



# CITY OF WHEATLAND

## CITY COUNCIL MEETING STAFF REPORT

May 12, 2020

**SUBJECT:** Approve Request for Proposals and Specifications, and Authorize Solicitation of Proposals for the AMI Water System Metering Upgrade Project, Phase 1 of the Wheatland Comprehensive Drinking Water Project

**PREPARED BY:** Dane H. Schilling – City Engineer, and  
Asa Utterback – Coastland Engineering

---

### **Recommendation**

Adopt a resolution approving the Request for Proposals (RFP) and specifications, and authorize the City Engineer to proceed with the solicitation of proposal for the implementation and installation of the Advanced Metering Infrastructure (AMI) Water System Metering Upgrade Project.

### **Background/Discussion**

With the support of the Yuba Water Agency (YWA), the City has been awarded a combined \$1.36 million grant through the Integrated Regional Water Management (IRWM) grant program, which includes fifty percent (50%) matching funds by YWA, for a Comprehensive Drinking Water Project. The Comprehensive Project will improve water system reliability; increase community awareness of water consumption; encourage sustainable water practices; and modernize the City's water supply system to accommodate growth.

The AMI Water System Metering Upgrade Project is one of two projects defined within the Comprehensive Project. The AMI Water System Metering Upgrade Project accounts for \$964,695 of the \$1.38 million in awarded IRWM grant funding. The other project included within the grant is the Water System Reliability Project, which has a programmed budget of \$400,000. Plans for delivery of that project will be brought to the Council at a later date.

The City has outdated water meters and billing software, making it difficult to quickly and accurately detect leaks; providing very limited information for water conservation measures; and creating on-going operational challenges which can be solved with available technology. Individual service meters are currently read manually. Most consumer leaks go undetected until after monthly reads, which results in substantial water loss. The system-wide water meter automation upgrades will improve water conservation and system management capabilities significantly. Further, the new system will allow for automated data sharing of groundwater levels

with Yuba Water Agency, which will enhance the groundwater sustainability monitoring efforts within the South Yuba Sub-Basin of which provides all of Wheatland's drinking water.

The project will install all new supply-side and demand-side meters, and implement systemwide water meter automation upgrades using Advanced Metering Infrastructure (AMI) to fully automate meter reading, enable timely leak detection; provide consumers with data for consumption management, increase operational efficiencies and improve the City's related operational and billing software.

With Council authorization and confirmation of funding award, the request for proposals is planned to be finalized and issued on May 14<sup>th</sup> with the tentative overall schedule as follows:

**Tentative Project Schedule:**

<b>RFP Issuance</b>	May 14, 2020
<b>Mandatory Pre-Proposal Conference</b>	June 2, 2020 at 10:00 am
<b>Cutoff for Requests for Information</b>	June 16, 2020 at 4:00 pm
<b>Proposals Due</b>	June 24, 2020 at 3:00 pm
<b>Presentation/Interviews (tentative)</b>	July 15, 2020
<b>Selection and Negotiation</b>	July-August
<b>City Council Approval</b>	August 25, 2020

Staff has been working cooperatively with multiple AMI system vendor teams to develop the attached RFP specification and has circulated a draft form of the RFP to those teams inviting their comments and input. The details of the RFP process and specification may be adjusted by comments received before issuance for solicitation and the final recommended scope may be adjusted as a result of negotiations with the selected vendor team before final contract award is recommended to the City Council.

Staff has determined that no significant environmental impacts should occur as a result of this project and therefore the project is categorically exempt under CEQA.

**Alternatives**

Alternatively, the City Council may choose to not to authorize the solicitation for proposals on the project or modify the scope of the specified project.

## **Fiscal Impact**

On January 21, 2020, the Yuba Water Agency (YWA) awarded the City of Wheatland a \$700,000 grant for the City's Comprehensive Drinking Water Project as the local match to leverage an application to the State for additional grant funding. On April 29, 2020 the City was notified that its project had been selected for full funding from the Proposition 1 Round 1 Integrated Regional Water Management (IRWM) Implementation Grant in the amount of \$682,347 to bring the grant total to \$1,382,347 for the Comprehensive Drinking Water Project. The Water Conservation and Efficiency (metering) Project is the first phase of the overall project.

The current estimate of project funding and budgeted costs is provided in Tables 1 and 2 below.

**Table 1 - Water Conservation & Efficiency (AMI Metering) Funding**

<b>Funding</b>		<b>Amount</b>
Integrated Regional Water Management (IRWM) Grant	\$	482,347.50
Yuba Water Agency (YWA) Matching Grant	\$	482,347.50
	<b>TOTAL</b>	<b>\$ 964,695.00</b>

**Table 2 - Water Conservation & Efficiency (AMI Metering) Budget**

<b>Expenditures</b>		<b>Amount</b>
Project Management, Engineering and Environmental	\$	63,250
Installation / Implementation	\$	809,445
Construction Administration	\$	23,000
City Admin (Transition of billing software)	\$	23,000
City Finance Software Upgrade	\$	46,000
	<b>TOTAL</b>	<b>\$ 964,695</b>

Note: Budgeted amounts include a contingency.

## **Attachments**

1. Resolution
2. Draft Request for Proposals (RFP) and specifications

**RESOLUTION NO. 23-20**

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WHEATLAND APPROVING THE DRAFT REQUEST FOR PROPOSALS (RFP) AND SPECIFICATIONS FOR THE AMI WATER SYSTEM METERING UPGRADE PROJECT**

**WHEREAS**, City staff applied for and the City was awarded \$1,382,347 in funding through the combination of a Proposition 1 Integrated Regional Water Management (IRWM) grant and match funding from the Yuba Water Agency (YWA) for the Wheatland Comprehensive Drinking Water Project; and

**WHEREAS**, the Advanced Metering Infrastructure (AMI) Water System Metering Upgrade Project ("Project") is one of the two projects included in the Wheatland Comprehensive Drinking Water Project grant; and

**WHEREAS**, the City's engineering consultant, Coastland Civil Engineering, has prepared and submitted a draft RFP and specifications for the Project; and

**WHEREAS**, Staff has determined that no significant environmental impacts would occur as a result of this project and the project is categorically exempt under CEQA; and

**WHEREAS**, City staff recommends to City Council that said draft Request for Proposals and specifications be approved, and authorization to bid be given to solicit proposals the Project;

**NOW, THEREFORE IT IS HEREBY RESOLVED, ORDERED AND FOUND** by the City Council of City of Wheatland, State of California, hereby approves the draft Request for Proposals and specifications for the AMI Water System Metering Upgrade Project and authorizes the City Engineer to proceed with the proposal solicitation process.

**PASSED AND ADOPTED** by the City Council of City of Wheatland, State of California this 12<sup>th</sup> day of May 2020, by the following vote:

AYES:  
NOES:  
ABSTAIN:  
ABSENT:

ATTEST:

\_\_\_\_\_  
Rick West, Mayor

\_\_\_\_\_  
Lisa Thomason, City Clerk

Request for Proposal  
Advanced Metering Infrastructure  
and Meter Replacement Project

---

City of Wheatland  
Wheatland, CA  
May 14, 2020

**SUBMITTAL DUE DATE AND TIME:**

June 24, 2020 3:00 pm

City of Wheatland  
Attention: City Clerk  
111 C Street, Wheatland, CA 95692

Mandatory Pre-Proposal Conference at City Hall (111 C Street)

June 2, 2020 10:00 am

**DRAFT**

# Table of Contents

1.0	Project Summary .....	4
2.0	Scope of Work .....	5
3.0	Proposer Response Format .....	5
3.1	Proposal .....	6
3.2	Presentation .....	8
4.0	Selection Criteria .....	8
5.0	Project Schedule .....	10
6.0	Proposal Response to Technical and Functional Questions .....	10

## Attachments

---

Attachment A: City Service Area and Billing Route Maps .....	A-1
Attachment B: Existing City Water Meters.....	B-1
Attachment C: Cost Tabulation .....	C-1
Attachment D: Scope of Work.....	D-1
Attachment E: City Water Meter Standard Details .....	E-1
Attachment F: City Standard Construction Contract.....	F-1
Attachment G: Summary of Proposed Equipment/System and Alternatives with Technical and Functional Questions .....	G-1

## 1.0 Project Summary

The City of Wheatland is located in California's Central Valley on the southern border of Yuba County, east of the Feather River, north of the Bear River, and 36 miles north of Sacramento on State Highway 65. Wheatland has an incorporated area of approximately 8.1 square miles with most of its developed area and existing water services focused in a 1.5 square mile area.

The City's existing water services are metered, but most of the meters are more than 15 years old with manual or touch-read systems. As part of this project the City of Wheatland will be replacing all existing water meters serving City connections and implementing a fixed network Advanced Meter Infrastructure (AMI) system on all connections served by the City. The key purposes of the system-wide water meter automation upgrades are to improve water conservation and water use efficiency significantly; improve system reliability; and reduce on-going operational costs.

The City of Wheatland provides water to 1,071 service connections composed of approximately 1,034 residential water meters and 37 commercial/industrial/landscape. Meters are generally located within front yards of residential connections, and behind walks in front of commercial connections. The City estimates that about 100 meters are located in driveways, approximately 25 of which will require plumbing modifications and new meter boxes. Maps of the City and its water system are included as Attachment A. The City also has supply meters located at five (5) different well sites. A summary of the existing supply meter sizes, locations, and work to be done is provided in the table below. City supply wells are also shown in the City water system map in Attachment A. An address listing of water services with meter size is also included in Attachment B.

It is the intent of this RFP for the City of Wheatland to obtain proposals for the replacement of all water meters, and the turn-key installation of a single AMI system to serve all connections in the City, including training for city staff and customers for the respective interface portals provided.

The proposals shall include costs for the following equipment and services, as described in detail in **Attachment C** of this the RFP:

- 1a. Project Management and Mobilization
- 1b. Meter Audit
- 2a. Water Meter Replacement
- 2b. Water Meter Plumbing Modification
- 3a. Water Meter Lid Replacement
- 3b. Water Meter Box Replacement
- 3c. Driveway Repair
- 4a-4k. Furnish Water Meters
5. Furnish AMI Endpoints
6. Install AMI Endpoints
7. Fixed Network AMI System
8. Hosting Services
9. Customer Portal
- LC1. Present value of expected repair, service and replacements within 20-year life for all water meters, including encoders
- LC2. Present value of expected repair, service and replacements within 20-year life for all endpoints



- LC3. Present value of expected repair, service and replacements within 20-year life for all AMI system components
- LC4. Present value of all fees for required hosting services, training and other required support services through 20-year life, including allowed rate increases.
- LC5. Present value of all fees for customer portal service and support through 20-year life, including allowed rate increases.
- LC6. Present value of all revenue loss caused by loss of meter accuracy over the life of the meter.

## 2.0 Scope of Work

The scope of work for this proposal is included in Attachment D.

## 3.0 Proposer Response Format

Proposers are advised to become thoroughly familiar with all conditions, instructions and specifications governing this RFP. Proposals shall be made in accordance with these instructions. Proposers shall bear their own costs and expenses in preparing their proposals, and this RFP does not commit the City to pay any costs incurred in the submission of a proposal or in making any necessary studies or designs for the preparation of this RFP. All questions must be answered in the order listed in this section and limit the number of pages to the requested page limit per each section. Minimum text height and spacing of body text for responses required in this proposal shall be 11 point with no compression of spacing. Product specification sheets and warranties should be submitted in appendices with the response as designated herein. Attendance at the pre-proposal conference is mandatory.

Submission will be made to:

**City of Wheatland  
Attention: City Clerk  
111 C Street  
Wheatland, CA 95692**

Submit four bound copies and one electronic (pdf format) copy of the proposal via post (not email) no later than **3:00 pm on June 24, 2020.**

Questions about this Request for Proposal should be made in writing and e-mail to the Project Manager, Asa Utterback of Coastland Civil Engineering at [utterback@coastlandcivil.com](mailto:utterback@coastlandcivil.com) or mailed to **111 C Street, Wheatland, CA 95692**. All questions must be received by June 16, 2020. Questions via phone will not be accepted.

### Tentative City Schedule:

<b>RFP Issued</b>	May 14, 2020
<b>Mandatory Pre-Proposal Conference</b>	June 2, 2020 at 10:00 am
<b>Cutoff for Requests for Information</b>	June 16, 2020 at 4:00 pm
<b>Proposals Due</b>	June 24, 2020 at 3:00 pm
<b>Presentation/Interviews (tentative)</b>	July 15, 2020
<b>Selection and Negotiation</b>	July-August
<b>City Council Approval</b>	August 25, 2020

The City reserves the right to modify this RFP at any time prior to the proposal due date, or to extend the proposal due date, or to cancel this RFP at any time.

### 3.1 Proposal

Proposals shall be submitted per the following format:

#### TABLE OF CONTENTS:

- Section 1: Cover Letter (2 page maximum)  
The cover letter should include the following:
- Introduction of proposal firm
  - Address
  - Phone number
  - Include the name, signature and contact information of an authorized binding official who is authorized to answer questions regarding the firm's proposal.
  - Include the name of the manufacturer of the proposed AMI System and product name.
- Section 2: Summary of proposed equipment and system with answers to technical and functional questions following format of Attachment G. (Summary - 1-2 pages; Questions and answers - 10 page maximum)
- Section 3: Vendor/Contractor Project Team Experience and Qualifications. Provide company size, performance history, qualifications and experience information for each company involved as a key member, including but not limited to manufacturer, vendor and installation contractor. Information provided shall detail the number of units installed of the proposed products and years in service as relevant to the specifications in this RFP. (8 page maximum)
- Section 4: Provide an organizational chart of the project team committed to this project along with their role. Provide brief biographical resumes of key team members. (6 page maximum)
- Section 5: Project Schedule (2 page maximum, 11x17 pages allowed)
- Section 6: Complete description of proposed metering solution, including AMI system, and replacement meters. The proposed solution shall be consistent with the City's requirements as set forth in the Scope of Work attached to this RFP as Attachment D. Summarize items included as appendices to the proposal. (3 page maximum)
- Section 7: Cost Proposal/Bid. The cost proposal/bid shall be broken down by individual items as specified in Attachment C. Table C1 is to be completed based on the Proposer's fee estimate to complete all items proposed. Table C2 is to be completed based on the City selecting the Proposer for less than the total number of items proposed. Table C2 should be completed if the Proposer's fee by item would vary on an individual selection basis from what is provided in Table C1 based on Proposer selected for all items proposed.

Include a 20-year life cycle Costs with and without water meters. A 20-year life cycle cost with meters would be the lump sum amount for the 20-year life cycle cost for

providing items and services specified in this RFP in today's dollars. This shall include all costs associated with the maintenance, and repair of the system, including but not be limited to the purchase price and installation of equipment required to provide a fully operational AMI system, on-going services for hosting, training, technical support and any other applicable reoccurring fees, replacement of end points if less than a 20-year warrantee and replacement of any other equipment that does not have an expected 20-year life. The 20-year life cycle cost shall include all labor, materials, and other costs. The escalation of annual costs used to prepare the 20-year life cycle shall be 4%. The complete calculation of the 20-year life cycle cost including all assumptions used to calculate the 20-year life cycle cost shall be provided as an appendix to the proposal.

Section 8: **OPTIONAL ALTERNATIVE:** At proposer's option, provide a summary of proposed **alternative** equipment and system with answers to technical and functional questions following format of Attachment G for separate consideration. (Summary - 1-2 pages; Questions and answers - 10 page maximum)

The following information shall be included as appendices to the proposal.

- Appendix A Product data/specification sheets for all AMI system components and metering products in proposal
- Appendix B Public agency references broken down in up to four categories (1-AMI System; 2-endpoint type; 3-mechanical meters; 4-ultrasonic or electromagnetic meters). Provide four references for each. Use of the same reference persons for multiple facets of the system is allowed and encouraged. References who cannot be readily contacted may result in a zero score for their part of the averaged scoring.
- Appendix C Warranties as they apply to each of the proposed items in Appendix A.
- Appendix D 20-year life cycle cost calculation and assumptions

Proposals will be reviewed to determine if the Proposer meets the minimum qualifications necessary to complete the Scope of Services required for the Project. Proposals not meeting minimum qualifications will be disqualified from further consideration at the sole discretion of the City. The City may seek written clarification from any or all Proposers in order to better understand and evaluate the proposed metering solution. This process may not be used as an opportunity to submit missing documentation or to make substantive revisions to the original proposal.

The Proposer shall certify in the proposal that the Proposer takes no exceptions to this RFP, including but not limited to all of the attachments, or if exceptions are taken, clearly indicate in the proposal those exceptions taken. Unless otherwise indicated in its proposal, each Proposer shall be deemed to have accepted all such terms and conditions as may be specified in this RFP, the attachments and any and all addenda related thereto.

### 3.2 Presentation / Interview

**Presentation/interviews are anticipated to occur on July 15, 2020. This date is subject to change.** Up to three (3) top-ranked, qualified proposers will be selected to provide a 45- to 60-minute presentation of the proposed AMI system, including:

1. Operation and use of the City Operations portal,
2. Operation and use of the water customer portal,
3. Overview and example of the proposed training,
4. Explanation of included software support services, and
5. Demonstration of endpoint activation and field verification.

Team members required to be at the presentation are the proposed project manager, field supervisor, and lead training person. Proposers may include other team members in the presentation at their discretion. After the presentation, the proposer’s team will be asked to respond to questions from the panel, as needed, regarding the presentation and the submitted proposal.

### 4.0 Selection Criteria

All proposals received will be reviewed and evaluated by a committee. This committee will assess the qualifications and select the proposers to be interviewed based upon the criteria and scoring.

Each of the technical categories will be evaluated to determine the best score by the following criteria. The review committee will make a recommendation to award the contract or contracts based on the criteria set forth below:

Evaluation criteria	Description	Approximate Weighted value (100 pt target)
Qualifications, Experience and History of Proposed Vendor Team	Size, qualifications and experience of proposed vendor and/or contractor. Demonstrate quantity and duration of proposed AMI water systems and meter equipment in use. Also show amount of installations performed by the proposed installation company.	20% / 20 points
Technical Requirements /System Capabilities	Degree to which proposed system addresses technical specifications, performance requirements, and desirable functions. Proposed solution must meet all of the RFP technical requirements. Preferred AMI and meter features and benefits will be scored higher. Features and benefits of water conservation and management tools provided are also of high value. Compatibility with the City’s billing software will also be considered.	30% / 30 points

Reference Rating of Product Quality, Reliability, Ease of Use & Customer Service	Product quality, reliability, ease of use and customer service experienced and ranked by listed references and City. Listed references and City operations manager will be asked to rank the proposed products and services on a scale of 1 to 10 on a prescribed list of questions or qualities. The average value of their composite ranking will be multiplied by 2.	20% / 20 points
20-year Life Cycle Cost	The engineer's estimate will be divided by the total present value of the 20-year life cycle cost analysis (Table C1 Project Costs plus Table C2 Designated Life Cycle Costs). The result will be multiplied by 30 to determine the point value. Proposed costs totaling less than the Engineer's estimate will be worth more than 30 points.	30% / 30 points
<p>Interviewed proposers will be scored separately for their interview by a panel of City staff. The panel members may differ from the proposal review committee. The proposer's score will be added to the score assigned by the proposal review committee to determine to final rankings.</p>		
Interview	Panel scoring of suitability of proposed AMI system components for City needs based on presentation and responses to questions	30 points

The top ranked proposer, based upon the combined proposal and interview scoring, will be selected for contract negotiation of a contract based on the proposed scope. Upon successful negotiation of contract scope and fee, selected proposer will be recommended for contract approval by City Council. At City discretion, if agreement upon a suitable contract scope and fee is not reached with top ranked proposer, city may terminate negotiations and enter negotiations with the next highest ranked proposer.

The City reserves the right to reject any or all proposals and to waive any and all irregularities to choose the Proposer and may amend the scope of this RFP at any time, which the City believes, in its sole discretion, best serves the City's interest. The City expects to complete its evaluation process to select one or more qualified Proposers, but reserves the right to change key dates and actions as the need arises. The proposals received in response to this RFP will become the property of the City and may be used by the City in any way it deems appropriate. The City reserves the unqualified right to modify and/or suspend any and all aspects of the RFP, to request further information from any firm or person responding to the RFP, to waive any defect as to form or content of this RFP or any response thereto, to extend deadlines for accepting responses or accept amendments to responses after expiration of deadlines and to reject any and all responses to the RFP.

The selected Proposer shall be required to execute a contract with the City that will be subject to City Council approval. **The City anticipates City Council award of this contract at the August 25, 2020 meeting. This date is subject to change.** The contract will incorporate all legal requirements and provisions required for implementation of the metering solution. The City's standard construction contract is included as Attachment F.

## 5.0 Project Schedule

Following City Council approval of the contract, the meter replacement and AMI system installations shall be completed within 7 months of the date upon which the City gives the selected Proposer a notice to proceed. The field installation work shall be completed within 4 continuous months after the beginning of field installation work.

Installation schedule shall accommodate delivery of meter change-out data according to timeframes needed by City to provide continuity of billing. Demonstrated ability to meet schedule requirements is part of the Technical Requirements scoring.

## 6.0 Proposal Response to Technical and Functional Questions

Provide a summary of proposed equipment/system according to the format and information requirements in Attachment G of this RFP. In Section 2 of the submittal, provide a complete response to all technical and functional questions that are detailed in Attachment G. All questions must be answered and the data given must be clear and comprehensive. Any references to "equipment being proposed," "equipment," etc. refers to the AMI system components and its operating software.

One alternative set of metering equipment may be submitted for ranking and consideration along with supporting information for the alternate equipment. Alternative, if submitted, shall be included as Section 8 of the proposal.

DRAFT

## Attachment A: City Water System, Service Area, and Service Addresses

---

**DRAFT**

Attachment B: Existing City Water Services

---

**DRAFT**



Attachment C: Cost Proposal

---

**DRAFT**

**PROJECT COSTS****General**

The intent of this cost proposal is to identify all costs of providing complete turn-key delivery, installation and support of an Advanced Metering Infrastructure (AMI) system for the City of Wheatland's potable water system. The cost to furnish all materials shall include sales tax, shipping and all incidental costs of providing specified items to the City. Values entered here will be the basis of values in contract with City.

TABLE C1 - PROPOSED PROJECT COSTS					
Item	Description	Quantity	Units	Unit price	Total price, \$
1a	Project Management	1	LS		
1b	Meter Audit	1,071	EA		
2a	Water Meter Replacement	1,071	EA		
2b	Meter Plumbing Modification (3/4" thru 2" size)	56	EA		
2c	Supply Well Metering Test Port Installation	5	EA		
3a	Water Meter Box Lid Replacement	100	EA		
3b	Water Meter Box Replacement	100	EA		
3c	Driveway Repair	25	EA		
4a	3/4" Water Meters	600	EA		
4b	3/4" with ASV*	10	EA		
4c	1" Water Meters	414	EA		
4d	1" with ASV*	10	EA		
4e	1-1/2" Water Meters	18	EA		
4f	2" Water Meters	14	EA		
4g	3" Water Meters	1	EA		
4h	4" Water Meters	1	EA		
4i	6" Water Meters (demand)	3	EA		
4j	6" Water Meters (supply)	4	EA		
4k	8" Water Meters (supply)	1	EA		
5	Furnish Endpoint	1,071	EA		
6	Install Endpoint	1,071	EA		
7	Fixed Network AMI system	1	LS		
8	Hosting Services Maximum annual escalation = _____%	1	YR		
9	Customer Portal Maximum annual escalation = _____%	1	YR		
Total Project Costs					

**DESIGNATED LIFE CYCLE COSTS**

**General**

The intent of the designated life-cycle cost proposal is to reasonably represent the approximate costs of continued operation and maintenance of the delivered and installed AMI system over the first 20 years of the system life, including replacements and maintenance per manufacturers recommendations and life expectancies plus all on-going and recurring costs of the required services. Table C2 values will be used as part of the ranking of the proposed system in the selection process and will **not** be included in the value of the contract with the City.

TABLE C2 - DESIGNATED LIFE CYCLE COSTS					
LC1	Repair, Service & Replacement of Water Meters, Including Encoders	1	LS		
LC2	Repair, Service & Replacement of Endpoints	1	LS		
LC3	Repair, Service & Replacement of AMI System components (not including endpoints)	1	LS		
LC4	Network-as-a-Service (NaaS) Hosting and Service Fees to 20 Years Use maximum annual escalation from Table C1	1	LS		
LC5	Customer Portal Fees to 20 Years Use maximum annual escalation from Table C1	1	LS		
LC6	Water Revenue Loss	1	LS		
<b>Subtotal Designated Life Cycle Costs after first year</b>					
<b>Total Considered Cost (Project plus Designated Life Cycle Costs)</b>					

Attachment D: Specification and Scope of Work

---

**DRAFT**

## **General Information**

The City does not have a readily identified property available to offer as a staging area for use by proposers. Use of unused portions of City property which are not explicitly open to public use or actively used by City operations may be proposed in the written proposal for consideration by the City.

All quantities are estimated for the purposes of cost comparison and establishment of contract values. Actual quantities will be verified through the meter audit and the contract quantities will be adjusted.

All existing services and supply wells have meters which are to be removed and disposed of by the proposer. All existing services have touch-read AMR units which are to be removed and disposed of by the proposer.

The proposal shall include the following items.

### **Item 1a. Project Management**

Proposer shall provide a project management team for the overall management of the project including but not limited to:

1. Schedule workflow for meter replacement, manage/schedule field efforts, and report status to City
2. Develop and manage process to address customer complaints
3. Provide 7-day and 24-hour written notice to customers informing them of the construction activities occurring in their neighborhood and notifying them of planned water shut off windows.
4. Construction management of field activities
5. Have a health and safety program in place
6. Manage data to connect new meter data into the City's database so that minimal or no information has to be captured or entered manually by the City.
7. Provide weekly written project status updates
8. Conduct biweekly coordination meetings

The lump sum amount for mobilizing all efforts, providing a route schedule for meter replacement, managing customer complaints, construction management of field activities, providing a health and safety program, providing notices to customers, managing data to connect to City's database, providing project status updates, and conducting coordination meetings. Contractor may apply for payment for this item on a percent complete basis as the items covered in project management are completed.

The lump sum price shall be full compensation for the completion of all items included in the scope for this item.

### **Item 1b. Meter Audit**

Proposer shall perform a field audit of all supply and demand meter locations to determine or confirm and report on the following for each meter:

1. Service address for service (demand) meters according to City-provided data
2. Account number and account type according to City-provided data
3. Customer name associated with account according to City-provided data
4. Name and phone number of contact person according to City-provided data
5. Existing service meter size (inches) and type
6. Existing meter serial/ID number (read by bar code scanner where possible)

7. Existing endpoint ID (read by bar code scanner where possible)
8. Box type and condition
9. Lid size, type, material, and condition
10. Meter box condition
11. Pipe material (copper, PVC, galvanized, etc.)
12. Determine cleanness of box/drain rock and accessibility of meter/curb stop valve
13. Check for and note damage, tampering, or leaks
14. GPS position of meter location: Global Positioning System (GPS) location data shall be collected using a Global Navigation Satellite System (GNSS) receiver rated for sub-meter accuracy.

All data shall be collected digitally using an approved software application (app) based data collection and work order management system loaded on a mobile device or computer to be furnished by the contractor for their own use. The selected system shall allow for the convenient tracking of all important details.

#### **Item 2a. Water Meter Replacement**

The City's current general metered specifications are included in the City's Standard Specifications located on the City's website. City Standard details for water meters are included in Attachment E for convenience, but all work shall be completed in accordance with the City Standards. The scope for this item includes:

1. Replace water meters – Remove and replace existing water meters with meters of the same size. A key element of the replacement strategy includes meter compatibility with the selected AMI system. The City will provide personnel to assist contractor with locating meters that the contractor is unable to reasonably locate.
2. Meter replacement plan – All meters must be replaced in four consecutive months from the start of the installation effort. Provide a phasing plan and schedule. Provide explanation and justification of the phasing plan. Scheduling of AMI System and meter installation shall be arranged to avoid disruption of the City's ability to bill customers on a monthly basis.
3. Contractor shall provide reports to the City describing nonstandard meter installations, proposed modifications, and estimated time required to complete the proposed modifications. Contractor shall provide a report for each billing route prior to starting work in that billing route.
4. Describe quality assurance/quality control (QA/QC) process – Provide verification that the meter reflects the correct meter reading and is the appropriate meter for the location.
5. Provide GPS coordinates of each meter in addition to meter number/unique identifier. This may be done with the use of a handheld GPS unit such as the field programmer but must not require additional equipment and shall provide accuracy to within one meter (3.28 feet). An electronic file with meter locations, suitable for importing into the City's GIS system, shall be provided.
6. Foreign material must not be allowed to enter the water meter while being installed. Any parts, tools, construction debris, or other foreign material that accidentally enters the meter or service line must be recovered before installation of water meter.
7. Contractor shall furnish all material, equipment and labor necessary to disinfect all new water meters and all related facilities disturbed by construction. Hand operated sprayer with a 300mg/L chlorine bleach solution shall be used to coat all interior surfaces of pipe, meter, and fittings immediately

BEFORE installation. HTH Tablets may NOT be used; only liquid bleach solution of the appropriate strength may be used.

8. All water meters shall be replaced and placed back into service as soon as possible. No water service shall remain out of service without prior approval of the Engineer. All debris resultant from the Contractor's excavation or construction operation shall be removed from each site the same day at the Contractor's expense. No excess materials shall be dumped or drained into the storm drains or sewer. All materials removed shall be disposed outside of the right-of-way, which shall be left with a clean and finished appearance. Any water service lines, meter couplings, angle meter valves, service fittings, irrigation lines, sprinkler heads, meter boxes or lids damaged during excavation or installation shall be repaired and water tested with the City's inspector present, prior to any backfill or pouring of sidewalk or concrete pad.
9. All existing landscaping, ground cover, grass, plants, shrubs, and/or trees, which are damaged during construction, shall be replaced with the same type or approved variety within 48 hours.
10. Contractor shall be responsible for disposal and scrapping of all existing meters that are taken out of service.
11. Where a new meter has been installed or other modifications are performed on the water service plumbing under this contract, the Contractor shall coordinate with the resident to open all exterior faucets and shall attempt to have the property owner/tenant open all interior faucets in order to help prevent fixtures from plugging.

If the resident or owner is not available, able, or willing to operate the faucets and hose bibs, the Contractor shall perform the flushing from the hose bib nearest to or on the water piping where it enters the home. Contractor shall flush the service for a minimum of two (2) minutes, and up to five (5) minutes, as needed until the water flows clear. Contractor shall immediately notify the City and the resident, if the flush water fails to clear within 5 minutes. If the service water fails to clear, the Contractor shall cooperate with the City to clear the water or perform work as needed to satisfy themselves and the City that the dirty or turbid water was not caused by Contract work.

12. Replacement of City supply meters have the following additional requirements:
  - a. No more than one city well can be out of service at a time. Plan replacement of supply meters to allow for testing and reactivation of previous installations before the next well is taken out of service.
  - b. Plan and prepare for supply meter replacement and related work to be performed and complete within four hours of deactivation of the respective well, including the test port installation covered under Item 2c.

**Table D-1 - Supply Well Details**

Well No.	Location Description	Meter Size/Type	Work to be done
3	City of Wheatland Corp Yard	8"	Replace and add test port
4	2 <sup>nd</sup> & Olive St	6"	Replace and add test port
5	Evergreen	6"	Replace and add test port
5	Evergreen (secondary meter)	8"	No changes
6	Southeast corner of Wheatland High School	6"	Replace and add test port

8	Carpenter Way	6"	Replace and add test port
---	---------------	----	---------------------------

Unit cost amount to furnish all labor, materials, tools, equipment, and incidentals to replace the City’s existing 1,071 meters, in conjunction with the installation of the AMI solution. Price for City supply meter installations shall include the addition of a downstream test port to allow for calibration testing.

This item does not include the cost to furnish the water meters themselves. Water meters will be furnished under Items 4a-4k.

**Item 2b: Water Meter Plumbing Modification (3/4", 1", 1½", and 2")**

This item includes modifications of water meter plumbing where required to fit a different meter size or lay length or to raise or lower the plumbed depth of the water meter. Modifications are expected to include connection to existing meter valve, piping as needed, installing new meter valve, installing new service-side piping and customer shut-off valve and connecting to existing customer piping. Valves shall be brass ball valves and all work shall conform to the revised City Standard details incorporated in this RFP.

Unit cost amount to furnish all labor, materials, tools, equipment, and incidentals to modify the existing piping, in conjunction with the installation of a ¾-inch, 1-inch, 1½-inch or 2-inch meter.

This item does not include the cost to furnish the water meters themselves. Water meters will be furnished under Items 4a-4f.

**Item 2c. Supply Well Metering Test Port Installation**

Install a secondary port downstream of the supply meter including the following:

- a. Submit recommendations for fitting(s), installation method and location of test port along with recommended test procedures for testing and calibration of supply meters
- b. Perform installation of test port in same operation as replacement of the respective supply meter.

**Item 3a. Water Meter Box Lid Replacement**

City Standard details for water services detail the meter box and lid requirements and are included in Attachment E for convenience. All work shall be completed in accordance with the City Standards except where noted. The scope for this item includes:

- 1. Replace water meter box lid.

The City does not have an estimate of the number of meter box lids to be replaced. All meter box lids that are required to be replaced shall be replaced at the unit cost listed in Proposer’s pricing.

Unit cost amount to furnish all labor, materials, tools, equipment, and incidentals to replace as needed any water meter box lid to make the AMI system function at the intended capacity. The number of meter box lids needing replacement is approximate. All meter box lids that are required to be replaced shall be replaced at the unit price provided, regardless of quantity.

**Item 3b. Water Meter Box Replacement**

City Standard details for water services detail the meter box and lid requirements and are included in Attachment E for convenience. All work shall be completed in accordance with the City Standards except where noted. The scope for this item includes:

- 1. Replace water meter box per standard details. Lid replacement shall be accounted separately under item 3a.



Unit cost amount to furnish all labor, materials, tools, equipment, and incidentals to replace any water meter box with existing damage or install new water meter box as needed to accommodate new water meter. The number of meter boxes needing replacement is approximate. All meter boxes that are required to be replaced shall be replaced at the unit price provided, regardless of quantity.

**Item 3c. Driveway Repair**

The City anticipates approximately 25 existing meters that are located in driveways to require plumbing modifications and box replacement. Driveways affected by meter replumbing and box replacement shall be repaired to match existing conditions or better. This item only includes plain concrete replacement with medium broom finish. Special materials and finishes, if required will be handled under time and materials accounting. Assume that approximately 30 square feet (5'x6') of existing concrete driveway per service will require replacement. Meter plumbing modification shall be accounted for separately under Item 2b. Meter box replacement shall be accounted for separately under item 3b.

Payment of this item will be made on a per service basis at the rate provided in Attachment C. The per service rate shall include all labor, tools, equipment, and incidentals required to perform the work.

Unit cost amount to furnish all labor, materials, tools, equipment, and incidentals to repair the existing concrete driveway after performing water meter plumbing modifications and meter box replacement. 30 SF of driveway repair is anticipated for each affected service.

This item does not include the cost to furnish the water meter box or replumb the existing service. Water meter box replacement will be furnished under Item 3b. Water meter plumbing modification will be furnished under items 2b.

All driveway repairs that are necessary to accommodate plumbing modifications and meter box replacement shall be performed at the unit price provided, regardless of quantity.

**Item 4. Furnish Water Meters**

The scope for this item includes:

1. Furnish 1,071 service (demand) meters and 6 supply meters to the City per the following table and specifications:

**Table D-2 – Schedule of Estimated Meter Quantities by Size**

Item	Meter Size / Use	Quantity
4a	¾" / service	600
4b	¾" with ASV* / service	10
4c	1" / service	414
4d	1" with ASV* / service	10
4e	1½" / service	18
4f	2" / service	14
4g	3" / service	1
4h	4" / service	1
4i	6" / service	3

4j	6" / supply	4
4k	8" / supply	1

- Meters to be provided with an Automated Shutoff Valve (ASV) are preferred with the ASV incorporated in the standard lay length for the meter size. The ASV shall be operated remotely via the AMI network. Meters with ASVs are to be installed in lieu of a non-ASV meter on service locations to be designated by the City.
- City preference is for ultrasonic or magnetic flow meter technology to reduce long term system maintenance requirements and reduced water loss where those meters can meet all requirements of these specifications. However, the proposing vendor/contractor is encouraged to also provide alternative use of mechanical positive displacement meters where the life cycle cost will be reduced or a better value can be demonstrated.
- Meters, registers, endpoints, data collectors, reading devices and software shall be warranted as fully compatible with each other for all intended uses in this specification package and sold through one point of contact to simplify installation, maintenance, replacement, and warranty management. City preference is for all components to be manufactured by a single company or brand.
- Proposed water meter must be manufactured and sold for a minimum of 3 years and shall have at least 50,000 in service. Ultrasonic or electromagnetic service meters of 2-inch nominal size or larger with lesser service length or fewer in service will be considered. Such ultrasonic or electromagnetic meters shall be provided with a full replacement warranty of not less than 10 years.
- All meters shall have a unique serial number durably marked on the main case along with indication of the year of the manufacture.
- Meter casing must be made of a stainless steel, bronze or copper alloy material. Plastic or polymer meter bodies are not acceptable.
- Meters must meet current Safe Drinking Water Act lead free standards and shall be constructed of copper, bronze, or stainless steel and ANSI/NSF Standard 61 Certified. The meter body, top and bottom covers and other component in contact with water, shall be no more than 0.25% of lead content and shall conform to California Proposition 65 requirements.
- All meters must meet or exceed all applicable American Water Works Association (AWWA) standards for cold water meters for accuracy and capacity, including but not limited to: C700, C707, C713 and/or C715.
- Meters 2" in size and larger must be equipped with valves for in-line test provisions. All meter assemblies shall be tested and shall comply with the requirements of the latest revision of the applicable AWWA Standards.
- All meters shall be furnished with certified test results attached to each meter or shipment of meters showing that every meter has been tested and compliant with meter accuracy and capacity requirements according to the most recent AWWA standards.
- Meters shall have a measured-fluid temperature range of at least 34°F to 122°F
- All meters shall be equipped with an electronic encoder type meter register with a water-tight sealed connection between the meter and the register.

- Meter register's electronic enclosure shall be constructed of a durable engineered composite designed to last the life of the meter, be weather resistant, sealed, non-removable, and tamper protected.
- Read resolution of the meter register is planned to be:
  - For meters of sizes 1" and smaller = 1/100<sup>th</sup> (one hundredth) of a cubic foot
  - For 1.5" and 2" meters = 1/10<sup>th</sup> (tenth) cubic foot
  - For 3" and larger = 1 cubic footHowever, all meters shall have a minimum resolution of 1/10<sup>th</sup> (one tenth) of a cubic foot.
- Register display shall be straight reading, permanently sealed electronic high resolution nine-digit LCD display that displays:
  - Consumption
  - Rate of flow
  - Alarms
  - Unit of measure factory programmed for cubic feet
- Meter registers must be capable of directly interfacing with Endpoint Transmission Devices without the need for any on-site register programming.
- Registers shall have a unique identification number that can be read electronically when the meter is interrogated and transmitted to or stored in the AMI endpoint.
- Meters and registers shall be warranted against defect in material and workmanship for a period of twelve months from date of installation identified on the meter reading data system.
- Any required field connections to endpoints or encoders shall be made with pre-formed waterproof connectors. No wire splicing of any kind shall be required to be performed during installation.
- Supply meters to be installed at City wells shall be provided with dual output to communicate directly with both the provided AMI system and the City's existing SCADA system.

Proposer shall assume that the existing demand/service meters greater than 2" in size are compound and will be replaced with a compound meter, if they do not have an ultrasonic or electromagnetic meter available for any given size.

#### **Item 5. Furnish AMI Endpoint**

The scope for this item includes:

- a) Furnish AMI endpoint meter reading data transmission equipment - Proposers may propose with either unlicensed radio, licensed radio or cellular endpoints. City preference is for cellular technology to reduce system infrastructure and maintenance requirements.
  - i. All radio systems proposed by the Proposer must operate on a dedicated, FCC licensed frequency to prevent erroneous reading errors. If proposed system will operate on a licensed frequency, the Proposer must obtain said license on behalf of the City of Wheatland. All related one-time and on-going costs shall be detailed and included in cost proposal and lifecycle cost analysis.
  - ii. All equipment must comply with current FCC requirements - Part 90 of the FCC regulations. The Proposer must have supporting documentation available upon request to verify compliance.
  - iii. The City will not accept a drive-by system with the expectation to migrate to a fixed network

reading solution, nor the installation of technology that has not been field tested for a period of at least 5 years.

- iv. Manufacturer's experience must include a metering solution that has been available for over 5 years, having at least 20 water utility customer deployments, completely installed and operational.
- v. All endpoints shall be compatible with meters and AMI system to be installed in the City of Wheatland. Meters, registers, endpoints, data collectors, reading devices and software shall be warranted as fully compatible with each other for all intended uses in this specification package and sold through one point of contact to simplify installation, maintenance, replacement, and warranty management. City preference is for all components to be manufactured by a single company or brand.

b) Endpoints & Field Programming Equipment

- i. **Warranty** - The endpoint devices shall have a full-warranty of at least ten (10) years from date of installation against any defects in materials and workmanship. The endpoint battery shall have full warranty for ten (10) years from date of delivery. Additionally, for radio systems, the endpoint battery and electronics shall be warranted for an additional ten (10) years at a prorated replacement cost. The total warranted life of the endpoint shall be twenty (20) years for radio systems.
- ii. The installation contractor shall utilize a software application to track and collect data during the meter installations. The program shall allow the user to view data collected during the meter box audit and collect additional data at the time of meter replacement. Data to be collected at the time of meter replacement shall include:
  - a) Old meter serial # as collected during the meter box audit
  - b) Last meter reading
  - c) New meter serial #
  - d) New endpoint ID #
  - e) Initial reading of new meter
  - f) Work performed
  - g) Date of work performed
- iii. The endpoint features shall comply with the following:
  - **Housing:** The endpoints will be housed in a molded plastic housing, hermetically sealed and resistant to rain, moisture and temperature changes from -40 to +140 degrees F, and capable of being submerged underwater without damage. The enclosure must house the complete unit, which includes electronics, battery compartment, antenna and wire connections. The meter lids will need to be modified or replace lids as needed to ensure the antenna edges do not protrude above the meter lid and meter lid/antenna edges are flush with the ground surface.
  - **Battery Life:** The endpoints shall have a permanently installed non-field replaceable battery with (20 - radio, 10 - cellular) year life cycle expectancy based upon not less than six (6) reading transmissions per day.
  - **Maintenance:** The endpoints shall be maintenance free. After initial installation, endpoint will continue to operate at optimal levels for the entire life of the product.

- **Read Interval:** The endpoints shall transmit a brief data packet containing the endpoint identification number and port number, the meter reading, and tamper flags at programmed intervals. The two-way water endpoints shall be capable of collecting data in intervals of 15 or 30 minutes as well as provide top-of-the-hour, time synchronized hourly reads. The read interval shall be reconfigured over the air from the head end computer. Meter reading system shall time stamp the transmitted meter reads.
- **Transmission:** Endpoint must store a minimum of 30 days of time-synchronized 15-minute reading data. In the unforeseen event that the communication system is unavailable for a period of time, readings shall continue to be captured and stored and returned to the utility upon system restoration.
- **Firmware Updates:** All end point transmission devices shall have the capability to receive and process commands from the hosted server system for all firmware updates to eliminate the need to manually perform the update function at each locale. AMI modules must support group firmware updates to reduce system maintenance time.
- **Water pressure reading:** Water pressure reading capability on all 1-inch and smaller meters is preferred. Water pressure reading capability is desired for all service meters, but not required. If pressure reading capability is not included on the majority of the proposed meter sets, provide alternative proposal for on-going distribution system pressure monitoring.
- **Leak Detection:** The system shall monitor water consumption through the meter and indicate when there is an abnormal increase in water consumption suggesting a leak within the customer's premise. The software must also provide meter reading management reports, usage analysis reports (leak detection, tamper detection, battery alerts, and backflow conditions), and system management diagnostics.
- **No Flow and Reverse Flow Detection:** The system (either through reports or alarms from the endpoint) shall indicate when there is an extended period of no flow or a minimum flow or a reverse flow through the meter.
- **High Flow Detection:** The system shall provide a report of accounts with abnormally high consumption during any billing period, suggesting a continuous flow condition.
- **Constant Consumption:** The system shall provide a constant consumption report to identify locations which a potential leak had occurred by monitoring for constant usage or continuous flow with consecutive reads.
- **Time Synchronization:** The system shall provide time synchronized meter reads that allow the City to obtain a snapshot of water consumption. All endpoints on the network must maintain time synchronization within 30 seconds of each other.
- **Diagnostic Information:** endpoints shall provide diagnostic information, such as battery voltage, and tamper flags with every transmitted reading.
- **Meter Compatibility/Ports:** Endpoints shall be compatible with multiple makes and models of meters. The endpoints shall be capable of receiving meter data from various independent meter manufacturers equipped with encoder registers.
- **Installation:** Endpoints shall be easily installed and provide appropriate provisions to avoid installer mistakes in installation, connection to meters, and programming. The endpoints shall be configured with a field programmer that will take the operator through a series of

simple steps. Each step shall include error checking and verification, where appropriate. The field programmer shall communicate with the endpoints to confirm proper configuration and wiring. The field programmer shall also have the ability to initiate communication between an endpoint and a collector unit to ensure successful communication. Meter reading system shall be able to give the installer a positive confirmation of successful installation in the field prior to the installer leaving the site.

- **Alarms / Tampering** - The system shall contain tamper detection capability of the meter, endpoint or wiring in between and provide an immediate transfer to the head end computer to allow for proper notification and reporting. System must allow for triggering of e-mail, or electronic message notification to subscribed users. Mandatory tamper detection shall include the following:
  - Cut wires
  - Equipment failures (such as meter failure)

#### **Item 6. Installation of AMI Endpoint**

The scope for this item includes:

1. Install AMI endpoints being supplied under Item 5 per the manufacturer's recommendations. Mount endpoint in lid of meter box or otherwise as required per manufacturer's recommendations. Any requirement to mount the endpoint or an antenna outside the meter box shall be subject to City approval.
2. Mount and equipment shall not create a vertical lip greater than ¼ inch above the lid with the lid fully seated in the meter box.
3. Install contractor shall verify successful installation in field prior to leaving service address.

Unit cost amount to install AMI endpoints at each meter shall include manufacturer recommended mounting in lid or box with all required hardware and fittings.

#### **Item 7. Cellular or Fixed Network Advanced Metering Infrastructure System**

Depending upon the technology proposed, some of the collector requirements may not be applicable. If so, provide a marked copy of this item to indicate applicability to the proposed technology with your proposal. The scope for this item includes:

1. Collector Units – Fixed Network
  - a) Environmental conditions of the meter system network of collectors/repeaters shall ideally be deployed on City owned property located throughout the City. Collectors/repeaters must operate in temperature extreme ranges of -40 to +185 degrees F.
  - b) Power Supply - The collector units shall be powered using either AC/battery or solar/battery to retrieve meter readings and relay them to a centralized location.
  - c) Diagnostic Information - At a minimum, the collector units shall measure and record battery strength, Radio Frequency (RF) signal strength and time and date stamp each inbound transmission. These records will be included with each transmission.
  - d) The collector unit locations shall be determined by the reading solution manufacturer as part of this proposal based on a propagation study performed by the manufacturer. The proposed number of collector units shall provide 100 percent coverage for the service territory without the need for any repeaters or boosters.

- e) If during installation, the Proposer determines the need for additional collector units, they shall be added at no additional cost to the City.
- f) Collector units shall be capable of being mounted on roofs, utility poles, streetlights, towers, elevated storage tank, etc., to collect readings from all meters in the coverage area. No special tower construction will be allowed.
- g) Collector unit network redundancy will be incorporated into the collector unit placement process to accelerate the reading process and ensure all meters provide a reading.
- h) Installation collector units shall be automatically recognized and installed onto the system network. Collector unit behaviors shall be programmable, including connection time, alarm message handling, alternative connection numbers, etc.
- i) The metering reading network shall be capable of adding collector units at any time without need for system reconfiguration.
- j) All collector unit electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes.
- k) After being installed, collector units shall require minimal maintenance over the life of the unit.
- l) Collector units shall be easily configured to utilize a variety of WAN technologies to communicate to the head end computer. Collector units shall have optional backhaul communication methods such as cellular, Wi-Fi, ethernet, IP, and fiber optic and shall be easily upgraded from one WAN technology to another.
- m) Field Programmer / Handheld Unit. The programmer shall contain its own software for programming and be provided with easy instructions for operation. Main and back-up batteries must be readily available from local suppliers. Units shall be provided with any needed communications software, adapters, chargers, or accessories. All software shall be licensed to the City of Wheatland. The hand-held device shall have the ability to upload data in the unit's memory.

## 2. Meter Reading System Software

- a) The AMI vendor shall provide integration of a software system with their AMI solution. The AMI vendor shall fully integrate the software into their system and provide a turn-key system to the City. No third-party contracts will be executed by the City. The Proposed software system shall be integrated by the vendor to provide fully automated communication with the City's utility billing software (Incode by Tyler Technologies), including potentially the Tyler Technologies customer portal with its full functionality.
- b) The meter solution manufacturer shall host the head end server and software. The City will not host and will not accept a third-party host.
- c) The Proposer shall provide sufficient and continuous Internet Technology (IT) support for system development and work with the City's IT department to set the security clearance, pop-up blockers, and enable mixed content.
- d) The meter reading solution manufacturer must support an interface with the City's billing system, Tyler Technologies Incode, with the ability to provide the appropriate software to automatically

- transfer appropriate data to the City's CIS and consumer engagement system. The system shall be integrated with the City's billing system directly.
- e) The meter reading solution shall maintain synchronization with Tyler Technologies Incode at least six times per day. The meter solution manufacturer shall retrieve a synchronization file from a secure FTP site provided by the City or provide a location on an FTP site operated by the manufacturer.
  - f) System shall have back-up capabilities and procedures to ensure that system and consumption data is not corrupted or lost.
  - g) System diagnostics shall be collected at all levels and transferred on to the vendor's hosted head end computer/server where several types of diagnostic reports shall be produced. Such reports shall indicate problems ranging from battery voltage to failure to recognize a proper communication with the meter. At minimum the report shall contain the following information:
    - Number of endpoint calls.
      - Warning/error messages
      - MTU battery status
    - Number of records received.
    - Number of records transferred.
  - h) Customer support staff interface – The solution must provide an interface for City customer staff.
  - i) The fixed network software solution must offer:
    - Rate information
    - Customer information
    - Service point information
    - Meter data
    - Tamper data
    - Event data
  - j) The software solution must allow the City staff to generate reports and tables within the software with the ability to easily select and compile particular data for printing or exporting via csv format. The software will enable the City staff to search the database to easily locate specific customer information and readings.
  - k) The software solution must be able to support aggregation of readings and billings of multiple individual meter endpoints for billing of a common customer entity.
  - l) The solution must be able to store and archive multiple types of data for each individual endpoint including but not restricted to:
    - Rate information
    - Customer information
    - Service point information
    - Meter data
    - Tamper data
    - Event data
    - Store/archive a minimum 24 months of data. All data must be easily retrievable.



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

### 3. Meter Reading System Installation

#### a) Collector Installation:

Submit plan for collector installation based on results of propagation study. The manufacturer of the selected meter reading solution will perform the installation of all infrastructures required to support the entire service area and shall be responsible for coordination of access with the property managers with the assistance of the City's Water Division. Work outside of normal City work hours will require approval by the City and the presence of a City staff person will be required.

#### b) Endpoint Installation:

The installation personal must have completed the manufacturers installation and training course and have attained the manufacturer's certificate of installation.

### 4. The Proposer that is awarded the contract will be required to submit an installation plan for meter reading network infrastructure, meter and endpoint deployment, including:

#### a) Quality assurance/quality control (QA/QC)

- Field discrepancies - Provide verification that every meter installed connects to the system. Provide a plan to deal with discrepancies in the system such as but not limited to meter box damage, meter cannot be located, incorrect lid type for reading technology, meter transmits incorrect data. Define your process for identifying failed AMI connections for the purpose of pushing data to the City's meter reading system for manual meter reading. The plan shall describe how these discrepancies will be identified and the Proposer's process to correct the discrepancies.
- Data discrepancies - Describe City data review process – The information the City provides will most likely have errors. Describe the plan to identify and address City data errors in order to minimize impacts to the overall project.

#### b) Describe the process for notifying customers at the time of installation. A notification process shall be in place sufficient to prevent damage to customer at water shutoff and re-startup.

#### c) Furnishing of handheld computer devices

#### d) Support and training for staff – Describe training process including when the training will be scheduled and duration of the training. List each separate training session, schedule and length of each training session, and who needs to attend each session.

5. **Warranty management - The Proposer awarded this AMI item is responsible for installations and warranties of meters and AMI system with an actual reading acquisition of 100 percent on a daily basis and not less than 98 percent overall. Contracted vendor/contractor shall include with the proposed work all studies and equipment required to ensure compliance.** This excludes temporary occurrences preventing meter reading such as obstructions due to vehicles parked over meters, tampered meters, and broken wires for example.

The lump sum amount shall include all costs for providing an AMI solution through a Network-as-a-Service (NaaS). The AMI vendor shall provide the entire AMI system, hardware and software, to the City including:

- All AMI data collection infrastructure (not including endpoints) to serve all meters in the City, including meters at City facilities
- Dedicated computer hardware required for system
- Software for use by City utilities and customer service staff
- Full integration with the City's Tyler Technologies Incode billing system
- Turn-key integration with the city-chosen customer portal
- Training
- Network subscription bundled with hardware at time of purchase
- Collectors, network operations software & data collection platform
- AMI Network design with propagation/service coverage studies as needed to ensure specification compliance.

#### **Item 8. Hosting Services**

The scope for this item includes:

1. The City is looking for a Network-as-a-Service (NaaS) solution with warranted full compatibility within the proposed AMI system.
2. Provide on-going hosting services as needed to complete delivery from all meters to the billing system and the city/user portals of all collected data which is required to satisfy these specifications. This is expected to be a secure, cloud-based server and software system. Costs detailed in the proposal shall include all fees and costs for software, hardware, infrastructure, updates, general facilities, software licensing, technical support, and any other required provisions to implement the proposed AMI solution throughout the 20-year lifecycle.
3. Proposal shall detail the security measures which are implemented with the system with the standards and certifications which are achieved by the system. Internet-based communications shall use only encrypted data transmitted via a virtual private network (VPN) for system controls and data transmission.

Data Management Platform shall include the ability to:

- Report high volume consumers
- Report daily system consumption
- Report daily system snapshot
- Provide graphical and tabular data presentation of consumption

- Provide pressure monitoring
- Provide summary of meter data and diagnostics
- Summarize consumption and profile data
- Report continuous and reverse flow, and high consumption
- Integrate with GIS
- Facilitate customer data sharing option via integration with web portal
- Facilitate fully automated billing processes

The lump sum price shall be the annual amount for providing hosting services for all collected data including fees for software, facilities, and any other fees incurred to implement the AMI solution included in Item 3. This shall include the price for software licensing, fees, technical support, and upgrades for the initial warranty period. Maximum annual escalation of the annual hosting service shall be provided as part of the proposal.

#### **Item 9. Customer Portal**

The scope for this item includes:

1. Customer engagement web portal which includes:
  - a) Customer login/authentication
  - b) Online access and smart phone application to allow the utility customer access to timely consumption information and water exception event messages via web and mobile devices.
  - c) Web based customer dashboard with:
    - Meter reading data presentment
    - Bill-to-date
    - Bill analysis
  - d) Analysis module for customers to see how their homes compare their month to month and year to year usage
  - e) Customer alerts for detected leaks and usage above customer-set limits
  - f) Proactive water conservation reports
  - g) A mobile solution for customer account management
  - h) Technical support and customer training resources to acclimate and support customer use.

The lump sum for customer portal services for all customers shall include fees for software, any other fees incurred, technical support, and any other costs related to providing customer portal services. Maximum annual escalation of the customer portal service shall be provided as part of the proposal.

The City is considering using the customer portal provided through their Tyler Technologies accounting system. This item may be eliminated at the City's discretion.

### **Designated Life Cycle Costs**

Provide a supporting calculation for each of the lifecycle costs quoted with this proposal. Calculations provided shall state/show each formula used along with its variable definitions.

For the sake of these calculations, the present value discounting rate for future expenses shall be assumed to be equal to the inflation rate throughout the 20-year lifecycle. Therefore, the current cost of any given item of expense will be considered equal to present value of the future expense.

Expected repair costs to occur within the 20-year life can be prorated to account for time covered only within the 20-year life. For example, if a meter will be replaced at year 15 and the life will be extended another 15 years, only include the portion of the cost associated with the 5 year period to get the meter from year 15 to year 20, or essentially one-third (1/3) of the cost.

For cases where it may be required, the assumed inflation rate shall be three percent (3%) per year. For on-going costs, such as hosting fees, if the quoted maximum escalation (inflation) rate is 3%, the present value will simply be the number of years of incurred expense (19 years) times the current annual fee. Otherwise, use an appropriate formula to obtain the present value to be quoted for each item.

#### **Item LC1. Repair, Service & Replacement of Water Meters, Including Encoders**

Present value of expected repair, service and replacements within 20-year life for all water meters, including encoders provided according to the specification for Items 4a-k.

#### **Item LC2. Repair, Service & Replacement of Endpoints**

Present value of expected repair, service and replacements within 20-year life for all endpoints provided according to the specification for Item 5 and installed according to the specification for Item 6.

#### **Item LC3. Repair, Service & Replacement of AMI System Fixed Network components (not including endpoints)**

Present value of expected repair, service and replacements within 20-year life for all AMI System Fixed Network components, not including endpoints, provided according to the specification for Item 7.

- All ongoing maintenance of collectors and infrastructure
- Monitoring of AMI infrastructure
- Monitoring of AMI wide-area-network (WAN) including data collectors and cellular / landline backhaul
- Any required updates and/or upgrades of AMI data collectors over the lifecycle of the project.

#### **Item LC4. Network-as-a-Service (NaaS) Hosting and Service Fees to 20 Years**

Present value of all fees for required NaaS hosting services, training and other required support services through 20-year life, including quoted maximum allowed annual rate increases, provided according to the specification for Item 8.

#### **Item LC5. Customer Portal Fees to 20 Years**

Present value of all fees for customer portal through 20-year life, including quoted maximum allowed annual rate increases, training and other required support services through 20-year life, provided according to the specification for Item 9.

#### **Item LC6. Water Revenue Loss**

Present value of all water revenue loss caused by loss of meter accuracy over the life of the meter, provided according to the specification for Item 9. For mechanical flow meters, water revenue loss calculation will assume 5% loss of the accuracy rated by the manufacturer at 15 years, calculated as a linear progression from the date

of install and replacement (0.34% accuracy loss per year). For ultrasonic and electromagnetic meters, water revenue loss will be assumed to be zero.

The revenue value of lost water will be calculated at \$0.0382 per cubic foot. Average annual use and water loss shall be assumed to be according to Table D-3.

TABLE D-3 - WATER REVENUE LOSS CALCULATION								
Service Meter Size	Average Annual Demand (CF)	Total 20-year Water Loss (Mechanical meter)				Total 20-year Water Loss (Ultrasonic or electromagnetic meter)		Total Water Loss Value (\$)
		CF per meter	\$ per meter	Quantity Proposed	Water Loss Value	Quantity Proposed	Water Loss Value	
¾"	73,000	31,025	\$1,185				\$0	
1"	73,000	31,025	\$1,185				\$0	
1½"	100,000	42,500	\$1,624				\$0	
2"	150,000	63,750	\$2,435				\$0	
3"	400,000	170,000	\$6,494				\$0	
4"	600,000	255,000	\$9,741				\$0	
6"	1,000,000	425,000	\$16,235				\$0	

Attachment E: City Water Meter Standard Details

---

**DRAFT**

Attachment F: City Standard Construction Contract

---

**DRAFT**

## Attachment G: Summary of Proposed Equipment/System and Alternatives with Technical and Functional Questions

---

**DRAFT**



Answers shall be supported by product data sheets provided in Section 6 of this proposal. Due to variability of options available from each manufacturer, this may also be completed for one alternative proposed set of equipment in addition to the primary proposal, but alternative is not required.

- Fill in the following table with the proposed meter information (this is intended to be a summary and not a replacement for tables required in technical questions):

Size	Manufacturer/Model	Meter Type	Length of time sold/ # in service	Low flow accuracy
<b>Service / Demand Meters</b>				
¾" – 1"				
1.5" – 2"				
3"				
4"				
6"				
<b>Supply Meters</b>				
6"				
8"				

- Proposed AMI system type/brand:  
**Type: Cellular / Fixed Network / Other** \_\_\_\_\_  
**AMI System Brand:** \_\_\_\_\_
- Power type, Battery Life and Warranties

Equipment/ Model or Series	Summary of Power supply / battery life <sup>1</sup>	Summary of warranty periods and warranty cost coverage
Meter: (by model/series)		
Encoded Register:		
Endpoint:		
AMI System Components (as applicable)		

Note 1 - Assume 6 reading transmissions required per day for the listed battery life

List the 20-year lifecycle cost of the proposed system (as determined in Section 7 of this RFP)

\$ \_\_\_\_\_

## Technical and Functional Questions

1.0 Water Meter Replacement	
1.1	List the corporate experience in terms of meters and AMI systems installed by the installation team/contractor.
1.2	Provide installation contractor licensing information in compliance with California Contractor License law.
1.3	Describe plan mechanism/measures to avoid disrupting billing cycle during installation phase.
2.0 Water Meters	
2.1	What brand of water meter are you proposing and pricing? For each meter size, provide in tabular format: model, type, material, operating flow range, extended low flow range, AWWA Standards met, length of time deployed.
2.2	Describe the warranty period for the proposed water meters with prorated warranty table, if applicable.
2.3	What is the meter register's resolution for each of the proposed encoder/registers and with which meters will each be used?
2.4	Provide detailed description of the water pressure reading capabilities which will be provided with the proposed meters and the system installation, including reading of pressures by AMI system.
3.0 AMI System	
3.a AMI System General	
3.a.1	Describe the type of AMI system being proposed (e.g. Fixed Base, Cell, Mesh) giving an overview of system components. Include how the reads are transmitted to the collectors/repeaters and back to the head end server. In an appendix to your response provide specification sheets for meters, registers and the meter reading system including endpoint modules, system software, collectors and repeaters, as applicable.

3.a.2	What is the FCC radio bandwidth for the proposed meter endpoint/transmitter equipment? Explain the benefits of the proposed bandwidth.
3.a.3	How many years has the proposed AMI technology been deployed?
3.a.4	Describe the FCC compliance status of your equipment and who retains ownership of the license?
3.a.5	Is there a backup reading method if the primary method fails or is temporarily disabled?
3.a.6	For the AMI system proposed, provide the total number systems and endpoints supplied in the past 12 months.
3.a.7	Does proposer provide break-fix ticketing, triage, and trouble call dispatching for AMI operations? Is this included with proposed cost, or as a separate option? If as a separate option, provide cost of option here.
<b>3.b Collector Unit/Repeaters</b>	
3.b.01	To the extent expected for this system, describe in general terms the primary collector, boosters/repeaters and other system hardware that will be required to serve the entire area within the City of Wheatland City limits including quantities and rough mapped layout. The City prefers the installation of all collector units on City owned property.
3.b.02	Can the proposed AMI system add additional collector/repeater units without reconfiguring the system?
3.b.03	What are the collector/repeater power supply requirements? Does the proposed Collector/Repeater have battery backup power? If so, what is the expected life of the battery?
3.b.04	What is the Collector's data storage capacity?
3.b.05	Describe the Collector's backhaul communication method(s) for transmitting data to the head end/network computer – e.g., cellular, virtual private network (VPN), etc.

3.b.06	What is the City's proposed responsibility for backhaul licensing and costs?
3.b.07	Describe system security measures against hacking or malicious intervention.
3.b.08	How is the Collector designed to protect against static discharge and indirect lightning strikes?
3.b.09	Does the system provide time synchronized time stamped meter reads? Describe how the system maintains time synchronization across the network.
3.b.10	Describe the expected Collector/Repeater life and the typical maintenance schedule for Collector/Repeater for the first 20-year period of operation.
3.b.11	What is the warranty provided for the Collector Unit? For repeater/booster units?
<b>3.c. Endpoints &amp; Field Programming Equipment</b>	
3.c.1	What is the proposed Endpoint module transmission output power?
3.c.2	Does the proposed read frequency of the Endpoint differ from the specified amount? If so, enumerate.
3.c.3	Describe the warranty period for the proposed endpoint and provide prorated warranty table if applicable.
3.c.4	Does your meter reading system provide at least hourly aggregate consumption in total, by user type, and by geographic area so that City can integrate data from the AMI database with the City's SCADA. Describe hourly and daily reading aggregation capabilities for system analysis.
3.c.5	Does the meter reading system have a feature that allows the utility owner to "wake up" the endpoint and transmit a message or command at any time of day? Describe two- way communication capabilities.

3.c.6	Can the Endpoint transmissions read interval be reprogrammed? If so, can it be done from the utility office?
<b>4.0 Field Installation</b>	
4.1	Describe any work requirements or input required from the City in the proposed installation process.
4.2	Provide details of proposed quality control/quality assurance program including site audits, meter read validation, and photographs.
4.3	Indicate the percentage of the proposed key staff member's time that will be dedicated to this project, and that will be spent on site.
4.4	List any key assumptions that are material to installation proposal and associated timeline, resources and cost.
4.5	Describe the process by which the updated meter services are confirmed operational on the meter reading system?

DRAFT

