

REQUEST FOR PROPOSALS

Town of Apex Advanced Metering Infrastructure (AMI)



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Submittal Deadline: May 24, 2019 at 3:00 PM

Contents

1	Introduction.....	1
1.1	Background.....	1
1.2	Project Scope.....	2
2	Instructions to Proposers.....	2
2.1	Submittal Requirements.....	2
2.2	Proposal Format.....	3
2.3	Technical Proposal.....	3
2.4	Team Qualifications and References.....	4
2.5	Combined Water and Electric Utility Experience.....	4
2.6	Systems Integration Experience.....	4
2.7	Evaluation Process.....	4
2.8	Price Proposal.....	5
3	Technical Requirements.....	6
3.1	Overall System Characteristics.....	6
3.2	Backhaul and Communications Infrastructure.....	6
3.3	Portable Devices.....	7
3.4	Distribution Automation (DA).....	7
3.5	Support for Outage Management.....	7
3.6	Voltage Monitoring.....	7
3.7	Security.....	7
3.8	Electric Meters.....	8
3.9	Water Meters.....	9
3.10	Meter Interface Units (MIU).....	9
3.11	AMI Head-End System Hardware and Software.....	10
3.12	Meter Data Management System (MDMS).....	11
3.13	Customer Portal.....	11
3.14	Integration Services.....	12
3.15	Deployment Process.....	12
3.16	Training.....	12
3.17	Support & Maintenance.....	13
3.18	Warranty.....	13

4	Price Proposal Forms	14
4.1	Communications Infrastructure.....	14
4.2	Future Communications Infrastructure	14
4.3	Portable Devices	15
4.4	AMI Head-End.....	15
4.5	One-Time Fees.....	15
4.6	Recurring Annual Fees.....	16
4.7	Replace Existing Meter and MIU	16
4.8	Retrofit Existing Meter with New MIU	17
4.9	Installation Adders	17
4.10	Spare/Future Water Meters and MIUs	17
4.11	Residential Electric Meters	18
4.12	Commercial Electric Meters	18
4.13	Spare/Future Electric Meters	18
5	Appendix.....	19
5.1	Project Map.....	19

1 Introduction

The town of Apex (town) is seeking proposals from qualified vendors experienced in the design, supply, installation, and implementation of Advanced Metering Infrastructure (AMI) for water and electric utilities. The town intends to purchase all necessary equipment, services, and software required to implement a complete AMI system to perform the following major functions:

- Fixed based automatic meter readings and two-way communication with electric and water meters
- Allow access to collected data at any time in order to support daily operations, provide customer support, and monitor system performance
- Advanced data analytics through a Meter Data Management System (MDMS)
- Voltage monitoring and outage notification for the electric system
- Remote connect/disconnect for electric meters
- Leak detection for water meters
- Prepayment Services
- Customer Portal
- System integration with the town's existing SCADA, CIS/billing systems, GIS, asset management software, and outage management software (OMS)

1.1 Background

The town of Apex provides electric and water service to approximately 21,000 and 19,000 customers, respectively. The appendix includes maps of the existing water and electric systems and their current and future service areas. The town has experienced tremendous growth as of late, mainly driven by development of unincorporated land to the west and south of Downtown Apex. This growth is expected to continue, so the expandability of a potential AMI solution is an essential concern.

The town's existing water meters include approximately 18,500 residential and 1,300 commercial meters ranging in size from 3/4-inch to 6-inch. For 2-inch and smaller, the town's preferred meter is the Badger E-Series. For 3-inch and larger, the town's preferred meter is the Badger Recordall Compound Series with HR-LCD registers. The majority of the existing meters are one of these two models, equipped with Itron ERTs for drive-by automatic meter reading (AMR).

The town prefers an AMI solution that will utilize the existing Badger E-Series and Recordall Compound Series meters by retrofitting them with new meter interface units (MIUs). The remaining (older) meters will be replaced as part of this project.

The town's residential electric meters will be replaced as part of this project. Residential meters include approximately 18,700 Form 2S/Class 200, 395 Form 2S/Class 320, and 200 Form 12S/Class 200.

Commercial electric meters have been converted to an Elster AMI system, which was deployed in 2009. The Elster (Honeywell/Connexo) AMI system will require replacement if not compatible with the selected AMI system. Commercial meters include approximately 691 Form 2S/Class 200, 89 Form 2S/Class 320, 9 Form 3S/Class 20, 15 Form 4S/Class 20, 289 Form 9S/Class 20, 21 Form 12S/Class 200, 423 Form 16S/Class 200, and 146 Form 16S/Class 320.

The town's existing fiber network is shown on the project map in the appendix. The fiber network should be utilized for backhaul communications to the maximum extent possible.

The following is a list of relevant software currently utilized by the town:

- Tyler/New World ERP – Customer Information System
- CityWorks – Asset Management/Work Order System
- DataVoice OMS – Outage Alerting
- ESRI/ArcGIS – Mapping & GIS analytics
- Ignition - SCADA

1.2 Project Scope

The town’s intent is to issue a single contract to the selected vendor to provide a “turn-key” AMI solution. However, the town reserves the right to award separate contracts for any portion of the project. As currently envisioned, the scope of work to be contracted generally includes the following:

- Supply and installation of the AMI system, including:
 - Field area network and backhaul communications infrastructure
 - AMI head-end hardware and software
 - Mobile data collection equipment
 - Electric and water meter replacements and retrofits as described herein
- Meter Data Management System (MDMS)
- Customer portal
- Systems integration with the town’s existing SCADA, CIS/billing systems, GIS, and OMS
- AMI system testing
- AMI system training
- Annual equipment and software maintenance and support

2 Instructions to Proposers

2.1 Submittal Requirements

Proposals must be submitted in both hardcopy and electronic format no later than 3:00 PM on May 24, 2019. It is the sole responsibility of the proposer (vendor) to ensure that the proposal is received by the established deadline at the proper location.

Notify town of intent to submit: As soon as possible, and no later than May 1, 2018, provide formal notice of intent to submit a proposal via email to matt.echols@apexnc.org. Specify the lead vendor and the main contact person for the vendor, and list all other parties to the proposal and describe their roles in the proposed AMI project. All correspondence with the town shall be via the identified vendor contact person.

Hardcopy Submittal: Five (5) bound hardcopies of the proposal shall be enclosed in a sealed package, addressed to Town of Apex, and delivered to 105-B Upchurch Street (Public Works Administration Building). The name and address of the vendor and the RFP Title (Advanced Metering Infrastructure (AMI) Request for Proposal) shall be clearly visible on the outside of the package.

Electronic Submittal: The proposal must be submitted electronically via the town’s Bonfire portal. Visit apexnc.bonfirehub.com to view additional requirements and to upload the proposal documents. Please

note that additional information and amendments to the RFP will be posted to Bonfire. It is the responsibility of the vendor to monitor the site accordingly.

Questions and RFIs: Any questions or requests for information (RFI) related to the RFP must be submitted by the lead vendor's main contact person via email to matt.echols@apexnc.org. Include "Town of Apex AMI – RFI" in the subject line of the email. **The deadline for questions is 12:00 PM on May 6, 2019.** Questions posed by any other means or after the deadline will not receive a response.

The vendor shall bare full responsibility for all costs incurred in the development and submittal of the proposal, including costs associated with interviews. All proposals shall become the exclusive property of the town of Apex and may be disclosed to third parties with the exception of content for which the following paragraph applies.

Trade secrets or similar proprietary data which a Respondent does not wish to be disclosed other than to representatives of the town involved in the evaluation of its proposal will be kept confidential to the extent permitted by N.C. Gen. Stat. § 132-1.3 if identified as follows: Each page shall be identified in boldface at the top and bottom as "CONFIDENTIAL." Any section of the proposal that is to remain confidential shall also be so marked in boldface on the title page of that section. In spite of what is labeled as confidential, the determination as to whether or not such information may be kept confidential shall be governed by North Carolina law.

2.2 Proposal Format

The proposal shall include the components listed below and adhere to the page limits shown in parentheses for each component:

- Title Page (1 page)
- Cover Letter (2 page limit)
- Table of Contents (1 page)
- Executive Summary (5 page limit)
- Technical Proposal (15 page limit)
- Qualifications, Experience, References (10 page limit)
- Pricing Proposal (5 page limit)
- Optional and Alternative Proposals (10 page limit)

2.3 Technical Proposal

The technical proposal section shall address all requirements, questions, and requests for specificity in the Technical Requirements section of this proposal. All questions must be answered. For each requirement, vendor shall explicitly confirm that the proposed system meets that requirement, and detailed explanations must be provided as required. Any exceptions shall be clearly stated and a detailed explanation provided.

The technical proposal section should follow the order of the Technical Requirements section, and each response shall reference the number and title of the technical requirement topic. After all technical requirements topics have been addressed, provide an indexed list of all exceptions with a brief description of each exception and the corresponding page number in the proposal where each exception can be found. Following the exceptions list, the Technical Proposal may continue to address any additional features or functionality of the proposed system that was not specifically addressed in the Technical Requirements section.

2.4 Team Qualifications and References

Both the proposing vendor and all parties to the vendor's team shall have considerable experience in similar AMI projects for combined water and electric utilities similar in size to the town of Apex. Provide a summary discussion of vendor's relevant experience, as well as the relevant experience of all proposed subcontractors and equipment manufacturers.

2.5 Combined Water and Electric Utility Experience

Provide a complete list of ongoing or completed AMI deployments by the vendor and subcontractors for combined water and electric utilities. Include the following information for each listed project:

- Name and location of the utility
- Name, job title, email address and phone number for a contact person at the utility familiar with the AMI deployment
- Year of deployment
- Total number of AMI endpoints for water and electric (and others if applicable)
- Subcontractors included in this proposal that were involved in the project

Provide an in-depth write up for at least three listed projects most similar to what is proposed for the town of Apex. Include a detailed project description, scope of supply and services, timeline, project budget, and discuss any additional aspects of the project that highlight the project's successes and its similarities to the proposed town of Apex AMI system.

2.6 Systems Integration Experience

Provide a complete list of ongoing or completed AMI deployments by the vendor and subcontractors where integration with the same Customer Information System (Tyler/New World ERP) was required. Include the following information for each listed project:

- Name and location of the utility
- Name, job title, email address and phone number for a contact person at the utility familiar with the AMI/New World integration efforts
- Year of deployment

2.7 Evaluation Process

All proposals will be reviewed by a selection committee of town personnel from multiple departments. The committee will evaluate the proposals based on the following criteria:

Weights	Evaluation Criteria
25	Total Life Cycle Cost: total present value of initial and ongoing costs to acquire, install, operate, and maintain the system over 20 years.
20	Meets or Exceeds Technical Requirements: Degree to which proposed system addresses technical specifications, performance requirements, and desirable features (exclusive of IT integration)
10	Project/Implementation Plan: proposed procedures and policies for project management, QA/QC, security, safety, training of installers, customer contact, scheduling appointments when necessary, troubleshooting and problem solving. Ability to keep schedule.
15	IT Integration: plans for integration between AMI system, MDMS, customer portal and town's information systems; minimization of customization; configuration procedures and testing; functionality; data integrity and protection.
15	Ease of Use and Facilitation of Customer Service. Ease of use in managing the AMI system, including network and endpoints, and identifying issues that need attention. User friendliness and ease of using the MDMS and Customer Portal.
10	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 vendor will deliver maintenance and operational support, as well as training. Response modes and times. Experience and references of others.
5	Experience, Financial Strength and References: History of deployment of proposed system, including number of units installed, number of systems and their sizes, and ages of deployments. Financial stability and solvency, revenue growth and profitability. Experience in the industry (with prior systems). Adherence to proposed budgets. Experience of project managers and staff proposed for this project, including resumes of proposed installation and project managers.
100	Total of weights

Each criteria will be scored on a scale of 0-10, and the score multiplied by the weight shown in the table. The evaluation committee will develop a consensus score for each proposal. The town reserves the right to request additional information or clarification from any vendor at any point following the initial submittal.

The town reserves the right to reject any and all proposals. The town also reserves the right to waive any and all informalities.

2.8 Price Proposal

Complete all price forms provided. If multiple pricing options are proposed, submit an entire set of price forms for each option. The forms are detailed in Section 0 and have been provided electronically as an excel spreadsheet. Vendor shall submit the completed excel file with the electronic proposal submittal. Additionally, all price tables shall be included within the main body of the proposal, with accompanying narrative explanations where appropriate, in accordance with Section 2.2. Pre-filled quantities are estimated for the purpose of bid comparison and are therefore not guaranteed.

Vendor shall expand tables or add new tables as necessary to ensure that the price proposal includes all foreseeable costs that the town may incur over the life of the project.

3 Technical Requirements

3.1 Overall System Characteristics

Provide schematic drawings of the system's components and configuration. Provide a brief overview of the architecture and normal functioning of the system. System shall be fully two-way all the way to the endpoint. Describe the proposed method of communication with the endpoints, including the commands or information that may be sent to the endpoints from the head-end server or any mobile collection unit in the normal operation and maintenance of the system.

Indicate what radio frequencies are used for communications. Provide details on licensing requirements, including the process to obtain licensing, renewal intervals, and who (town or vendor) will be responsible for obtaining and renewal. The town shall be provided an irrevocable right to the license for the AMI system, so long as the system is in service. Describe procedures to identify and eliminate interfering signals that impact system performance. Indicate who will be responsible for this effort.

The base proposal shall be for configuration of the AMI system on town of Apex property (town hall). Vendor shall provide all hardware and software for a complete and working system. If a hosted solution is available, provide details in the appendix of the proposal, including pricing comparison, terms, advantages/disadvantages, etc.

Describe the default time synchronization, meter reading and transmitting intervals. Indicate whether these can be changed, by how much, and how deviating from the default intervals affects battery life, warranty, etc.

The system shall be capable of obtaining an on-demand read from any endpoint. Describe how this is accomplished, and indicate the maximum time it takes to receive a reading.

3.2 Backhaul and Communications Infrastructure

Provide an official RF Propagation Study from an experienced RF engineer that displays the exact location and height of all proposed data collection equipment and coverage patterns. The system shall successfully read 99.5% of endpoints over a four day period and shall successfully read 97% of endpoints at least once every day. Vendor is solely responsible for determining the quantity and placement of equipment to meet this requirement. Any additional equipment required after deployment to achieve this performance shall be provided and installed at no cost to the town.

For each type of network device proposed, describe the function of the device and provide specifications, dimensional drawings of the device and mounting options, power requirements, disaster recovery, and maintenance tasks and intervals.

Any attachments to existing facilities are subject to town approval and may not compromise the structural integrity or impede access to any part of the facility.

The town's existing fiber optic network may be utilized for backhaul from data collectors to the AMI head-end system. The fiber optic network is shown on the project map in the appendix. Limited fiber optic line extensions may be allowed to reduce reliance on mobile or other forms of backhaul communication. Clearly describe the proposed plan for backhaul communications. For any proposed fiber optic line extensions, indicate the start and end points of the extension. The cost of fiber optic line extensions will be estimated by the town for the purpose of bid comparison. All other initial and recurring costs shall be included in the price proposal.

Based on the project map included in the appendix, describe how the system would be expanded to cover areas that are not currently served, including electric-only and water-only areas. Identify the location and height of additional network devices required to meet the above read success requirements across the entire service area.

3.3 Portable Devices

Describe all available portable devices for endpoint installation, field programming, diagnostics, and collecting mobile meter readings.

Vendor shall supply the necessary portable devices to its installation contractor for initial system deployment.

Vendor shall provide three sets of new portable devices to the town (if a single device provides all required functions, provide three devices; if multiple devices are required, provide three of each). Provide pricing for these devices in the price proposal.

3.4 Distribution Automation (DA)

Describe the AMI system's ability to support Distribution Automation (DA). The AMI system shall support integration of industry leading DA devices to provide data inputs such as voltage, current, and demand values for the SCADA system, and shall support a wide variety of standard IP and DA protocols.

3.5 Support for Outage Management

Describe the AMI system's capabilities related to Outage Management. The AMI system shall monitor and collect service status data from meters and sensors throughout the system, immediately after they occur to confirm power outage, momentary outages and restoration, etc. Indicate whether this is accomplished through endpoint-originated notifications or by pinging network elements.

Data shall include detailed historical outage data from every endpoint to support SAIDI, SAIFI, and other reporting requirements. Outages and restorations shall be integrated into existing (DataVoice OMS) system. The outage detection interface shall support the MultiSpeak standards.

3.6 Voltage Monitoring

The system shall retrieve scheduled reads and voltage alarms from strategic meters or sensors. Alerts shall be triggered if the voltage deviates from configurable thresholds.

3.7 Security

The system shall provide end to end security to include:

- Role based access for end devices, data collectors, MDM and all other related applications and the network management system
- Authentication of devices and personnel
- NIST approved encryption modes and algorithms
- Security audit logging and reporting to ensure data rest, data in motion and data in use

3.8 Electric Meters

The system shall provide two way communications to read usage, interval data, status, and report events and communications errors. The two way communications shall facilitate time synchronization and firmware updates.

Functionality:

- Report KWh consumption (delivered, received, delivered + received, and delivered – received), kVARh or kVAh consumption w/time stamp
- Energy and demand readings for active power, reactive power, and apparent power for both delivered and received quantities
- Four-tier four season TOU energy and demand
- TOU programming w/ Day Light Savings , Holiday Schedule, Seasons
- Remote firmware and software upgrade capability
- Outage and voltage monitoring
- Multi-channel interval data recording (5, 15, 30, or 60 minute)
- Tamper detection
- Metrology inherent in meter
- Remote service connect and disconnect
- GIS/location tracking
- Momentary / Sustained outage count
- Reverse energy indication
- Service Voltage
- Forward/reverse and net power measurement
- Load profiles
- Accommodate existing rate structures and holiday schedules w/ability for future rate structure changes
- Provide support for multiple electric meters (list supported meters)

Features of interest include:

- Auto-registration, re-registration
- Service disconnect and reconnect
- Standards based
- Programmable LCD display
- Advanced security with encryption
- Residential support for Home Area Networks (HAN)
- Optional direct WAN communications
- Power quality monitoring (PQM) w/ Alarms
- Transformer loss compensation
- KYZ relay w/ programmable value

Provide a complete parts catalog, pricing sheets, specifications, data sheets, and any other applicable literature for each model included in the proposal.

3.9 Water Meters

The town's current standard water meters are Badger E-Series (2" and smaller) and Badger Recordall Compound Series with HR-LCD registers. Existing (older) meters that are not the current standard are to be replaced as part of this project. Replacement meters shall be the appropriate town standard Badger meter or an approved alternative that meets the performance and functionality of the Badger meters and the following requirements.

All water meters shall be new, latest year model, with the latest standard equipment provided. Meters shall comply with NSF 61, ASTM B-62, and applicable AWWA standards.

Meters shall be manually readable, including a visible leak detection indicator, without the use of any special equipment. Register shall have a flip cap to prevent dirt from collecting and obscuring the readability.

Meters shall be tamper resistant. Detail how this is accomplished.

Describe the features of the meter that prevent corrosion or degradation of performance. The unit must operate in conditions subject to water submergence and exposure to UV.

Provide a complete parts catalog, pricing sheets, specifications, warranty information, data sheets, and any other applicable literature for each model included in the proposal.

3.10 Meter Interface Units (MIU)

If the proposal includes more than one version of the MIU (e.g., one with more advanced features or memory and one with less, single port versus multi-port, etc.), vendor must provide responses to the requirements in this section for each version for those features that are different, clearly specifying which version they apply to and which are included in the base price MIU listed in the price proposal.

Provide specifications for the proposed MIU. Describe the physical characteristics, including dimensions and weight. Indicate if there are different models for indoor, outdoor wall-mounted, and vault installations. The town prefers a single model with appropriate mounting brackets for different situations. Indicate and provide picture of the proposed mounting in an outdoor meter box/lid.

Describe the features of the MIU that prevent corrosion or degradation of mechanical or electrical performance. The unit must operate in conditions subject to water submergence and exposure to UV.

Indicate whether the MIU can be read with mobile collection unit and describe the procedures for collecting mobile reads.

Indicate how many meter readings at what intervals can be stored in the MIU (e.g., 60 days of 15-minute reads). Indicate the procedure for retrieving meter readings stored in the unit.

Describe the battery life as a range of years under default settings, and describe the default settings. Describe how the battery life has been determined and verified. Describe the low battery warning system, the warning time provided before failure under normal conditions, and how this is accomplished. Indicate the differences in expected battery life, if any, when reading different types and makes of meter registers.

Indicate if the battery is removable or replaceable. If so, explain how the battery is replaced, whether this can be done by the town, and if this requires soldering or special tools, or the application of any sealant.

If the unit can be read in mobile and fixed configurations, state the difference in expected battery life for each method.

Describe any additional endpoint programming requirements, options, features, and procedures.

Indicate whether the MIU can store a meter register number, if this number is transmitted with the meter reading data, and if this number can be captured automatically by the MIU or can be programmed into the MIU from a field programming unit based on information downloaded from an installation work order database.

Describe features to minimize, detect, and report tampering with the MIU.

Describe the proposed normal wiring connection between the MIU and the meter, and any options. Indicate whether the MIUs are to be provided with in-line waterproof connectors (Nicor or equivalent) between the MIU and meter. All such connectors must be tamper-resistant, immune to submergence in water as well as to oils and salts, and factory potted to the wire leads from the meter and MIU, respectively.

Describe installation requirements and procedures for mounting, connection to meter, and programming MIUs. Describe mounting brackets for different installations.

A 2" diameter hole has been drilled in the majority of existing meter box lids to accommodate the existing vault-lid mounted Itron ERTs. Indicate whether the proposed MIU installation will utilize the pre-drilled holes or require replacement of pre-drilled lids. Indicate whether concrete meter boxes, metal meter boxes are to be drilled, replaced, or left intact. Provide a diagram indicating vault lid mounting configuration, with dimensions, including any mounting brackets or lid assemblies, and indicating any protrusion of any part above the top plane of the lid. A unit cost adder is included in the price form for drilling a previously un-drilled cast-iron lid. The cost of any lid replacements or additional modifications, mounting hardware or remote antennas must be included in the price proposal.

Indicate how the system will obtain readings from meters in transmission-constraining settings. Vendor's approach may include the use of repeaters, remote antennas, etc. Describe how these will be identified and addressed during installation.

Detail the degree of compatibility of vendor's MIUs with the Badger E-Series meter, including any features of the MIU or meter that would be inoperable and whether either warranty would be affected.

Describe any additional capabilities of the MIU, including any alarms (high usage, tamper, etc.) that the MIU can generate (not report), and the ability of the MIU to communicate with and/or control devices other than water meters (e.g., pressure sensors, turbidimeters, chlorine analyzers, pH transmitters, remote shut off valves, level sensors, etc.)

3.11 AMI Head-End System Hardware and Software

Detail the proposed hardware configuration (include a diagram) and software needed to properly operate the AMI system.

The AMI software shall enable the town to effectively monitor and manage the AMI system. Describe the major functions and capabilities of the software. List all standard reports provided for system and component performance; missing or late data; errors, anomalies, tampering, and alarm conditions; and data transfer, management, and administration. Include a brief description, sample reports and/or screen shots for all listed reports.

If multiple versions of the software are available, indicate which version is being proposed and provide a comparison (cost and features) to other versions.

Vendor shall guarantee all hardware and software to be viable and fully supported for a 20 year period. Any future software or hardware replacements or upgrades required due to sunsetting of previously purchased hardware or software shall be provided at no cost to the town.

3.12 Meter Data Management System (MDMS)

Vendor shall provide software to manage the database of meter readings and other information created by the AMI system. This system may be distinct from the AMI head-end software. The MDMS should be the central platform for AMI system interface, read data collection, billing determinant processing, Validation, Editing and Estimation (VEE), data analytics, and exception reporting. It shall serve as the operational data store and must be capable of maintaining separate databases and secure access. The MDMS is expected to have a minimum functional operational life of ten years presuming deployment of recommended system maintenance releases. The preferred database platform is Microsoft SQL server or compatible database platform.

Provide a software architecture diagram and a description of all proposed software, including third-party middleware, database engine, report generator, etc. If multiple versions of the software are available, indicate which version is being proposed and provide a comparison (cost and features) to other versions.

Describe major functions and capabilities of the proposed MDMS, including the following minimum requirements:

- Collect and maintain historical water and electric meter read data, meter attributes, customer account information, and alert and event history
- Support for future tariffs that may include Time-of-Use, Critical Peak Pricing, Real-Time Pricing, Pre-Pay services and other rates
- Perform billing determinant calculations and Validation, Editing and Estimation (VEE) for electric and water read data, and integrate with the town's CIS (New World)
- Autonomously analyze water usage to identify potential leaks, high consumption, misuse, and water theft
- Allow for grouping of meters by customer type, location, or other criteria for demand analysis. Describe how such groups are created, edited, stored, etc, and how data from such analysis can be reported, including graphs, tables, and maps
- Support outage and restoration detection, notification and verification
- Securely support remote commands: disconnect and reconnect, on-demand energized meter
- Interface with the town's existing CIS (New World)
- Interface with the town's existing AMR system (Itron)
- Microsoft SQL server or compatible database platform

3.13 Customer Portal

Describe and provide screenshots as applicable to demonstrate how the requirements of this section are achieved.

List all compatible mobile and desktop web browsers and indicate whether compatibility is limited to newer versions of those browsers. Mobile users should be automatically redirected to a version optimized for mobile viewing or to a mobile application.

Customer should be able to create a username and password to initialize online account access, as well as recover/reset usernames and passwords, without the involvement of town staff. Describe how this is

accomplished. A backdoor should also be provided for town staff to manage forgotten usernames and passwords. Software should allow a single customer to access and manage all accounts for which they are responsible.

The town's logo and branding shall be displayed on the main screens of the Customer Portal.

The portal shall allow the customer to see consumption history graphs, and configure those graphs to a specified time range. The portal shall support customer configurable threshold alerts for daily, weekly, or monthly consumption.

The portal shall support customer notifications via email or text message.

The portal shall support meteorological data such as temperature and rainfall and display these data in conjunction with water usage reports.

3.14 Integration Services

The selected vendor shall be required to submit a detailed systems integration plan for review and approval by the town. Generally describe the intended approach and deliverables that would be included in the plan submittal. Provide sample deliverables (or excerpts from deliverables) from previous projects.

The town strongly prefers standard, open architecture interfaces.

The selected vendor shall be responsible for providing and completing a comprehensive test plan for all AMI software, application program interfaces and data exchanges.

3.15 Deployment Process

The town's intends to deploy the AMI system in two phases. The first phase will be a testing and acceptance phase, which will achieve full systems integration and testing with only partial deployment of new infrastructure. Full-Scale deployment will follow successful completion of the testing and acceptance phase.

Detail the proposed deployment process. Address the following topics at minimum:

- Scope and timeline for partial infrastructure deployment for testing and acceptance phase
- Integration testing plan and proposed acceptance criteria
- Detailed scope and timeline for full-scale network deployment and meter replacement/retrofit
- Deployment in water-only areas
- Meter reading transition plan

3.16 Training

Vendor shall be responsible for comprehensive training of appropriate town personnel on all aspects of the AMI system. This training shall follow a formalized training plan developed by the vendor, and shall include an initial training program to be completed prior to full-scale deployment, as well as follow-up training to occur six months after final system acceptance. Provide a sample training plan, including all training session titles, timing, and required town personnel. Provide examples of training materials that will accompany the training plan in the appendix of the proposal.

3.17 Support & Maintenance

Vendor shall provide onsite support for all components of the AMI system from delivery through final system acceptance. Following final system acceptance, vendor shall provide ongoing support through annual support and maintenance contracts.

Outline specifically what is covered and excluded by the support and maintenance contracts, and include their annual costs in the price proposal. For costs which are based on the number of endpoints, number of network components, or any factor that could increase costs as the system grows, provide a table showing how those costs are determined.

Describe the support system that would be available to the town, including the methods of support (on-site, telephone, remote-access, etc.), schedule of costs, normal business hours, location and number of remote support staff and field personnel for on-site support, minimum response times, escalation procedures, etc.

3.18 Warranty

Vendor shall warrant that the proposed communications protocol is viable and that endpoints and collection devices are compatible with the communications protocol for 20 years. Accordingly, any component that becomes obsolete shall be replaced or retrofitted at no cost to the town, including installation of the replacement component and removal and proper disposal of the obsolete component.

Vendor shall guarantee that the AMI system achieves the read success requirements of Section 3.2 for 20 years. If the read success falls below the requirements during this period, vendor shall, at no cost to the town, provide equipment and labor for any system upgrades required to achieve satisfactory read success. This requirement excludes upgrades required for geographical expansion of the coverage area, provided the upgrades are consistent with the plans for future system expansion that are detailed in response to Section 3.2 of the technical requirements and the prices included in Section 4.2 of the price proposal.

All network devices, electric meters, water meters and MIUs shall have a minimum 20 year warranty. Detail the terms, conditions, and limitations of these warranties. Provide guaranteed maximum failure rates in failures-per-year for each year from year 1 through year 20.

4 Price Proposal Forms

The price proposal forms are provided as an excel spreadsheet. Vendor shall provide the completed excel file with its electronic proposal submittal. Additionally, all price tables shall be included within the main body of the proposal, with accompanying narrative explanations where appropriate, in accordance with Section 2.2. Quantities shown are estimates for the purposes of proposal comparison and are not guaranteed.

4.1 Communications Infrastructure

Provide the unit price including installation for all physical components of the AMI communications infrastructure, including data collection units, repeaters, modems, etc., required to meet the requirements herein for the existing water and electric systems.

Provide the total length in feet of proposed fiber optic line extensions.

Description	Quantity	Unit Price	Total Price
Fiber Optic Extension, LF			

4.2 Future Communications Infrastructure

Provide the unit price including installation for all *additional* physical components of the AMI communications infrastructure to meet the future/build-out condition.

Provide the total length in feet of *additional* fiber optic line extensions required to meet the future condition.

Description	Quantity	Unit Price	Total Price
Fiber Optic Extension, LF			

4.3 Portable Devices

Provide the unit price and model number for all mobile devices required to provide the functionality required by Section 3.3.

Description	Quantity	Unit Price	Total Price
	3		

4.4 AMI Head-End

Provide the cost including installation for the AMI Head-End computer hardware and software.

Description	Quantity	Unit Price	Total Price

4.5 One-Time Fees

Provide costs for all one-time expenses that the town will incur during the project that are not listed elsewhere in the cost proposal; e.g., setup fees, training, mobilization, etc.

Description	Total Price

4.6 Recurring Annual Fees

Provide costs for all recurring expenses that the town will incur once the AMI system is deployed; e.g., annual maintenance/support fees, software upgrades, site leases, backhaul communications costs, etc. Indicate if these costs are to begin any time other than after the first year of town ownership or control.

Description	Total Price

4.7 Replace Existing Meter and MIU

Provide costs for replacement of an existing water meter/MIU combination with new. Costs shall include equipment and labor for meter and MIU installation, programming, removal and proper disposal of the existing meter and MIU, and shall assume the existing meter box and lid will be utilized with no modifications. If meters other than the town’s standard (Badger E-Series or Recordall) are proposed, include the manufacturer/model in the Description column.

Description	Quantity	Unit Price	Total Price
5/8"x3/4"	10,340		\$ -
1"	88		\$ -
1.5"	33		\$ -
2"	83		\$ -
3"	9		\$ -
4"	7		\$ -
6"	3		\$ -

4.8 Retrofit Existing Meter with New MIU

Provide costs for retrofit of an existing Badger water meter with a new MIU. Costs shall include equipment (including necessary connectors) and labor for MIU installation, programming, removal and proper disposal of the existing MIU, and shall assume the existing meter box and lid will be utilized with no modifications. If two MIUs are required for dual register meters, the cost shown shall be to install both.

Description	Quantity	Unit Price	Total Price
Badger E-Series	7,733		\$ -
Badger Recordall (Dual Register)	22		\$ -

4.9 Installation Adders

Provide unit installation cost adders for drilling a cast iron meter box lid.

Description	Quantity	Unit Price	Total Price
Drill existing cast-iron lid	200		\$ -

4.10 Spare/Future Water Meters and MIUs

Provide unit prices for spare water meters and MIUs. Costs shall include delivery to the town’s purchasing warehouse at 105-C Upchurch Street. Quantities shown reflect the estimated number of meters to be installed per year. Prices shall be guaranteed for five years.

Description	Quantity	Unit Price	Total Price
5/8"x3/4"	400		\$ -
1"	5		\$ -
1.5"	2		\$ -
2"	2		\$ -
3"	2		\$ -
4"	2		\$ -
6"	2		\$ -
MIU	500		\$ -

4.11 Residential Electric Meters

Provide unit prices for each listed electric meter type. Costs shall include equipment and labor for removal and proper disposal of the existing meter and installation and programming for the new meter.

Description	Quantity	Unit Price	Total Price
Form 2S, Class 200	18,700		\$ -
Form 2S, Class 320	395		\$ -
Form 12S, Class 200	200		\$ -

4.12 Commercial Electric Meters

Provide unit prices for each listed electric meter type. Costs shall include equipment and labor for removal and proper disposal of the existing meter and installation and programming for the new meter.

Description	Quantity	Unit Price	Total Price
Form 2S, Class 200	691		\$ -
Form 2S, Class 320	89		\$ -
Form 3S, Class 20	9		\$ -
Form 4S, Class 20	15		\$ -
Form 9S, Class 20	289		\$ -
Form 12S, Class 200	21		\$ -
Form 16S, Class 200	423		\$ -
Form 16S, Class 320	146		\$ -

4.13 Spare/Future Electric Meters

Provide unit prices for spare electric meters. Costs shall include delivery to the town's purchasing warehouse at 105-C Upchurch Street. Quantities shown reflect the estimated number of meters to be installed per year. Prices shall be guaranteed for five years.

Description	Quantity	Unit Price	Total Installation Price
Form 2S, Class 200	800		\$ -
Form 2S, Class 320	20		\$ -
Form 3S, Class 20	2		\$ -
Form 4S, Class 20	2		\$ -
Form 9S, Class 20	15		\$ -
Form 12S, Class 200	10		\$ -
Form 16S, Class 200	20		\$ -
Form 16S, Class 320	5		\$ -

5 Appendix

5.1 Project Map

A 24"x36" project map is available for download (pdf format) from the Bonfire portal. GIS data will be provided upon request.