence for injury to persons (including death), and for property damage; (ii) policy of automobile liability insurance covering any vehicles owned and/or operated by the proposer, its officers, agents, and employees, and used in the performance of the Project with policy limits of not less than \$500,000.00 combined single limit and aggregate for bodily injury and property damage; (iii) statutory Worker's Compensation Insurance at the statutory limits and Employers Liability covering all of the proposer's employees involved in the provision of services with policy limit of not less than \$500,000.00; and (iv) Professional Liability covering negligent acts, errors and omissions in the performance of professional services with policy limit of not less than \$1,000,000.00 per claim and \$1,000,000.00 in the aggregate. All policies except the professional liability insurance and workers' compensation shall be endorsed to name the City as an additional insured, and all policies except the professional liability policy shall be endorsed to waive subrogation against the City. The Proposer shall be required to provide to the City a Certificate of Insurance evidencing the required insurance and endorsements along with the signed contract. All policies shall be further endorsed to provide that the policy shall not be cancelled or non-renewed without thirty (30) days advanced notice to the City and ten (10) days notice for nonpayment of premiums. The insurance shall be written by carriers licensed to do business in Ohio and with companies with A: VIII or better rating in accordance with the current Best Key Rating Guide.

4.3 INDEMNIFICATION

The contract entered between the City and the selected Proposer shall include and be subject to the following provision:

The City shall not be liable for any loss, damage, or injury of any kind or character to any person or property arising from the services of the Proposer pursuant to the Project. Proposer hereby waives all claims against the City, its officers, agents and employees (collectively referred to in this section as "CITY") for damage to any property or injury to, or death of, any person arising at any time and from any cause other than the negligence or willful misconduct of CITY or breach of CITY's obligations hereunder. Proposer agrees to indemnify and save harmless CITY from and against any and all liabilities, damages, claims, suits, costs (including court costs, attorneys' fees and costs of investigation) and actions of any kind by reason of injury to or death of any person or damage to or loss of property to the extent caused by the Proposer's negligent performance of services pursuant to the Project or by reason of any negligent act or omission on the part of the Proposer, its officers, directors, servants, employees, representatives, consultants, licensees, successors or permitted assigns (except when such liability, claims, suits, costs, injuries, deaths or damages arise from or are attributed to negligence of CITY, in

whole or in part, in which case the Proposer shall indemnify CITY only to the extent or proportion of negligence attributed to professional as determined by a court or other forum of competent jurisdiction). The Proposer's obligations under this section shall not be limited to the limits of coverage of insurance maintained or required to be maintained by the Proposer pursuant to the Project. This provision shall survive the completion of the Project.

4.4 ETHICS

The City expects the Proposer and its employees to act ethically.

5.9.1 Fair Dealing

The Proposer warrants that its proposal is submitted and entered into without collusion on the part of the Proposer with any person or firm, without fraud and in good faith. The Proposer also warrants that no gratuities, in the form of entertainment, gifts or otherwise, were, or will be offered or given by the Proposer, or any agent or representative of the Proposer to any officer or employee of the City with a view toward securing a recommendation of award or subsequent contract or for securing more favorable treatment with respect to making a recommendation of award.

5.9.2 Conflict of Interest

The Proposer warrants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under the contract resulting from this RFP. The Proposer also warrants that, to the best of its knowledge, no officer, agent or employee of the City who shall participate in any decision relating to this RFP and the resulting contract, currently has, or will have in the future, a personal or pecuniary interest in the Proposer's business.

5.9.3 Participation/Proposer Preparation

The Proposer may not use the consultation or assistance of any person, firm company who has participated in whole or in part in the writing of these specifications or the Scope of Services, for the preparation of its proposal or in the management of its business if awarded the contract resulting from this RFP.

5.9.4 Debarment or Ineligibility Compliance

By submitting its proposal in response to this RFP, the Proposer certifies that (i) it has not been debarred or otherwise found ineligible to receive funds by any agency of the federal government, the State of Ohio, any local public body of the State, or any state of the United States; and (ii) should any notice of debarment, suspension, ineligibility or exclusion be received by the Proposer, the Proposer will notify the City.

5.9.5 Goods Produced Under Decent Working Conditions

It is the policy of the City not to purchase, lease, or rent goods for use or for resale at City owned enterprises that were produced under sweatshop conditions. The Proposer

certifies, by submittal of its proposal in response to this solicitation, that the goods offered to the City were produced under decent working conditions. The City defines “under decent working conditions” as production in a factory in which child labor and forced labor are not employed; in which adequate wages and benefits are paid to workers; in which workers are not required to work more than 48 hours per week (or less if a shorter workweek applies); in which employees are free from physical, sexual or verbal harassment; and in which employees can speak freely about working conditions and can participate in and form unions.

4.5 MODIFICATION OR WITHDRAWAL OF OFFER

Offers may be modified by submittal of a substitute or supplemental proposal to the City following the submission requirements set out above. Offers may be withdrawn by written request provided to the City. In either case, such action must occur prior to the hour and date specified for receipt of proposals.

4.6 FAILURE TO SUBMIT OFFER

If no proposal is to be submitted, the recipient shall not return the RFP.

4.7 RECEIPT OF PROPOSALS

The only acceptable evidence to establish the time of receipt of proposals from the City is the time date stamp of such office on the proposal wrapper or other documentary evidence of receipt maintained by the office.

4.8 ACKNOWLEDGMENT OF AMENDMENTS TO THE REQUEST FOR PROPOSALS

Receipt of an amendment to the RFP by a Proposer must be acknowledged (a) by signing and returning the amendment, (b) by letter, or (c) by mention in the proposal. Such acknowledgment may be submitted with the proposal.

4.8.1 Evaluation Period

The City reserves the right to analyze, examine and interpret any proposal for a period of ninety (90) days after the hour and date specified for the receipt of proposals.

4.8.2 Evaluation Assistance

The City, in evaluating proposals, reserves the right to use any assistance deemed advisable, including City contractors and consultants.

4.8.3 Rejection and Waiver

The City reserves the right to reject any or all proposals and to waive informalities and minor irregularities in proposals received.

4.9 DEBARMENT OF THE PROPOSER

Any proposal received from a Proposer that is, at the time of submission of the proposal or prior to receipt of award of a contract, debarred by or otherwise ineligible to receive funds

from any agency of the State of Ohio, any local public body of the State, or any state of the United States, shall be rejected.

4.10 AWARD OF CONTRACT

4.10.1 When Award Occurs

A conditional award of contract occurs when the City Council of the City of Delaware approves a resolution authorizing execution of a contract for the Project with the selected Proposer. The award of the contract for the Project shall become effective when (i) the selected Proposer has delivered to the City the required number of original sets of contract documents signed by an authorized representative of the proposer accompanied by all required certificates of insurance evidencing that all required insurance coverage is in effect with policies endorsed as required by the RFP, and all payment, performance, and/or maintenance bonds properly signed and sealed by the surety with original power(s) of attorney attached and (ii) said contracts and bonds have been signed by the City's authorized representative and approved as to form by the City Attorney. A Recommendation of Award does not constitute award of contract. All proposals received shall be subject to acceptance and award and shall not be deemed rejected until a contract between the City and the selected Proposer has been signed by all parties thereto.

4.10.2 Award

If a contract is awarded, it shall be awarded to the responsive and responsible Proposer whose proposal conforming to the RFP will be most advantageous to the City as set forth in the Evaluation Criteria, Section 2.1 above. The award of this contract will not be based on price alone. Factors that would affect the final cost to and the benefits to be derived by the City will be considered using the criteria listed above. The Selection Advisory Committee's decision as to which supplier best meets the City's needs will be final.

The City reserves the right to reject any and all proposals and to waive any informality in proposals received. If the original selected Proposer is unwilling or unable to provide all required insurance coverage and bonds within ten (10) days after delivery of signature sets of the contract documents, the City reserves the right to reject the conditional award to the original selected Proposer and proceed to negotiate and award the contract for the Project to the Proposer submitting next most advantageous Proposal.

4.11 CANCELLATION

This RFP may be canceled and any and all proposals may be rejected in whole or in part when it is in the best interest of the City.

4.12 NEGOTIATIONS

Negotiations may be conducted with the Proposer(s) recommended for award of contract.

4.13 CITY FURNISHED PROPERTY

No material, labor, or facilities will be furnished by the City unless otherwise provided for in the RFP.

4.14 PROPRIETARY DATA

Proposals shall be open to public inspection after the contract has been signed by the City, except to the extent the Proposer designates trade secrets or other proprietary data to be confidential. Material so designated, must be separated from the Proposer's main proposal and each page shall be clearly marked in order to consider confidential and to facilitate public inspection of the non-confidential portion of the proposal. Prices, makes and models, or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available regardless of any designation to the contrary. The City will endeavor to restrict distribution of the material designated as confidential or proprietary to only those individuals involved in the review and analysis of the proposals.

4.15 WORK AUTHORIZATION

Notice to Proceed (NTP) is planned to occur by 01 January 2016. All proposals received in response to this RFP must remain valid for not less than 120 days from the date of the opening of the proposals by the City. A statement indicating the period during which the Proposer agrees to be bound by its proposal must be included in the proposal.

Immediately after the City's recommended Proposer has been approved by the City Council, the recommended Proposer is instructed to pursue any and all subcontracts associated with this project.

The City intends to issue a NTP immediately after the following conditions have been met:

- Delaware City Council approval.
- The selected Proposer has delivered to the City all required certificates of insurance and surety bonds (i.e. payment, performance, and/or maintenance bonds).
- A contract has been fully executed by both parties and distributed.

The City is not responsible for any costs associated with the preparation and submission of proposals, including any costs by the Proposer or Sub-Proposer incurred as part of the interview, contract negotiation phases, and/or any related work prior to the issuing of the Notice to Proceed.

4.16 NON-RESPONSIVE PROPOSALS

All Proposers must furnish a proposal based exactly on the requirements set forth in this RFP, and shall include no alternatives in its base proposal.

Every alternate, deviation, or substitution whatsoever from the exact scope, terms, and requirements as set forth in the RFP that the prospective Proposer proposes shall be priced separately. The Proposers shall include in their submittals a list of all proposed alternates,

deviations and substitutions, and the associated change in prices, whether an increase or decrease, from their base prices.

Proposals not in accord with the foregoing will be considered non-responsive and may be excluded from the review.

5. DELIVERABLES, SPECIFICATIONS AND SCOPE OF SERVICES

This section identifies the Proposer's deliverables, functional specifications and Scope of Services. The proposal shall provide narrative descriptions for the AMI system's current capabilities and respondent's approach in addressing the tasks and functionality listed within this RFP. The respondent may propose other options above and beyond the list of tasks/requirements if deemed beneficial to the Project. The new ideas or techniques proposed by the Proposer shall be indicated and priced separately.

Coordinating with City staff, the selected AMI System Provider shall perform and administer all work under this RFP, including performing any and all RF propagation studies, identifying any and all collector and repeater sites, obtaining transferable rights to third party sites for installation of communications equipment, providing Meter Interface Units for water meters, providing data collection units, and repeaters as needed, and providing a hosted data management solution.

5.1 RESPONSIBILITIES OF THE CITY

The City will facilitate access to City owned facilities for the system installer and support the vendor with the installation of data collection units (DCU).

5.2 RESPONSIBILITIES OF THE SELECTED AMI SYSTEM PROVIDER

The AMI system provider shall provide all of the hardware and software that together comprise the proposed AMI system. This includes meter interface units, wire and wire connectors, data collection units, repeaters, and related software and interfaces. The AMI system provider shall also perform an RF propagation study and determine the installation locations for any and all data collection units. If communication equipment is to be installed on third party sites, the AMI system provider shall obtain 20 year rights installing and operating that equipment, these rights will be transferred to the City at no additional cost at time of successful system acceptance testing.

The AMI system provider shall propose detailed goals and milestones for deliveries or accomplishments within the project schedule established by the City, and subject to approval of the City. Should the AMI system provider fail to meet a key milestone within a reasonable period of time the City shall collect liquidated damages until the milestone is met.

The AMI system provider shall determine the methods and means of installing the meters and meter reading equipment, consistent with this RFP.

The AMI system provider shall provide City staff and public relations assistance as required. This assistance shall include, but not be limited to, providing charts, brochures, materials for public meetings or media distribution, photographs for news releases, and materials for technical articles or presentations. All contacts by the media as it relates to the Project shall be referred to the City.

The AMI system provider shall provide all required, necessary, and reasonably implied services, reports, analyses, correspondence, applications, meetings, and other preparation of documents and communications necessary to obtain approvals and cooperation of agencies such as Occupational Safety and health Administration (OSHA), Federal Communications Commission (FCC), Federal Aviation Administration (FAA), Army Corps of Engineers, railroads, utilities, cellular providers, and various municipalities, for all activities related to the Program. All correspondence, applications, responses to agencies, and other reports and communications shall be prepared by the AMI system provider and reviewed by the City. The AMI system provider shall be responsible for establishing working relationships with agencies and municipalities to expedite approvals and mitigate negative impacts and shall hand-deliver items when necessary. Applications to agencies shall be signed by the City and any fees or fines shall be paid by AMI system provider.

5.3 GENERAL PROPOSAL REQUIREMENTS

The Proposer must answer all questions and requests for specificity. All responses must reflect current AMI system capabilities. All specifications incorporating “shall,” “must,” etc., are requirements, and failure to comply with these must be specifically noted as exceptions. All specifications incorporating “may,” “should,” “desires,” etc., are highly desirable features. In the case of a specific requirement not followed by a request for an explanation, The Proposer must explicitly affirm that the proposed system or component meets that requirement. Simply taking exception to a requirement without providing an explanation, and where appropriate an alternative, may result in the rejection of proposal. The Proposer shall provide a list of all exceptions taken to this RFP. Proposed alternative language, if appropriate, should be incorporated in the response to each requirement.

The Proposer must provide copies of manufacturers’ specifications or comparable technical documentation for all proposed equipment, devices, and hardware. These documents shall be provided as an attachment to the proposal.

If required functionality is not currently available but under development, the Proposer must state when this functionality will be available and how it would be implemented.

If proposing more than one solution, the Proposer must submit a separate proposal for each.

5.4 MINIMUM REQUIREMENTS

The proposer shall, and its offering shall, meet the following minimum requirements. Failure to meet one or more of these requirements may exclude consideration of the offering.

Financial Stability	The vendor shall not be undergoing any current bankruptcy activities or have declared bankruptcy in the past three (3) years.
Experience	The technology (metrology and communication) being proposed by the vendor must have a demonstrated experience of a minimum of three projects and totaling more than 50,000 installed endpoints.
Water Audit	Under normal operating conditions, time-stamps must be synchronized with a real-time clock deviating by no more than 30 seconds.
Security	The AMI system must have a security architecture that can be responsive to both physical and cyber security threats.
Quality	All equipment is desired to be manufactured in North America and participating manufacturing facilities shall be ISO9000 certified.
Read Performance	The vendor shall perform a propagation study and design system coverage to guarantee read performance rates of at least 98.5% in 72 hours, 97.5% in 48 hours, and 95% in 24 hours. See 5.5.24 for more information regarding this requirement.
Compatibility	The proposed AMI system shall be compatible with existing meters/registers which include Zenner C700 and Elster/Amco.

Table 1: Minimum Requirements

The following section(s) detail the functional and work description to be covered in the proposal. The Proposer's response shall use a similar numbering and titling scheme in their response. The Proposer is advised to read the entire RFP first and minimize repetition to the greatest extent possible.

5.5 OVERALL SYSTEM CHARACTERISTICS

The City desires the AMI system to be capable of two-way communications between the Meter Interface Unit (MIU) and the Head End System (HES).

5.5.1 Mode of Operation

Include/Describe:

1. Describe the system's normal mode of operation (i.e., for obtaining periodic readings, for billing, and other purposes).
2. Describe in detail the sequence of steps by which the system components interact to deliver readings and event notifications and how this data can be made available to the City.
3. Provide a schematic or flow diagram depicting the system's normal mode of operation.
4. Describe the communications between system components,

and where time stamping of reading and event data occurs.

5.5.2 General Description of System Components

Include/Describe:

1. Briefly describe the technical, functional and operating characteristics of each component used by the AMI system including if applicable:
 - MIUs
 - Repeaters
 - Collectors (DCUs)
 - Reporting systems
 - Field installation tools and software
 - Field maintenance and troubleshooting tools and software

5.5.3 Clock Synchronization

Requirements:

1. The system shall utilize real time clocks and time stamp all meter reading and event data.
2. Timestamps must be accurate within 30 seconds of true time and should be accurate within 5 seconds of true time

Include/Describe:

3. Describe how real time clock accuracy is maintained in the system and how readings and events are time stamped by each element of the system.

5.5.4 Daylight Savings Time (DST)

Requirements:

1. The system shall automatically adjust for DST.

Include/Describe:

2. Describe how the systems time stamps data with regards to Day Light Savings time.
3. Specifically discuss how it handles the 25 hour Sunday when reversion to standard time occurs and the 23 hour Sunday when daylight savings time commences.

5.5.5 Meter Reading Interval**Include/Describe:**

1. What is the default meter reading interval?
2. What is the default frequency/timing for transmitting readings from the MIU to the DCU?
3. Is the default frequency/timing for transmitting readings from the MIU to the DCU user configurable?
4. Describe the packet content of a typical meter read transmission. *For example, register reading, xx amount of hourly interval readings, alarm data, etc.*
5. Describe how the system manages the transmission of interval read data to ensure that all intervals are successfully received by the HES.
6. Describe how missing reads may be recovered/retransmitted from the MIU.

5.5.6 Changing Reading Interval and Reporting Frequency**Include/Describe:**

1. Indicate if the meter reading interval, MIU transmission, and DCU reporting frequencies can be changed, and the range of interval/frequency choices.
2. Indicate which changes require a physical visit to the MIU, and which changes can be propagated through the communications network to the MIU. Describe the procedure.
3. Indicate whether a change in reading or transmission interval is or can be programmed to reset automatically, or has to be reset manually. Indicate the magnitude of any impacts on battery life.

5.5.7 Relocating an MIU to a new service location**Include/Describe:**

1. Describe the procedure for moving an in-service MIU from an existing customer to a new customer account.
2. Describe how the HES handles the historical meter reads associated with that MIU to ensure the existing customer and new customer both retain their proper consumption history.

5.5.8 Component Firmware Upgrades**Include/Describe:**

1. The Proposer shall include firmware for all system components including MIUs, DCUs, repeaters and portable interrogator/programming/testing units, at no additional cost or separate annual maintenance fee.
2. The Proposer shall provide any available upgrades or patches

to such firmware to correct problems, add new standard features, and ensure system compatibility and full functionality for a minimum of 1 year after system acceptance at no additional cost.

3. Indicate if and how firmware patches or upgrades would be applied to each system component, including:
4. Describe all the steps that must be taken to upgrade DCU firmware.
5. Describe all the steps that must be taken to upgrade MIU firmware.

5.5.9 System Capacity

Include/Describe:

1. Describe the memory capacity of each system component in terms of the number of meter readings and usage intervals stored (in total and per endpoint) and/or the number of meter readings that can be transmitted/received in a given time interval.
2. Describe what happens as capacity is approached?
3. What happens when it is exceeded? (For example, does new data overwrite old data?)
4. Describe any provisions in the system for archiving old meter reading data.

5.5.10 Radio Communication Band

Include/Describe:

1. Indicate what radio frequencies are used for interactions between the MIUs and DCUs and if they are licensed or unlicensed.
2. If licensed, describe how you will obtain and provide the City the license.

5.5.11 Data Transmission Accuracy

Requirements:

1. The system shall include provisions to ensure data transmission accuracy (for example, error checking), and immunity from outside (electromagnetic) interference as well as fading and other forms of signal degeneration or attenuation (such as multi-path fading) to prevent accidental loss of customer or meter reading data.

Include/Describe:

2. Describe how the above requirement is accomplished. Do not describe in this section the security systems associated with

controlling user access.

5.5.12 Meter Event Data

Include/Describe:

1. Describe which events are transmitted by the MIU.
2. List/Discuss all routine/scheduled events.
3. Discuss condition events.
4. What is the default reporting frequency of MIU events?
5. Describe the packet content of a typical event transmission.
6. Describe how the system manages the transmission of MIU event data to ensure that all intervals are successfully received by the HES.
7. Describe how missing events may be recovered/retransmitted from the MIU.

5.5.13 Data Transfer to HES

Include/Describe:

1. Indicate the proposed mode of data transfer between the DCUs and the HES.
2. Describe any options that exist for any portion of the data transfer.
3. Provide estimated costs for these options.

5.5.14 Consumption Validation

Requirements:

1. The system shall perform automatic data validation on meter reading data to ensure accuracy.

Include/Describe:

2. Describe how the HES or data management system would perform this task.

5.5.15 Tamper Detection

Requirements:

1. The system shall contain tamper detection capability which, when the meter, MIU, or any wiring between components has been tampered with (cut wire, rotation of the meter, etc.) shall cause a tamper message to be indicated when the MIU transmits its data.
2. The City desires the system to be configurable for either immediate or end-of-the day summary reporting of tampers.

Include/Describe:

3. Indicate what different kinds of tamper are detected.

4. Indicate how quickly tampering with each component can be reported and how it will be reported. Can alerts triggers / thresholds be customized?
5. How many times or over what period of time will a tamper indication be provided to the DCU or to the HES before it is automatically cancelled?
6. Indicate whether the tamper indication must be reset or reprogrammed, and how this is accomplished.

5.5.16 Unauthorized Usage Detection

Requirements:

1. The system should give an indication of unauthorized usage; that is, when the customer account record indicates that the customer has been shut off, the system will flag and specifically report any unauthorized usage.

Include/Describe:

2. Describe this capability, if available. Can alerts triggers / thresholds be customized?

5.5.17 Leak Detection

Requirements:

1. The system shall monitor water consumption through the meter and specifically indicate if there is a probable leak, high intermittent usage, or if there is a “running continuously” condition.
2. The City desires the system to be configurable for either immediate or end-of-the day summary reporting of leaks.

Include/Describe:

3. Indicate how quickly leaks can be reported and how it will be reported.
4. Describe the capacity to detect leaks at various flow rates and the exception process for excluding certain customer types (e.g. 24 hours businesses).

5.5.18 Large Leak Detection

Requirements:

1. The system shall detect very large leaks and notify the City as soon as they are detected.

Include/Describe:

2. Describe how the system would perform this function.
3. Describe how the City would define the flow rate that is

considered a large leak and trigger a report.

5.5.19 No Flow Detection

Requirements:

1. The system shall indicate when there is an extended period (e.g., 10 days) of no flow through the meter, or an unusually low consumption over a regular reading interval.

Include/Describe:

2. Indicate how this is accomplished.
3. Can this be adjusted? If so, please describe how.

5.5.20 Water Conservation Algorithms

Include/Describe:

1. Certain water conservation regulations may need to be enforced by the City (e.g. no irrigation on Monday and Friday). Describe how the system would perform this monitoring function.
2. Describe how the City would define the criteria and how reporting would occur.

5.5.21 Other Detection Features

Include/Describe:

1. List other conditions (for example, reverse flow or backflow) that the system can detect.
2. Describe these capabilities and how they are accomplished. Can alerts triggers / thresholds be customized (e.g. for hot water heater expansion)?

5.5.22 Additional Features

Include/Describe:

1. Describe any additional capabilities of the proposed system, such as remote shut-off or turn-on, pressure monitoring, etc. Describe specific third-party sensors or controllers that are supported (such as Acoustic Leak Detection) and their capabilities. Include any deployments of such devices, including the number of units installed, in the References section of the proposal.

5.5.23 Planned Future Capabilities

Include/Describe:

1. Indicate any planned future capabilities for the equipment being proposed, the anticipated development and availability schedule, expected incremental costs, and the expected

procedures for upgrading the City's system, if applicable.

5.5.24 Read Performance**Include/Describe:**

1. The Proposer shall price in its proposal and provide an adequate communications infrastructure (WAN and LAN) to ensure that for all AMI meters, 98.5 percent will successfully report all reading and interval data within the last 72 hours, 97.5 percent will successfully report all interval and read data in the last 48 hours and that at least 95 percent of all meters will successfully report all reading and interval data in the last 24 hours. Meters that have temporary physical barriers beyond the control of the City or the Proposer are excluded from these performance metrics. The Proposer shall define in detail any qualifiers to these requirements. Describe the "rule of thumb" distance the MIU and DCU can be apart and meet or exceed these performance requirements.

5.5.25 Hard-to-Read Meters**Include/Describe:**

1. Indicate how the AMI system will obtain readings from meters in ravines, vaults, and other transmission constraining settings.

5.5.26 Environmental Tolerances**Include/Describe:**

1. All system components must operate over an external temperature range of at least 135° F and a humidity range of at least 95 percent non-condensing.

5.5.27 FCC Compliance**Include/Describe:**

1. All applicable system components must comply with FCC regulations 47CFR §15 or FCC Part 22.

5.5.28 Use of Standards**Include/Describe:**

1. The City believes that standards-based products better suit the long term requirements and interests of their customers. National and international standards which proposer's products comply and adhere to shall be listed.

5.6 METER INTERFACE UNIT (MIU)

5.6.1 General

Include/Describe:

1. Indicate if there are different models of MIUs for indoor, outdoor wall-mounted, and vault installations and if there are different versions of the MIU (e.g., one with more advanced features or memory, or single port versus multi-port).
2. Provide responses to the requirements in this section for each model/version; for those features that are different, clearly specifying which model(s)/version(s) apply.

5.6.2 Physical Characteristics

Include/Describe:

1. Describe the physical characteristics of the MIU, including dimensions and weight.
2. Provide pictures or drawings to scale. Include all optional models.

5.6.3 MIUs for Different Meter Types

Requirements:

1. The City may want to replace existing meters over time, which may not be the same model. Therefore the MIU must read at least two different water meter manufacturers' AMI-compatible, dial-position encoded registers for all sizes of meters.
2. The MIU should read more than two different manufacturers' registers regardless of meter size.

Include/Describe:

3. List all the meter models, encoders, etc. that are NOT compatible with the proposed AMI system.

5.6.4 Batteries

Requirements:

1. The expected normal life of the battery powering the MIU should be twenty (20) years or more. Normal operating conditions require the battery to power the MIU and provide up to six (6) data transmissions per day.

Include/Describe:

2. What type and size of battery does the MIU use?
3. What is the expected battery life when the MIU is used with normal conditions and default settings?
4. Describe the expected battery life as a range of years within one and two standard deviations of the average expected life.
5. How will the system prevent loss of programming or data if the battery expires?
6. Does the AMI system provide a warning in advance of battery failure? If so, what is it and how is this accomplished?
7. Is battery life affected by the type of meter register the MIU is reading?
8. Is battery life affected by external temperature fluctuations? If so, indicate the differences in expected and guaranteed lives.
9. Is the battery removable and replaceable? If so, what is the current cost of replacement batteries?
10. Can the battery be replaced in the field?
11. Does battery replacement require soldering or special tools, or the application of any sealant?
12. Describe any special MIU battery disposal provisions, and indicate the current cost of providing battery disposal if special handling is required.

5.6.5 MIU Labeling**Requirements:**

1. The MIU shall be permanently labeled with manufacturer's name, model number, "Delaware," a tamper warning, MIU identification number, required FCC labeling, input/output connections, and date of manufacture.
2. The label should be weatherproof and attached to the MIU where normal installation will not obscure it.

5.6.6 MIU ID Number**Requirements:**

1. Each MIU shall have a unique, permanent ID number that is transmitted with the meter readings and the City meter number. This MIU serial number shall be readable on the outside as well as bar-coded.

5.6.7 Programmability**Requirements:**

1. The MIU should be able to be initialized or programmed during or

prior to field installation.

Include/Describe:

2. Describe all MIU programmability options, features, and procedures.
3. Describe how long it takes to program an MIU using a standard workflow in the field

5.6.8 Electromagnetic Isolation

Include/Describe:

1. Describe how the MIU will protect itself, the meter, and any connected equipment against induced electromagnetic surges or fields.
2. Describe any risks of surges from MIU batteries.

5.6.9 Tampering

Include/Describe:

1. Describe features, including physical characteristics (seals, tamper resistant bolts, etc.) to minimize, detect, and report tampering with the MIU.

5.6.10 Environmental Tolerance

Requirements:

1. The MIU must operate in conditions subject to water submergence (i.e., meter pits).
2. The MIU enclosure should be composed of ultraviolet (UV)-inhibiting ABS or similar material.
3. All materials used in the MIU must be non-hazardous.

Include/Describe:

4. Describe any features of the MIU that prevent corrosion or degradation of mechanical or electrical performance (e.g., encapsulation or coating).

5.6.11 Mounting

Include/Describe:

1. Describe requirements for mounting the MIU (elevation, orientation, etc.) to ensure adequate communication.
2. For MIUs not mounted in meter pits or vaults, describe features to facilitate mounting to masonry, wood, pipe, or any other

building materials.

5.6.12 Ease of Installation

Include/Describe:

1. Briefly describe installation procedures.
2. Indicate design provisions to avoid mistakes in installation, connection to meters, and programming.

5.6.13 Meter Pit and Vault Installation

Requirements:

1. All MIUs installed in meter pits/vaults shall be mounted under the pit/vault lid, recessed so that no critical portion of the MIU protrudes above the plane of the meter lid.
2. In addition, lids in paved areas must be configured to minimize the danger of damage from snow removal equipment.

Include/Describe:

3. Describe how MIUs in meter pit and vault settings should be installed.
4. Describe any proposed method (such as a wire connection designed to release under tension) for connecting registers to MIU's attached to a vault lid that might prevent damage to the meter reading equipment or wires if vault lids are removed too abruptly.
5. The Proposer shall provide photographs and diagrams of any brackets or lid assemblies used to mount the MIU in vault applications.
6. Describe how lids located in streets and other areas of traffic will be addressed

5.6.14 Connections to Meter Registers

Requirements:

1. Wire connections between the meter register and the MIU must be sealed and waterproof.
2. New connection wires shall be in the form of a cable in a single protective jacket or fused as a single cable unit suitable for exposed mounting.
3. Wire should be not less than 22-gauge.
4. The City prefers solid molded cable.

Include/Describe:

5. Describe the proposed methods to be used for connecting wires to the MIU and to the register.
6. Include any use of potting or water-proofing materials or devices.
7. Describe any provisions to prevent mis-wiring.
8. Describe provisions to resist and indicate tamper with wiring.
9. Indicate the maximum length of cable between the MIU and the meter that will not result in any degradation of data or system reliability.

5.6.15 Manufacturing Quality Requirements:

1. The City believes that only products manufactured under a quality oriented environment (ISO9000 certified) will meet its long term operational requirements.

Include/Describe:

2. Describe the current manufacturing quality program in place at the MIU manufacturing facility.
3. When was the last formal external quality audit? Who performed that quality audit?
4. What were the salient findings of the audit?
5. Have all non-conformance items been addresses and accepted by the auditor?
6. List the Manufacturing facility, facility location (country and state/province), ISO9000 certifications and expiration dates for the MIU manufacturing facility.
7. List the details (quantities, root cause, and steps taken) of any recent product recalls for product lines be proposed as part of this project.

5.7 DATA COLLECTION UNITS (DCU)

The City is requesting the Proposer to include in its technical and cost proposals, a solution for on-call network maintenance services. The City is requested such service for both emergency and preventative maintenance of the entire collection system (DCU and Repeaters) and to provide a response time within 24 hours. This component of the proposal may or may not be awarded and will be considered a separate task order under this contract.

5.7.1 Mode of Operation

Include/Describe:

1. For systems that employ DCUs, indicate the mode of operation and schedule by which the DCU captures, stores, and retransmits data received from MIUs back to the HES. Describe any existing capabilities for sending signals to MIUs or other devices for remote shutoff, flow restriction, customer notification, etc.

5.7.2 DCU Communication to HES

Include/Describe:

1. Indicate available options and the preferred or recommended method for transmitting meter readings and other AMI system data to the HES from the DCU.
2. The Proposer must specify to the best of its ability the capital, installation, operation, and maintenance costs of such communications network.

5.7.3 Preliminary RF Propagation Study

Requirements:

1. If the proposal employs an RF LAN or WAN, the Proposer is expected to perform a preliminary RF propagation study to ensure system performance metrics described in paragraph 5.5.24 (Read Performance) are met.

Include/Describe:

2. Describe the preliminary RF propagation study and its results.

5.7.4 Number of Units

Requirements:

1. The Proposer is solely responsible for determining the mix of data collectors (DCUs), repeaters, and MIU placement strategies needed to meet or exceed the reading success rates described in paragraph 5.5.24 (Read Performance).

Include/Describe:

2. Indicate the estimated number of data collection units needed to achieve that level of performance.
3. Describe the proposed amount of redundancy in signal reception.

5.7.5 DCU Mounting**Include/Describe:**

1. Indicate options for mounting DCUs, and recommended mounting.
2. Indicate minimum, maximum, and recommended heights.
3. The Proposer must include estimates of the costs of mounting and any continuing site rental costs in its proposal.
4. Describe how DCU installation quality will be measured and what QA/QC checks will be made to ensure long term weatherproofing was completed per specifications.

5.7.6 Third Party DCU Locations**Include/Describe:**

1. Describe the proposed strategies for identifying and securing permission to use DCU sites that are not on City property (if required or recommended) that will keep fees low, and that can minimize the effort required to negotiate and establish leases. A list of City facilities is provided in Attachment A.

5.7.7 Power Supply**Include/Describe:**

1. What are the options for power source?
2. How does the system preserve data should power to a DCU be lost?

5.7.8 DCU Programming**Include/Describe:**

1. Describe any programmable features, such as data reporting schedules, for DCUs, and procedures for programming or configuring.
2. Do DCUs install themselves onto the system as they are powered up?
3. Describe provisions, such as firewalls, to ensure integrity of data and programming, and prevent unauthorized reprogramming.
4. Describe provisions to update programming.

5.7.9 Electrical Isolation**Include/Describe:**

1. Indicate how the DCU is protected against electrical surges such as lightning.

**5.7.10 Manufacturing
Quality**

Include/Describe:

1. Describe the current manufacturing quality program in place at the MIU manufacturing facility.
2. When was the last formal external quality audit? Who performed that quality audit?
3. What were the salient findings of the audit?
4. Have all non-conformance items been addressed and accepted by the auditor?
5. List the Manufacturing facility, facility location (country and state/province), ISO9000 certifications and expiration dates for the MIU manufacturing facility.

**5.7.11 DCU
Maintenance**

Include/Describe:

1. Indicate recommended fixed DCU maintenance intervals and procedures.
2. Indicate maintenance procedures in the event of physical accident or damage.

**5.7.12 Protection
against Loss of
Data**

Include/Describe:

1. Describe how meter reading data is protected and not lost if a DCU goes out of service.

5.8 REPEATERS AND OTHER COMMUNICATION EQUIPMENT

If the data communication system incorporates repeaters or other communication equipment in addition to DCUs, provide responses to this section for the equipment at each level.

- 5.8.1 Mode of Operation** **Include/Describe:**
1. Indicate the mode of operation and schedule by which the repeater captures, stores, and retransmits data to the DCU.
 2. Describe any capabilities for relaying signals to the MIUs for advanced functions such as remote shutoff, customer notification, etc.
- 5.8.2 Mounting** **Include/Describe:**
1. Indicate options for mounting repeaters, and recommended mounting.
 2. Indicate minimum, maximum, and recommended heights.
 3. The Proposer must include estimate of the costs of mounting devices in its unit costs.
- 5.8.3 Power Supply** **Include/Describe:**
1. How is the repeater powered?
 2. If the repeater is battery powered, or incorporates a battery in conjunction with another power supply (e.g., solar), what is the guaranteed battery life and what is the expected battery life?
- 5.8.4 Repeater Programming** **Include/Describe:**
1. Describe any programmable features for repeaters, and procedures for programming or configuring.
 2. Do repeaters install themselves onto the system as they are powered up?
- 5.8.5 Electrical Isolation** **Include/Describe:**
1. Indicate how the repeater is protected against electrical surges such as lightning.
- 5.8.6 Repeater Maintenance** **Include/Describe:**
1. Do repeaters require any routine maintenance? If so, describe.
 2. Describe any tamper detection or other alarm features of repeaters.

5.9 RADIO LICENSES

For systems that utilize a licensed radio frequency for its WAN or LAN communications, describe the following:

5.9.1 FCC Licenses

Include/Describe:

1. Indicate what FCC or other regulatory agency licenses, if any, the system will require. Indicate the expected length of time to acquire such licenses.
2. Indicate what problems can occur in the process of obtaining such licenses.

5.9.2 Obtaining Licenses

Requirements:

1. The Proposer shall be responsible for obtaining all necessary licenses on behalf of the City.
2. Licenses shall be assigned to or made available for a minimum of 20 years to the City.
3. Licenses must be obtained and assigned radio frequencies verified as suitable for use with the AMI system(s) before any AMI equipment is delivered to the City.
4. If license frequencies are reallocated and no longer available to the City after installations have begun, and this could have been reasonably anticipated by the Proposer, the City reserves the right to cancel the contract and orders for all or part of the system, and receive a full refund from the Proposer of all amounts paid, in addition to other damages incurred.

5.9.3 Protection from Interference

Include/Describe:

1. Describe procedures the City may use to identify and remove interlopers on its licensed frequency(s) or overpowered signals on unlicensed frequencies.
2. Indicate any provisions offered by the Proposer or its system to assist in this effort.

5.10 PORTABLE FIELD TEST UNITS (PFTU)

Portable electronic tools for assisting in the installation, operation, and maintenance of the AMI system will be needed by the City. These tools can be in the form of handheld devices or programs run on a laptop computer.

Portable interrogators may be required to capture readings from MIUs that are in radio “dead” spots, or for other special reading situations. Portable programming units may be required to program MIUs or meter registers. Portable Field Test Units may be required to diagnose problems with meter registers, MIUs, or the system. These possible functions are aggregated in this section. The Proposer shall respond to this subsection separately for each separate type of device if there are more than one.

5.10.1 Number of PFTUs

Requirements:

1. The Proposer shall supply all units required to implement the Project.
2. An additional two (2) units are needed for maintenance by City employees.

5.10.2 PFTU

Functions/Modes
of
Operation

of

Requirements:

1. Portable Interrogation
 - a. The unit should be capable of alerting (if necessary) and receiving signals from MIUs.
 - b. The unit should be capable of downloading consumption profile data, if that is a capability of the system.
2. Field Programming
 - a. The unit must be capable of programming the MIU with any information required for operation that has not been pre-programmed.
 - b. It must be capable of providing instructions to the MIU concerning the make, model, and data protocol of the meter being connected, should the MIU not be able to determine this itself.
3. Portable Interrogation
 - a. The unit should be capable of alerting (if necessary) and receiving signals from MIUs.
 - b. The unit should be capable of downloading consumption profile data, if that is a capability of the system.
4. Field Programming

- a. The unit must be capable of programming the MIU with any information required for operation that has not been pre-programmed.
 - b. It must be capable of providing instructions to the MIU concerning the make, model, and data protocol of the meter being connected, should the MIU not be able to determine this itself.
5. Field Testing
- a. The unit must be able to locate and diagnose problems with a meter register or MIU unless the system incorporates an alternate way to make such diagnoses.
 - b. The City desires that the unit be able to ascertain the condition or remaining life of the battery in an MIU.

Include/Describe:

6. Installation
- a. Describe how the automation of meter replacement data occurs and export formats supported by the PFTU.
7. Portable Interrogation
- b. Can the unit interrogate meter registers (if so, which ones)?
8. Field Programming
- c. Can the unit program a programmable meter register? If so, describe how this is accomplished.
9. Field Testing
- d. Can the unit simulate the functions of an MIU?
 - e. Can the unit simulate the functions of a meter register to test the MIU?
 - a. Can the unit communicate with a repeater/DCU?

5.10.3 PFTU Capacity**Include/Describe:**

1. Describe the capacity of each unit.
2. If the unit stores work order information, how much data, or how many work orders, can it accommodate?
3. How many meter readings can a portable interrogator

accommodate?

5.10.4 PFTU Range

Include/Describe:

1. What is the practical maximum distance at which a portable interrogator will reliably receive the complete meter reading signal from an MIU?

5.10.5 PFTU Physical Characteristics

Include/Describe:

1. Indicate unit weight and dimensions.
2. Describe any features, such as shoulder or belt strap, to facilitate carrying and preventing it from being dropped.
3. Describe the durability of the unit, including its capacity to endure impacts from dropping onto hard surfaces and its resistance to intrusion from water.

5.10.6 PFTU Accessories

Include/Describe:

1. What connecting hardware and software, including cables, modem, cradle, battery, charger, etc., are required for the unit to be fully functional?

5.10.7 Bar Code or RFID Reader

Requirements:

1. The unit should be capable of capturing (or accommodating a bar code reader to capture) the MIU bar codes. Identify if these capabilities are available

5.10.8 Other Features

Include/Describe:

1. Describe any additional functionality or features of the field units.

5.10.9 PFTU Batteries

Requirements:

1. The unit must ensure against accidental data loss in case of power loss.

Include/Describe:

2. Does the unit use rechargeable batteries? If so, what type? If not, what does it use?
3. How long does it take to fully recharge a battery after a full day of

normal use?

4. Can the batteries be recharged in charger cradles separate from the unit cradles?
5. Can the battery be recharged from a 12-volt vehicle system?
6. Can the batteries be replaced?

5.10.10 PFTU User Interface

Include/Describe:

1. Indicate the display dimensions, the number of characters displayed, and the height and width of the characters.
2. Does the display allow alphanumeric characters? Include an illustration of the display screen and keypad.
3. How does the unit enable the display to be easily readable in bright or dim light?
4. Indicate the angular range of readability.

5.10.11 PFTU Audible Tones

Include/Describe:

1. Describe any audible tones used by the unit, and their function (e.g., confirming a reading or successful programming, warning of an out-of-limits condition, low battery, etc.)?
2. Can the volume be adjusted?

5.10.12 Manual Entry

Include/Describe:

1. Does the unit permit manual entry of meter readings or other information (for example, the information necessary to complete a meter or MIU investigation or repair work order)? If so, what other information is allowed?
2. Describe its capability to record notes or comments.

5.10.13 PFTU Mounting

Vehicle

Include/Describe:

1. Describe any provisions for mounting and operating the PFTU within a vehicle.

5.10.14 PFTU-HES Interface

Include/Describe:

1. Is there a separate computer required for data exchange between the HES and the PFTU? If so, describe in detail the functions of the software used to manage this operation.

2. Describe in detail, with screen shots, the reports produced by this software.
3. Include a detailed description of any hardware or software needed.

5.10.15 PFTU Data Protocol Include/Describe:

1. What is the data protocol for communications between the PFTU and the HES?

5.11 HEAD END SYSTEM-AMI CONTROL COMPUTER

The City prefers the Head End System and meter data management to be hosted by the vendor. Describe how that process works in this section.

5.11.1 Hardware and Network Configuration Requirements:

1. The vendor will provide all hardware and all software needed for a complete and working system. Meter data management should be hosted by the vendor.

5.11.2 Remote Access Requirements:

1. The City desires that the AMI system functions, reports and data on the control computer or server, be securely accessible by properly authorized persons.

Include/Describe:

2. Describe how this access is provided and how security is ensured.
3. Describe how data would be downloaded from the HES and imported into an MS Access/SQL or Excel database for offline analysis and reporting.

5.12 SYSTEM SOFTWARE

Software may be required to interface with the City's Billing system, and other information systems. The Proposer shall respond to this subsection for each application.

5.12.1 General

Requirements:

1. The Proposer shall provide a description of all of the proposed software including version numbers of all products.

5.12.2 Mode of Operation

Requirements:

1. AMI software shall provide the user with reports of the current status and reading history of individual accounts and selectable groups of accounts.
2. The software should be able to sort and list accounts and their meter reading data.
3. The software should be able to create user-defined account groups and aggregate consumption profiles.

Include/Describe:

4. Indicate normal modes of operation of the AMI system software, including batch processing and single meter reading query processing.
5. Describe the steps a system operator must perform to obtain meter readings from the meters at the customers' premises, if the functions are not totally automated.
6. Describe how a City customer service employee will obtain an individual current reading from the AMI system.

5.12.3 Asset, Account, and Reads Database

Requirements:

1. The City has several systems that use meter asset/inventory, customer account, and water usage information. The AMI system adds yet another system where meter asset/inventory, account and usage information must be constantly maintained. The meter reading data must integrate with these systems.
2. The AMI database (Vendor hosted) must contain at a minimum: account number, MIU ID number and/or port number, meter number, meter readings, date and time of each meter reading, geographic coordinates, and event indications.
3. The updated AMI database will be made available for download on a

daily basis and shall be in a format compatible with MS Acces/SQL or Excel.

Include/Describe:

4. Describe major database tables and list fields with associated data types.
5. Can the City add or modify fields in database tables? If so, describe provisions and limitations.
6. Describe the recommended ways to keep these tables up-to-date and synchronized with the City's GIS and asset management systems.
7. Specifically describe the general procedures and interface requirements for:
 - a. Adding a new meter
 - b. Removing an existing meter
 - c. Modifying an attribute of an existing meter
 - d. Changing accounts
8. Replacing an MIU

**5.12.4 Synchronizing
Data**

Include/Describe:

1. Even with the best interfaces, data systems can become unsynchronized. Discuss the Proposer's strategy for keeping data of all types synchronized across the various data systems affected by AMI processes. This should include data programmed into MIUs, the billing system, and the HES.

**5.12.5 Meter Location
Data**

Include/Describe:

1. Indicate any provisions in the HES for storing and managing X-Y coordinates or other data for meter location.

**5.12.6 Interface
Billing System**

to Requirements:

1. The AMI system should automatically provide data, corresponding to all the accounts in a billing cycle, meter reading route, or other grouping, to the billing system in a standard, nonproprietary format (e.g., fixed-field ASCII, CSV, etc.).
2. The City prefers that the proposed AMI system interface with the billing system and emulate existing interfaces used by the City for meter reading, eliminating the need for the City to amend its existing

systems. The preferred file layout currently used to pass data between the billing system and the meter reading process is a standard export flat file as shown in Attachment B.

3. If that file structure is not feasible, the Proposer shall be responsible for designing and developing or providing the interface between its AMI system and the billing system. This effort shall include design, construction, and testing. While City resources will be available for design critiques, implementation planning, and testing support, the Proposer shall perform all of the integration. If the Proposer does not have the capacity in-house to develop such interfaces, it shall procure the services of a firm experienced in the development of automated system interfaces. The selected firm shall be specified in the proposal, and must be acceptable to the City.
4. Each record provided shall contain at a minimum: premise number, MIU ID number and port number (if applicable), meter number, meter readings, date and time for each meter reading, and flags and alarms

Include/Describe:

5. Indicate what information is provided to the billing system by the AMI system and indicate what information is required by the AMI system from the billing system.
6. Describe record layout, including field length and format.
7. Describe any steps an operator must perform in the AMI system to initiate or schedule this process.
8. Please provide suggestions on other billing software that works well with the Proposer's MDMS and could be used to replace the existing City billing system, if the City decides to upgrade in the future.

5.12.7 Standard Web Services and APIs

Include/Describe:

1. List and briefly describe all the current standard web services and Application Programming Interfaces (APIs) provided with your head end system software.

5.12.8 Grouping of Meters

Include/Describe:

1. Briefly indicate any capabilities or limitations of the system to separate meters into groups (e.g., by routes, types of customer,

billing cycles) for reading, configuration changes, and firmware upgrades.

2. Include a description of how the system can be used to gather synchronized readings from a grouping of meters (such as all meters within one pumping district).

5.12.9 Read on Demand Include/Describe (if applicable):

1. Describe how readings are taken “on demand” from a particular meter.
2. Include how the request is initiated within the system
3. Include how the request can be initiated and received by an external system
4. Indicate how long it would take from the request until the meter was read and the reading is available to the requestor.

5.12.10 On Demand Read Elapsed Time (Latency) Include/Describe (if applicable):

1. Indicate the amount of time that elapses from the start of an on-demand meter reading request and the meter reading being available to the user of the AMI software, if the time varies, the range of values, including descriptive statistics and/or a histogram adequate to clearly describe the distribution of the times.

5.12.11 Multiple Users Requirements:

1. The City desires that the system support multiple users at multiple locations.
2. The City prefers a web-based interface.

Include/Describe:

3. How many concurrent users can the system accommodate?
4. Can the system process batch transfers of meter reading data in the background while allowing users to conduct queries and other transactions?

5.12.12 User Interface Requirements:

1. The Proposer shall include menus, navigators, and major screen shots in its proposal.

Include/Describe:

2. Describe provisions and guidelines for customizing screens, menus, and navigators.

5.12.13 User Access**Requirements:**

1. The system should provide a method to track and monitor all changes to software, hardware, work processes, and equipment.

Include/Describe:

2. What provisions exist for data entry and editing by authorized users?
3. What restrictions are placed on such functions to ensure security and data integrity?
4. Are edits traceable by the City?
5. Are restriction settings customizable by the City?

5.12.14 Capacity**Include/Describe:**

1. Describe any capacity limitations on the number of accounts, number of readings per account, etc. readily accessible for the configuration proposed.
2. Describe any provisions for archiving and retrieving additional data.

5.12.15 Back-Up**Include/Describe:**

1. Describe data back-up capabilities and procedures to ensure that system and consumption data are not corrupted or lost.

5.12.16 Reports**Requirements:**

1. Report formats should be user-customizable, using a built-in report writer or a third-party commercially available report writer that is included with the software.
2. Reports must be able to be directed to a printer, screen, or data file.

Include/Describe:

3. Provide a list, with brief descriptions and screen shots or sample pages, of the standard reports provided for system and component performance; missing or late data; errors, anomalies, and alarm conditions; data transfer, management, and administration; analysis of consumption for individual customers or groups of customers; and other major report categories.

4. Describe any existing capability to interface with maps for presentation.

**5.12.17 Validation,
Estimation and
Editing**

Include/Describe:

1. Describe any system capabilities to validate meter readings for reasonableness, unusually high or low readings, and potential meter rollovers.
2. Describe estimating and editing capabilities.

5.12.18 Customization

Requirements:

1. Permissible customization shall not void any software product warranties, nor prevent any overlay of future software releases.

Include/Describe:

2. Indicate the nature and extent to which standard reports can be customized.

**5.12.19 Software
Documentation**

Requirements:

1. Documentation shall be provided with the software and should include at a minimum:
 - a. System overview description, system flow charts, file descriptions and record layouts (include descriptions of fields that can be customized for City applications)
 - b. Database structure diagrams
 - c. Description of program function and logic
 - d. Back-up and recovery procedures
 - e. Operating procedures, screen layouts
 - f. Data entry procedures
 - g. Report descriptions
 - h. Descriptions of all user options
 - i. Descriptions of all error messages.

**5.12.20 Software License
and Warranty**

Requirements:

1. All Proposer-provided software necessary to support the full functionality of the meter reading system(s) must be supplied to the City with a perpetual, irrevocable, fully paid-up license to use, copy, maintain, modify, enhance, translate, and create derivative works

from the software.

Include/Describe:

2. Indicate the software’s designer, owner, and licensor.
3. Indicate how many servers or workstations the software license will cover.
4. Include the cost, if any, of additional server or workstation licenses in the price proposal submitted under separate cover.

5.12.21 Maintenance and Upgrades

Requirements:

1. The Proposer-supplied software shall be available for 20 years with enhancements, patches, and corrections of “bugs,” at no additional cost to the City beyond the annual maintenance fee.
2. The Proposer must promptly notify the City if it introduces newer or later versions of the software or any of its components.

5.12.22 Third-Party Software

Requirements:

1. The City desires that the Proposer shall own and host all software, except for commercial generic third-party packages used to support the Proposer’s system (e.g., relational database management system, report generator, etc.).
2. The Proposer must secure for the City sublicenses or direct licenses for all third-party software necessary for the systems to function as proposed.

Include/Describe:

3. Indicate third-party provider of software specifically designed to support the Proposer’s software.
4. Indicate the warranty, licensing, and support provisions for any such packages. Such specialized third-party software should be under the control of the Proposer, and be subject to the provisions of paragraphs 5.12.20 (license and warranty) and 5.12.21 (maintenance and escrow).

5.13 END TO END SECURITY

The City takes security seriously and is constantly making efforts to reduce the risk of cyber threats. The AMI system potentially extends the reach of some enterprise systems beyond the physical boundaries of City offices.

5.13.1 Communications Security Requirements:

1. The AMI system must ensure end-to-end data integrity (so that the readings from the meters, ID numbers, and other data are always associated with the correct meter and customer), data access security, and prevent exposure of any personally identifiable information (PII).
2. The system must ensure against loss of stored data.

Include/Describe:

3. Specifically describe how the system addresses the following:
 - a. End-to-end data security and integrity
 - b. Protection of all PII
 - c. Prevention of cyber-attacks and intrusions including Denial-of-service, Man-in-the middle, Spoofing, Etc.
 - d. Prevention of malware intrusion

5.13.2 HES Software Security Requirements:

1. The HES software shall include a security system, incorporating multiple levels of authorization and access.

Include/Describe:

2. Describe security features, logging, and security levels.

5.14 CUSTOMER WEB PORTAL

The City is requesting the Proposer to include in its technical and cost proposals, a recommended solution for a Customer Web Portal. This component of the proposal may or may not be awarded and will be considered a separate task order under this contract. The Web Portal is intended to facilitate water conservation efforts and provide customers with direct access to their individual water consumption data via the Internet.

5.14.1 Functionality

Requirements:

1. Provide a fully hosted customer facing web portal.
2. Customizable customer “dashboard” to display water usage information, daily temperature, rainfall & estimated bill based on usage.
3. Comparisons between the customer’s consumption and that of their neighbor, reference group, system average, or other meaningful metric
4. Email alerts when water use exceeds a self-established monthly water budget, a City-developed water use budget, or is higher than the typical usage signaling they may have an undetected leak
5. Watering advice about how much irrigation is needed to replace actual evapo-transpiration losses
6. Customized messages about water conserving tips
7. Evaluations of the impact of water efficiency measures on water usage/bill using before and after self-assessments

Include/Describe:

8. Describe display of usage when there is a gap when read(s) are not reported and how the usage is displayed once read is reported. I.e.: a symbol displays when a read is not reported.
9. Provide both functional descriptions and capability statements for the recommended solution.
- 10.

5.15 TRAINING

5.15.1 Training Curriculum

Requirements:

1. The Proposer shall provide thorough training and specify teaching

method and duration for each training sessions:

- a. All aspects of the AMI system's operation, including obtaining reads and consumption data from the system; transferring reads and other information between the AMI system and the billing system; creating, analyzing, and customizing performance reports; diagnosing potential problems with system components; and changing or adding customer accounts/MIU/ meters to the system, for a minimum of 5 City employees or agents.
- b. Field installation, for a minimum of 5 City employees or agents.
- c. Field diagnostics and maintenance, for a minimum of 5 City employees or agents.
- d. DCU office and field maintenance and repair/replacement for a minimum of 5 City employees or agents.

5.15.2 Location

Requirements:

1. All training shall be done at City offices and facilities, or in the field in Ohio.

5.15.3 Testing

Requirements:

1. The Proposer's training shall include evaluation of trainees to ensure that they have learned the course content and can perform all necessary functions on the system.
2. The Proposer shall notify the City of any employees who fail this evaluation, and provide them additional training as required.
3. The Proposer shall repeat a training session at no additional cost to the City if a majority of the trainees have not attained the skills from the training session or fail the evaluation at the end of the training.

5.15.4 Training Objectives and Outline

Requirements:

1. The Proposer shall provide a detailed outline of each training session's objectives and content at least 2 weeks prior to the training session to the City for review.

5.15.5 Training Aids

Requirements:

1. The Proposer shall provide trainees' workbooks, training aids (including software and video), and system technical manuals prior to or during the training session at no additional cost.

- 5.15.6 Supplemental Training** **Requirements:**
1. The Proposer shall provide a schedule of costs for additional training beyond the initial training proposed.

- 5.15.7 Restore Equipment** **Requirements:**
1. The Proposer shall restore, repair, or replace any City equipment damaged in training, and restore any hardware or software modified in training.

- 5.15.8 Instructors** **Requirements:**
1. The Proposer shall provide trained and experienced instructor(s), and ensure that they do not perform other duties during the training period that will interrupt instruction.
 2. Instructor will provide a checklist to trainees to evaluate presentation of course materials for effective feedback to the City.

- 5.15.9 Prerequisite to Installation** **Requirements:**
1. The Proposer must provide prerequisite training to City staff prior to the commencement of installations. There will be no installations permitted until after the City's staff is properly trained.

Include/Describe:

2. Briefly describe typical prerequisite training topics and time allotments for training utility staff on the installation, operations and maintenance of your AMI system.

5.16 AMI SYSTEM SUPPORT

- 5.16.1 Initial Support Period** **Requirements:**
1. The Proposer should provide onsite support during the installation period at no additional cost to the City beyond the annual component and software maintenance fees.

- 5.16.2 Extended Support Period** **Requirements:**
1. The Proposer should provide telephone and onsite support for 20 years from the date on which the Proposer completes full-scale

installation.

2. The Proposer shall include in this proposal a schedule of support costs, terms, and conditions.
3. Support shall be renewed at the City's discretion on an annual basis.

5.16.3 Telephone Support

Requirements:

1. The Proposer shall provide trained persons to answer technical questions and guide City employees through the use or diagnosis of the system through a toll-free number.
2. Telephone support shall be available at a minimum from 7:00 a.m. through 4:00 p.m. EST Monday through Friday.
3. Response time to a City telephone query shall be within 30 minutes.

Include/Describe:

4. Indicate telephone support hours proposed.
5. What is the provision for support outside the telephone support hours?
6. Indicate proposed provisions for support.
7. Describe the Proposer's current support operations (number of persons, location, hours, etc.) and any planned additions as a result of this project.

5.16.4 Onsite Support

Requirements:

1. The Proposer shall be required to provide onsite assistance at the request of the City.
2. Onsite support shall include emergency service with a response time of 24 hours (on-call), as well as recurring work to perform preventative maintenance for the collection system.

5.17 INSTALLATION

The Proposer will perform all installations located outside the building and City personnel will perform installations located inside the building. The City will assist on the installation of all communication located on City sites. The Proposer or its subcontractor will install all communication equipment on third party sites, if needed.

- 5.17.1 Installation Schedule Requirements:**
1. The City and the Proposer shall establish an overall schedule for installation of the entire project.
- 5.17.2 The City Project Manager Requirements:**
1. The City will designate an employee or agent who will manage the project on behalf of the City. The function of this Project Manager is to coordinate with the AMI system provider and promote compliance by the provider with the specifications. The designation of a Project Manager shall not relieve the AMI system provider of its full responsibility to comply with the terms of the Contract and/or all plans and specifications.
- 5.17.3 Communication Equipment Installation Acceptance Requirements:**
1. Each installation of communication equipment will be accepted by the City conditioned upon both:
 - Satisfactory inspection by the City
 - Confirmation that meter readings are being received by the HES and that the AMI system is operating in a normal way

5.18 INSTALLATION PROCEDURES

5.18.1 Procedures Approval

The Proposer shall provide detailed installation procedures to the City. The procedures should be designed to optimize the work of the field installers and all other staff working on the project.

The Proposer shall take and submit photos of the as-found meter register, as-left meter register and new MIU serial number for QC; these photos can be submitted on a disc or ftp site.

5.18.2 Procedures Validation Testing

Prior to the commencement of full-scale installation, the Proposer shall install MIUs on one of the City's routes (comprised of approximately 500 meters) following the Proposer's proposed procedures. During this Validation test and for a period not longer than ten (10) business days following it, the City and the Proposer shall evaluate the procedures for public notification, scheduling installations, meter and MIU installation, data transfer to the City's billing system, meter reading over the system, installation data management, and problem resolution, to ensure they are working and effective. The City may require the Proposer to modify any procedures that it deems are deficient or ineffective or otherwise unacceptable to the City. No work will be started on other routes until the AMI system equipment is determined to be working to performance requirements on the test route, the project control procedures and systems are determined to be performing accurately, and the installation procedures have been approved by the City.

5.19 INSTALLATION WORK PLAN

5.19.1 Installation Sequence

The Proposer shall conduct installations by book, or group of books. Book groups should be based on geographic proximity and logistics, and neighborhoods to be determined by the City in discussion with the Proposer.

5.19.2 Work Hours

Proposer shall propose normal work hours, which must be approved by the City. Indicate the number of crews proposed for all installation periods, including evening and weekend times.

5.19.3 Daily Reports

A listing of all installation locations to be visited by Proposer's installers each day shall be electronically transmitted to the City each work day by 8:30 a.m. At the end of each day the Proposer shall electronically transmit to the City information on work performed in a City-approved file format.

5.19.4 Post-Installation Access

For 90 days after the City was notified of a given installation, Proposer must respond to calls from the customer associated with that installation on a 24-hour-per-day basis. Proposer shall be responsible for correcting leaks at the valves, couplings, or service lines that could reasonably be attributed to the meter installation if reported by the City or

customers within 90 days of installation at no additional cost to the City or customer. Describe the procedures for response to customer problems.

5.19.5 Installation Acceptance

Each installation will be accepted by the City conditioned upon:

A) Electronic submission of a list of completed installations containing for that installation the premise ID, address, old and new meter serial numbers, old and new meter readings, MIU serial number, location of meter and MIU, installer's name, and all other information relevant to the installation

B) Successful capture of the scheduled readings for two consecutive days following completion of the installation.

5.20 INSTALLATION SCHEDULING

5.20.1 Customer Notification

Approximately two weeks prior to the commencement of installation on a particular book, proposer shall send approved notices to customers and owners of property on that book indicating the time when installations will occur. Text of all Proposer letters, door hangers, and other communications must be submitted for approved to the City Project manager.

5.20.2 Payment for installation

The proposer shall only be paid for completed and accepted installations (5.19.5).

5.21 WARRANTIES

5.21.1 AMI Component Requirements:

Warranties

1. All MIUs supplied in connection with this proposal shall be guaranteed to be free from defects in workmanship for a period of at least 10 years from the date of installation. Any MIU that fails during this period shall be repaired or replaced at manufacturer's sole cost. MIUs shall be guaranteed against failure for an additional 10 years such that a failed component will be replaced at a 10 percent-per-year pro-rated increasing cost to the City of the original purchase price, or the then currently available purchase price, whichever is less.
2. All Data Collection Units supplied in connection with this proposal shall be guaranteed to be free from defects in workmanship for a period of at least 3 years from the date of installation. Any DCU that

fails during this period shall be repaired or replaced at manufacturer's sole cost and expense.

3. All other AMI system components shall be guaranteed for one (1) year from the date of installation, including parts and labor. The Installation Commencement Date for the project is the date following successful pilot testing, when the Proposer is authorized by the City to begin full-scale production.

**5.21.2 Installation
Warranties**

Requirements:

1. All installation work, including materials used in the installation, performed by the AMI system provider or their third party agent under this contract, shall be guaranteed against defects in workmanship for a period of one (1) year from the date of installation.

**5.21.3 Nonperformance
or Excessive Failures**

Requirements:

1. Should the failure rates exceed the guaranteed maximum expected annual failure rates identified in Section 8, or should the system in its totality substantially fail to perform such that the City cannot reliably use the system for billing, or should the occurrence of erroneous or inaccurate meter readings exceed 20 per thousand per year, then the City may notify the AMI system provider of this condition, whereupon the AMI system provider shall be responsible for promptly restoring the system to its normal level of reliability and accuracy at its sole cost and expense.

5.21.4 Site License

Requirements:

1. Any meter reading equipment (including software) to be provided shall be accompanied, at no separate cost to the City, by a perpetual license to use this equipment in combination with any other meter reading equipment or meters, supplied to the City by any third party, whether or not licensed directly by the manufacturer; provided, however, that such equipment can be demonstrated not to damage or materially compromise the performance of the manufacturer's or supplier's equipment. The site license, as well as all agreements stemming from the proposal, shall not contain any clauses or language

that prevents parties from acknowledging the existence of the site license or the agreements.

6. TECHNICAL PROPOSAL SUBMISSION REQUIREMENTS

The Proposers who desire to be considered to provide the services outlined in this RFP should submit three paper copies of their technical proposal and two electronic copy on a CD or flash drive to the following address:

Brad Stanton, Public Utilities Director
City of Delaware
225 Cherry Street
Delaware, Ohio 43015
bstanton@delawareohio.net

Technical proposals must be received **no later than 12:00 pm (Noon) EST on 17 September 2015**. Any proposals received after the deadline will be returned unopened. The Proposers should obtain a receipt confirming the date and time of delivery.

6.1 EXECUTIVE SUMMARY

The proposal shall include an Executive Summary.

6.2 QUALIFICATIONS

Promotional brochures and other literature should be included separately from the proposal document itself.

6.3 DETAILED TECHNICAL APPROACH

The proposal shall address separately, and in detail, each aspect of the work, including all of the work as defined in Section 5. As part of the technical approach, the Proposer shall include a discussion regarding any proposed exceptions to the scope of services and suggest alternative language.

Nowhere in the technical proposal shall the Proposers give any indication whatsoever regarding their fees for this project. All such information shall exist exclusively in the Cost Proposal Submission.

6.4 REPRESENTATIVE PROJECTS

The Proposer shall provide a list of three water utility installations, each with more than 10,000 endpoints, utilizing the AMI Equipment that is being proposed, commencing after January 1, 2013. This list shall contain the total number of endpoints, percentage completed, date of contract commencement, date of contract completion (actual or expected), and project references, including contact names, phone numbers, and email addresses. Include business partners and subcontractors on each project, if applicable.

6.5 SAMPLE CONTRACT

The Proposer shall provide a sample contract or contract language for the City's review.

6.6 PUBLIC ENGAGEMENT

Proposer shall provide examples of existing public relation materials addressing typical public concerns (e.g. radio frequency, security, rate impacts) and how they have been successfully addressed through proactive customer engagement.

6.7 DISCLAIMER

The City is not responsible for any costs associated with the preparation and submission of proposals, including any costs by the Proposer or its agents incurred as part of the interview and contract negotiation process.

6.8 NON-RESPONSIVE SUBMITTAL

Attempts to circumvent the process by submitting qualification/technical information in the fee proposal shall cause the proposal to be considered non-responsive and may cause it to be excluded from the review process.

7. COST PROPOSAL SUBMISSION

The Cost Proposal WILL BE REQUESTED AFTER THE VENDOR PRESENTATIONS. DO NOT PROVIDE COST WITH THE TECHNICAL PROPOSAL.

Any fee submittals will be subject to negotiation during contract negotiations.

8. FAILURE RATES

The City understands that AMI equipment will fail periodically and wants to be able to respond to failures in an efficient and timely manner. To do so, the City needs to understand how key components fail and their expected maximum failure frequency. The City expects the AMI vendor to have previously performed a Failure Mode and Effect Analysis (FMEA) on all critical components and requests the proposer to summarize those findings and experiences. The Proposer shall indicate the expected life in service of the system components, if other than 20 years. The Proposer shall provide annotation for any underlying assumptions necessary to explain these numbers.

8.1 GUARANTEED MAXIMUM EXPECTED ANNUAL FAILURE RATES

The Proposer shall provide guaranteed maximum failure rates in terms of failures per thousand units per year. Should the guaranteed maximum failure rates be exceeded, the City will incur maintenance costs, loss of savings and productivity, loss of credibility and interruptions in cash flow in excess of reasonable expectations, and may, at its option, declare the system to be non-functioning, and may exercise its rights and seek remedies under 5.21.3 (Nonperformance or Excessive Failures). A failure of either the MIU or the battery is considered a failure and a cause for a field visit by City personnel.

The Proposer shall provide maximum expected failure rates for each of the system components:

- Table F1: Meter Interface Unit Failure Modes and Max Failure Rates
- Table F2: Repeater Failure Modes and Max Failure Rates
- Table F3: Data Collection Unit Failure Modes and Max Failure Rates

9. INVOICE REQUIREMENTS

The AMI System Provider shall submit its invoice for progress payment to the City no later than the close of business on the THIRTIETH (30th) CALENDAR DAY OF THE MONTH following the month for which payment is requested.

The AMI System Provider shall submit one original and two (2) copies of the invoice, as well as an electronic copy in PDF format. Invoices shall be numbered sequentially beginning with the first invoice. Invoices shall include, but not be limited to, a Cover Page, Summary Table, Quantity of Units Accomplished, Specific Units Accomplished, Original Receipts, and other information deemed appropriate by the City or the AMI System Provider. Each approved Change Order to the Contract Documents shall be specifically identified and tracked as part of the invoice.

10. SCHEDULE FOR PROJECT

The City anticipates that the Notice to Proceed for this contract will happen by 01 January 2016. The tentative schedule for the process steps are:

Anticipated AMI Procurement Process

RFP Release Date	11 Aug 2015
Deadline for RFP Questions/Clarification	18 Aug 2015
Responses issued for Questions	21 Aug 2015
Technical Proposals Due	17 Sep 2015
Vendor Presentations (by invitation)	29 Sep 2015
Cost Proposals Due	09 Oct 2015
Vendor Negotiations and Selection	Oct 2015
City Council award contract	Nov 2015
Notice to Proceed (NTP)	01 Jan 2016
Installation Phase	Negotiable

11. PROPOSAL CHECKLIST

The Proposers shall address each of the following areas in their proposal. This page does not need to be submitted with the Proposal.

TECHNICAL PROPOSAL

Executive Summary

Qualifications

Details of Proposed AMI System (per section 5)

Proposed Alternates

Exceptions to Scope

List of Representative Projects

Sample Contract

Customer Engagement Examples

Failure Rate Tables

ATTACHMENT A: WATER TOWER LOCATIONS

The City of Delaware maintains three water tanks at a height of approximately 1,100 feet:

1. SE Highland Water Tower
418 Cheshire Road
Delaware, Ohio 43015

2. West Water Tank
700 London Road
Delaware, Ohio 43015

3. East Water Tank
536 Sunbury Road
Delaware, Ohio 43015

ATTACHMENT B: METER ADDRESSES (FULL POPULATION)