

HENDERSON WATER UTILITY

REQUEST FOR PROPOSALS

**WATER METERS AND
ADVANCED METERING INFRASTRUCTURE**

HENDERSON, KENTUCKY

February 2020



***Henderson Water Utility
Request for Proposals
Water Meters and AMR/AMI***

The Henderson Water Utility is seeking submittals of Requests for Proposals for services related to the procurement of water meters and the installation of Automated Meter Reading or Advanced Metering Infrastructure.

Copies of the RFP which detail the requirements for submittals are available on our web site, Solicitation # 2020-01, at this link:

<http://tinyurl.com/hwu-bids>

Inquiries should be directed to Tom Williams, P.E., HWU General Manager, 270.826.2421. Submittal deadline for responses is 2:00 p.m. Local Time, 18 March 2020.

Ad to run in the Gleaner on 5 February 2020

REQUEST FOR PROPOSALS

The Henderson Water and Sewer Commission of the City of Henderson, Kentucky will receive sealed responses to this Request for Proposals at its office at 111 Fifth Street, Henderson, Kentucky 42420; until Wednesday 18 March 2020 at 2:00 p.m. local time, at which time the bids will be opened and considered for the purchase of the following:

**WATER METERS and
ADVANCED METERING INFRASTRUCTURE
FOR
HENDERSON WATER UTILITY**

REF# 2020 – 01 – WATER METERS and AMI

Information relative to this request may be obtained at the above address of the office of the Henderson Water Utility or at the company website <http://tinyurl.com/hwu-bids>. Questions should be directed to the Purchasing Manager at 270.826.2421.

The Water and Sewer Commission reserves the right to accept or reject any or all proposals in whole or in part and to waive informalities and/or technicalities in the proposals. Conflicts of interest, gratuities, and kickbacks as defined and provided for in K.R. S. 45A.455 are absolutely prohibited.

GENERAL CONDITIONS

1. DEFINITIONS:

As used herein:

- a. The term "solicitation" means Invitations for Bids (IFB) and Requests for Proposals (RFP).
- b. The term "offer" means "bid" or "proposal".
- c. "Bidder" or "Proposer" shall refer to a person or entity responding to an IFB or RFP.
- d. "Non-resident bidder" is defined by KRS 45A-494(3).
- e. "Resident bidder" is defined by KRS 45A-494(2)
- f. "Qualified bidder" means Kentucky Industries for the Blind, Incorporated; any non-profit corporation that furthers the purposes of KRS Chapter 163; or a qualified non-profit agency for individuals with severe disabilities as described in KRS 45A.465(3)

2. PREPARATION OF OFFERS:

- a. Proposers shall examine the specifications, schedule, and all instructions. Failure to do so shall be at the Proposers' risk.
- b. Offers shall set forth full, accurate, and complete information as required by the solicitation. Offers that contain a Proposer's own special terms and conditions in conflict with the terms of the solicitation or state statutes and regulations may be rejected.
- c. Each proposal shall furnish the information required by the solicitation on the forms included herein. Sign the solicitation in ink and type or print in ink name, firm, address, telephone number, and date. Erasures or other changes shall be initialed in ink by the person signing the offer. Approved electronic format may also be accepted.
- d. Any explanation or statement which the vendor wishes to make concerning the proposal shall be written separately and independently of the proposal or bid, attached to the bid form, and placed in the envelope with the proposal. Any such statement or explanation must refer to the proposal submitted and shall also be signed by the vendor.
- e. Unit price for each unit offered shall be shown and such price shall include packing and delivery to HWU unless otherwise specified within the Bid Form. Fuel Surcharges and any other miscellaneous charges should be included in the unit price. A total shall be entered in the amount column of the schedule for each item offered. In case of discrepancy between a unit price and extended price, the unit price shall govern.
- f. Cash discounts shall not be considered in making the award of the contract. However, if vendor offers discounts for payment net 10 or net 15, please indicate so in your submittal.
- g. Trade discounts shall be deducted by the vendor in calculating the unit price quoted, unless otherwise stated.
- h. Offers for supplies or services other than those specified shall not be considered unless authorized by the solicitation.
- i. Time, if stated as a number of days, shall include Saturdays, Sundays, and Holidays. One day is 24 hours; One week is 7 days; One month is 28 days.

3. CLARIFICATION – REQUEST AND RESPONSE

Any explanation desired by a proposer regarding the meaning or interpretation of the solicitation specifications, etc., **shall be requested in writing to the Purchasing Manager as outlined in the Bid Form**. Oral explanations or instructions given before the award of the contract shall not be binding. Any clarifying information given to a prospective Proposer concerning a solicitation shall be furnished to all prospective Proposers through a clarification posted on the HWU website, or as an amendment of the solicitation (if there was a change in the scope of the bid), which would also be posted on the HWU website and would also include an amended bid form.

VENDORS WILL NOT BE NOTIFIED INDIVIDUALLY OF CLARIFICATIONS/AMMEDNMENTS TO THE RFP.

All information pertaining to corrections, interpretations, or clarifications to the RFP will be posted on the HWU website <http://tinyurl.com/hwu-bids>.

4. ACKNOWLEDGEMENT OF ADDENDA TO SOLICITATIONS:

Receipt of an addendum to a solicitation shall be acknowledged by the Proposer and the Proposal shall be submitted on the bid form which is noted as AMENDED. Verbal acknowledgement shall not be accepted. Failure to acknowledge addenda may cause the Proposal to be considered non-responsive.

5. SUBMISSION OF OFFERS:

- a. Offers and modifications thereof shall be enclosed in sealed envelopes and addressed to the office specified in the solicitation. The Proposer shall show the opening hour and date specified in the solicitation, the solicitation number, and the name and address of the Proposer on the face of the envelope(s).
- b. Telegraphic or facsimile offers shall not be considered unless authorized by the solicitation; however, offers may be modified by telegraphic or facsimile notice, if such notice is received prior to the hour and date specified for receipt. Telegraphic or facsimile modifications shall not mention unit prices or total price; but shall only refer to percentage change or numerical change (i.e., reduce unit price of item 1 by \$1.00).
- c. Samples of items, if required, shall be submitted within the time specified, and not unless otherwise specified, at no expense to HWU. If not destroyed by testing, samples shall be returned at the Proposer's request and expense, unless otherwise specified by the solicitation. Unless a request for their return is made within thirty (30) days of award of contract, all samples shall become property of HWU.

6. MODIFICATION OR WITHDRAWL OF OFFERS:

Offers may be modified or withdrawn by written notice received prior to the exact hour and date specified for receipt of offers. An offer may also be withdrawn in person by a Proposer or his authorized representative, if his identity is made known and he signs a receipt for the offer, but only if the withdrawal is made prior to the exact hour and date set for receipt of offers. Withdrawn proposals may be resubmitted, but only in the manner in which the proposal was originally submitted.

7. LATE OFFERS AND MODIFICATIONS:

Offers and modifications of Proposers received at the office designated in the solicitation after the exact hour and date specified for receipt shall not be considered for an award of contract, unless:

- a. No bids are received other than the late bid; and
- b. The need of an agency is determined to preclude the re-solicitation of bids.

8. MULTIPLE AND ALTERNATE BIDS:

Proposers shall submit one response only to the solicitation and shall not propose more than one price, model, and brand for each bid item. Multiple or alternate bids offering more than one bid price in total (or by line-item) shall be cause for rejection unless specifically called for in special provisions provided elsewhere in the solicitation.

9. AWARD OF CONTRACT:

- a. Criteria for award are listed in the "Evaluation Criteria" section below.

Best Value scoring is subject to **Reciprocal preference for Kentucky resident bidders and Preferences for a Qualified Bidder or the Department of Corrections, Division of Prison Industries (KAR 200 5:410)**. To receive these preferences, qualified vendors **MUST** return the completed forms with the bid document.

- b. The awarded contract shall agree to offer the prices and the terms and conditions offered herein to any municipality, county or state government; public utility; non-profit hospital; educational institute; special governmental agency; and non-profit corporation performing governmental functions in Western Kentucky area who wish to participate in a cooperative purchase program with Henderson Water Utility. Other agencies will be responsible for entering into separate agreements with the Contract and for all payments thereunder.
- c. The bidder, if awarded an order or contract, agrees to protect, defend, and save harmless the Water and Sewer Commission of the City of Henderson and the Henderson Water Utility against any demand for the use of any patented materials, process, article, or device, that may enter into the manufacture, construction, or form a part of the work covered by either order or contract and he further agrees to indemnify and save harmless the Water and Sewer Commission of the City of Henderson and the Henderson Water Utility from suits or actions of every nature and description brought against it, for or on account of any injuries or damages received or sustained by any party or parties, by or from any of the acts of the contractor, his servants, or agents.

A written award mailed (or otherwise furnished) to the successful bidder(s) within the time for acceptance specified in the offer shall be deemed to result in a contract without further actions by either party.

10. Kentucky Preference Laws

The scoring of bids/proposals is subject to **Reciprocal preference for Kentucky resident bidders.**

Reciprocal preference for Kentucky resident bidders

KRS 45A.490 Definitions for KRS 45A.490 to 45A.494.

As used in KRS 45A.490 to 45A.494:

- (1) "Contract" means any agreement of a public agency, including grants and orders, for the purchase or disposal of supplies, services, construction, or any other item; and
- (2) "Public agency" has the same meaning as in KRS 61.805.

KRS 45A.492 Legislative declarations.

The General Assembly declares:

- (1) A public purpose of the Commonwealth is served by providing preference to Kentucky residents in contracts by public agencies; and
- (2) Providing preference to Kentucky residents equalizes the competition with other states that provide preference to their residents.

KRS 45A.494 Reciprocal preference to be given by public agencies to resident bidders -- List of states -- Administrative regulations.

- (1) Prior to a contract being awarded to the lowest responsible and responsive bidder on a contract by a public agency, a resident bidder of the Commonwealth shall be given a preference against a nonresident bidder registered in any state that gives or requires a preference to bidders from that state. The preference shall be equal to the preference given or required by the state of the nonresident bidder.
- (2) A resident bidder is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:
 - (a) Is authorized to transact business in the Commonwealth; and
 - (b) Has for one (1) year prior to and through the date of the advertisement, filed Kentucky corporate income taxes, made payments to the Kentucky unemployment insurance fund established in KRS 341.490, and maintained a Kentucky workers' compensation policy in effect.
- (3) A nonresident bidder is an individual, partnership, association, corporation, or other business entity that does not meet the requirements of subsection (2) of this section.
- (4) If a procurement determination results in a tie between a resident bidder and a nonresident bidder, preference shall be given to the resident bidder.
- (5) This section shall apply to all contracts funded or controlled in whole or in part by a public agency.
- (6) The Finance and Administration Cabinet shall maintain a list of states that give to or require a preference for their own resident bidders, including details of the preference given to such bidders, to be used by public agencies in determining resident bidder preferences. The cabinet shall also promulgate administrative regulations in accordance with KRS Chapter 13A establishing the procedure by which the preferences required by this section shall be given.
- (7) The preference for resident bidders shall not be given if the preference conflicts with federal law.
- (8) Any public agency soliciting or advertising for bids for contracts shall make KRS 45A.490 to 45A.494 part of the solicitation or advertisement for bids.

The reciprocal preference as described in KRS 45A.490-494 above shall be applied in accordance with 200 KAR 5:400.

Determining the residency of a bidder for purposes of applying a reciprocal preference

Any individual, partnership, association, corporation, or other business entity claiming resident bidder status shall submit along with its response the attached Required Affidavit for Bidders, Offerors, and Contractors Claiming Resident Bidder Status. The BIDDING AGENCY reserves the right to request documentation supporting a bidder's claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

A nonresident bidder shall submit, along with its response, its certificate of authority to transact business in the Commonwealth as filed with the Commonwealth of Kentucky, Secretary of State. The location of the principal office identified therein shall be deemed the state of residency for that bidder. If the bidder is not required by law to obtain said certificate, the state of residency for that bidder shall be deemed to be that which is identified in its mailing address as provided in its bid.

11. KENTUCKY / INDIANA SALES AND USE TAXES:

Sales of tangible personal property or services to HWU are not subject to state sales or use taxes. Henderson Water Utility's Kentucky/Indiana sales tax exemption number will be provided to the successful Proposer.

Henderson Water Utilities sales tax exemption status may not be used by the Proposer to acquire materials or supplies on a sales-tax-exempt basis. Any sales taxes or other taxes incurred by the Proposer remain the responsibility of the Proposer. It is assumed that all such costs incurred by any Proposer are included in his price.

12. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS:

Any contracts or orders placed because of the offer shall be governed by the laws of the Commonwealth of Kentucky. The rights and obligations of the parties thereto shall be determined in accordance with these laws. Any offer conditioned upon governance by the laws of a state other than Kentucky shall not be considered.

Conflicts of interest, gratuities, and kickbacks as defined and provided for in K.R.S. 45A.455 are absolutely prohibited. Proposer acknowledges and certifies by submission of his bid that all the provisions of K.R.S. 45A.455 are complied with fully.

A City of Henderson business license is required for all vendors servicing accounts within the City of Henderson. A Henderson County business license is required for all vendors servicing accounts at HWU locations outside the City of Henderson but in Henderson County. Information regarding the business license can be obtained by calling the business license office at 270-831-1200. Vendors will be allowed ten (10) days after award of bid to submit a copy of their current business license(s) to the Purchasing Manager.

13. CONFLICTS OF INTEREST – Gratuities and kickbacks – Use of confidential information (KRS 45A.455)

- a. It shall be a breach of ethical standards for any employee with procurement authority to participate directly in any proceeding or application; request for ruling or other determination; claim or controversy; or other particular matter pertaining to any contract, or subcontract, and any solicitation or proposal therefore, in which to his knowledge:
 - i) He, or any member of his immediate family has a financial interest therein; or
 - ii) A business or organization in which he or any member of his immediate family has a financial interest as an officer, director, trustee, partner, or employee, is a party; or

- iii) Any other person, business, or organization with whom he or any member of his immediate family is negotiating or has an arrangement concerning prospective employment is a party. Direct or indirect participation shall include but not be limited to involvement through decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing or in any other advisory capacity.
- b. It shall be a breach of ethical standards for any person to offer, give, or agree to give any employee or former employee, or for any employee or former employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment, in connection with any decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling or other determination, claim or controversy, or other particular matter, pertaining to any contract or subcontract and any solicitation or proposal therefore.
- c. It is a breach of ethical standards for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.
- d. The prohibition against conflicts of interest and gratuities and kickbacks shall be conspicuously set forth in every local public agency written contract and solicitation therefore.
- e. It shall be a breach of ethical standards for any public employee or former employee knowingly to use confidential information for his actual or anticipated personal gain, or the actual or anticipated personal gain of any other person.

14. CONTRACT MODIFICATIONS:

During the period of the contract, no modification shall be permitted in any of its conditions and specifications unless the contractor receives written approval from the Purchasing Manager.

If the contractor finds at any time that existing conditions make modification in requirements necessary, he shall promptly report such matter to the Purchasing Manager for consideration and decision. All contract modifications shall be subject to the provisions of 200 KAR 5:311.

15. SELLER'S INVOICES:

Invoices shall be prepared and transmitted to HWU at the provided address.

HWU is a municipality and invoices are processed for payment not less than once per month. Regardless of any stipulations attached by vendor, HWU terms are net 30 after:

- a. Receipt of appropriately documented invoices.
- b. The invoice, when received, must have the correct pricing, or have a credit memo issued. HWU will not process any invoices "short-paid".

16. PRECEDENCE OF PROVISIONS:

In the event of an inconsistency between provisions of the solicitation, the inconsistency shall be resolved by giving precedence in the following order:

- a. Addenda and Clarifications issued prior to bidding;

- b. Solicitation Instructions and Conditions;
- c. General Conditions;
- d. other provisions of the contract, whether incorporated by reference or otherwise; and
- e. The detailed specifications.

17. INSURANCE:

Contractors, including all Subcontractors, furnishing labor, and\or equipment under this requirement shall carry the following insurance in addition to all insurance required by law. Valid certificates of insurance shall be furnished to the HWU prior to the Contractor causing any work to begin.

A. Workman’s Compensation	Statutory
B. Broad Form Comprehensive General Liability including coverage for Bodily Injury, Personal Injury, Broad Form Property Damage (No deductible clauses are acceptable for these coverages), and Independent Contractors (Subcontractors)	\$1,000,000 Combined Single Limit
C. Comprehensive Automobile Liability, including Hired Car and Employer’s Non-Ownership Liability Coverage.	\$1,000,000 Combined Single Limit
D. Endorsement naming as additional insured “The Henderson Water and Sewer Commission, its elected and appointed officials, employees, agents, boards, consultants, assigns, volunteers and successors in interest.”	
E. Endorsement that Contractor’s insurance coverage shall be primary insurance as respects HWU. Any insurance or self-insurance maintained by HWU shall be separate from Consultants insurance and shall not contribute with it.	
F. Endorsement that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days’ prior written notice by certified mail, return receipt requested, to Henderson Water Utility, 111 Fifth Street, Henderson, KY 42420.	

18. INDEMNIFICATION & ASSIGNMENT:

The successful proposer shall defend, indemnify, and hold harmless HWU, its officers, directors, agents and employees from and against all claims, damages, losses, and expenses, including attorneys’ fees, arising out of negligent acts, errors or omissions or willful misconduct in the performance of this project and those of its agents or employees. The successful proposer is not obligated to indemnify HWU in any manner whatsoever for HWU’s own negligence.

Any attempt by Proposer to assign or otherwise transfer any interest in this agreement without the prior written consent of HWU shall be void.

19. GOVERNING LAW:

Should there be any contract/agreement acquired, Proposer agrees that it shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. No action involving this contract agreement may be brought except in a court of competent jurisdiction located in Henderson County.

20. COMPLIANCE WITH LAW

Proposer shall comply with all applicable federal, state, and local statutes, regulations, ordinances, or other legal requirements which apply. Before commencing with the performance of any work under this RFP, the Proposer shall obtain all necessary permits and licenses as may be necessary. Before and during the progress of work under this RFP, the Proposer shall give all notice and comply with all the laws, ordinances, rules and regulations of every kind and nature now or hereafter in effect promulgated by any Federal, State, County, or other Governmental Authority, relating to the performance of work under this RFP. If the Proposer performs any work that is contrary to any such law, ordinance, rule, or regulation, he shall bear all the costs arising therefrom. Proposer agrees to obtain all appropriate business licenses and provide a copy to HWU prior to commencing work.

21. MISCELLANEOUS PROVISIONS

Patent Indemnity: Proposer agrees to indemnify and hold HWU harmless from any claim involving patent infringement or copyrights on good supplied.

Penalties: In case of default by Proposer, HWU may procure the products and/or services from other sources and may deduct from any unpaid balance due Proposer or collect against the bond, security, or surety for the amount of excess costs so paid.

Intellectual Property: Any drawings, written reports or other works made by Proposer shall be considered works for hire and become the property of HWU. Any such works shall not be stamped with the Proposer's proprietary markings.

No Third-Party Rights: This agreement is made for the benefit of HWU and Proposer, not for any outside party.

Non-Endorsement: As a result of the selection of a Proposer to supply services, HWU is neither endorsing nor suggesting that the Proposer's services are the best or only solution. Proposer agrees to make no reference to HWU in any literature, promotional material, brochures, sales presentations, or the like, without the express written consent of HWU.

Severability: If a competent court or arbitrator holds any of the terms, covenants, provisions and agreements contained herein invalid, illegal or unenforceable, this agreement shall be interpreted as if such invalid terms, covenants, provisions, or agreements were not contained herein and the remaining provisions shall be valid and enforceable.

Water Meter and Advanced Metering Infrastructure Proposals

Henderson Water Utility (HWU) intends to acquire an AMR / AMI system, and related products, software, and services (collectively, the “system”), for all its approximately 10,500 water meters. HWU plans installation of new water meters and an AMR/AMI System throughout its North service area over a period of 4 to 5 years. Decision to purchase AMR vs. AMI will be based on cost and availability of funds. The basic components of the AMR/AMI system sought by HWU may include the following:

- Cold water meters with AMR / AMI-compatible registers to replace existing meters.
- Endpoints (meter interface units, or “MIUs”) capable of encoding, storing, and transmitting meter reading and other data, such as tampering alerts.
- If an AMR system is purchased, reading devices and software necessary for drive-by meter reading and head-end management of readings, so that existing City billing software can generate bills from the AMR meter reads.
- If an AMI system is purchased, head-end computer hardware and software required to collect, store, and manage the data which is transferred through the AMI system; a meter data management system; the design, installation and testing of acceptable complete and working information interfaces between the system installation, head-end control, meter data management and presentation software/hardware.
- If an AMI system is purchased, fixed data collection units, including the communications links between those collection units and the system control components, capable of collecting reads and alert information from the MIUs and transmitting it to a head-end computer system.
- Endpoints, meters, and data collection units are to be installed by HWU personnel.
- Handheld devices and software necessary to program and/or initialize the MIU and collect installation data.
- All related documentation, including technical manuals and operating procedures.
- Training of HWU’s employees in meter and MIU installation, field maintenance, diagnosis and troubleshooting, system use, and operation and maintenance.
- Shipping the inventory of equipment during project deployment. HWU will designate a delivery point for items included in this project.
- Provision of all necessary radio licenses, cell technology, firmware, third party software or operating systems to ensure a complete and working system.
- Satisfactory testing of all software, hardware, and procedures prior to the deployment of the selected system, and satisfactory testing at the completion of the project or at major milestones.
- Coordination, scheduling, communications, and documentation for installation services.
- Project management to ensure all products and services are coordinated.
- HWU may consider the following optional services:
 - A customer web portal to display interval consumption data and other information.
 - Hosting of the meter data management system and customer web portals.
 - Monitoring of the data collection network and MIUs.
 - Operation and maintenance of the data collection network.
 - Information interface with the Utility’s work order/asset management system (Cityworks).

Vendors of meter data management systems and customer consumption web portals are invited to submit proposals for products and services covering only those parts of the system. However, such proposals must comply with all relevant sections of the Technical Requirements portion of this RFP and all the requirements of all the other sections.

HWU may, at its discretion, purchase an AMR system that provides the ability to perform “drive-by” reads initially, but that can be upgraded to an AMI “smart grid” system in the future.

Submit one (1) paper copy of the response in a sealed envelope Plainly marked “WATER METER & AMI PROJECT” to the following:

Henderson Water Utility (HWU)
111 Fifth Street
Henderson KY 42420
Attn: Purchasing Manager

All responses must be complete and accurate. The Henderson Water Utility (HWU) will review and evaluate only those responses received in the formats identified above to ascertain which proposal is most advantageous to HWU. HWU may conduct additional interviews and/or negotiations with selected proposers.

HWU assumes no responsibility for any costs incurred by any respondent to this RFP. All costs are entirely the responsibility of the respondent. Your good faith response to the requested information is solicited without the creation of any obligation between parties, explicit or implied. HWU will make a thorough investigation and evaluation of all responses.

The following terms and definitions are used herein:

AMI Compatible Meter – A meter that requires an encoder type register with a connector ready to connect to an MIU.

AMI Ready Meter – A meter that has a register and connector ready to connect to an MIU.

ANSI – American National Standards Institute

City – the City of Henderson, Kentucky

DCU – Data collection unit (fixed)

FDCU – Fixed Network Data Collection Unit

GIS – Geographical Information System

GPS – Global Positioning System

HWU – the Henderson Water Utility

Latency – the total elapsed time from an event (e.g., meter interrogation or tamper) occurring until the event is available on the head-end control computer

MDCU – Mobile Data Collection Unit

MDMS - Meter Data Management System

MIU – Meter Interface Unit (Endpoint)

Proposer – The firm or team (under the direction of the firm that serves as prime contractor) responding to this Request for Proposal.

PSI – Pounds per Square Inch

Portable Interrogator - An AMI-capable handheld meter reading device supplied by Proposer designed and used to obtain meter readings, program MIUs or perform diagnostics.

Part 1 - Proposal Format:

This section describes the format to use in responding to the RFP.

Section 1.0 - Executive Summary

- Title Page: list the RFP Title, the name of the Proposer, managing office address, telephone number, name and email of the contact person, and the date.
- Agreement to Participate – See Attachment A.
- The scope of the Proposed Solution. Indicate your understanding of the scope of work. Make a positive commitment to provide equipment and perform the required work within the time requested. Identify the AMR/AMI system being proposed. Also, give the name(s) of the person(s) who will be authorized to make representation for your organization, their title, telephone number, and e-mail address. Limit response to four (4) pages.

Section 2.0 - Company Overview & Management Section

- Description of corporate qualifications, including industry experience, organizational structure, and a statement regarding financial soundness.
- Indicate specific committed project team, percent dedication to the project, onsite personnel, and any other pertinent data, relative to the unique capabilities of the Proposer to meet HWU's needs. Provide project management organization chart showing those functions (including individuals where possible) which make up the project team. Provide a description of the Proposer's approach and understanding of the work required, specific to HWU. Include proposed project schedule. Limit to ten (10) pages.

Section 3.0 – Technical Proposal

- Please describe the technical aspects of your product and/or service offering.
- Describe clearly and concisely the functional and performance benefits of their offering.
- For each section of Part 5 - Technical Requirements, below, list all exceptions and non-compliance responses to the detailed specifications in a clearly delineated, separate, section.
- Limit technical proposal to one hundred (100) pages.

Section 4.0 – Price Proposal

- Please provide Pricing information. Include pricing for alternate solutions, and add-on options that may be available.
- This pricing should include all costs of all Water Meters, System Hardware, Installation, Software, Service, Software Licensing, Hosted Services, Maintenance Agreement and Licensing. All pricing must be by line item with quantities and per unit pricing stipulated.

Section 5.0 – Appendices

- Include relevant material needed to aid with the understanding of the proposal content. This can include additional detail that will enhance your response to specific questions in Specific System Requirements, and Service and Support Requirements, as well as additional information that you believe will aid HWU's evaluation of proposals but was not specifically solicited. This may also include Terms & Conditions, warranty, etc.

Tentative Proposal Selection Schedule

<i>Activity</i>	<i>Date</i>
Issue RFP	5 February 2020
RFP Questions to HWU – Deadline	26 February 2020
Proposals Due	18 March 2020, 2:00 p.m.
Short-listed Proposers Notified	8 April 2020
Finalize Preferred Proposal	On or about 15 April 2020
Contract Finalized	On or about 1 May 2020

Confidentiality

HWU is a public entity as defined by state law and, as such, is subject to the Kentucky Open Records Act (KRS 61.870 to KRS 61.884). Under this Act, all HWU records are public (unless otherwise declared by law to be confidential), subject to inspection and may be copied by any person. Any privileged or confidential information in the Proposer’s proposal shall be specifically identified as such by the Proposer. If the Proposer considers any information to be confidential, the Proposer shall agree to indemnify HWU for any and all attorney fees HWU may incur in defending the withholding of such information. Should HWU receive a request for the release of any information in the Proposer’s proposal in accordance with the open records act, HWU will review the proposal, giving consideration to the portions that the Proposer indicated contained trade secrets, privileged information, or confidential commercial or financial data, and may release only that information which has not been identified as confidential. Proposers will be notified of any open records requests prior to the release of such information. If, in the opinion of HWU’s legal counsel, HWU is nonetheless compelled to disclose any portion of such information to anyone or else stand liable for contempt or suffer censure or penalty, HWU may disclose such information without liability.

Part 2 - Evaluation Criteria:

The vendor response to this RFP is intended to help HWU select a vendor with the technology and support services that provide the best solution for its Smart Grid needs. Proposals will be evaluated by a committee of HWU employees. The Evaluation Committee will each score the proposals on a scale of 0 to 10 on the weighted criterion listed in the table below.

Weight	Evaluation Criteria
25	Total Life Cycle Cost: Total cost to deploy proposed solution. Total present value of initial and ongoing costs to acquire, install, operate, repair, and maintain the system. Lowest life-cycle cost.
25	Meets or exceeds technical requirements: Degree to which proposed system addresses technical specifications, performance requirements, and desirable features (exclusive of IT integration). Versatility and projected lifespan of proposed technology. Intrinsic security to provide confidentiality and data integrity.
20	Ease of Operation and Maintenance: The ease of ongoing use and maintenance of the system’s hardware components, including component installation, programming, software upgrades and repair, effective use of the software, and diagnostic and reporting capabilities.
20	Warranties and Support: period and extent of warranty coverage on meter reading system components. Overall system performance guarantees. Protection in the event of excessive failures. How the Proposer will deliver maintenance and operational support, as well as training. Response modes and times. Vendor is financially stable.
10	Project/Implementation Plan: proposed procedures and policies for project management, QA/QC, security, safety, training, customer contact, scheduling appointments, troubleshooting and problem solving. IT Integration. Ability to keep to schedule. Five plus years of AMR / AMI experience. Simplicity and ease of installation. Availability and delivery schedule.

References

AMI/AMR Project References: Proposer shall provide a list of water utility projects of size comparable to HWU of the AMI Equipment it is proposing that have commenced within the last three years. This list shall contain the total number of units; percentage completed to date; and contact information, including contact names, phone numbers, and email addresses.

AMI/AMR Equipment References: Proposer shall provide additional information for three (3) references, if available, from utilities of size and circumstances most comparable to HWU, including contact names, phone numbers, and email addresses. To the greatest extent possible, cite projects using the AMI equipment, meters and installation contractors proposed in this proposal, and where the implementation has been substantially completed within the last three (3) years.

Include the following contract information: project beginning and ending dates, major subcontractors and suppliers, total number of units contracted, and percentage of total units that have been installed to date. Include description of Proposer’s scope of work on each project.

Meter References: Proposer shall provide a list of utilities which have purchased at least 15,000 of the

same make and model of meter that it is proposing for HWU within the last three years, including contact names, phone numbers, and email addresses, and the number of meters purchased.

Post-Submittal Information and Questions

Proposers may be required to submit additional or supplemental information to HWU, if necessary, for HWU to determine whether the Proposer(s) meet all the standards outlined.

All questions and requests for specificity must be answered. 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, Proposer must explicitly affirm that the system or component meets that requirement. Simply taking exception to a requirement without providing an explanation, and where appropriate alternative specifications and language, shall be deemed non-responsive, and may result in rejection of the proposal.

Requesting a discussion of a requirement or provision of this RFP without providing explicit alternative language may also be deemed non-responsive and may result in rejection of the proposal.

Proposers shall be required to submit, in writing, the names, addresses and telephone numbers of any proposed major subcontractors or equipment manufacturers, and to submit other material information relative to proposed major subcontractors or equipment manufacturers.

HWU reserves the right to cancel the Request for Proposal or to reject any or all responses to the Request for Proposal, or parts thereof, if it determines, in its sole discretion, that such cancellation or rejection is in the best interest of HWU.

Bonds and Insurance

See Section 17 of the General Conditions for Insurance requirements.

Bonds are not required for this project.

Part 3 - Scope of Work:

The **City of Henderson** is a community of approximately twenty-eight thousand people located on the Ohio River in northwestern Kentucky. The city owns the **Henderson Water Utility**, constituted as a separate entity and providing direct water, wastewater and stormwater services to approximately 11,000 metered customer accounts spread over the City, some areas outside the City adjacent to the City Limits, and customers served by a separate “South” water and wastewater system based around plants near Robards, Kentucky. Consumer population base is approximately 47,500.

HWU owns 6 elevated water towers and 3 ground storage tanks. Six of these tanks are located within the North system, three are in the South system. Tank elevations (top, MSL) and street addresses are listed in Attachment B. The City also owns a 260-foot radio tower located at the Municipal Services Center, 1449 Corporate Court.

HWU is issuing this RFP to identify the solution that best addresses our Smart Grid System requirements and objectives. After RFP responses have been received and evaluated, one or more proposers may be chosen for contract negotiations for project implementation.

HWU intends to have the AMR/AMI meter deployment started by 1 July 2020 and deployed and operational in stages over the next 5 years as funds are available. The approximate number of meters to be deployed each year is:

Fiscal Year	Number of Meters to be Installed
FY 2019 – FY 2020	1,000
FY 2020 – FY 2021	2,000
FY 2021-22 thru 2024-25	2,000 annually
Fiscal Years run from July 1 to June 30.	

Vendors should only include equipment and system capabilities that will meet the operational deadline. If projected additional revenue exceeds expectations, this schedule may be accelerated.

HWU prefers to own all the network equipment and be the FCC license holder of all frequencies associated with the proposed system.

Part 4 - Objectives:

Our AMR / AMI project objectives include:

- 1) Increased customer service:
 - Provide scheduled interval reads and accurate billing
 - Provide on-request reads
 - Leak detection features
 - Fraud/theft detection
 - Possible inclusion of a customer portal
- 2) Reduced total cost of ownership:
 - Improve meter reading accuracy, reduce hazards associated with meter reading
 - Monitor and report losses due to tampering or leaks
 - Reduce implementation costs by installing AMR system that can be upgraded to AMI in the future
- 3) Improved operation of the Distribution System through data collection:
 - Temperature monitoring
 - Pressure monitoring
 - Peak water demand
 - Demand measurement
- 4) End to end security:
 - Provide enhanced encryption and authentication
 - Role-based access to data
 - Provide audit logging and reporting
- 5) Protection against obsolescence, and support for interoperability
 - Two-way communications from head-end system to and from meter point using a common platform for the Water Distribution System
 - Provide support for multiple concurrent communications options
 - Provide scalability for additional bandwidth and capacity
 - Provide remote firmware upgrades
- 6) Flexibility in implementation, to include an option to install AMR (drive-by) system initially, moving to an AMI (smart grid) system later. Also, options to spread implementation over several fiscal cycles.

Part 5 - Technical Requirements:

Respondents must reply to each requirement listed below. State whether your proposed solution meets the requirement and if so, describe how. If not, describe why this requirement is not necessary or applicable to your solution. Respond to each section heading and subparagraph, or state “Meets all requirements”.

1) Overall System Characteristics

- Describe the system architecture and include how the proposed solution includes principles to avoid obsolescence and provide flexibility in the future. Provide a schematic depicting the system’s components and configuration. Provide a brief overview of the architecture and normal functioning of the system, for both the AMR and AMI options.
- All meters supplied shall have integral data communication using dual band radios and/or cellular technology, with the ability to communicate to data collection units on HWU water towers or City-owned radio tower if an AMI system is chosen, or the ability to communicate to mobile meter reading equipment, if an AMR solution is chosen.
- Describe the system’s support for redundancy.
- HWU intends to completely replace all meters over a 5-year period as funds are available. Describe the process for accommodating this need, including phased installation of data collectors, and the impact of multi-year acquisition on pricing.

2) Communications

2.1 Time Synchronization, System Commands, Meter Reading Interval, On-Demand Reading

- a) The system shall provide two-way communications with all Endpoints/Meter Interface Units (MIUs).
- b) Describe how system will provide communications with temperature and pressure sensors.
- c) Indicate if meter readings from MIU’s are time-synchronized (e.g., meters are all read at same time). If so, explain how this is achieved and how the clock in the MIU is set. Indicate the accuracy of synchronization (e.g., +/-15 seconds).
- d) Describe other commands or information that may be sent to the MIU from the head-end control computer, data collection unit, or mobile data collection unit in the course of the normal operation and maintenance of the system.
- e) Indicate the default interval at which the MIU interrogates the meter, whether the interval can be changed for individual meters, and the settable range of this interval. Describe the procedure required to change the interval or reset it. Indicate if changing the interval can be accomplished over-the-air from the head-end software. Indicate if this can be done for a selected group of MIUs at the same time. If changing the interval will change the expected MIU battery life, provide specific parameters or examples (e.g., “15-minute interval will reduce expected battery life by X”).
- f) Indicate default interval for transmitting readings from the MIU to the data collector, and whether the interval can be changed.
- g) Indicate if the system can obtain a real-time read on demand “over-the-air” from the MIU/meter. Describe how readings are taken on demand from a single meter. Indicate the expected time interval between a user’s on-demand reading request and the response.
- h) Describe how system will support remote firmware upgrades.

2.2 Radio Band and Licenses

- a) Indicate what radio frequencies are used for communications with the MIUs, DCUs, and/or Mobile Data Collection Units. Indicate what FCC license(s), if any, will be required. Include the cost of licenses in the price schedule as part of the Price Proposal.
- b) Proposer shall be responsible for obtaining all necessary licenses on behalf of HWU and in HWU's name. Frequency licenses shall be assigned to HWU. Indicate the expected length of time to acquire licenses. HWU must be provided an irrevocable right to use licenses for as long as the system is in service. Indicate charges for this right, if any, in the pricing proposal.
- c) If cellular technology is used for communications, indicate all initial and/or recurring costs which will be the responsibility of HWU. Please indicate which communication technology (i.e. RF, cellular, etc.) is used by each component as applicable.
- d) To confirm communication with the meter, an acknowledgement of receipt of data must be made by the MSDS, and in the absence of acknowledgement by MSDS of receipt of data, meter shall store the last values for up to 24 hours.

2.3 Protection from Interference

- a) Describe procedures that will be used to regularly check for, identify and remove interlopers on licensed frequencies, or overpowered signals on unlicensed frequencies. Indicate who will be responsible for this effort. If HWU, describe Proposer assistance in this effort.
- b) Meters shall be upgradeable and shall receive firmware via messaging from the server or Mobile Data Collection unit. Requirements to physically connect to a meter as a secondary method shall be allowed. All data must be synchronized with the MSDS with every communication for data accuracy.

2.4 Data Transmission Accuracy, Integrity and Security; Tamper Detection

- a) Describe measures, such as encryption and error checking, used to transmit data from MIU to DCU, and DCU to control computer, to ensure data accuracy, integrity, and security.
- b) Describe how missing reads may be recovered/retransmitted from the endpoint including the ability to automatically backfill missing interval data daily.
- c) Describe any security certifications currently held related to the proposed solution.
- d) Indicate the frequency of security penetration tests conducted.
- e) Provide a list of the tamper conditions that will be provided to the system operator (e.g., cut wire, meter register separation, tilting of meter). For each, indicate whether the alarm is transmitted instantly or with the next MIU transmission. Indicate the number of times or over what period will a tamper indication be provided to the system operator before it is automatically cancelled.
- e) Indicate whether the tamper indication can or must be reset or reprogrammed by the system operator or field service technician, and how this is accomplished.

2.5 Leak and High Flow Detection

- a) Briefly describe the system's approach to detecting (a) continuous flow (that is, consecutive non-zero intervals), (b) low flow leaks (many but not all consecutive intervals non-zero), and (c) abnormally high flow ("broken pipe"). Indicate if the threshold levels for reporting of these anomalies are definable by HWU, and if so, for individual customers or groups of meters.
- b) List other conditions (reverse flow, etc.) the system can detect. Describe any additional capabilities of the proposed system not already described above, such as remote shut-off or turn-on, pressure monitoring, temperature monitoring, or chemical concentration monitoring. Describe specific third-party sensors or controllers that are supported (such as Acoustic Leak Detection) and their capabilities. Include current deployments of such devices, including the number of units installed, in the References section of the proposal.

- c) Describe the system's ability to add instrumentation at non-meter locations (pressure, temperature, chemical, leak, etc.) and to collect distribution system performance information and transmit the information from such endpoints. Indicate whether additional software would be required for any additional feature listed.

2.6 Read Success Rate

- a) For a system using DCUs, Proposer shall install enough network devices (i.e., data collectors, repeaters, boosters, etc.) to obtain:
 - i. At least one register reading for each meter/MIU within a three-day interval from at least 99.5 percent of all meters on which the system is installed;
 - ii. At least one (1) meter register read per day from at least 97.5 percent of meters on which the system is installed; and
 - iii. At least 95 percent of all readings taken hourly or at more frequent intervals except for meters from which transmissions are blocked by readily identifiable temporary physical barriers beyond the control of HWU or Proposer.

3) System Scalability and Redundancy

- a) Describe the system's ability to scale to accommodate future growth within the city and surrounding area.
- b) Describe the system's ability to add additional utility meter readings (gas & electric).
- c) The system shall be highly scalable and support redundancy at all levels. Please describe minimum hardware requirements.
- d) HWU realizes the importance of customer service and requires the system to be able to support a customer portal for future integration of customer access to meter readings through a web portal.

4) Interoperability - Indicate Proposer's willingness to transmit data from third party or competitive meters or products from companies not related to Proposer that monitor acoustic leak detection, pressure, temperature and water quality, and shut-off valve operation. Describe conditions under which this would be enabled. The City of Henderson's enterprise system is Tyler Technologies, with Itron FCS Utility Billing software. Interface from the AMI system to Tyler Technologies software shall be written by the AMR/AMI system software manufacturer in conjunction with Tyler Technologies. Detail Proposer's experience with this enterprise and billing software. Provide pricing for this in the pricing tables attached.

5) Security - The system shall provide end to end security to include:

- a) Role based access for end devices, data collectors and the network management system
- b) Authentication of devices and personnel
- c) Security audit logging and reporting
- d) Is cyber security embedded within the system design, or is it provided utilizing a third- party application?
- e) What are the annual or one-time costs for implementing security into the system?
- f) Hosted data collection and storage shall be domestically located in USA.

6) Water Meters

Meters shall meet the requirements of AWWA C-700, 701, 702, 703, 704, 706, 710 or 715, and shall register in U.S. Gallons.

6.1 Latest Models – Quality Control – Unproven Designs

- a) Meters shall be new, of the latest production model, with the latest standard equipment, including items specified.
- b) If any shipment of meters exceeds a 0.5% failure rate, or if a manufacturer's meters exceed a 0.35% failure rate in aggregate, HWU reserves the right, in addition to any legal remedies, to default the contract for a certain size meter or for all sizes of meters, and require the Proposer to obtain meters from another manufacturer.
- c) Parts or components not proven in service for a period of two (2) years, and experimental or untried equipment will be acceptable only with the identification of such parts and a written guarantee that such parts are totally replaceable by the meter vendor, including all labor incurred by HWU, for a period of four (4) years from the date of purchase. HWU requests that Proposers who wish to offer meters that are unproven and/or do not conform to existing AWWA standards, should clearly identify the proposal as an alternate to its primary proposal which incorporates proven and AWWA-compliant meters

6.2 Lead in Meters

- a) Water meters submitted in this proposal shall be compliant with NSF/ANSI 61. Meters shall be made of "lead free" Fiberglass-Reinforced Polymer or 316 Stainless Steel, or approved equal.

6.3 Tools

- a) Meter manufacturer shall furnish, at no cost, within ninety (90) days from the date of Notice to Proceed, all specialty tools required for meter maintenance, in reasonable quantities to be negotiated with HWU.

6.4 Serial Numbers and Labeling

- a) The manufacturer's serial number shall be stamped on the main case of all meters and shall be clearly visible when viewed from above. The serial number shall consist of all numeric digits. All meters shall have stamped or cast on them the size and model. The direction of the flow through the meter shall be properly indicated. The serial number must also be provided on two bar code labels attached to the meter, one of which shall be removed for transfer to a paper record. HWU prefers that the serial number include digits representing the year of manufacture.
- b) A computer file of the meter serial numbers shall accompany meter shipments for HWU's database; file shall be in .csv or .xls format.

6.5 Parts and Technical Data

- a) A complete parts catalog, and pricing sheets showing list prices and discounts from list, must be supplied with the proposal for all meter models incorporated in the proposal. The model number of each item being proposed must be indicated and the appropriate literature, data sheets, and specifications must be attached to the proposal. All parts or interchangeable equivalent parts should be readily available from the meter manufacturer for a period of twenty (20) years from the date of purchase. Detail how this will be accomplished.
- b) Proposer shall provide all manuals, diagrams, tolerance charts, exploded views, parts numbers, pricing, electronic diagrams, and any Safety Data Sheets (SDS) within thirty (30) days of the Notice to Proceed.

6.6 Interchangeability

- a) All meters of the same size or capability shall be manufactured to permit complete interchangeability of all parts (e.g., discs, pistons, chamber tops, chamber bottoms, registers, etc.).

6.7 Factory Accuracy Tests/Testing by HWU

- a) All meter accuracy tests shall be conducted in accordance with AWWA test methods and meter standards. The manufacturer shall furnish an electronic copy of the test results for each meter shipped. Specific information contained within the test results shall include the manufacturer serial number, flow rates, results of each flow rate test, the size of the meters being tested, the model number, the date, and the tester. Provide electronic copy of test results and testing dates. HWU also desires the test results be provided on a tag attached to the meter. Vendor shall indicate if test results were obtained using any register other than the actual register shipped with the meter.
- b) Proposer shall provide an opportunity for HWU to remove a sample of the meters from each shipment for testing. All meters tested will be tested as a unit (i.e. meter and any attached register or attached reading device). If any part or portion of a unit does not function properly the entire unit will be considered defective.
- c) Water meters that do not meet the requirements of this specification shall be rejected by HWU, removed by the manufacturer at its own expense and replaced within the delivery date specified.

6.8 Meter Registers

- a) All meters shall be equipped with solid state and/or digital encoder registers that conform to the latest AWWA standards except as amended herein.
- b) The meter reading and other information must be readable without the need for any special equipment.
- c) Meter registers should have a flip cap to prevent dirt/mud from interfering with the visual inspection of the register, its ID number, its indicators, and other information.
- d) The meter register shall have a visible leak detector.
- e) The register and wire connection shall be waterproof and corrosion proof, factory-potted connections, provided with Nicor or equivalent connectors on a 5-foot three-conductor 18-gauge cable potted to the meter register to protect the connection from water intrusion. Indicate the methods of manufacture and installation to ensure this.
- f) Meter registers shall be sealed to withstand long-term and repeated submersion in water and wide variations in ambient temperature.
- g) The meter registers as well as the terminals or wire connections, must be tamper resistant. Indicate how this is accomplished.
- h) Each encoder register shall have a unique identification number with a minimum of 8 digits that can be read electronically when the meter is interrogated and transmitted to or stored in the MIU. This number shall be the same as the number stamped into the meter base. This register number shall also be visually readable on the register display or the cap, and shall be permanently stamped into the cap. The register should be shipped with an attached bar code corresponding to the register number.

6.9 Small Meters (5/8" x 3/4" to 2" sizes)

- a) The measurement technology shall be solid state featuring no moving parts. The meters should be designed in such a way that the sensor and electronics make no contact with the fluid. The electronics (transducers, LCDs, and battery), shall be warranted for twenty (20) years; ten (10) year full replacement at no charge with an additional ten (10) year prorated cost at the current list price. All meters shall have identical calibration with no "K" calibration factors permitted. Meters shall be able to measure temperature directly without the use of RTD's or thermocouples.
- b) Meter manufacturer's solid-state meters shall exceed AWWA C715 accuracy standards and warrant their published accuracy levels for the life of their meters. Each meter shipment must be

accompanied by factory test data showing the accuracy of the meter as tested at their factory. All typical residential meters shall have a minimum certified 99% accuracy at a minimum flow rate of .2 gpm to 25 gpm. This accuracy shall be guaranteed for 20 years regardless of volume of flow passing through meter and there shall be no exclusions in this warranty for water quality. The meter shall have a starting flow reading of 0.015 gpm.

- c) HWU prefers that the manufacturer have at least a minimum of ten years' experience successfully producing ultrasonic meters. The demonstrable mean failure rate of the meters over ten years must be less than one percent.
- d) HWU prefers that the same manufacturer produce both the water meter and the radio transmitter.
- e) The solid-state meter electronic enclosure shall be constructed of a durable engineered composite designed to last the life of the meter. The register shall provide at least a 9-digit visual registration at the meter and shall be programmable to display the units from non-fractional units to a minimum of three decimal place resolution. The register shall have a validation mode where the register is updated in no less than one second increment. The meter shall be programmable to read in cubic feet, gallons, or other metric units. The register shall have an integral data logger that logs 450 daily flows, 36 monthly flows and the last fifty alerts. The system shall visually alert the following on the LCD screen: leak and burst alerts on the customer side, tampering with the meter, dry measurement chamber, and reverse flow. The system shall easily allow for field changes of units, volume resolution, and time.
- f) The system shall support leak detection, burst pipe condition and alerts for water meters.
- g) The communications module shall detect and report tamper conditions and alert notifications.
- h) Describe the expected MIU battery life as a range of years within two standard deviations of the average expected life under normal or default MIU meter interrogation and transmission settings and the climate in Henderson, Kentucky. Describe the MIU's low battery warning system, the warning time in months provided before failure under normal conditions, and how this is accomplished (e.g., based on battery voltage or the number of transmissions). Indicate the differences in expected MIU battery life, if any, when reading distinct types and makes of meter registers.
- i) Since meters are to be purchased over a period of 3 to 5 years, designate the required annual price increase required. Specify if this increase will be based on verified cost increases, a CPI adjustment, or other means.
- j) The AMR/AMI system shall communicate in appropriate spectra concurrently providing dual redundant reading backup capability. Please describe the process.
- k) The system shall support two-way, over-the-air upgrades and time synchronization for water meters. Please describe.
- l) The system shall support the collection and presentation of interval data from water meters.
- m) Interval of data collection and the frequency of transmission for water meters shall be configurable.

6.10 Larger Meters (greater than 2")

- a) Meter sizes greater than 2" shall be battery powered solid state magnetic flow type meters, conforming to AWWA C-715. The electronics (transducers, LCDs, and battery), shall be warranted for twenty (20) years; ten (10) year full replacement at no charge with an additional ten (10) year prorated cost at the current list price.

6.11 Fire-Service Type Meters

- a) All meters shall conform to the latest AWWA Standard C-703 for Cold Water Meters – Fire Service Type, except as amended herein. Fire Service meters and strainers shall have the Underwriter's Laboratories, Inc. (UL), and Fire Mutual (FM) approval for use on fire lines.
- b) Flanges: All meters shall be furnished with round flanges at both ends. Companion flanges are not required.
- c) Warranties: The manufacturer shall guarantee the entire meter, including the register, for a period of fifteen (15) years from the date of shipment against all defects in material and workmanship. Any other guarantee by the manufacturer shall be stated in its proposal.
- d) Strainers: Fire service strainers where specified shall be companion to meters and shall have cast iron cases and cover plates and stainless-steel screens.

7) Water Meter Interface Unit (MIU) or Endpoint

- The system shall provide two-way communications to read consumption usage, interval data, status, and event notifications including leak detection, burst pipe, reverse flow, and temperature alerts, and to facilitate time synchronization and firmware updates.
- MIU shall be battery powered with an engineered & designed life of 20 years.

7.1 Specifications and Physical Characteristics

- a) Describe the physical characteristics of the proposed MIUs, including dimensions and weight.
- b) Indicate environmental tolerances, including temperature and humidity ranges. At a minimum, MIU shall function accurately and not be damaged over an operating temperature range of 32 degrees F to 140 degrees F.
- c) Describe features of the MIU that prevent corrosion or degradation of mechanical or electrical performance (e.g., encapsulation or coating). The MIU shall be provided in a waterproof casing rated IP8 or better (submersion up to 1 meter of depth)
- d) Describe the expected MIU battery life as a range of years within two standard deviations of the average expected life under normal or default MIU meter interrogation and transmission settings and the climate in Henderson, Kentucky. Describe the MIU's low battery warning system, the warning time in months provided before failure under normal conditions, and how this is accomplished (e.g., based on battery voltage or the number of transmissions). Indicate the differences in expected MIU battery life, if any, when reading distinct types and makes of meter registers.
- e) If the MIU can be read in a mobile configuration as well as fixed, indicate if there is a different expected battery life for each reading method.
- f) MIU shall be capable of storing interval meter data in non-volatile memory. Indicate how many meter readings at what intervals are normally stored in the MIU (e. g., 120 days of one hour reads).
- g) MIU shall have the capability to receive and process commands from the head-end system for all firmware updates.
- h) MIU shall employ actionable alerts.
- i) Please indicate compliance with each of the items below:
 - i. Tamper Alert
 - ii. Leak detected
 - iii. Burst Pipe
 - iv. No flow detected
 - v. Reverse flow/backflow

- vi. Ambient Temperature Monitor
- vii. For each, indicate whether the alarm is transmitted instantly or with the MIU transmission.
- viii. Indicate if threshold levels for continuous flow, leak detection and broken pipe anomalies can be set by HWU, and if so, if settings can vary for individual customers or groups of meters.

7.2 Connection to Meter Registers

- a) Describe the proposed normal wiring connection between the MIU and the meter, and any options. HWU requires a tamper-resistant, weatherproof connection that is immune to submergence in water as well as to oils and salts.
- b) Indicate whether the MIUs are to be installed with in-line waterproof connectors between the MIU and meter. If so, HWU prefers that each end of the connector be factory potted to the wire leads from the meter and MIU, respectively.
- c) Describe any proposed method (such as a wire connection designed to release under tension) for connecting registers to endpoints attached to a vault lid that might prevent damage to the meter reading equipment or wires if vault lids are removed abruptly.
- d) Describe any provisions to prevent miswiring, such as in the event of manual splicing or gelcaps.

7.3 Mounting and Installation

- a) HWU desires to obtain maximum signal strength, within reason, from MIUs in vaults and boxes. Indicate whether concrete or metal meter box or vault lids, respectively, are to be drilled, replaced, and/or left alone for the Proposer’s system to operate to the specified performance criteria.
- b) Prices for mounting brackets, if separate from lids, must be included in the prices for the MIUs in the Price Proposal. Briefly describe installation procedures, including connection to meters, programming and provisions to avoid installer’s mistakes in installation.
- c) Indicate if any remote antennae will be used (where the portion protruding through the lid relays the signal to an endpoint below the lid), the specifications around such device, and whether such device is traffic rated.

7.4 Interoperability with Different Meter Registers

- a) Provide a table showing the degree of compatibility of Proposer’s MIUs with all makes and models of water meters currently available in the U.S. market, including, at a minimum, the information requested in table below. The proposed solution must be compatible with at least three registers listed in the MIU Meter Compatibility Table. More compatibility is desirable. Complete the MIU Meter Compatibility Table using the following numbers:

Compatibility:

- 1-No programming req’d
- 2-Routine programming of MIU or meter req’d
- 3-Different MIU req’d
- 4-Technically feasible, non-routine modification (describe)
- 5-Unfeasible

Functionality

- 1-All features operational
- 2-Some functions inoperable (describe)

Support

- 1-Cross-licensed
- 2-Not licensed or supported, no effect on warranties
- 3-Warranties voided

MIU Meter Compatibility Table				
Manufacturer	Register model	Degree of compatibility (enter 1,2,3,4, or 5)	Functionality (enter 1 or 2)	Support (enter 1,2, or 3)
Badger	ADE			
Badger	E-Series			
Hersey	Translator			
MasterMeter	AccuLinx			
Metron	Innov-8			
Neptune	E-coder			
Neptune	Pro-read			
Kamstrup	IQ Series			
Performance	ETR			
Sensus	ICE			
Sensus	iPERL			
Other				

8) Data Collection Units

- Data collection units must be independent operating units. Data collection units shall be easy to set up without the need for IT specialists.
- All configuration for the data collection unit shall be completed through the main server.
- The data collection units shall be able to operate as a redundant back up if another collector becomes unavailable. Due to the general location of collectors, all collectors shall have a multi redundant surge protection built in with an integrated 16A/C10 circuit breaker. In addition, all data ports shall have surge protection built in.
- The data collection unit shall be accessible for data checks and communication integrity via internet connectivity.
- Data must remain encrypted from the meter to server to protect consumer privacy and meet Federal data security requirements. Consumption data from the meters may not be decrypted in the data collection units.
- Each data collection unit must be equipped with the latest main-stream cell technology. Each data collection unit shall be able to collect data from at least 5,000 meters and be equipped with an RJ45 Ethernet connection.
- HWU will supply AC Power for each data collector location. Additionally, HWU anticipates available usage of existing high-speed Ethernet communication.
- All data collection units and all communication equipment will be installed turnkey cooperatively by the vendor and manufacturer to provide complete communications for the system proposed. System acceptance test to be determined and agreed upon during final contract negotiations.

8.1 Number of Units, Redundancy

- a) Proposer is solely responsible for determining the mix of data collectors and repeaters (if relevant), MIU placement strategies, and MIU communication configuration needed to meet or exceed the following performance requirements (read success rates):

- i. At least one register reading for each meter on which an MIU is installed within a three-day interval from at least 99.5 percent of all meters;
 - ii. At least one (1) meter register read per day from at least 97.5 percent of meters on which the system is installed; and
 - iii. At least 95 percent of all readings taken hourly or at more frequent intervals, except for meters from which transmissions are blocked by readily identifiable temporary physical barriers beyond the control of HWU or Proposer.
- b) Indicate the proposed number of data collection units and repeaters to achieve the levels of system performance described in the item immediately above.
 - c) Indicate the percentage of MIUs from which transmissions are expected to be received by only 1 collector, 2 collectors, and 3 or more data collectors in the proposed system.
 - d) If repeaters are used, indicate, based on a propagation study, the average number of MIUs from which signals would no longer be received if a repeater failed.

8.2 Locations & Mounting

- a) A list of HWU/City facilities at which data collectors may be located is included in this RFP as Attachment B.
- b) HWU takes no responsibility for network coverage or design by providing potential sites to the Proposer.
- c) Indicate proposed options for mounting DCUs/repeaters. Indicate minimum and maximum required and recommended heights for antennae. Provide specifications with photographs and dimensions of mountings. DCUs/repeaters must not interfere with access by HWU personnel to any part of the building or structure on which they are mounted, nor in any way compromise the structural integrity. Device mountings, support system, cabling, etc., must be preapproved, as well as inspected and accepted, by an HWU engineer.

8.3 Power Supply

- a) Describe the proposed primary power source for DCUs.
- b) Indicate expected kilowatt-hours per month of electrical consumption and expected maximum watts per device. Describe DCU device battery and recommended preventive maintenance battery change interval. Describe any backup power supply for devices. Describe provisions for electrical isolation and protection against static discharge and indirect lightning strikes.

8.4 Diagnostics, Maintenance and Repair

- a) Describe the diagnostic information that is recorded and transmitted by the DCUs. Describe the DCU diagnostic information that is monitored by the head-end system.
- b) Describe recommended device preventive maintenance intervals and procedures. Indicate in terms of FTEs the level of effort required to maintain the proposed network solution. Describe the type of work expected if HWU performs the maintenance internally.
- c) Briefly describe maintenance procedures in the event of a device malfunction or damage.
- d) Describe tamper and other alarms that are produced by the network devices.
- e) How many days of meter readings, or how many reads per meter, how many MIUs, will the DCU normally store?

9) **Portable Interrogators, Testing Devices and Field Programming**

- 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 when meters are changed out. Portable field test units may be required to diagnose problems with meter registers, MIUs, or the system.
- Supply four (4) units.

9.1 **Physical Characteristics, Functions/Modes of Operation**

- a) Describe the dimensions, weight, environmental tolerances, resistance to dropping and submergence, and other physical characteristics of the unit. Provide pictures.
- b) Describe the functions of the unit. Describe the capabilities of the unit’s software for programming, testing and portable interrogation of meters and MIUs. Indicate the options and exception codes for each of these operations. Provide representative screen shots.
- c) Indicate if the unit is capable of alerting (if necessary) and receiving the signals from MIUs.
- d) Indicate if the unit can download all the consumption profile data stored in an MIU, if that is a capability of the MIU.
- e) The unit shall be capable of capturing, at a minimum, the new meter reading, register number, old meter reading and address manually. HWU prefers that the new meter reading and register number be captured automatically through the MIU and visually displayed. Indicate if the unit is capable of programming the MIU with any information required for operation that was not factory pre-programmed into the MIU.
- f) Indicate what connecting hardware and software, including cables, modem, cradle, battery, charger, etc., are required. Furnish sufficient quantities of each for the number of units supplied.

9.2 **Capacity, Bar Code Reader, Manual Entry, GPS Coordinates**

- a) Identify how much data, or how many work orders, each unit can accommodate, and how many meter readings a portable interrogator can accommodate.
- b) The unit shall include or be capable of capturing and recognizing bar codes to capture meter or MIU identification numbers from bar code labels on these components.
- c) Provide the unit operation life in hours on a fully charged battery when the unit is involved in installation and programming, including taking up to 3 pictures of each installation. Provide time it takes to fully recharge the unit’s battery after a full day of normal use. Indicate if the battery can be recharged outside of the unit and/or from a 12-volt vehicle system. Explain how the unit ensures against accidental data loss in case of a dead battery.
- d) Indicate whether the unit permits manual entry of meter readings and other information (for example, the information necessary to complete a meter or MIU investigation or repair work order). Provide screen shots for this other information, including notes or comments.
- e) The unit shall be capable of capturing GPS coordinates within two-meter accuracy.
- f) The unit shall be able to diagnose problems with a meter register or MIU, unless the system incorporates an alternate way to make such diagnoses. HWU desires that the unit be able to ascertain the remaining life of the battery in an MIU.

10) **Mobile (Vehicle-Mounted) Data Collection System**

- HWU is interested in mobile data collection units for areas where fixed data collection unit coverage is uneconomical and for backup should all or parts of the fixed data collection network be unavailable for extended periods of time. This may also be used as an interim step (AMR) if a

full Smart Grid system is not installed initially. If Proposer's system includes an option for vehicle-mounted mobile meter reading of the endpoints proposed above, provide responses to this section. If mobile reading capability is provided by a portable-handheld device, even though it can be operated from a vehicle (for example, with a roof antenna), do not respond to this section, but include the relevant information in response to Section 9 above.

- Describe the proposed solution for collecting meter reads in a mobile system, specifically describing the collection of both daily and hourly meter reads.
- Describe the process for loading routes to and from the mobile system. If data can be transmitted wirelessly please describe this process and requirements.
- Supply four (4) units.

10.1 Hardware Components

- a) Describe the hardware components of the mobile solution.
- b) Indicate which components are ruggedized and/or in weatherproof enclosures.
- c) Indicate any vehicle specific requirement for the successful operation of the mobile solution.

10.2 Software Components

- a) Describe the software for the mobile solution. Provide screen shots.
- b) Indicate what map-based features are included (such as navigation, ability to identify new meters identified, and audio/visual indicators during the collection of meter reads).
- c) Indicate whether the software can accept a manual reading and/or notes in the account record.

10.3 Capacity, Communications Protocol

- a) Indicate the maximum vehicle speed for the normal collection of meter readings.
- b) Indicate the capacity of the mobile solution (number of meter reads) that can be stored.
- c) Indicate the average time required to collect a meter read (both daily and hourly) using the proposed mobile system.
- d) Describe how the mobile network communication protocol is like and different from the communications protocol used on the fixed network system.
- e) What connecting hardware and software, including cables, modem, cradle, battery, charger, etc., are required for the unit to be fully functional? Furnish sufficient quantities of each for the number of units supplied.
- f) Describe any events that would require the driver to stop the vehicle to collect data.

11) System Head-End Hardware, Network Configuration, and Software

- Provide detailed specifications of all the computer hardware and software needed for a complete and working system. In addition to the production system, Proposer shall provide a development/quality assurance non-production environment on which to test and configure system software changes.
- The software shall enable HWU to effectively obtain all the meter readings generated by the system, monitor, and manage the AMI system, including underperforming or nonperforming MIUs, data collection units and backhaul communications, and determine remediation measures. The software shall manage the database of meter readings and other related information (service point information, meter data, tamper data, etc.) about the meters and the AMI system.
- Indicate normal modes of operation of the AMI system software, including batch processing and single meter reading query processing. 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. HWU prefers that meter readings for billing be provided automatically following a billing calendar. HWU prefers that database synchronization also be automated.

- If these functions are performed by the meter data management system instead of the system control/head-end software, then indicate that and DO NOT DUPLICATE responses.

11.1 Backup and Failover; Access; Reports

- a) Describe the back-up capabilities and procedures to ensure that the AMI head-end system and consumption data is not corrupted or lost.
- b) The system software and functions should be quickly and easily accessible to users even in the event of a failure of a computer or server. Describe how this could be accomplished.
- c) Indicate if the system enables secure remote access to AMI system functions, reports, and data from other workstations on City/HWU's network. Describe how this access is provided.
- d) Can the system be accessed by a web-browser interface for system administration and diagnostic troubleshooting?
- e) How many users can simultaneously access the system for queries and for data entry?

11.2 Alerts, System Administration and Security

- a) Describe any provisions for the system to trigger e-mail or electronic message notification to subscribed users of certain alarms or conditions.
- b) Describe normal procedures for system administration.
- c) Describe the security infrastructure of the proposed head-end software; how security is implemented at the presentation, application, database, and network levels; logging of system access and database transactions for all actions, and items captured as part of the security log attributes.
- d) The AMI head-end system shall authenticate and authorize users of the system through user login names and encrypted and masked passwords, configurable role and function-based controls to limit access to data, limit access to software functions and features of the system, and provide traceability and thorough user audit logging. Describe the process for establishing user access privileges. Describe support for secure access and authentication, role-based security and permission-based functionality for internal and external users and Application Programming Interfaces (APIs), and the level to which security is granted (e.g., function, user, data element). Describe control of administrative or super user access over the Internet.
- e) The AMI head-end system shall provide automated methods of preventing cross-site scripting (XSS) attacks or SQL injection attacks from compromising the databases or software functions of the AMI head-end system

11.3 Reports

- a) Provide a list, with brief descriptions and screen shots or sample pages, of all the standard reports provided for system and component performance; missing or late data; errors, anomalies, tampering, and alarm conditions; and data transfer, management, and administration.
- b) Reports must be able to be directed to a printer, screen, or data file. The system should be able to export data from analyses and reports in standard CSV format.
- c) Standard reports should include, as a minimum:
 - i. Received signal strength from MIUs
 - ii. Number/percentage of reads received from MIUs
 - iii. A list of meters (including address or identifying information) that are being interrogated at a higher than normal rate (e.g., every 15 minutes instead of hourly)

- iv. MIUs from which no transmissions have been received, and the ability to sort them by the number of missing days
 - v. MIUs from which there are cut-wire alarms, and the ability to sort them by the number of days the condition has persisted
 - vi. Any other flags created by meters and MIUs, such as reverse flow or magnetic tamper
 - vii. Redundancy in coverage of MIUs by collectors
 - viii. MIU density per collector
 - ix. Duplicate MIU or meter serial numbers
 - x. "Orphan" MIUs; that is, MIUs transmitting but not associated with an account.
 - xi. Detailed call records of every cellular call initiated by the Proposer's cellular-enabled network components
 - xii. Data retrieval times/data latency
 - xiii. Remaining battery life in MIUs and other network components, or low battery life alarms, including the ability to sort by the number of days the unit has been in alarm status
 - xiv. Network component status, including communication retires, memory errors, connection errors, and whether the network components pass or fail the Proposer's operating specifications
 - xv. A listing of current AMI control system hardware, software and firmware versions and configurations for routine maintenance purposes.
 - xvi. A list of components that required time synchronization within specified dates.
- d) The software should support ad hoc queries and custom reports, using a built-in report writer or a third-party commercially available report writer that is included with the control computer software. Permissible customization shall not void any software product warranties, nor prevent any overlay of future software releases.

12) Meter Data Management System (MDMS)

- Software is required to manage the database of meter readings and other information created by the AMI system. This software may be distinct from the control computer software used to manage the AMI system. Meter reading data management capabilities shall be described in response to this section. Do not duplicate answers if these functions are handled by the customer portal.
- Provide a software architecture diagram and a description of all proposed software, including all third-party middleware, database engine, report generator, etc. Descriptions shall include version numbers of all products.
- The software shall collect and maintain historical meter read data, including at a minimum: meter identification number, meter attributes, meter location, account and premise identification, meter reads, read dates and times, failures to read, tampering alerts, and leak detection, for each meter in the system.
- The MDMS software shall provide the user with reports of the status and reading history of individual accounts and selectable groups of accounts. The software shall be able to sort and list accounts and their meter reading data. The software shall also be able to create user-defined account groups and aggregate consumption profiles.

12.1 On-Line Storage

- a) The system shall provide the capability for maintaining at least one year of “live” (that is, instantly accessible) data assuming meter reads with at least one-hour intervals, and an additional two years’ of “live” daily reads for all the HWU’s meters. Additional data shall be available on a retrieval basis.
- b) The MDMS shall be able to support future seamless growth up to a total of 20,000 meters, with live storage of data as defined above.

12.2 Meter Reads/General

- a) Describe the functions provided by the system “out of the box,” including:
 - i. Input, process, store, and analyze consumption, and interval data from multiple AMI technology collection systems, field tools, and HWU’s existing meter reading data transfer systems.
 - ii. Input, process, store, and analyze consumption pressure and other sensor measurements, if available.
 - iii. Identify and report tamper flags and missing or incomplete meter data.
 - iv. Support scheduled and on-demand meter readings.

12.3 Validation/Estimation/Editing

- a) Describe the system’s capability, if available, for verifying, estimating, and editing missing or invalid meter readings, including providing a complete audit history of any data modified or added because of that process.

12.4 Meter, Meter Register and MIU Asset Management

- a) Describe meter configuration data and the process for changing it. Describe how an MIU is assigned to a premise ID, customer ID, meter ID, and geographic location. Show how the software maintains asset data, including installation date, model number, etc.

12.5 Customer Service Representative Interface

- a) A City/HWU Customer Service Representative (CSR) or other employee shall be able to access an account by at least the following fields: account number, name, address, premise ID number, meter serial number, MIU serial number. Indicate available customer search parameters.
- b) A City/HWU CSR or other employee shall be able to view latest or current reading (with time of read), consumption history over a selectable date range, meter information, usage statistics (e.g., max flow rate, usage by day of week, etc.), historical events (tamper, alerts, etc.). A CSR shall be able to view consumption with selectable granularity (e.g., hourly, daily), compare usage to same period last year, or to comparable meters, and display data both in bar graph and table form. Describe the process by which a CSR will view or generate a file of this information. Do not duplicate descriptions here with responses to other sections.
- c) Indicate the ability of the MDMS to display consumption / minimum hourly flows in each 24-hour period.
- d) Indicate if the CSR can see a screen identical to what a customer might see through the customer portal.
- e) Describe any other features available to a CSR or other employee.
- f) Describe the process by which a City/HWU employee would input a meter or MIU change in the MDMS, maintaining the continuous consumption history for an account while keeping track of the point of change-out.

12.6 Analysis of Usage

- a) Describe how potential leaks, high consumption, misuse, and water theft are identified by the software from the data, and what analysis reports are generated, including:
 - i. Identification of possible low flow rate leaks (e.g., extended periods when interval reads are always above zero or consumption anomalies above user defined thresholds by account.)
 - ii. Identification of possible continuous high consumption events at individual customers' premises.
 - iii. Monitoring "usage on inactive" (registered reads above configurable thresholds without an active customer account) and automatically generate alerts and notifications.
 - iv. Water theft analysis, use after shut off, and reverse flow.
 - v. Identification of intermittent backflow situations.
 - vi. Identification of any meter with little or no change in registration (zero or low consumption) for a configurable number of days.
 - vii. Consumption profiles by season and day type (weekday, weekend, month, holiday, etc.) and by rate class, customer type, and/or any user-specified assortment of meters.
 - viii. Combining consumption from two registers of a compound meter, including handling the scaling of different registers.
 - ix. Identification of potentially underperforming meters.
 - x. Consumption histograms to help right size meters.

12.7 Analytic/Grouping of Meters

- a) Describe any capabilities of the software to provide customer, consumption, and meter analytics, such as: meter underperformance, unauthorized consumption, non-revenue water analysis, etc.
- b) The software shall be capable of generating consumption profiles for groups of meters (a "virtual meter"). Indicate by what parameters or data fields meters may be grouped for this purpose. Describe the procedure for assigning meters in the MDMS to district metered areas (DMAs).
- c) The system shall enable the comparison of consumption between an individual meter and a group of meters, or between two or more groups of meters.

12.8 Event Reporting and Tamper Management

- a) Describe how the MDMS can be used to track and report on potential system status issues, including:
 - i. A normal meter change out, authorized by a work order (including a meter with higher resolution than the meter it is replacing).
 - ii. Identification of a meter that has been changed without a work order.
 - iii. Missing reads. Show how the system can triage or prioritize recommended work orders based on number of missing reads, proximity to read-for-billing dates, severity of the problem, etc.
- b) Describe how the proposed system analyzes meter or MIU tampering flags and automatically generates alerts and notifications, including:
 - i. logging event messages, and changes, and reporting status of logged event messages (i.e. ignored, fixed, etc.)
 - ii. storing all collected event and alarm data.
 - iii. performing trending analytics and correlating failures with a variety of attributes and time frames.
- c) The MDMS shall enable the users to set start and end date report filters for the above.
- d) The system shall provide a list of accounts with one or more of the above conditions.

- e) Provide sample reports for these cases. Indicate how information may be pushed to or requested by a CSR.

12.9 Reports

- a) Describe the standard reports and trend analysis to be provided by the proposed system.
- b) Describe how reports are to be generated on demand.
- c) Describe how reports are to be generated via a scheduled process.
- d) Describe how system generated reports are sent to predetermined email addresses and predetermined storage file locations.
- e) Describe end user custom reporting capability with ability to save as reporting templates.
- f) Reports shall be able to be set up or changed without modifying source program code and without any proprietary language skills.
- g) Describe how reports can be exported to standard file formats (ex: .csv, .xls, .mdb, .html, etc.).
- h) The database should be directly accessible by HWU (read-only, replication or placement in a data warehouse). Indicate procedures for correcting misinterpreted or mis-assigned data.
- i) List all supported reporting tools (i.e. Crystal, Microsoft SSRS, etc.).
- j) Describe (if available) consumption projection analysis.

12.10 Data Validation and Exception Handling

- a) Describe detection and prevention of logical data errors when the data is input by user, including, how the system prevents data errors from affecting system functions that are not directly associated with it, and the error codes and descriptions which can be used to help facilitate debugging end user problems. Error codes must reference the specific exception.
- b) Describe detection and prevention and reporting of logical data errors when data files are imported from other systems.

12.11 Database

- a) Describe need and responsibilities if an HWU Database Administrator (DBA) is required.
- b) Describe backups, either incremental or full, without stopping any operational processes.
- c) Describe automated data archiving, purging, and restoration.

12.12 User Environment

- a) Identify web browser options for proposed system, and any browsers not supported.
- b) Describe support for a session logout that will terminate the user session with a configurable session timeout value.

12.13 System Administration

- a) Describe procedures for system administration.
- b) Describe the process for establishing user access privileges. Describe support for secure access and authentication, role-based security and permission-based functionality for internal and external users and Application Programming Interfaces (APIs), and the level to which security is granted (e.g., function, customer, data element). Describe control of administrative or super user access over the Internet.

12.14 Information Protection and Encryption

- a) Describe the system's data encryption capabilities. For presentation to external end users (e.g., the online presentment application), describe how the proposed system will support masking and/or encryption of sensitive data as identified by HWU.

12.15 System Backup

- a) Describe data storage, backup, restoration, and disaster recovery, including but not limited to clustering, redundant servers, hot standby, etc.
- b) Proposer should provide separate development/test, training, and production environments.
- c) Describe Proposer Help Desk availability (e.g., hours, time zone, etc.) and escalation procedure.
- d) Describe upgrade frequency and notification process.
- e) Can upgrades be implemented by HWU staff or is Proposer assistance required?
- f) Describe any plans for sun-setting the proposed system.
- g) Describe prior version support.

12.16 Hardware/Software/Operating System

- a) Provide minimum and recommended hardware/software and operating system requirements and any other non-responder proposed software required.
- b) List any other proposed system environmental requirements (i.e. climate control, power requirements, surge protection, system backup, emergency power backup, LAN, network, etc.).

13) Customer Web Portal - The proposed solution shall include a web portal for consumers to access detailed data from their meters. The data must be presented in simple charts and graphs that are easily understood by most users. Describe and show (with screen shots) how the software provides the following capabilities.

13.1 Log in and Passwords

- a) The platform should have a configurable interface that can be accessed as a seamless extension of HWU's web site.
- b) The software shall be accessible to customers using web browsers and phone operating systems from major manufacturers.
- c) The software shall allow the customer to initialize an account for access using address and account number. Initializing a customer account shall require no involvement of City/HWU staff. Account initiation should be completed using an authorization code.
- d) The software should provide support for utility account file import, and account and password authentication. Alternatively, the software shall allow the customer to set up an e-mail, username, and a password. Describe password requirements.
- e) Indicate if the customer portal can be accessed by a customer from HWU's website or e-billing page with token passing.
- f) The software shall allow the customer to retrieve or re-set a forgotten password via the previously established email, and for backdoor support for City/HWU to manage forgotten usernames and reset passwords.
- g) The consumer solution should include a mobile application.

13.2 Multiple Meters and Accounts

- a) The software shall allow customers to access and view all meters or accounts they are responsible for in a single logged on session.
- b) Where a meter has more than one register, the software shall be able to aggregate the consumption into a single view.

13.3 Customer Display

- a) The software's main customer display screen shall include HWU 's logo/branding.
- b) The display will provide all account, address, and meter information relating to a customer.
- c) The software shall not display confidential information about the meter or account.

- d) The software will display the customer consumption history in a graph that can be configured to a customer specified start and end date. The default period should be the customer's latest complete billing period.
- e) The software shall be able to display daily and hourly usage up to the most recent data available in the MDMS.
- f) The graph shall allow the customer to compare consumption history for different time periods on a single graph (e.g., consumption by month this year versus last year).
- g) The customer shall be able to select the resolution of the consumption interval displayed (hourly, daily, monthly, and yearly). Indicate the data that can be displayed for each interval (e.g., 6 months, 31 days, 24 hours).
- h) Describe capacity to overlay data streams for comparison purposes such as comparing monthly consumption with pre-defined factors (i.e. temperature, occupancy, etc.). Provide examples.
- i) Describe the capability to show cost data for individual consumption profiles based on the customer's rates.
- j) Describe the capability to provide a graph of customer consumption history against the average consumption of similar customers.

13.4 Customer Alerts

- a) Describe from where (head-end system for alarms, MDMS for consumption profiles, etc.) and how (e.g., FTP interface) the customer portal gets its information.
- b) Indicate the alarms that can be provided to the customer through outbound notification, such as persistent consumption indicative of a leak, excessive consumption, usage over a customer-settable threshold for a specific period (e.g., when the premises are vacant).
- c) Describe the provisions for the consumer to designate emails, mobile numbers (for text message), or other communications for alarms. Can the consumer enable multiple contact emails or phone numbers, or contact emails or phone numbers for different conditions?
- d) Indicate if the software has provisions to allow consumers to opt in or opt out of notifications.
- e) The software should be able to inform a customer of a violation of certain HWU-defined usage restrictions (such as excessive flow rates).
- f) Describe capabilities of the software to provide data files to City/HWU with messages concerning possible leaks, unauthorized irrigation, etc. Describe capabilities to generate letters, emails, or text messages for customers. Indicate data required from City to provide this capability. Describe ability to provide flags to account records in the Billing office of conditions or messages created.
- g) Describe capabilities to keep track of notifications (e.g., about continuous flow) that have been sent and whether they have been received, and to schedule subsequent notifications if the condition persists.

13.5 Reporting

- a) The software shall allow the customer to download both graphical and chart-based reports of their consumption. The downloaded shall be available to the customer in PDF or Excel formats.
- b) The Proposer shall be responsible for developing up to five custom reports at HWU's direction that the customer will be able to view and download.
- c) Describe the Customer Portal's ability to integrate on-line bill delivery and payment.
- d) Describe how missing data points are managed and displayed for the capabilities described in the Customer Display section above.

14) System Documentation

- a) All system documentation and manuals shall be provided by the commencement of training of HWU employees.
- b) Proposer shall provide one hard copy and one copy in electronic portable media (CD/DVD, etc.) of all standard manuals and additional customized (for HWU) written procedures sufficient for complete operation and maintenance, including:
 - i. Technical architecture
 - ii. Functional and technical specifications
 - iii. MIU Installation instructions
 - iv. Data collection unit and repeater installation instructions
 - v. Hardware Configuration
 - vi. System administrative operation, performance monitoring, diagnostics and maintenance
 - vii. Backup and recovery procedures
 - viii. MIU field diagnostics and repair
 - ix. Network component diagnostics and repair
- c) The electronic versions shall be indexed, searchable, and printable. Proposer shall make standard manuals available online to HWU employees.
- d) Manuals for any third-party software components incorporated into the system shall be available online or on CD/DVD in searchable and printable format.
- e) Promptly update online documents whenever there are any revisions or additions to the manuals. Describe notification and update procedure. Proposer shall provide a method to track and monitor all changes to software, hardware, operation, and maintenance procedures and equipment.

15) Training - Training is an important part of fully realizing the potential of this project. Training must be included in the proposal. It shall include training for utility personnel and/or subcontractors responsible for the installation and maintenance of the hardware installed in the field, as well as training for the software system administrator(s), operators, and customer service representatives.

- a) HWU will require initial field operations training on all system components including water meters data collection hardware and software.
- b) Initial Customer service and billing training will take place at the HWU Administration Building. HWU will require 3 separate levels of training:
 - i. Pre-deployment, system, and software training, prior to the commencement of meter installation;
 - ii. On-site 2-day minimum training for customer service and billing (prior to the first billing cycle with new system);
 - iii. Post project 2-day minimum follow-up training to be conducted within 90 days of completion date of first tranche of meter deployment.
- c) Proposer shall specify teaching method and duration for each of these training sessions. 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. Provide resumes and certification of trainers for HWU approval.
- d) Provide training in the following areas for a minimum of 25 HWU/City employees, unless otherwise noted:

- i. All aspects of the AMR/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 office; creating, analyzing, and customizing performance reports, diagnosing potential problems with system components, and changing or adding customer accounts/MIUs/ meters to the System.
- ii. Meter reading database management, including thorough training in the use of the AMR/AMI system data repository.
- iii. Use of the Proposer's installation management and project control software in association with proposer's handheld programming devices.
- iv. Field installation of MIUs, as well as MIU field diagnostics and maintenance AMR/AMI system operation and management, including the use of system management and diagnostic software, and server and control computer hardware management.
- v. Network component (including data collection units and repeaters, if used) installation and field maintenance (for up to 10 employees).

16) Support

- a) Provide details on all ongoing maintenance, service, support, and associated annual costs, for the system including:
 - i. Hardware and software maintenance
 - ii. Help desk/telephone support.
 - iii. Service level agreements
 - iv. Remote access monitoring and support
 - v. Preventive Maintenance provisions, backup, archiving, etc.
 - vi. Product fixes and enhancements
 - vii. Escalation procedures
 - viii. Product releases and upgrades
- b) What are the typical maintenance activities required over the product lifecycle?

17) Project Management

- a) Project Management is essential to the success of the project. Proposers will be evaluated, in part, on the strength and experience of their Project Management capabilities.
- b) Project implementation shall include initial system planning, software installation and configuration, training, customer portal, and system acceptance.
- c) Provide sample layouts of all anticipated reports for managing the project to ensure the contract is completed, on time, within budget, and meets all performance requirements.

17.1 Project Goals and Milestones

- a) The successful Proposer shall propose detailed goals and milestones for deliveries or accomplishments within the Project schedule established by HWU, and subject to approval of HWU. Should the successful Proposer fail to meet a key milestone within a reasonable period, HWU shall collect liquidated damages in the amount of \$100 per day until the milestone is met.

17.2 Project Management Meetings

- a) Proposer's Project Manager shall meet with HWU personnel periodically and not less than monthly to update them on progress against the installation schedule. Describe the proposed meeting plan including reporting requirements, expected participants, and expected topics of meetings.

- b) Proposer's Project Manager and other personnel, as requested by HWU, will meet with HWU's Project Management staff not less than weekly from the point in time a Notice to Proceed is issued through the project closeout. Describe the proposed meeting plan including reporting requirements, expected participants, and expected topics of meetings.

17.3 Installation Management Meetings

- a) Proposer Installation personnel, as requested by HWU, will meet with HWU's Project Management staff not less than weekly from one month prior to the start of the procedural pilot through the installation period. Describe the proposed meeting plan including reporting requirements, expected participants, and expected topics of meetings to ensure timely, cost-effective, and high-quality installations and customer satisfaction assurance with the installations.

18) Industry Experience

- a) HWU is seeking a proposal which meets its requirements from a vendor experienced in similar or larger projects. The preferred meter and reading system will be designed, manufactured, and supported by a single-source manufacturer.

19) Warranties

19.1 MIUs/Endpoints

- a) 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 acceptance. Any MIU that fails during this period shall be repaired or replaced at manufacturer's sole cost and expense. MIUs shall be guaranteed against failure for an additional 10 years such that a failed component will be replaced on a pro-rated cost basis.
- b) Proposer shall provide a schedule of the pro-rata costs in its pricing tables. Pro rata costs to HWU shall be based on the original purchase price adjusted for inflation, or the then currently available purchase price, whichever is less. These costs shall be submitted in the Price Proposal.

19.2 Fixed and Mobile Data Collection Units

- a) Fixed data collection units shall be guaranteed for a minimum of three (3) years from date of installation acceptance. Mobile data collection units shall be guaranteed to be free from defects in workmanship for a minimum of three (3) years from date of delivery. Specify if a longer warranty period is available.

19.3 Handheld Meter Reading Equipment

- a) The handheld units, data cradles or data transfer devices (including memory cards and memory card readers), and all accessories (including batteries, straps, cables and cases) shall be guaranteed for a minimum of three (3) years from date of delivery. Any handheld device or accessory found to be defective upon delivery must be exchanged for new and shall not be repaired or exchanged for a remanufactured device.

19.4 Maintenance Agreements

- a) Proposer shall provide HWU with equipment maintenance agreements, which may be renewed annually by HWU for at least fifteen (15) years. Should handheld unit firmware updates require sending the devices to the factory or authorized repair center, Proposer shall provide a loaner device for each device being upgraded so that meter reading activities can continue.

- b) For each piece of hardware or software, state any required or optional maintenance programs beyond the warranty period. Include program features and any additional charges such as hourly rate for on-site and/or remote support. State the location of and procedures for obtaining such support.

19.5 Repair Turnaround

- a) Repairs to handheld units or data collectors shall be accomplished either locally, at HWU facilities, or at the manufacturer's factory or authorized repair center, within ten (10) working days. Shipments from HWU for out of warranty repairs will be at HWU's cost and the return shipments will be at Proposer's cost.
- b) For repairs not completed and returned within ten (10) working days, Proposer shall provide a loaner HMRU or MDCU until the HWU's unit is returned in working condition.

19.6 Other System Components

- a) All other system components not specifically noted above shall be guaranteed for one (1) year from the date of installation acceptance, including parts and labor.

19.7 Software, Firmware

- a) Proposer shall provide a written guarantee that no changes in the software, firmware, or hardware design of components of its MIUs, DCUs or Repeaters that it provides to HWU for twenty (20) years from the Commencement Date will be made without prior testing and verification that such changes will result in no loss of functionality for the meters incorporated in HWU's AMI system. In the event of such incompatibility or loss of full functionality, Proposer shall be responsible for repairing or replacing all its equipment that is not working, including labor. Firmware updates for handheld devices shall be provided by Proposer at no additional cost to HWU for twenty (20) years from the date of delivery of the unit.
- b) Proposer warrants that any and all software provided as part of its system to HWU does not contain any program code, virus, worm, trap door, back door, timer, or clock that would erase data or programming or otherwise cause the software to become inoperable, inaccessible, or incapable of being used in accordance with its user manuals, either automatically, upon the occurrence of Proposer-selected conditions, or manually on the command of Proposer, or upon occurrence of user-selected conditions.

20) Optional Hosted Services

- a) In lieu of acquiring, deploying, operating, and maintaining certain AMI-related hardware and software at its own facilities, HWU may choose to procure hosted services covering the AMI head-end system hardware and software; Meter Data Management System, including interfaces to its billing office and key IT systems (GIS, work order); and Customer Portal. Under this arrangement, Proposer would:
 - i. Provide access by HWU and its customers to HWU's AMR/AMI generated data and related applications on production and test systems.
 - ii. Manage hardware and third-party software compatibility, including version control and implementing and testing upgrades and patches as required.
 - iii. Ensure the continued integrity of the interfaces between the applications and the City billing system when this latter software is patched, upgraded, or replaced.
 - iv. Troubleshoot throughput and other issues impacting the system performance or accessibility.
 - v. Maintain data and data center security.
 - vi. Backup and archive HWU system data and restore it in the event of a system crash or failure.

- vii. Provide application development services, including creating or assisting HWU in creating customized reports, and application programming interfaces.

20.1 Term

- a) Hosting services fees, if elected by HWU, would commence following the acceptance of the Pilot and continue for a minimum of five years from the date of System acceptance. HWU may at its sole option extend the contract annually for up to 15 additional years based on the price schedule provided in response to its this Request for Proposal for these services. These costs shall be submitted in the Price Proposal.

20.2 Data Centers and Communications

- a) Proposer shall describe the proposed method of communications between City/HWU workstations and Proposer's servers, including redundancy and security of those communications.
- b) All data centers used to support HWU's AMI system and data, including any disaster recovery data centers, shall be in the United States.
- c) Any third-party data centers used to support HWU's system must comply with all the requirements of this section. No third-party data centers shall be used without prior written permission of HWU.

20.3 Design Documents

- a) Prior to the start of hosting service, Proposer shall submit interface and system design draft documents, as well as processes and procedures draft documents, in conformance with the requirements herein, for approval by HWU. Documents shall cover access by HWU and its customers. Documents shall cover proposed technical architecture, including servers, peripherals, communications devices, and the system that run on each, indicating which components would be dedicated to HWU's project.

20.4 Proposer Responsibility

- a) Proposer shall:
 - i. Configure and make available to HWU production and test environments on virtual servers.
 - ii. Make all system features available to HWU users through web access.
 - iii. Monitor and maintain the computing hardware required to run the applications.
 - iv. Acquire all licenses for third party products required to maintain the applications and ensure hardware and third-party software compatibility.
 - v. Maintain version control for third party products and the applications. Maintain third party software on supported versions. Implement upgrades and patches as required in accordance with vendor recommended schedule.
 - vi. Monitor and ensure the integrity of the interfaces between the applications and City's billing software. Provide HWU with a draft test plan upon notification by HWU of intended patches or upgrades to the billing software. Test all functionality when this software is patched or upgraded.
 - vii. Monitor access to hosted software by HWU and its customers and respond to and troubleshoot throughput and access issues identified by the system or user interface software, and by HWU or its customers.
 - viii. Backup and archive HWU system data and restore the system and data in the event of a system crash or failure by using system backups or a disaster recovery program.
 - ix. Monitor and report Key Performance Indicators (KPIs) as defined herein.
 - x. Provide application development services, including creating or assisting HWU in creating customized reports and application programming interfaces.

- xi. Provide support as defined herein to transition the System to a HWU defined location in the event the HWU opts to cancel the managed services agreement.
- xii. Provide and maintain a secure file transfer (SFTP) site, which will be used to post system files and reports.

20.5 Interfaces and File Transfer

- a) In response to a “From Host” file from the billing software requesting readings for billing, the MDMS shall generate a “To Host” file containing the meter readings and other information as specified in the technical architecture and interface documents.
- b) In response to a CSV, XML or comparable configuration document generated daily by the billing software, the head-end system, MDMS and/or Customer Portal will synchronize endpoint and customer data and generate a confirmation report.
- c) Proposer will deliver alert and tamper reports on a real-time continuous basis to an HWU designated terminal or workstation.
- d) Should Proposer’s software be used to accept or manage field work orders related to MIU and/or installation, Proposer shall generate a daily file of work order information to be uploaded to the billing software and asset management systems, as defined in the technical architecture and interface documents.

20.6 Database Maintenance

- a) Proposer shall:
 - i. Run routine diagnostics for data corruption and abnormalities, rebuild indexes, and remove duplicate records.
 - ii. Run routine checks for security flaws and other issues that could compromise database integrity.
 - iii. Run compacting and defragmentation procedures and keep database statistics up to date.
 - iv. Monitor data and log file size to minimize response time to queries and file requests.
 - v. Run these procedures on a schedule designed to minimize interference with user access.

20.7 System Availability

- a) The head-end system and customer portal shall be available not less than 99.0% of the time, and the MDMS not less than 99.5% of the time, measured over any thirty (30)-day rolling period, except for scheduled upgrades and preventative maintenance. Any downtime required to fix problems with the software or hosting servers and devices shall not be considered scheduled maintenance and shall count as downtime. “Accessible” shall mean that all HWU’s users can gain access to and use all the modules and applications they are authorized to use on the hosted site. In the event that there is downtime in excess of the allowed downtime, Proposer shall provide a credit to HWU on an hour-for-hour basis against all of the monthly fees associated with the Software, Hosting and Support for the first ten (10) hours of downtime in the aggregate during the rolling 30-day period at issue. For hours 10-20 aggregate hours of downtime, Proposer shall provide two hours of credit per hour of downtime. For any aggregate hours of downtime in a rolling 30-day period more than twenty (20) hours, Proposer shall provide a credit against all monthly fees on a three hours credit for each hour of downtime basis.
- b) Credits shall be applied against the next invoice.
- c) Should System Availability fall below 90% over a 90-consecutive day rolling period, Proposer will provide HWU support as needed to transition the System to an HWU defined location at no cost to HWU.

- d) The cost of providing this level of service shall be incorporated in the Price Proposal. Proposer may at its option provide additional prices reflecting other levels of availability.
- e) These credits shall be considered liquidated damages and not a penalty. Proposer shall acknowledge that in the event of downtime in breach of the warranty, HWU will incur damages that, while significant, may be difficult to prove with particularity. Proposer acknowledges that the liquidated damages set forth above have been negotiated at arms' length and reflect the parties' reasonable expectation of damages that HWU will likely incur given the circumstances known to the parties at the time this agreement was executed.

20.8 Security

- a) Describe the data center physical security provisions.
- b) Describe the firewall and application-level security proposed.

20.9 Response Times

- a) During normal business hours (defined as Monday through Friday 08:00 am – 5:00 pm Central Time), response time shall be within one hour of HWU reporting an inability to use the system.
- b) Outside of normal business hours, and on mutually agreed holidays, response time shall be within four hours of HWU reporting an inability to use the system.

20.10 Problem Analysis and Resolution

- a) Proposer shall propose procedures to report on and deal with problem analysis and resolution based on extent and criticality of the problem using a systematic problem diagnosis and decision-making model or procedure, including root cause analysis, in accordance with Section 15.2. Problem resolution shall include immediate corrective measures and where appropriate, root cause analysis and long-term preventive measures to prevent reoccurrence. An interruption in services will be the highest priority.
- b) HWU will provide reasonable resources to assist Proposer in problem analysis.
- c) Initial problem will be reported to HWU's designated AMI system manager. Findings will be shared with HWU.

20.11 Scalability

- a) Initially, the system shall support 15,000 metered accounts and shall be scalable to at least 45,000 to accommodate future addition of gas and electric meters.
- b) The system should support simultaneous access by a minimum of 10 City/HWU users.
- c) Indicate the number of customers the Customer Web Portal can support simultaneously.

20.12 Backup and Disaster Recovery

- a) HWU desires that Proposer maintain dual data centers so that one center shall provide secure backup for the other. The recovery time requirement in the event of a system or database failures shall be 4 hours. The recovery point requirement in the event of system or database failure shall not be more than 2 hours.
- b) On not less than an hourly basis, Proposer shall synchronize HWU data to a disaster recovery database.
- c) On not less than a daily basis, Proposer shall backup system and HWU data to tape or other mass storage device.
- d) On not less than a weekly basis, Proposer shall backup system and HWU data to a secure offsite facility.
- e) Proposer will schedule and perform a disaster recovery test not less than annually to ensure continuity of the disaster recovery process and report the results to HWU.

20.13 Reports

- a) Proposer shall generate reports of any software patches or upgrades or updated anti-virus releases.
- b) Proposer shall provide email notification to a list of staff provided by HWU when reports are posted to the site.
- c) Proposer will provide a monthly report of the following key performance indicators for:
 - i. Availability as percentage of uptime
 - ii. System, as well as software component, uptime
- d) Proposer will provide a monthly report of the following performance statistics for:
 - i. CPU Utilization
 - ii. Disk I/O Performance
 - iii. Memory Utilization
 - iv. Database server long-running (that is, multitransactional, persistent state) processes
 - v. Database server dead locks

ATTACHMENT A

**REQUEST FOR PROPOSAL (RFP)
ADVANCED METERING INFRASTRUCTURE (AMI) SYSTEM
Proposals Due: 18 March 2020**

AGREEMENT TO PARTICIPATE

I/We, the undersigned, certify and declare that I/We have read and understand the Request for Proposal. The information provided in this proposal, including documentation, is complete, current, and accurate and I/We agree to be bound by the statements and representations contained herein. I/We understand and acknowledge that any false, misleading, or fraudulent statements on the application will result in immediate disqualification. I/We authorize HWU to contact any entity named herein for the purpose of verifying information provided, or to develop other information deemed relevant by HWU. I/We understand and acknowledge that HWU reserves the sole right to determine qualifications based on its evaluation criteria pursuant to the best interests of the company, its customers, and the public.

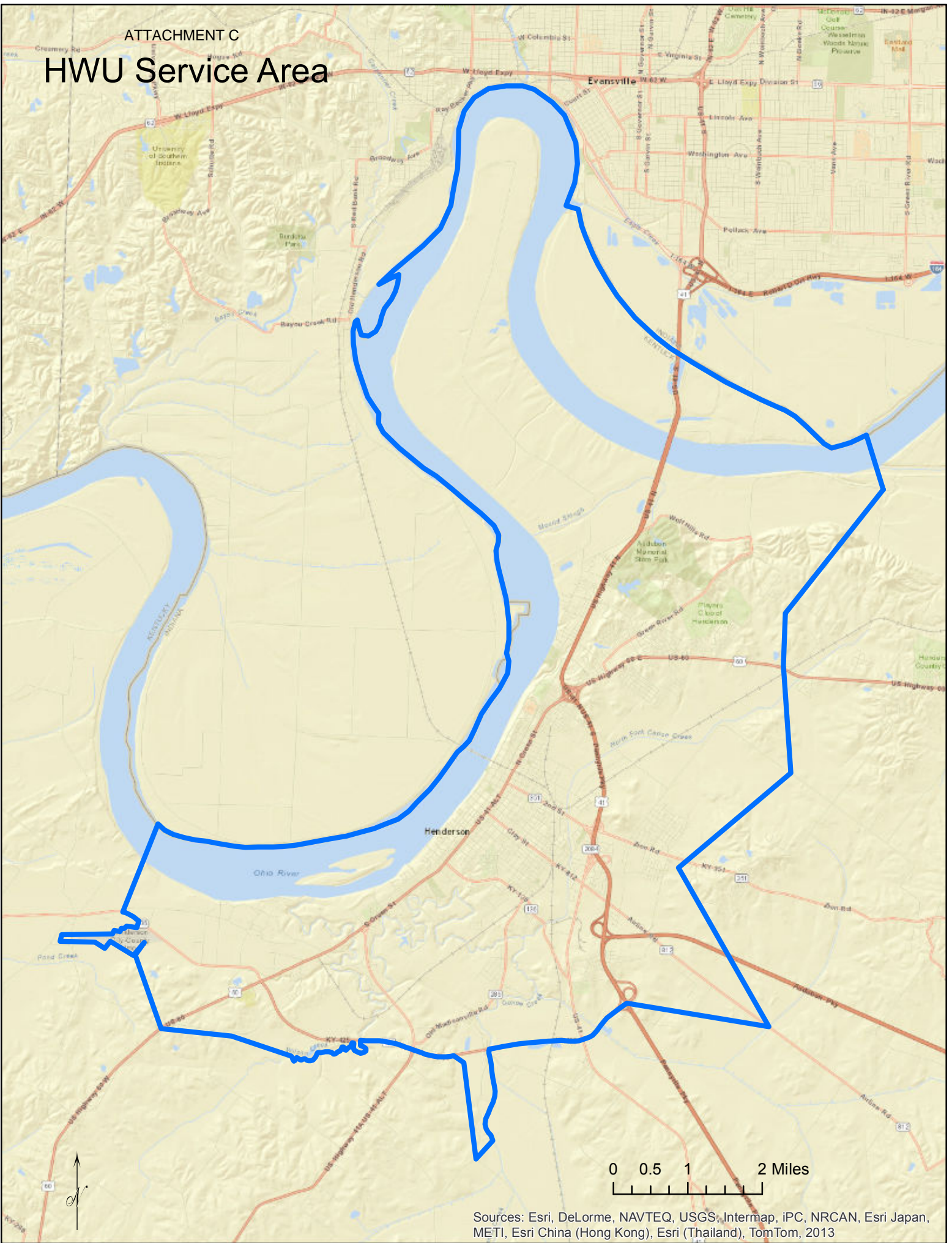
Name of Firm: _____
Preparer's Name: _____
Title or Position: _____
Signature: _____
Date: _____

ATTACHMENT B

HWU Water Tank Data – North Water System

Tank	Street Address	Type	Elevation at Top
Atkinson Park	1450 Merritt Drive	Ground	541.4
College	2660 US Hwy 60 West	Elevated	538.2
Frontier	2723 Wilderness Drive	Elevated	591.75
Graham Hill	2234 Holloway Lane	Ground	540.0
Green River Road	7600 Green River Road	Wet-Riser Hydropillar	590.15
Vine Street	832 Vine Street	Fluted Column Hydropillar	547.2

HWU Service Area



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

ATTACHMENT D

PRICING TABLES and INSTRUCTIONS

GENERAL

Proposer shall supply unit prices and related annotations that will enable HWU to reasonably determine the total life cycle cost of owning, operating, using, and maintaining Proposer's system over a 20-year period from the date of Notice to Proceed. Proposer shall indicate explicitly if any of the recurring prices (e.g., for annual license fees or maintenance costs) shall be subject to an inflator, and if so, what that inflator will be. In life cycle cost evaluation, HWU will discount future costs at 2% per annum.

Information required includes:

- Cost to supply meters, and endpoint/MIU components, of the AMI system and dispose of existing equipment (Table A).
- Cost to supply and install AMI network components, system software and server hardware, and provide training and support, as well as annual licensing and maintenance contracts (Table B).
- If Proposer proposes software hosting and managed services or network management options, they shall be included on Table C, which will supplant Table B in its entirety, to avoid misinterpretations or double counting.
- Component failure rate information (Table D).

The price tables must be completed in their entirety, in accordance with the instructions below.

Prices shall include all material, labor, shipping, tools, equipment, hardware and software, taxes (HWU suppliers must pay sales tax.), supervision, bonds, insurance, material, rental, indirect costs and profits to perform any unit of work. The price tables must be completed in their entirety, in accordance with the instructions below. HWU is tax exempt and will provide necessary documentation upon request.

Proposer shall provide pricing information in Excel files on CD, DVD or USB memory device "thumb-drive" as well as in hard copy within its pricing proposal, as described in the Instructions to Proposers. All pricing proposals shall be provided under separate covers as part of the proposal package, as outlined in Section 1 of the RFP.

Proposer must respond to each line item listed; lump sum proposals will not be accepted. Indicate "NA" (Not Applicable) if the equipment described is not incorporated in Proposer's system. Proposer must include any additional equipment and services not listed in the tables below, that are required to provide a complete and working system in accordance with the technical and performance requirements of this RFP; Proposer shall modify the Excel tables of Appendix D by adding rows or columns to accommodate additional system components or unit costs. Proposer shall not delete any row or column from the tables; if one item is included in the cost of another, Proposer shall so note this in the table or in a footnote.

HWU reserves the option of accepting or rejecting individual components of each proposal as needed to best serve the needs of the HWU. Any price submittals may be subject to negotiation during contract negotiations.

Pricing Table A details the Meter Costs, Scrap Credit, MIU Cost, and Grand Total Costs for each Meter Size.

Pricing Table B details the costs for all other equipment and services required for a complete and working AMI system throughout HWU's North Service Territory.

HWU prefers fixed network components (that is, data collectors) be deployed in portions of its service territory before deployment of meters and endpoints in that area.

Annual costs shall also be entered as applicable in Table B. Annual costs shall include software licensing and maintenance fees, proposed annual equipment preventive maintenance agreement costs and/or actual preventive maintenance, and any other expected costs associated with normal system maintenance.

Proposer shall detail each cost item if necessary (adding additional rows to the table if necessary), rather than just presenting a summary in the cell in the table. Indicate if these costs are to begin at a time other than after the first year of HWU ownership or control. If proposing costs that change from one year to the next because of inflation or other factors, explicitly state the annual adjustment factor as a percentage (e.g., 3% annual inflation rate) to be applied in the appropriate column.

Include in this section a schedule of costs for additional training beyond the initial training required by the RFP.

Proposer shall indicate the number of spare parts of each system component HWU should acquire and maintain on-hand.

Pricing Table C details the costs for a Managed Services/Hosted option for the network devices and software applications. Table C is provided for Proposers to submit this as an option.

The cost of data collectors and other network components, hardware and software, and professional services that must still be purchased by HWU under a managed services scenario shall be included in Table C so that this table constitutes a complete substitution for Table B.

Proposer should accompany this table with a list of any services not included in its hosted and managed services and network monitoring pricing, including optional services, and specific prices for each item not included for which it intends to levy a separate charge.

Failure Rates: Proposer shall provide expected failure rates for various system components, and their associated warranty and repair costs, in Table D. Proposer shall also provide (1) repair prices for MIUs, and (2) expected maintenance and repair costs for DCUs, in the case that HWU does not avail itself of annual maintenance agreements for these components, that will give HWU a true representation of expected operating and maintenance costs.

Proposer shall indicate the expected life in service of the system components if other than 20 years, and modify the tables listed below accordingly. Proposer shall provide explanation of any underlying assumptions necessary to explain these numbers.

Please note that if any proposed costs refer to a "list" price, or "retail" price, Proposer shall explicitly state the current "list" or "retail" price.

Proposer should provide guaranteed maximum failure rates in terms of failures per hundred units per year. Should the guaranteed maximum failure rates be exceeded, HWU will incur maintenance costs, loss of savings and productivity, loss of credibility and interruptions in cash flow in excess of reasonable expectations, may, at its option, declare the system to be nonfunctioning, and may exercise its rights and seek remedies under its contract with successful Proposer.

Table A - Replacement Meters, Scrap Credit, MIUs

Meter Size	Number of Meters in Situ	Unit Cost		Total Meter Cost (Unit Cost x Number of Meters)	Unit Cost		Grand Total Cost
		Unit Meter Cost			Unit Cost per Endpoint/MIU	Total MIU Cost	
5/8" x 3/4"	10,566	\$ -		\$ -	\$ -	\$ -	\$ -
1"	249	\$ -		\$ -	\$ -	\$ -	\$ -
1.5"	5	\$ -		\$ -	\$ -	\$ -	\$ -
2"	209	\$ -		\$ -	\$ -	\$ -	\$ -
3"	45	\$ -		\$ -	\$ -	\$ -	\$ -
4"	5	\$ -		\$ -	\$ -	\$ -	\$ -
6"	10	\$ -		\$ -	\$ -	\$ -	\$ -
11,089		Net Total Cost		\$ -	\$ -	\$ -	\$ -

Provide pricing for meters and MIUs for all meters in the Table.

Total Meter Cost is the Unit Meter Cost, minus the Unit Meter Scrap Credit, times the Number of Meters In Situ

Total MIU cost is the Unit Cost per MIU, times the Number of Meters In Situ

Grand Total Cost for each Meter Size is Total Meter Cost plus Total MIU Cost

Table B - Network, Software and Other Equipment and Services

Equipment Description	Capital Costs			Annual Unit License or Maintenance Contract Cost	Annual Unit Operating Cost	Inflator for Annual Cost
	Quantity	Unit Price	Total Cost			
Fixed Data Collection Units (DCUs)		\$ -	\$ -	\$ -	\$ -	
Recommended Spare DCUs		\$ -	\$ -	\$ -	\$ -	
Fixed DCU Installation		\$ -	\$ -	\$ -	\$ -	
Recommended Number of Portable Interrogators/Testing Units		\$ -	\$ -	\$ -		
Recommended Spare Portable Interrogators/Testing Units		\$ -	\$ -	\$ -		
Recommended Number of Vehicle Mounted Data Collection Units		\$ -	\$ -	\$ -		
Recommended Spare Vehicle Mounted Data Collection Units		\$ -	\$ -	\$ -		
AMI Head-End System Hardware			\$ -	\$ -		
AMI Head-End System Software			\$ -	\$ -		
Integration of AMI Head-End System Software to Tyler, other Systems			\$ -	\$ -		
Installation Management System Hardware/Software			\$ -	\$ -		
Meter Data Management System Hardware (i.e., servers)			\$ -	\$ -		
Meter Data Management System Software			\$ -	\$ -		
Meter Data Management System Software Integration to Tyler, other			\$ -	\$ -		
Customer Portal Hardware (servers)			\$ -	\$ -		
Customer Portal Software			\$ -	\$ -		
Customer Portal Software Integration to Tyler, other Systems			\$ -	\$ -		
Training			\$ -			
Project Management			\$ -			

Table C - Network, Software and Other Equipment and Services - Hosted/Managed Services

Equipment Description	Capital Costs			Annual Unit License or Maintenance Contract Cost	Annual Unit Operating Cost	Inflator for Annual Cost		
	Quantity	Unit Price	Total Cost					
Fixed Data Collection Units (DCUs)		\$ -	\$ -	\$ -	\$ -			
Recommended Spare DCUs		\$ -	\$ -	\$ -	\$ -			
Fixed DCU Installation		\$ -	\$ -	\$ -	\$ -			
Recommended Number of Portable Interrogators/Testing Units		\$ -	\$ -	\$ -	\$ -			
Recommended Spare Portable Interrogators/Testing Units		\$ -	\$ -	\$ -	\$ -			
Recommended Number of Vehicle Mounted Data Collection Units		\$ -	\$ -	\$ -	\$ -			
Recommended Spare Vehicle Mounted Data Collection Units		\$ -	\$ -	\$ -	\$ -			
	Set-up Fee	Price per Endpoint (year 1)	Total First Year	Price per Endpoint (year 2)	Price per Endpoint (year 3)	Price per Endpoint (year 4)	Price per Endpoint (year 5-20)	Inflator for Annual Cost
AMI Head-End System (Servers and Software)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Meter Data Management System (Servers and Software)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Customer Portal (Servers and Software)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Installation Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Communications Hardware/Installation for offsite Hosting	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	
Communications Cost for offsite Hosting	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	
Network Management and Endpoint Monitoring	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Integration of AMI Software to Tyler, other Systems	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Integration of MSDS to Tyler, other Systems	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Integration of Consumer Portal to Tyler, other Systems	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Customer Portal Software Integration to Tyler, other Systems			\$ -					
Training			\$ -					
Project Management			\$ -					

Meter Data Management System Software Integration to Tyler, other Systems

Table D - Component Unit Failure Rates

Meters & Registers				
Years After Meter is Installed and Accepted	Expected Failure Rate (per 100 units/year)	Pro-Rata Replacement Cost Percentage ¹	Unit Repair or Replacement Cost	Guaranteed Maximum Failure Rates (Failures /100 units/yr)
1		0%		
2		0%		
3		0%		
4		0%		
5		0%		
6		0%		
7		0%		
8		0%		
9		0%		
10		0%		
11		10%		
12		20%		
13		30%		
14		40%		
15		50%		
16		60%		
17		70%		
18		80%		
19		90%		
20		100%		

¹ For Example, a meter that HWU paid \$ 50.00 for that fails in the 11th year after being installed and accepted will be replaced at a cost to HWU of \$ 5.00.

Endpoint/MIU				
Years After Unit is Installed and Accepted	Expected Failure Rate (per 100 units/year)	Pro-Rata Replacement Cost Percentage ²	Unit Repair or Replacement Cost	Guaranteed Maximum Failure Rates (Failures /100 units/yr)
1		0%		
2		0%		
3		0%		
4		0%		
5		0%		
6		0%		
7		0%		
8		0%		
9		0%		
10		0%		
11		10%		
12		20%		
13		30%		
14		40%		
15		50%		
16		60%		
17		70%		
18		80%		
19		90%		
20		100%		

² For example, an MIU that HWU paid \$ 50.00 for that fails in the 11th year after being installed and accepted will be replaced at a cost to HWU of \$ 5.00.

Fixed Data Collector Unit				
Years After Unit is Installed and Accepted	Expected Failure Rate (per 100 units/year)	Pro-Rata Replacement Cost Percentage ³	Unit Repair or Replacement Cost	Guaranteed Maximum Failure Rates (Failures /100 units/yr)
1		0%		
2		0%		
3		0%		
4		0%		
5		0%		
6		0%		
7		0%		
8		0%		
9		0%		
10		0%		
11		10%		
12		20%		
13		30%		
14		40%		
15		50%		
16		60%		
17		70%		
18		80%		
19		90%		
20		100%		

³ For example, a DCU that HWU paid \$ 5000.00 for that fails in the 11th year after being installed and accepted will be replaced at a cost to HWU of \$ 500.00.

These costs may be supplanted by an annual maintenance contract, the price for which shall be included in Tables B & C

SIGNATURE PAGE

Non-Collusive Bid Statement: The undersigned bidder, having fully informed himself regarding the accuracy of the statements made herein, certifies that: (1) The bid has been arrived at by the bidder independently and has been submitted without collusion with and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the bid, designed to limit independent bidding or competition, and (2) The contents of the bid have not been communicated by the bidder or its employees or agents to any person not any employee or agent of the bidder or its surety on any bond furnished with the bid, and will not be communicate by any such person prior to the official opening of the bid.

Signature of Authorized Official

Name and Title (printed)

Legal Name of Business

Address

Address

Telephone Number

Date

Affix seal below if bid is by corporation.

This seal was herewith affixed in the presence of:

Signature _____ Title _____

**REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS
CLAIMING QUALIFIED BIDDER STATUS**

FOR BIDS AND CONTRACTS IN GENERAL:

I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a "qualified bidder" in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular "qualified bidder" status claimed by the bidding entity.

_____ A nonprofit corporation that furthers the purposes of KRS Chapter 163

_____ Per KRS 45A.465 (3), a "Qualified nonprofit agency for individuals with severe disabilities" means an organization that:

- (a) Is organized and operated in the interest of individuals with severe disabilities; and
- (b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and
- (c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and
- (d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder's claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

_____ Signature	_____ Printed Name
_____ Title	_____ Date
_____ Company Name	_____ Address

Subscribed and sworn to before me by _____ this _____ day of _____, 2020.

Notary Public

My Commission Expires

[Seal of Notary]

Check this box if **not** claiming Resident Bidder Status

**REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS
CLAIMING RESIDENT BIDDER STATUS**

FOR BIDS AND CONTRACTS IN GENERAL:

The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
 - a. Filed Kentucky corporate income taxes;
 - b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
 - c. Maintained a Kentucky workers' compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder's claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

_____ Signature	_____ Printed Name
_____ Title	_____ Date
_____ Company Name	_____ Address

Subscribed and sworn to before me by _____ this ____ day of _____, 2020.

_____ Notary Public	_____ My Commission Expires
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[Seal of Notary}

Check this box if **not** claiming Resident Bidder Status

**Statement Required Pursuant to KRS 45A.395
NON-COLLUSIVE AFFIDAVIT OF PRIME BIDDER**

State of _____)

County of _____)

_____, being first duly sworn, deposes and says that:

1. He or she is the owner, partner, officer, representative, or agent of _____, the Bidder that he or she has submitted the attached bid;
2. He or she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached bid or of any other bidder, or to fix any overhead, profit or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Henderson Water Utility, the City of Henderson or any person interested in the proposed Contract: and
5. The price or prices quoted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

Signed

Title

Subscribed and sworn to before me this
____ day of _____, 2020.

Title

My commission expires _____