



Request for Proposals

The City of Rochester, New Hampshire, is requesting sealed proposals for the purchase and installation of water meters, water meter reading equipment with alternate proposals for an automatic reading system. All proposals must be submitted in a sealed envelope plainly marked:

“Water Meter Replacement” **RFP #08-37**

City of Rochester, New Hampshire
31 Wakefield St.
Rochester, NH 03867
Attn: Purchasing Agent

All proposals must be received no later than May 29, 2008 at 2:30 PM. No late proposals or telephone bids will be accepted. The specifications, appendices and proposal forms may be obtained by visiting www.rochesternh.net, or emailing purchasing@rochesternh.net, or by contacting the Purchasing Agent at City Hall, 31 Wakefield Street, Rochester, NH 03867, and (603) 335-7602. All bid questions must be submitted in writing (email preferred) to the Purchasing Agent. All bid proposals must be made on the bid proposal forms supplied, and the bid proposal forms must be fully completed when submitted.

RFP Meters #08-37**Description of Work:**

The City of Rochester is seeking a proposal for the purchase and installation of **approximately** 4,500 (four thousand, five hundred) Sensus SR-ECR (or equivalent) cold water meters and equipment for outside Auto Read (or equivalent) touch pad reading system. Included in this scope of services will be the necessary software conversion or upgrade necessary for billing purposes. Attached are Exhibit #1 Meter Specifications and Exhibit #2 Automatic Meter Reading System. The following is a list of other related specifications:

- The contractor shall arrange for access to the dwellings (or on dwelling premises when installing into meter pits) except in the event of vacancy or the refusal of entry by occupant or owner, wherein such cases the City of Rochester will arrange for such entry.
- The contractor will work closely with the City of Rochester Water Billing Office and will supply a form with all necessary information required to update the billing system with new meter information.
- The contractor will be responsible for operation of shut off valves within the dwelling, or in some cases at the street, to shut off water. The contractor will be responsible for restoring water to any home shut-off while performing the work.
- The contractor will be responsible for draining and refilling any residential system, to include heating systems and water heating systems.
- The contractor will be responsible for any damages incurred while working with in the residences, or to outside, City of Rochester, water system parts damaged by work in progress.
- The contractor shall be responsible for furnishing all materials incidental to the installation of the meters. This should include, but not be limited to, caulking material, staples, fasteners, washers, straps, etc. All materials furnished and installed by the contractor shall be of industrial quality and be suitable for the purposes employed.
- The touchpad remote reading sensor shall be securely attached to the exterior of the building at a level between 3 1/2 to 4 1/2 feet above grade at a location easily accessible year-round under all conditions in the judgment of the Owner and/or engineer. The wire between the meter and receptacle shall be placed and securely fastened on the interior walls of the premises. Holes made in building walls shall be angled slightly upward from outside and shall be securely caulked after installation of the wire. When possible, no wire shall be exposed on the outside

of the building. The meter register and receptacle shall be tested for electrical continuity. The Contractor is responsible for restoration of any items disturbed or destroyed during installation.

- All work must be done in a professional manner. All installations of meters by the contractor may be inspected by City of Rochester personnel and shall meet the requirements of the local plumbing code. The Contractor shall supply, upon request from the City of Rochester inspector, a list of addresses where installations are complete and ready for inspection. Any deficiencies found at the time of this inspection shall be repaired at no additional expense to the City of Rochester.

METER PROPOSAL FORM**RFP # 08-37**

COMPANY NAME: _____

AUTHORIZED COMPANY REPRESENTATIVE: _____

MAILING ADDRESS: _____

TELEPHONE: _____

EMAIL: _____

SIGNATURE: _____

Please submit a brief summary of work plan, certificates of insurance, references for workmanship, and specification sheets for all equipment in proposal.

Please note that work is to be completed 1 year from date of award.

BID ITEM #1

Items quoted below will include the cost of meters with touch pad per specifications.

1. APROXIMATELY 4500 METERS (PRICE PER METER) _____
2. INSTALLATION OF METERS (PRICE FOR ALL 4500) _____
3. METER READING DEVICES:
 - a) Furnish & Install Handheld Meter Reading Unit, _____
 - b) Furnish & Install Communications
charging stands, per specifications _____
 - c) Furnish & Install Touchgun for attachment
to Interrogator, per specifications. _____
 - d) Furnish & Install AutoRead System Software
per specifications _____
 - e) Start-Up Training for City Staff _____

BID ITEM #2

The City of Rochester is requesting an additional bid for radio read software and equipment. We have an estimated 2500 Invensys / Sensus meters with touch pads currently installed the above meters will need to be installed with radio read capability using the existing two wire system and touchpad's already installed.

We would like and estimated cost for this option.

4. APROXIMATELY 4500 METERS (PRICE PER METER) _____
Meters as specified.
5. RADIO UNITS (MXU) FOR EXISTING 2500 METERS _____
To retrofit touch pads (See Attached Exhibit 4)
6. INSTALLATION OF RADIO EQUIP (PRICE FOR ALL 4500) _____
7. INSTALLATION OF RADIO READ ON EXISTING (2500) _____
(Sensus / Invensys meter)
8. METER READING DEVICES:
 - a) Furnish & Install Vehicle based reading unit _____
(See Attached Exhibit 5)
 - b) Furnish & Install hand held device reading unit _____
 - c) Furnish & Install Communications
charging stands, per specifications _____
 - d) Furnish & Install Radio Read System Software
per specifications _____
 - e) Start-Up Training for City Staff _____

INSTRUCTION TO BIDDERS

PREPARATION OF BID PROPOSAL

1. The Bidder shall submit her/his proposal upon the form(s) furnished by the City (attached). The bidder shall specify a unit price for each pay item for which a quantity is given and shall also show the products of the respective unit prices and quantities written in figures in the space provided for that purpose. The total amount of the proposal, written both in words and figures shall be obtained by adding the amounts of all bid items. All words and figures shall be in ink or typed.
2. If a unit price or lump sum bid already entered by the bidder on the proposal form is to be altered it should be crossed out with ink, the new unit price or lump sum bid entered above or below it, and initialed by the bidder, also with ink. In case of discrepancy between the prices written in words and those written in figures, the prices written in words shall govern.
3. The bidder's proposal must be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, by one or more officers of a corporation, or by an agent of the contractor legally qualified and acceptable to the owner. If the proposal is made by an individual, his name and post office address must be shown, by a partnership the name and post office address of each partnership member must be shown; as a joint venture, the name and post office address of each must be shown; by a corporation, the name of the corporation and its business address must be shown, together with the name of the state in which it is incorporated, and the names, titles, and business addresses of the President, Secretary, and Treasurer.
4. All questions shall be submitted in writing to the Purchasing Agent. The Purchasing Agent will then forward both the question and the City's response to the question to all prospective bidders.

IRREGULAR PROPOSALS

Bid proposals will be considered irregular and may be rejected for any of the following reasons:

1. If the proposal is on a form other than that furnished by the Owner or if the form is altered or any part thereof is detached.
2. If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite or ambiguous as to its meaning.
3. If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.
4. If the proposal does not contain a unit price for each pay item listed, except in the case of authorized alternate pay items.

DELIVERY OF BID PROPOSALS

When sent by mail, the sealed proposal shall be addressed to the City of Rochester, Purchasing Agent, 31 Wakefield Street, Rochester, NH 03867. All proposals shall be filed prior to the time and at the place specified in the invitation for bids. Proposals received after the time for opening of the bids will be returned to the bidder, unopened. Emailed or faxed bid proposals are not acceptable.

WITHDRAWAL OF BID PROPOSALS

A bidder will be permitted to withdraw his proposal unopened after it has been deposited if such request is received in writing prior to the time specified for opening the proposals.

PUBLIC OPENING OF BID PROPOSALS

Proposals will be opened and read publicly at the time and place indicated in the invitation for bids. Bidders, their authorized agents, and other interested parties are invited to be present.

DISQUALIFICATION OF BIDDERS

Either of the following reasons may be considered as being sufficient for the disqualification of a bidder and the rejection of her/his bid proposal(s):

1. Evidence of collusion among bidders.
2. Failure to supply complete information as requested by the bid specifications.

AWARD AND EXECUTION OF CONTRACT

CONSIDERATION OF PROPOSALS

1. Bids will be made public at the time of opening and may be reviewed only after they have been properly recorded. In case of discrepancy between the prices written in words and those written figures, the prices written in words shall govern. In case of a discrepancy between the total shown in the proposal and that obtained by adding the products of the quantities of items and unit bid prices, the latter shall govern.
2. The right is reserved to reject any or all proposals, to waive technicalities or to advertise for new proposals, if in the judgment of the City; the best interest of the City of Rochester will be promoted thereby.
3. Bid results will be available on the website at www.rochesternh.net within 48 hours of the bid opening.

AWARD OF CONTRACT

If a contract is to be awarded, the award will be made to the lowest responsible and qualified bidder whose proposal complies with all the requirements prescribed as soon as practical after the bid opening. No bid shall be withdrawn for a period of (60) sixty days subsequent to the opening of bids without the consent of the City of Rochester. The successful bidder will be notified, via mail to the address on his proposal, that her/his bid has been accepted and that she/he has been awarded the contract.

CANCELLATION OF AWARD

The City reserves the right to cancel the award of any contract at any time before the execution of such contract by all parties without any liability against the City.

BID EVALUATION

In addition to the bid amount, additional factors will be considered as an integral part of the bid evaluation process, including, but not limited to:

1. The bidder's ability, capacity, and skill to perform within the specified time limits.
2. The bidder's experience, reputation, efficiency, judgment, and integrity.
3. The quality, availability and adaptability of the supplies and materials sold.
4. The bidder's past performance.
5. The sufficiency of bidder's financial resources to fulfill the contract.
6. The bidder's ability to provide future maintenance and/or services.
7. Any other applicable factors as the City determines necessary and appropriate (such as compatibility with existing equipment).

CONDITIONS AT SITE

Bidders shall be responsible for having ascertained pertinent local conditions, such as: location, accessibility and general character of the site of the building. The character and extent of existing work within or adjacent to the site and any other work being performed thereon at the time of the submission of her/his bid.

LAWS, PERMITS AND REGULATIONS

1. The Contractor shall obtain and pay for all licenses and permits as may be required of him by law, and shall pay for all fees and charges for connection to outside services, and use of property other than the site of the work for storage of materials or other purposes.
2. The Contractor shall comply with all State and Local laws, ordinances, regulations and requirements applicable to work hereunder, including building code requirements. If the Contractor ascertains at any time that any requirement of this Contract is at variance with applicable laws, ordinances, regulations or building code requirements, she/he shall promptly notify the City of Rochester in writing.

CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

1. The Contractor shall deliver at the time of execution of the Contract; certificates of all insurance required hereunder and shall be reviewed prior to approval by the City of Rochester. The certificates of insurance shall contain the description of the Project, and shall state that the companies issuing insurance will endeavor to mail to the City of Rochester ten (10) days notice of cancellation, alteration or material change of any listed policies. The Contractor shall keep in force the insurance required herein for the period of the Contract. At the request of the City of Rochester, the Contractor shall promptly make available a copy of any and all listed insurance policies. The requested insurance must be written by a Company licensed to do business in New Hampshire at the time the policy is issued.
2. The City of Rochester, NH shall be listed as additional insured on all the

Certificates of Insurance.

3. The Contractor shall require each Subcontractor employed on the Project to maintain the coverage listed below unless the Contractor's insurance covers activities of the Subcontractor on the Project.
4. No operations under this Contract shall commence until certificates of insurance attesting to the below listed requirements have been filed with and approved by the Department of Public Works, and the Contract approved by the City Manager.
 - a. Workmen's Compensation Insurance
Limit of Liability - \$100,000.00 per accident
 - B. Commercial General Liability
Limits of Liability
Bodily Injury: \$1,000,000.00 per occurrence, \$1,000,000.00 aggregate
Property Damage: \$500,000.00 per occurrence, \$500,000.00 aggregate
Combined Single Limit, Bodily Injury and Property Damage:
\$5,000,000.00 aggregate
 - c. Automobile Liability
Limits of Liability - \$500,000.00 per accident
5. The Contractor shall indemnify, defend, and save harmless the City of Rochester and its agents and employees from and against any suit, action or claim of loss or expenses because of bodily injury. Including death at any time resulting there from, sustained by any person or persons or on account of damage to property, including loss of use thereof, whether caused by or contributed to by said City of Rochester, its agents, employees or others.

ACCIDENT PROTECTIONS

It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to the Contract. That a Contractor and any Subcontractors shall not require any laborer or mechanic employed in the performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health or safety, as determined by construction safety and health standards of the Occupational Safety and Health Administration, United States Department of Labor, which standards include, by reference, the established Federal Safety and Health regulations for Construction. These standards and regulations comprise Part 1910 and Part 1926 respectively of Title 29 of the Code of Federal Regulations and are set forth in the Federal Register. In the event any revisions in the Code of Federal Regulations are published, such revisions will be deemed to supersede the appropriate Part 1910 and Part 1926, and be effective as of the date set forth in the revised regulation.

SUBCONTRACTS

1. Nothing contained in the Specifications or Drawings shall be construed as creating any contractual relationship between any Subcontractor and the City of Rochester.

The Division or Sections of the Specifications are not intended to control the Contractor in dividing the work among Subcontractors or to limit the work performed by any trade.

2. The Contractor shall be as fully responsible to the City of Rochester for the acts and omissions of Subcontractors and of persons employed by her/him, as she/he is responsible for the acts and omissions of persons directly employed by her/him.

PROTECTION OF WORK AND PROPERTY

The Contractor shall, at all times, safely guard the City's property from injury or loss in connection with this Contract. She/he shall, at all times, safely guard and protect her/his own work and that of adjacent property from damage. All passageways, guard fences, lights and other facilities required for protection by State or Municipal laws, regulations and local conditions must be provided and maintained.

USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense:

1. To take every precaution against injuries to persons or damage to property;
2. To comply with the regulations governing the operations of premises which are occupied and to perform his Contract in such a manner as not to interrupt or interfere with the operation of the Institution;
3. To perform any work necessary to be performed after working hours or on Sunday or legal holidays without additional expense to the City, but only when requested to do so by the City;
4. To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other Contractors;
5. Daily to clean up and legally dispose of (away from the site), all refuse, rubbish, scrap materials and debris caused by his operation. Including milk cartons, paper cups and food wrappings left by his employees, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;
6. All work shall be executed in a workmanlike manner by experienced mechanics in accordance with the most modern mechanical practice and shall represent a neat appearance when completed.

MATERIALS AND WORKMANSHIP

1. Unless otherwise specified, all materials and equipment incorporated into the work under the Contract shall be new. All workmanship shall be first class and by persons qualified in their respective trades.
2. Where the use of optional materials or construction method is approved, the requirements for workmanship, fabrication and installation indicated for the prime material or construction method shall apply wherever applicable. Required and necessary modifications and adjustments resulting from the substitution or use of an

optional material or construction method shall be made at no additional cost to the City.

STANDARDS

1. Materials specified by reference to the number, symbol or title of a specific standard, such as a Commercial Standard, a Federal Specification, and Department's Standard Specifications, a trade association standard or other similar standard. Shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of advertisement, except as limited to type, class or grade or modified in such reference.
2. Reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. In such cases the Contractor may, at his option, use any articles, device, product, material fixture, form or type of construction that, in the judgment of the City expressed in writing to all Bidders before opening of bids as an addendum, is an acceptable substitute to the specified.
3. Substitution During Bid Time: Whenever any particular brand or make of material or apparatus is called for in the Specifications, a Bidder's Proposal must be based upon such material or apparatus, or upon a brand or make which has been specifically approved as a substitution in an Addendum issued to all Bidders during the bidding time.
4. The intent is that the brand or make of material or apparatus that is called for herein establishes a standard of excellence that, in the opinion of the Consultant and Engineer, is necessary for this particular Project.
5. Substitution after Bid Opening: No substitutions will be considered after bids have been opened unless necessary due to strikes, lockouts, bankruptcy or discontinuance of manufacture, etceteras. In such cases, the Contractor shall apply to the City, in writing within ten (10) days of his realizing his inability to furnish the article specified, describing completely the substitution he desires to make.

EXTRAS

Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the Director of Public Works has ordered the same in writing.

GUARANTEE OF WORK

1. Except as otherwise specified, all work shall be guaranteed by the Contractor against defects resulting from the use of inferior materials, equipment or workmanship for one (1) year from the Date of Final Acceptance.
2. Make good any work or material, or the equipment and contents of said building or site disturbed in fulfilling any such guarantee.
3. In any case, wherein fulfilling the requirements of the Contract or of any guarantee, should the Contractor disturb any work guaranteed under another contract, the Contractor shall restore such disturbed work to a condition satisfactory to the Director of Public Works. And guarantee such restored work to the same extent as it was

guaranteed under such other contracts.

4. If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the City of Rochester may have the defects corrected and the Contractor shall be liable for all expense incurred.
5. All special guarantees applicable to definite parts of the work that may be stipulated in the Specifications or other papers forming a part of the Contract shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

DEFAULT AND TERMINATION OF CONTRACT

If the Contractor:

1. Fails to begin work under Contract within the time specified in the notice to proceed; or
2. Fails to perform the work with sufficient workers and equipment, or with sufficient materials to assume prompt completion of said work; or
3. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable; or
4. Discontinues the prosecution of the work; or
5. Fails to resume work, which has been discontinued, within a reasonable time after notice to do so; or
6. Becomes insolvent or has declared bankruptcy, or commits any act of bankruptcy or insolvency; or
7. Makes an assignment for the benefit of creditors; or
8. For any other causes whatsoever, fails to carry on the work in an acceptable manner the City of Rochester will give notice, in writing, to the Contractor for such delay, neglect, and default.

If the Contractor does not proceed in accordance with the Notice, then the City of Rochester will have full power and authority without violating the Contract to take the prosecution of the work out of the hands of the Contractor. The City of Rochester may enter into an agreement for the completion of said Contract according to the terms and conditions thereof, or use such other methods as in the City's opinion will be required for the completion of said Contract in an acceptable manner.

All extra costs and charges incurred by the City of Rochester as a result of such delay, neglect or default, together with the cost of completing the work under the Contract will be deducted from any monies due or which may become due to said Contractor. If such expenses exceed the sum which would have been payable under the contract, then the Contractor shall be liable and shall pay to the City of Rochester the amount of such excess.

OBTAINING BID RESULTS

Bid results will be available on the website at www.rochesternh.net within 48 hours of the bid opening.

Exhibit # 1

METER SPECIFICATION

SR® Water Meters
For Cold Water Meters
Displacement Type with Direct Read Registers
5/8" – 2" SR Sizes

Type

Magnetic Drive, Sealed Register, Positive Displacement Type Oscillating Piston only.

Size

Must conform to American Water Works Standard C-700 as most recently revised.

Length

Must conform to American Water Works Standard C-700 as most recently revised.

Cases

All meters shall have a non-corrosive Water Works bronze (minimum 75% copper content) outer case with a separate measuring chamber which can easily be removed from the case. All meters shall have cases on them, in raised characters, the size and direction of water flow through the meter. Case iron frost bottoms, or bronze bottoms shall be provided on 5/8", 3/4", and 1" size meters. 1- 1/2" and 2" meters shall be the split case type with bronze lower and upper shell assemblies. The manufacturer's serial number must be permanently affixed to the main case to aid in identification and must be visible so that it can be read from directly above the water meter.

External Bolts and Washers

All external bolts and washers shall be of corrosion resistant material, and be easily removed from the main case. All threaded main case bolt holes must be covered, to aid in removal of the bolts for repair.

Register

The register must be of the straight reading type with a large red test or sweep hand and shall include a low flow indicator on the dial face. The numeral wheel assembly shall be located at the bottom of the dial face with reading obtained from left to right. Registration shall be in cubic feet, gallons or metric units. All reduction gearing shall be contained in a permanently hermetically sealed, tamperproof enclosure made from a stainless steel material, covered with a heat tempered glass lens.

The register shall be secured to the main case by means of a locking device located in the interior of the meter so non-utility personnel cannot remove the register externally. An external register box assembly is not acceptable. The register must be covered so as to protect the register by a lid constructed of a copper based alloy or a suitable synthetic polymer.

Measuring Chamber

The measuring chamber shall be of Water Works bronze (minimum 85% copper content) or a suitable synthetic polymer and shall not be cast as part of the main case. All piston assemblies shall be interchangeable in all measuring chamber assemblies of the same size. The measuring chamber shall be held in place without the use of fasteners.

The measuring chamber piston shall operate against a replaceable control roller, allowing for repair to AWWA standards. The control roller shall rotate on a stainless measuring chamber steel pin, to provide added strength, wear resistance and corrosion resistance. There shall be an elastomeric seal or seals between measured and unmeasured water, preventing leakage around the measuring element.

Magnetic Coupling

The motion of the piston will be transmitted to the sealed register through the use of a direct magnetic drive without any intermediate coupling.

Strainers

All meters must be provided with a corrosion resistant strainer, which is easily removable from the meter without the meter itself being disconnected from the pipeline.

Change Gears

Change gears will not be allowed to calibrate the meter. All registers of a particular registration and meter size shall be identical and completely interchangeable. Should meters arrive with registers containing more than one gear combination, the entire shipment will be returned to the manufacturer freight collect and the next responsible bidder will receive the award.

Accuracy and Headloss Tests

Meters shall conform to current AWWA C-700, current revision, test flows, head loss and accuracy standards.

Pressure Capability

Meters shall operate up to a working pressure of 150 pounds per square inch (psi), without leakage or damage to any parts. The accuracy shall not be affected when operating at this pressure due to possible distortion. Accuracy shall not be affected by variations in pressure up to 150 psi.

Performance Warranties

In evaluating bid submittals, warranty coverage will be considered. All bidders are required to submit their most current nationally published warranty statements for water meter main cases, registers and measuring chambers.

Shipment Verifications

A statistically controlled sample of each meter shipment will be tested by the utility to insure each shipment meets the utility performance and materials specifications.

EXHIBIT 2 SPECIFICATION

Encoder (ECR and ECR/WP) Type Remote for SR Meters

Encoder Registers and Remote

Must conform to American Water Works Standard C-707 as most recently revised.

Touch Read ECR Encoder Register

The register must be of the straight reading type and have a full test dial on the face of the register that records one-tenth of the right-most odometer wheel. It shall read in 100 cubic feet and be capable of direct visual reading both at the meter and by remote reading utilizing a visual interrogation device that connects through to the water meter via a TouchPad located external to the meter, and/or by a Meter Interface Unit (MIU) for remote based Automatic Meter Reading (AMR). The direct read numeral wheel assembly shall be located in the middle of the dial face with reading obtained from left to right using standard notation (billions, millions, and thousands separators and decimal points). All reduction gearing shall be contained in a permanently hermetically sealed, tamperproof enclosure made of a corrosion resistant material.

The register shall be secured to the maincase by means of a device located in the interior of the meter so non-utility personnel cannot remove the register externally. An external register box assembly is not acceptable.

The meter register shall be provided with three terminal connections. The connection between the meter register and the TouchPad shall be accomplished with the use of only two terminal connections. The connection between the meter register and the MIU shall be accomplished with the use of all three terminal connections. The register shall transmit the meter reading and register data directly to the interrogation device through the TouchPad or to the MIU when interrogated by an AMR system.

For installations where moisture is not a concern, the terminal connections shall be protected with a dust cover on the register. The dust cover will be of a snap-on configuration not requiring screws and be equipped with seal wire holes for security. When the meter is to be installed in a vault or pit set installation, the terminal connections shall be permanently factory sealed to three wire interconnecting cable with an environmentally approved epoxy to prevent moisture penetration and eliminate the need for field sealing requirements.

The register output data format shall be 7-bit ASCII (American Standard Code for Information Interchange) digital, plus an even parity bit. Upon interrogation with a TouchPad or AMR product, the register will transmit an odometer reading containing from 1 to 8 digits (field programmable) and a user defined alphanumeric identification of up to 12 characters (field programmable). The odometer reading is to be obtained from the register by "magnetic field position-sensing" technology to determine the rotational position of each odometer wheel. Encoders with a mechanical brush contact with the

odometer wheel will not be acceptable nor will digital registers for small meters requiring solar or battery power. The register can also be programmed to output a factory set, non-programmable identification number, Customer Text of up to 20 alphanumeric characters (field programmable), a reading multiplier ranging from 10 -99 to 10 99 (field programmable), and/or a reading measurement unit indicator (for example, US Gallons – field programmable). Data is to be positive true. The register's ASCII digital output is to be capable of interfacing directly to an AMR transponder to transmit data via cable TV, telephone, radio signal, or power lines to an AMR system. Registers must also have the ability to be re-programmed to change the resolution in case of future AMR/AMI upgrades.

Outside Touchpad

The outside TouchPad shall be of a sturdy and tamperproof construction. The TouchPad shall be compatible with the Touch Probe, Touch Gun, Smart Gun, or Autogun connected to a handheld. The remote TouchPad shall be protected from the environment with watertight seals. The remote TouchPad shall not require a plug-in or metal-to-metal contact to complete a connection with the interfacing gun or probe. The register data will be transmitted to the interrogation device by touching the interfacing gun or probe to the external cover of the remote TouchPad. The TouchPad will be provided with two terminal connections to accept the two-conductor cable that connects it with the meter register. The remote TouchPad will have provisions to cover and seal the mounting screws to prevent tampering.

Change Gears

Change gears will not be allowed to calibrate the meter. All registers of a particular registration and meter size shall be identical and completely interchangeable. Should meters arrive with registers containing more than one gear combination, the entire shipment will be returned to the manufacturer freight collect and the next responsible bidder will receive the award.

Ability to Upgrade

All infrastructures that would be furnished and installed must have the ability to eventually upgrade to either a RadioRead or Fixed Based System. This upgrade must utilize the existing touchpad's to be installed with the installed two-wire system. A manufacturer's meter interface unit must have the ability to attach directly over the existing touchpad's without re wiring.

EXHIBIT 3

AUTO READ SPECIFICATION

AutoRead® Hand-Held Device/Programmer System Requirements

System will collect and store meter readings either manually via a keypad, automatically by utilizing a “touch” device for remote reading, or by wireless connection to a reading gun. All meter readings will be captured in the meter-reading device for later analysis, including multiple data entries and bad readings.

The system will be fully programmable route information, meter reader prompts and questions. “High/Low” checking must be provided for on both “touch” and manually entered readings.

The system must provide for bi-directional communications between the utility’s mainframe computer and the personal computer by utilizing a communications/charging stand. The vendor shall describe all personal computer hardware, software and peripheral devices, which are necessary for the operation of the proposed system. The technical specifications, model numbers, etc. of the personal computer equipment proposed shall be provided. The utility reserves the right to substitute an equivalent personal computer and peripheral devices which it may presently own or may purchase from a vendor of the utility’s choosing.

The software, which is proposed for use on the personal computer, must be suitable for use by a non-technical operator. And, the software will have enough user-friendly features to free the operator from having to be overly familiar with the programs, other than the basic operational procedures. The software must also provide for customer-select management reports related to the data of the meter route read.

The proposed equipment shall be suitable to withstand a rugged field meter-reading environment. Such features shall include, but may not be limited to the following:

- Alphanumeric keypad
- Durable weatherproof housing
- 3.0” wide x 2.3” high or larger display (3.8” diagonal or greater)
- Backlit displays
- Field adjustable contrast displays
- Tactile response keypad
- Weigh less than three pounds (48 oz.)
- Field adjustable audible tone
- 256 megabyte of memory
- Durable carrying belt with hand straps
- Watertight gun connectors
- Compatible to read Sensus TouchRead Meters
- Function Keys

All meter reading equipment shall include memory sufficient to store at least 3000 readings before data downloading is required. Internal hardware and software data must have the ability to verify the integrity of the collected data.

The meter-reading device must include a full-function alphanumeric keypad, which will be utilized by the non-technical meter reading personnel for manual entry of readings from conventional meters as well as the entry of special notes. The reading device must also have the capability to manually enter and record readings from meters not on the predefined routes.

Each meter reading device must be powered by a long life, lightweight, field-replaceable, nickel-metal hydride (NiMH) battery pack. The battery pack must be capable of supporting multiple days' readings without the need to recharge. The field units must be recharged while resting in the communication/-charging stand. A meter-reading device, which is placed in the stand at the end of the working day, must be fully charged prior to the beginning of the next working day. The field devices must provide for protection of the stored data should the NiMH battery pack fail to provide power. Each meter reading device must be equipped with its own charging stand and not require any special pin connections.

Successful meter readings must be confirmed by a loud, audible tone, which will simultaneously alert the operator in the event of a faulty or missed reading.

The meter reading device must be equipped with a date and time-of-day clock, which automatically records the date and time of reading into each "touch" or manual reading.

The software will provide, at the user's option, forward or reverse movement through the route.

The successful bidder shall provide full and complete hardware and software documentation, which shall include but not be limited to operator manuals which are designed for use by non-technical users, as well as detailed technical manuals which are designed for use by technical support and programming personnel.

The vendor shall provide a complete list of all standard features which are included with each meter reading device and all other equipment and/or system proposed. In addition, the vendor shall provide a full listing, description and unit pricing of all optional features which may be available to the utility.

Warranties and Service

The vendor shall be required to state its warranty and/or guarantee policy with respect to each item of proposed equipment.

The procedures for submitting warranty claims must also be provided.

The full cost of service, if required, for each item of proposed equipment must be stated.

The cost of service agreements or contracts, if available, must be stated. The vendor must

agree to guarantee the cost of service for a period of one (1) year following the expiration of the warranty period.

The location of the nearest service center, hours of operation and average repair time for each item proposed must be stated. All hardware service policies must be clearly stated. The availability of on-site hardware support and service must be explained.

Due to the utility's need to process water consumption data on a continuing basis, and the utility's determination not to stock "reserve" equipment, the vendor must agree to provide "loaner" replacement equipment should any service be required.

A sample form of any proposed service agreements shall be provided.

The vendor's policy regarding software warranties shall be clearly stated.

The policies and costs associated with software modifications and technical support shall be stated. The procedures and names, addresses and telephone numbers of software support personnel shall be provided and updated by the vendor on a continuing basis.

ALL METER READING EQUIPMENT AND SOFTWARE MUST BE MADE BY THE SAME MANUFACTURER.

User Training and Education

It shall be the responsibility of the vendor to provide a complete on-site training program for the utility's staff. This program is intended to fully familiarize staff with the operation of all aspects of the hardware and software, which is to be provided. The bidder shall state the proposed format of such a training program, the number of hours of initial on-site support to be provided as well as the recommended schedule of follow-up visits. The vendor shall also state its hourly rate for on-site and/or remote support which may be required by the utility. The location and procedures for obtaining such support shall be stated.

EXHIBIT 4 SPECIFICATION

RadioRead® For Automatic Meter Reading System Meter Transceiver Unit (MXU)

General

The following specification describes the requirements for a radio based automatic meter reading system. The specification will cover the meter transceiver unit (MXU). If meters and other supporting equipment are included in this proposal or bid, they will be covered under separate specifications.

Radio System Description

The radio AMR system will have the ability to read meters equipped with absolute encoder registers using either a hand-held interrogation unit or a mobile interrogation unit. The encoder registers will be connected to a MXU that will provide the radio link from the meter to the interrogation unit.

The radio AMR system must utilize a true two-way (interrogate and respond) communication protocol that enhances system integrity and reliability.

Upon completion of the meter reading route, the meter reading data is downloaded from the interrogation unit, using the radio AMR software. The radio AMR software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing.

The MXU must have the capability of offering leak detection / continuous consumption monitoring. The MXU must be able to indicate that there has been an occurrence of continuous flow for a field programmable period of time (minimum 24 of hours). Once communicated to the interrogation device, the leak detection indicator in the MXU must either reset if there is no leak / continuous flow currently or continue to stay set if a leak / continuous flow is still present.

The MXU must offer hourly readings stored internally for a rolling 45 days. This data must be able to be extracted via a TouchRead device and handheld or laptop as well as wirelessly. This wireless extraction can be done via a radio equipped handheld or vehicle-base system. The software that downloads the data from the interrogation device (handheld or vehicle-base) to must provide views and graphical presentations of the data that was extracted.

Function

The MXU will be the interface between the encoded register and the radio interrogation unit. The MXU will power up when a valid alert signal is received from the reading interrogation unit. The interrogation unit will be either a hand-held or vehicle mounted device. The MXU and interrogation device will utilize a two-way communication

protocol. Following the alert signal from the interrogation unit and transmission of meter reading data, the interrogation unit will signal to the MXU that valid reading parameters were met and will instruct the MXU to power down.

The MXU must have the capability of utilizing a reading cycle code which is an element of the transmission protocol. The reading cycle code is utility controlled and changes with each reading cycle. Once an MXU has been successfully interrogated and powered down using a specific reading cycle code, the MXU will not alert again until the cycle code is changed.

The MXU will have a fixed factory set non-programmable identification number to insure absolute identity of the MXU within the radio AMR system.

In addition, the MXU will have the capability of storing a utility defined programmable class code. The class code will be used to separate different classes of meters and differentiate the MXU in multi-utility installations.

FCC Regulations

All equipment must comply with current Federal Communications Commission (FCC) requirements which include proper labeling of the MXU. The bidder must have supporting documentation available upon request to verify compliance.

Modulation

The radio frequency transmission from the MXU to the interrogation unit must utilize direct sequencing spread spectrum, operating in the non-licensed 902-928 MHz band. It shall be alerted utilizing a message broadcast on a licensed 956 or 952 MHz channel from the interrogation unit.

Hardware

The bidder must be able to supply separate units that accommodate pit and non-pit environments to complement the various installations within the utility. These various enclosures must house the complete single or two-port MXU units which include electronics, battery compartment, and wire connections. When necessary, the port inputs should support multi-meter attachments (port expanders). The MXU will also have an internal antenna as a standard.

The pit style units should have the radio and original battery encased in high density polyethylene (HDPE) to provide protection for the electronic components and be capable of being submersed in a water filled meter box without damage. The pit style unit must be able to be installed through a meter pit lid utilizing a 1-3/4" diameter hole or under the meter pit lid if necessary. When installing the radio through the meter pit lid, the radio must be secured to the meter pit lid by use of a threaded nut. Holes in the housing should be available to allow the utility the ability to secure seal wires to indicate tampering.

The non-pit style units should have the radio and battery potted in material to protect the components from corrosion due to high humidity environments. It must have a tamper-resistant locking screw so that the enclosure cannot be opened by non-utility personnel.

The internal parts of the MXU can only be accessed by utility personnel using a manufacturer supplied field tool. The field tool **must not** be commercially available. Seal wiring or a frangible head seal screw is not acceptable.

Both the pit and non-pit style units must be able to connect to Sensus Metering Systems' encoders utilizing the 2-wire inductive coupling TouchRead® system components (TouchPads or TouchRead® Pit Lid TP/PL sensors) which eliminates the use of additional connectors such as gel caps. The MXU must be also supplied with the capability of connecting via a 3-wire connection to an encoder if needed.

The MXU must have a field attachable battery cartridge option available. The battery will be used in conjunction with a hybrid layer capacitor to insure longevity. The battery cartridge must be date stamped for ease of age identification for warranty purposes.

The MXU must contain wiring diagram labels within the unit to aid in and simplify installation. All wires must be color coded and easily identifiable. All exposed plastic must be UV stable to prevent discoloration.

Installation and Training

Complete installation and operating instructions must be included for all of the supplied hardware and software equipment. Proposal must include any additional costs for training and assistance to install and begin operation of the MXUs. The vendor will also inform the customer what pre-installation activities are to be completed and what support materials will be needed for the initial installation.

Performance Warranties

In evaluating bid submittals, warranty coverage will be considered.

The vendor shall be required to state its warranty and/or guarantee policy with respect to each item of proposed equipment. The procedure for submitting warranty claims must also be provided.

As a minimum, the electronics shall be warranted for twenty (20) years from date of shipment for defects in materials and workmanship. Battery warranty shall be twenty (20) years from date of factory shipment. For additional information on warranties refer to Sensus publication G-500.

System Maintenance and Support

In addition to warranty periods, vendors are required to supply information on required or optional maintenance programs beyond the warranty period for both hardware and software. Features of those programs shall also be included with any additional charges such as hourly rate for on-site and/or remote support. The location of and procedures for obtaining such support shall be stated.

EXHIBIT 5 SPECIFICATION

RadioRead®

For Automatic Meter Reading System

Mobile Radio Vehicle Transceiver Unit (VXU)

General

The following specifications describe the requirements for a radio based automatic meter reading system as it relates to the mobile radio Vehicle Transceiver Unit (VXU). If meters and/or other equipment are included in the proposal or bid, that material will be covered under a separate specification.

Radio System Description

The radio AMR system must have the ability to read meters equipped with absolute encoder registers using either a hand-held or mobile interrogation unit. The encoder registers will be connected to a Meter Transceiver Unit (MXU) that will provide the radio link from the meter to the interrogation device.

The radio AMR system will utilize a true two-way (interrogate and respond) communication protocol that enhances system integrity and reliability.

Upon completion of the meter reading route, the meter reading data from the VXU will be downloaded via a PC with radio AMR software. The radio AMR software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing.

VXU Basic Functions

The VXU is considered the complete package that will permit the utility to read meters by using any vehicle in the utility's fleet via radio signals.

The complete VXU package, as a minimum, will include the following:

- A laptop computer connected to the VXU with the capability to handle multiple reading of radio equipped meters and the storage of meter reading data
- VXU radio operating software
- A magnetic mount antenna that connects to the VXU for optimal radio reading performance
- A power cable capable of plugging into a 12-volt cigarette lighter to power the VXU
- Applicable connector cables for the computer and VXU
- Carrying case for all VXU equipment

The VXU will have the capability to collect and store meter readings at any time on the meter reading route via radio transmission with any meter equipped with an encoder and MXU.

The VXU will send an alert signal to a MXU connected to a meter fitted with an encoder register. Upon receipt of the alert, the MXU will transmit the meter reading data to the VXU. Once this data is received and if all parameters are valid in the meter reading message, the VXU will acknowledge the MXU that the data is valid and permit the MXU to go into a power down mode. The VXU will be able to handle multiple readings from MXUs simultaneously.

The VXU software will periodically transfer the meter reading data to the hard drive of the VXU computer to maintain already read meters in case of power failure. The VXU computer will also have its own battery in case of vehicle power system failure.

The VXU will provide the capability to read the MXUs in either a geographic mode or blind mode. Geographic mode being the ability to alert and receive transmission for a specific MXU or group of specified MXUs. In the blind mode, the VXU will be able to alert and receive transmission from any MXU within range of the alert signal simultaneously.

The VXU shall also have the capability to address MXUs on a wild card alert basis. The wild card will be operator controlled from the VXU.

The VXU, in conjunction with the MXU will have the capability of utilizing a reading cycle code within the transmission protocol. The reading cycle code is utility controlled and changes with each reading cycle. Once an MXU has been successfully interrogated and powered down using a specific reading cycle code parameter, the MXU will not alert again until the code is changed.

For optimum performance, the VXU will have the capability to analyze noise levels of applicable RF channels in the area and select the optimum frequency for the MXU to transmit. It will then command through the alert signal to the MXU what frequency to transmit the meter reading back to the VXU. The VXU shall be able to function either with or without a meter reading route. With a reading route, the VXU will be able to read the meters in either blind or geographic reading mode and post the readings to the proper account through the use of the MXU and encoder register identification number. Without a reading route, the VXU will be able to read the meters in either blind or geographic reading mode. The VXU will retain the meter readings for later posting to the billing software by matching with the proper account through the use of the MXU and encoder register identification number.

The VXU software will have the capability to address MXUs in conjunction with the MXU class code option. The class code being an optional utility defined code programmed into the MXU for meter reading.

VXU Data Transfer

The VXU will be able to store the meter reading data either on the hard disk of the laptop computer or on a diskette of the computer disk drive. If stored on the computer hard drive, the meter reading data will be able to be transferred to the computer interfacing to the billing software through file transfer to a diskette. The VXU computer will also have the capability to be directly linked to the interfacing computer for computer to computer transfer. The VXU computer will have a programmable baud rate capability for the computer transfer.

VXU Power Requirements

The VXU will be powered from any vehicle in the utility's fleet that has a 12-volt power system. The VXU computer will have its own battery for backup in case of the vehicle system failure. The backup battery will be able to operate the VXU computer for at least two (2) hours with a fully charged battery.

VXU Navigation System

The VXU will provide for an optional navigation system. The VXU design will permit a commercially available GPS receiver to be interfaced to the VXU via an RS232 link.

FCC Regulations

All equipment must comply with current Federal Communications Commission (FCC) requirements which include proper labeling of the MXU. The Bidder must have supporting documentation available upon request to verify compliance.

Frequency/Modulation

The VXU will operate on the 956 MHz channel for the purposes of alerting the MXU in a licensed mode. It will utilize AM modulation for the alert tone.

The vendor will be responsible for assisting the utility in obtaining any required license from the FCC for operation of the equipment.

Carrying Case

The VXU will be supplied with a portable carrying case to permit easy storage and transportability of the VXU as one unit. The carrying case must be able to store all components of the VXU package required for vehicle meter reading via radio AMR.

Installation and Training

Complete installation and operating instructions will be included for all of the supplied hardware and software equipment.

Proposal must include any additional costs for training and assistance to install and begin operation of the VXU and operating software. The vendor will also inform the customer of what reinstallation activities are to be completed and what support materials will be needed for the initial installation.

Performance Warranties

In evaluating bid submittals, warranty coverage will be considered.

The vendor shall be required to state its warranty and/or guarantee policy with respect to each item of proposed equipment. The procedure for submitting warranty claims must also be provided.

System Maintenance and Support

In addition to initial warranty periods, vendors are required to supply information on required or optional maintenance programs beyond the warranty period for both hardware and software. Features of those programs shall also be included with any additional charges such as an hourly rate for on-site and/or remote support. The location of and procedures for obtaining such support shall be stated.