Albuquerque Bernalillo County
Water Utility Authority

Agenda Item No. 9d

Meeting Date: March 23, 2022
Staff Contact: Hobart Warren, Field Division Manager

TITLE: C-22-12 - Approving an Increase of Contract 2011-0092 with Sensus USA Inc. for Continued Implementation of the Advanced Meter System

ACTION: Recommend Approval

BACKGROUND:
Conservation is a critical component of the Water Authority's newly adopted 100-year water plan entitled Water 2120: Securing our Water Future. Advanced Metering Infrastructure (AMI) meters provide near real-time water usage data that can be used to help customers reduce over usage such as leaks or excessive landscape watering. Conservation measures taken now reduce the need to obtain additional water supplies in the future. The Water Authority has successfully installed AMI towers, associated AMI infrastructure, and approximately 130,000 AMI meters, which has already replaced approximately 62% of water meters throughout the distribution system.

Summary:
An increase to contract# CCN 2011-0092 with Sensus USA Inc. for continued implementation of the Advanced Meter System. The increase to the maximum contract amount by $10,000,000.00 will be used to complete the installation of AMI meters over the next several years, and provide matching funds as per R-21-31. In addition to automated metering, the Water Authority utilizes the AMI network for leak detection and pressure zone monitoring which is consistent with Policy D of Water 2120 – Securing our Water Future.

If approved by the Board, an amended PO/agreement will be issued by the Water Authority to enable Vendor to continue to provide hardware and services for the Advanced Meter System implementation.

FISCAL IMPACT:
The previously approved board amount of $22,440,000.00 will need to be increased to $32,440,000.00, included applicable taxes. The AMI program is appropriated $2,000,000.00 annually per Policy.

Advanced Metering Infrastructure

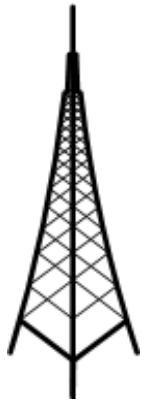
March 23, 2022

H Warren

Field Division Manager

AMI (Advanced Metering Infrastructure)

AMI – refers to the equipment used to collect, store and forward information from the meter to the meter database management system(MDM).



The Water Authority's AMI

9 Base Stations

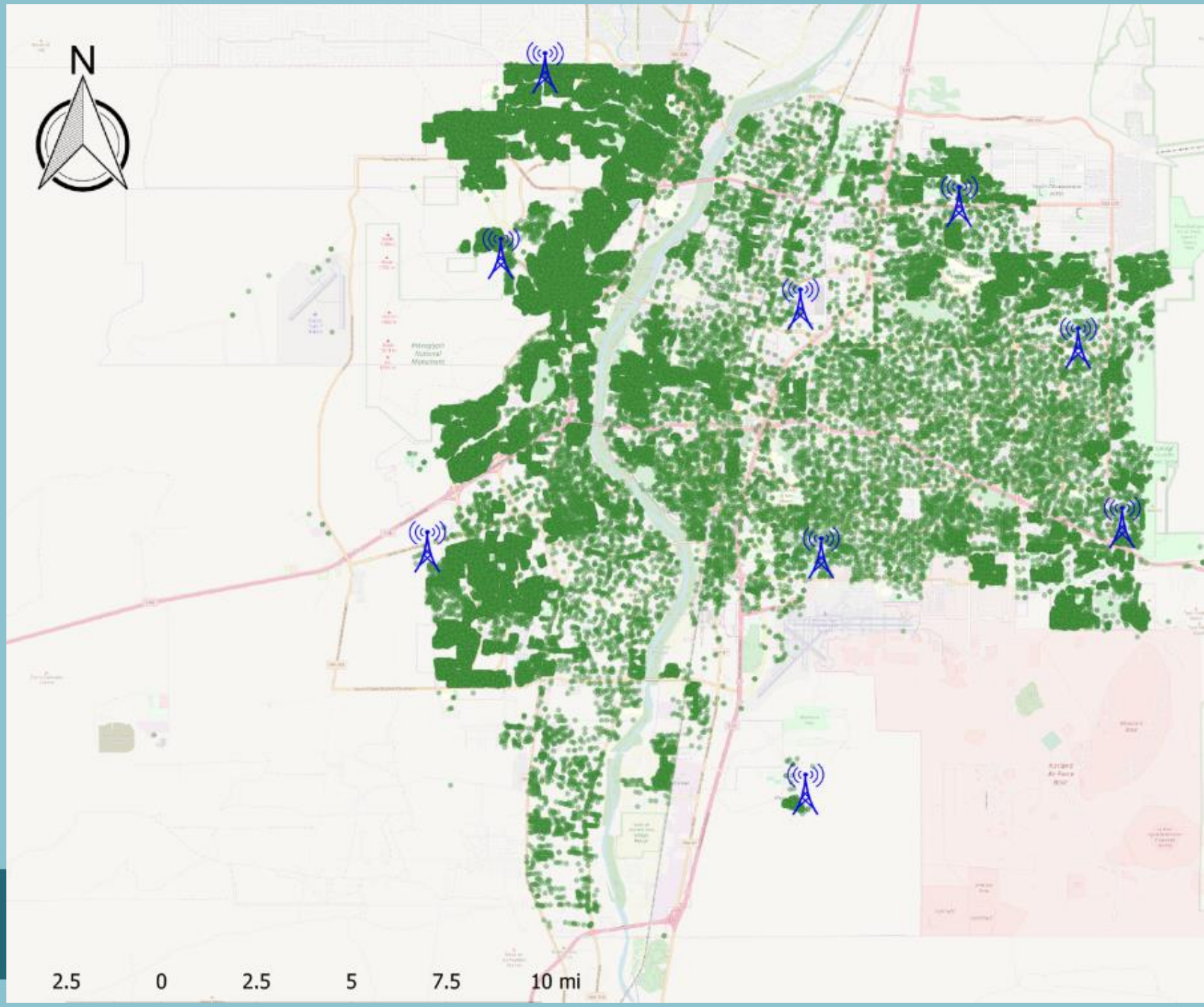
129,000 accounts

- 61% of all accounts
- 67% of revenue

Meter Reading

Customer Connect

Pressure Monitoring



Why AMI?

AMI gives the end user Access to data, the ability to Measure, and allows for an Innovative solution to the problem, which promotes Customer service, Conservation, and Competency.

Customer

Home Connect web portal

Access

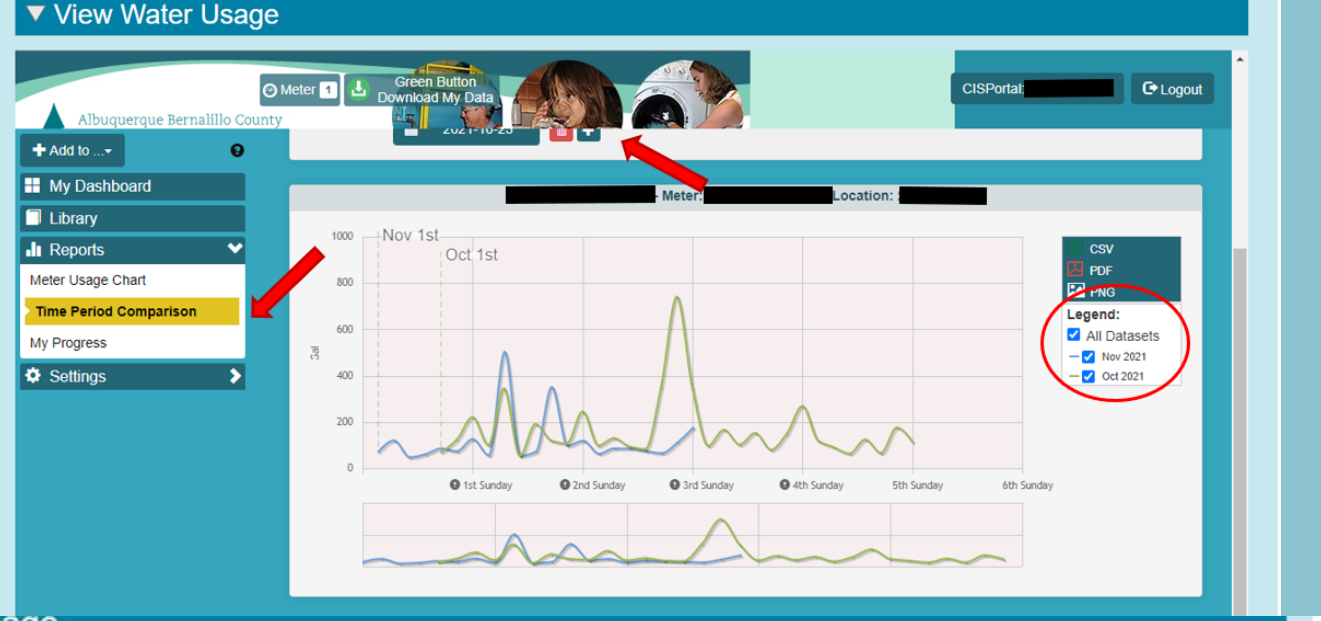
- Meter Readings
- Billing Data
- Customer and CCR see same information

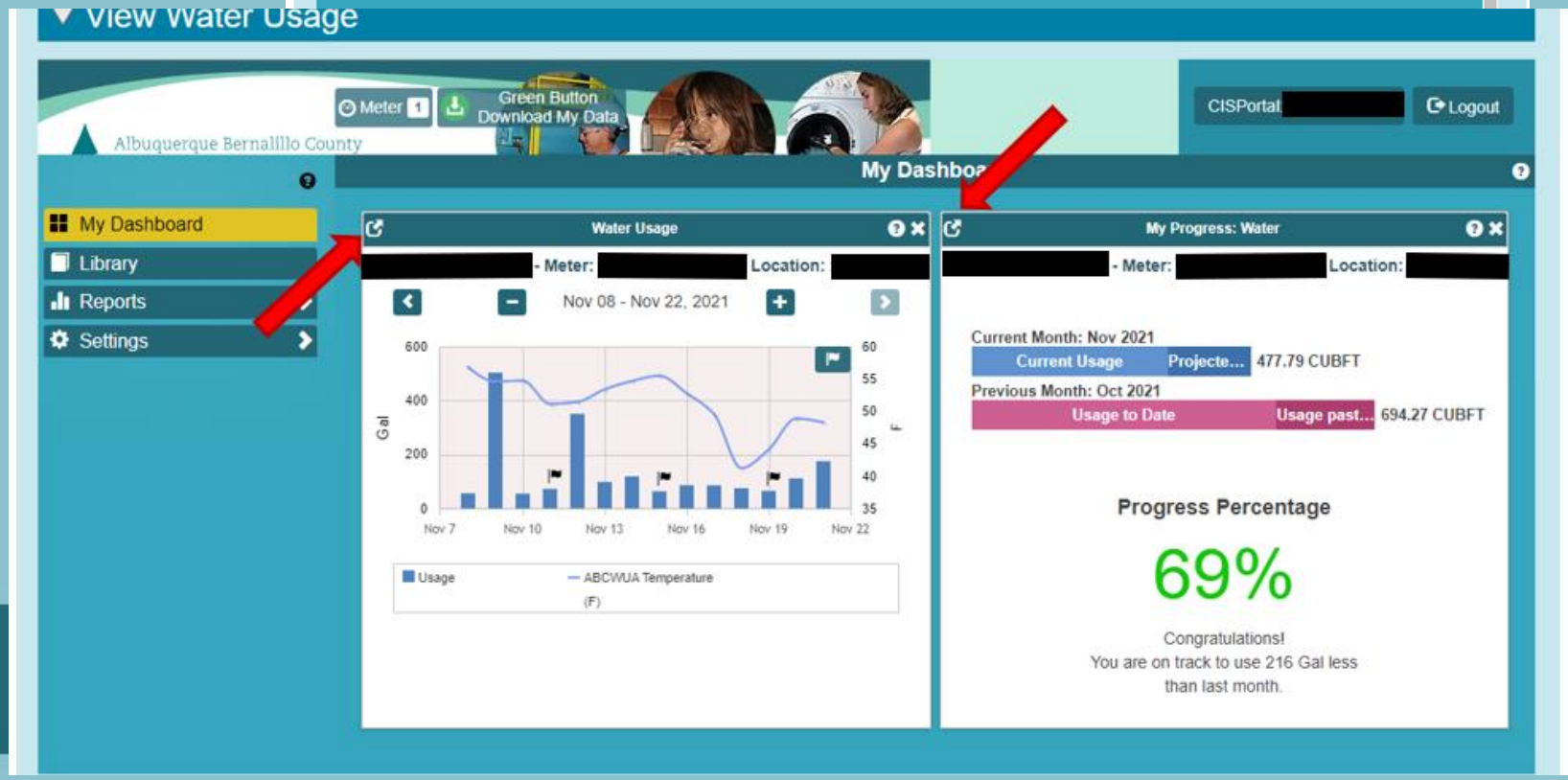
Measure

- Month to month comparison
- Year to year

Innovation

- Set consumption alerts
- Text or email notifications





Conservation

Access

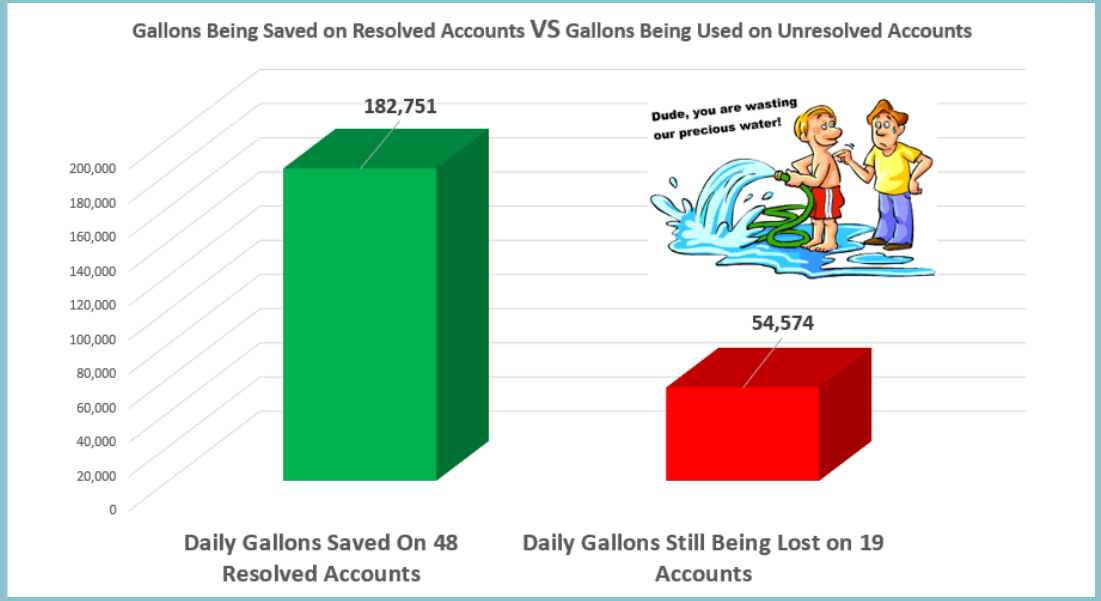
- Continuous usage reports
- Water loss per metered area

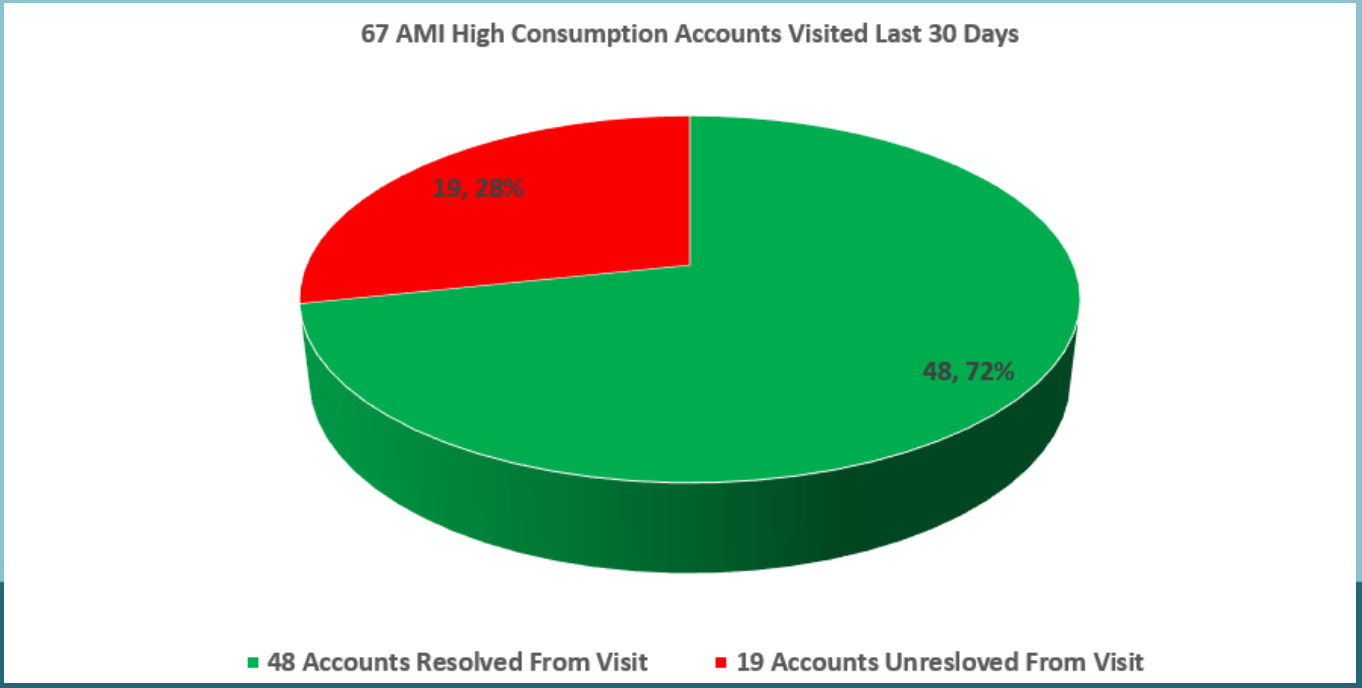
Measure

- Water saved & lost
- Locate hot spots for leaks

Innovation

- Identify leak before major damage
- Save customers unnecessary costs





Competency

Access

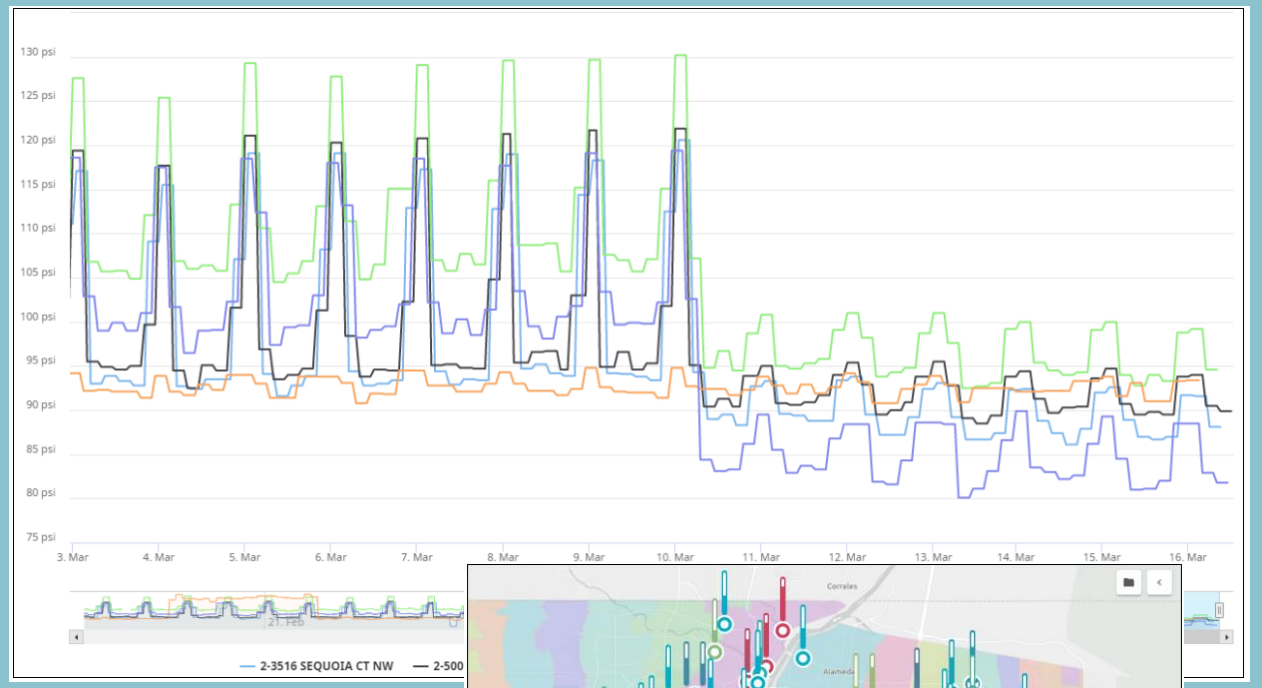
- Additional tools and information for decision making
- Cost effective

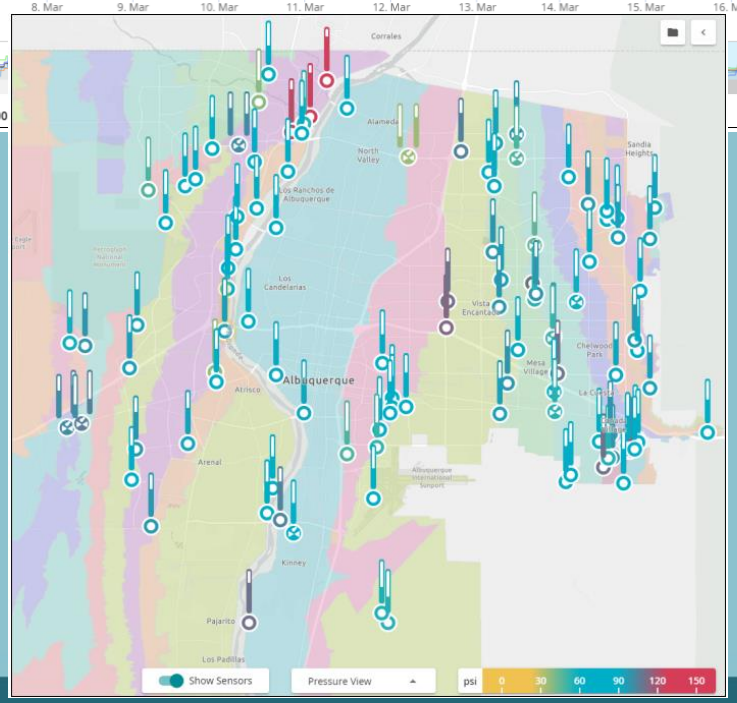
Measure

- Realtime
- Historic information

Innovation

- Identify anomalies early
- Instant feedback to refine corrections





Questions

ABCWUA
Purchasing Division - CONTRACT

Vendor ID 0000133625
SENSUS USA INC
8601 SIX FORKS ROAD STE 700

RALEIGH,NC 27615

Contract ID	00000000000000000000700502
Contract Dates	03/16/2011 to 03/15/2013
Contract Reference	RFP2011-002-TC **Last Date Updated**
Contract Maximum	1,000,000.00 **Origin** WWI

AMI Infrastructure Equipment and Services (RFP2011-0092-TC)

PER THE TERMS & CONDITIONS OF THE
ATTACHED AGREEMENT

CONTRACT TERM: 03/16/2011 TO 03/15/2013

TOTAL CONTRACT NOT TO EXCEED $1,000,000.00
WHICH AMOUNT INCLUDES ANY APPLICABLE
NMGRT. TO BE PAID AT THE RATES STATED
IN THE ATTACHED AGREEMENT

REF: CCN# 2011-0092

REF: RFP2011-002-TC

TO: ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY
INFORMATION TECHNOLOGY DIVISION
ATTN: KIM DAVIS/CHRIS FRAMEL (505) 768-2907
1 CIVIC PLAZA, SUITE 5027
ALBUQUERQUE, NM 87103

Purchasing Division Document

PURCHASING OFFICE

Acceptance of this purchase order/contract indicates vendor acceptance of all terms and conditions printed on the front and back of this form. Valid only with official City of Albuquerque Purchasing Division signature. Call 505-768-3320 for any questions.
White - Vendor Yellow - Dept. Copy Pink - Purchasing Gold - Accounting

ALBUQUERQUE-BERNALILLO COUNTY WATER UTILITY AUTHORITY
CONTRACT CONTROL FORM

PM: Chris Framel 8-2907

Contact: Kim Davis
Phone: 768-3628

Req. No.: _____
Acct. No.: 527500
Act. No.: 6088240/629

CCN: 2011-0092

WATER UTILITY FINANCE
MAR 22 2011
REVIEWED BY DATE

PRELIMINARY

Type of Agreement: Professional Services

Description: Advanced Meter Infrastrucure System under RFP2011-02-TC

Dept./Div.: ABQ-BernCo Water Utility Authority
Vendor: Sensus USA, Inc.

Contract Term: _____ to: 2 years from execution

Contract Amount: $1,000,000.00 **Payable/Reimbursement** FY Aggregate:
Contract Total: $1,000,000
Fed. Tax I.D. No. _____ State Tax I.D No. _____

PROCUREMENT: _____

WAIVERS REQUIRED:
RFP: NO Waiver Letter attached: _____ Approved: _____
Insurance: N/A Waiver Letter attached: _____ Approved: _____

DRAFT CONTRACT:
Recd by Legal: _____ Rejected/Returned to the Authority: _____ / _____
Returned to Legal: _____ / _____ Approved: _____ / 3/25/11

INSURANCE and BONDS REQUIRED:
Bond Required: N/A Attached: _____
Insurance Required: CG, Auto, WC Attached: _____

APPROVALS REQUIRED:	Date Delivered	Returned to Dept	Approved by (Written Initials)	Approval Date (Written)
Purchasing:				
Contract Manager:			N/A	N/A
Authority Atty:				3/17/11
CFO:				3/16/11
COO:			N/A	N/A
Executive Director:				3/16/11
Other:				

Authority: _____ Bill No. _____ Date: _____

2011 MAR 22 P 3:44
RECEIVED-PURCHASING DIV
CITY OF ALBUQUERQUE

DISTRIBUTION

	Date	By:
Vendor:	3-25-2011	SJ
User Dept:		
Authority	3-25-2011	SJ
Other:		

AGREEMENT
Advanced Meter Infrastructure System

THIS AGREEMENT is made and entered into on the date last entered below, by and between the Albuquerque Bernalillo County Water Utility Authority, a political subdivision of the State of New Mexico (Water Authority), and Sensus USA Inc.,(hereinafter referred to as the "Contractor"), a Delaware corporation, whose address is 8601 Six Forks Road, Suite 700, Raleigh, N.C., 27615.

RECITALS

WHEREAS, the Water Authority issued a Request For Proposals for the RFP2011-002-TC, titled "Advanced Meter Infrastructure System" attached hereto as Exhibit A; and

WHEREAS, the Contractor submitted its proposal, dated September 6, 2010, in response to RFP2011-002-TC which proposal is attached hereto as Exhibit B; and

WHEREAS, the Water Authority desires to engage the Contractor to supply certain goods and render certain services in connection therewith, and the Contractor is willing to provide such services.

NOW, THEREFORE, in consideration of the premises and mutual obligations herein, the parties hereto do mutually agree as follows:

1. **Scope of Services.** The Contractor shall provide and install hardware, software and implementation services (hereinafter collectively the "Services") according to the terms of this Agreement as follows:

Provide implementation services for an advanced meter infrastructure ("AMI") system in accordance with this Agreement and the Exhibits C to G as attached and incorporated hereto. The Scope of Work set forth in Exhibit G sets forth the parties' respective operational obligations for the deployment and operation of the AMI system.

2. **Time of Performance.** Services of the Contractor shall commence on the date of final execution of this Agreement and shall be undertaken and completed in such sequence as to assure their expeditious completion in light of the purposes of this Agreement; provided, however, that in any event, all of the Services required hereunder shall be completed within two years of the date of execution of this Agreement. This Agreement may be extended for future phases/periods upon written agreement of the parties.

3. **Compensation and Method of Payment.**

A. **Compensation.** For delivering the goods and performing the Services as specified in Section 1 and the Exhibits D through H hereof, the Water Authority agrees to pay the Contractor in accordance with Exhibit C. Invoiced amounts shall include, as a separate line item, any and all taxes. Payment of invoiced taxes shall be the responsibility of the Water

2011-0092

Authority. The compensation paid under this Agreement shall not exceed the amount of One Million Dollars ($1,000,000), which amount includes any applicable gross receipts taxes, and shall constitute full and complete compensation for the Contractor's Services under this Agreement, including all expenditures made and expenses incurred by the Contractor in performing such Services. This Agreement and the compensation amount may be extended and increased for future phases/periods only upon written agreement of the parties.

B. Method of Payment. Such amount shall be paid to the Contractor in installments based on the payment schedule and milestones as identified in Exhibit C, which include any applicable gross receipts taxes. Payments shall be made to the Contractor upon completion of each task, upon receipt by the Water Authority of a properly documented requisition for payment as determined by the budgetary and fiscal guidelines of the Water Authority and on the condition that the Contractor has accomplished the applicable Services and delivered the applicable goods in accordance with the Agreement.

C. Appropriations. Notwithstanding any other provisions in this Agreement, the terms of this Agreement are contingent upon the Water Board of the Albuquerque Bernalillo County Water Utility Authority making the appropriations necessary for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the Water Board, this Agreement may be terminated at the end of the Water Authority's then current fiscal year upon written notice given by the Water Authority to the Contractor. Such event shall not constitute an event of default. Upon payment of any termination payment or other payments required under this Agreement, all payment obligations of the Water Authority and all of its interest in this Agreement will cease. The Water Authority's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final. Such event shall not constitute an event of default. If the Water Authority terminates under this provision, such termination shall be deemed a termination for convenience and the Water Authority shall pay the Contractor the termination payments specified in Section 19 herein.

D. Goods. The warranty and other terms and conditions governing the supply by Contractor of meters, modules and all other goods under this Agreement are set forth in Exhibit D. **The Badger ADE register may be connected to the Sensus 520M2 TouchCoupler Port (2-wire connectivity) by either; (i) using the Sensus TR/PL connector potted to the wires from the Badger ADE register; or (ii) using an approved Nicor or Itron connector to TR/PL connector adapter cable. Sensus gives no warranty as to the Badger ADE register or any other third party goods.**

E. Software. The software license and other terms and conditions governing the supply of software by Contractor under this Agreement are set forth in Exhibit E.

F. Spectrum. The radio spectrum license and other terms and conditions governing the Water Authority's use of a radio frequency spectrum under this Agreement are set forth in Exhibit F.

4. **Independent Contractor.** The Contractor is considered as an independent contractor at all times in the performance of the Services described in Section 1. The Contractor

further agrees that neither it nor its employees are entitled to any benefits from the Water Authority under the provisions of the Workers' Compensation Act of the State of New Mexico, or to any of the benefits granted to employees of the Water Authority under the provisions of the Merit System Ordinance as now enacted or hereafter amended.

5. **Personnel.**

A. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing all of the Services required under this Agreement. Such personnel shall not be employees of or have any contractual relationships with the Water Authority.

B. All the Services required hereunder will be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local law to perform such Services.

C. None of the work or Services covered by this Agreement shall be subcontracted without the prior written approval of the Water Authority. Any work or Services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this Agreement. The Water Authority is informed and has approved of Utility Partners of America as Contractor's installation subcontractor.

6. **Liability**. The Contractor and the Water Authority agree that as between the parties under this Agreement, each party shall be responsible for liability arising from personal injury, loss or damage to person or property occasioned by its own agents or employees in the performance of this Agreement, subject in all cases to the immunities and limitations of the New Mexico Tort Claims Act (NMSA 1978, Sections 41-4-1 et seq.) and any amendments thereto. This paragraph is intended only to define the liabilities between the Water Authority and the Contractor, the provisions contained herein are not intended to create in the public or any member thereof a third party beneficiary or to authorize anyone not a party to the Agreement to maintain a suit for wrongful death, bodily and/or personal injury, damage to property, and/or any other claim whatsoever based upon or pursuant to the provisions of this Agreement.

7. **Insurance.** The Contractor shall not commence any work under this Agreement until the insurances required have been obtained and the proper certificates (or policies) have been submitted to the Water Authority.

A. General Conditions. The Contractor shall procure and maintain at its expense during the term of the Agreement insurance in the kinds and amounts hereinafter provided with insurance companies authorized to do business in the State of New Mexico, covering all operations of the Contractor under the Agreement. Upon execution of the Agreement and on the renewal of all coverage, the Contractor shall furnish to the Water Authority a certificate or certificates in form satisfactory to the Water Authority showing that it has complied with these insurance requirements. All certificates of

insurance shall provide that thirty (30) days written notice be given to the Risk Manager, Department of Finance and Administrative Services, City of Albuquerque, P.O. Box 470, Albuquerque, New Mexico, 87103, before a policy is canceled, materially changed, or not renewed. Various types of required insurance may be written in one or more policies. The Albuquerque Bernalillo County Water Utility Authority shall be named an additional insured for Commercial General Liability insurance and Automobile Insurance and the coverages afforded shall be primary with respect to operations provided.

B. Approval of Insurance. Even though the Contractor may have been given notice to proceed, it shall not begin any work under the Agreement until the required insurance has been obtained and the proper certificates (or policies) filed with the Water Authority. Neither approval nor failure to disapprove certificates, policies, or the insurance by the Water Authority shall relieve the Contractor of full responsibility to maintain the required insurance in full force and effect. If part of the Agreement is sublet, the Contractor shall include any or all subcontractors in its insurance policies, or require the subcontractor to secure insurance to protect itself against all hazards enumerated herein, which are not covered by the Contractor's insurance policies.

C. Required Coverages. The kinds and amounts of insurance required are as follows:

1. **Commercial General Liability Insurance.** A commercial general liability insurance policy with combined limits of liability for bodily injury or property damage as follows:

$1,000,000	Per Occurrence
$1,000,000	Policy Aggregate
$1,000,000	Products Liability/Completed Operations
$1,000,000	Personal and Advertising Injury
$ 50,000	Fire Legal
$ 5,000	Medical Payments

Said policy of insurance must include coverage for all operations performed for the Water Authority by the Contractor and contractual liability coverage shall specifically insure all activities required by this Agreement.

2. **Automobile Liability Insurance.** A comprehensive automobile liability insurance policy with liability limits in amounts not less than $1,000,000 combined single limit of liability for bodily injury, including death, and property damage in any one occurrence. The policy must include coverage for the use of all owned, non-owned, hired automobiles, vehicles and other equipment both on and off work.

3. **Workers' Compensation Insurance.** A workers' compensation insurance policy for the Contractor's employees, in accordance with the provisions of the Workers' Compensation Act of the State of New Mexico.

D. **Increased Insurance or Bonding.** During the life of the contract, the Water Authority may require the Contractor to increase the maximum limits of any insurance required herein or to furnish a separate Performance Bond and/or a Labor and Material Payments Bond as additional security for the faithful performance of this Agreement by the Contractor. In the event that the Contractor is so required, an appropriate adjustment in the compensation will be made.

8. **Discrimination Prohibited.** In performing the Services required hereunder, the Contractor shall not discriminate against any person on the basis of race, color, religion, gender, sexual preference, sexual orientation, national origin or ancestry, age, physical handicap or disability, as defined in the Americans With Disabilities Act of 1990, as currently enacted or hereafter amended.

9. **ADA Compliance.** In performing the Services required hereunder, the Contractor agrees to meet all the requirements of the Americans With Disabilities Act of 1990 (the "ADA"), which are imposed directly on the Contractor or which would be imposed on the Water Authority as a public entity. The Contractor agrees to be responsible for knowing all applicable rules and requirements of the ADA and to defend, indemnify and hold harmless the Water Authority, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of any acts or omissions of the Contractor or its agents in violation of the ADA.

10. **Reports and Information.** At such reasonable times and in such forms as the Water Authority may require, there shall be furnished to the Water Authority such statements, records, reports, data and information, as the Water Authority may reasonably request pertaining to matters covered by this Agreement. Unless authorized by the Water Authority, the Contractor will not release any information concerning the work product including any reports or other documents prepared pursuant to the Agreement until the final product is submitted to the Water Authority.

11. **Open Meetings Requirements.** Any nonprofit organization in the Water Authority which receives funds appropriated by the Water Authority, or which has as a member of its governing body an elected official, or appointed administrative official, as a representative of the Water Authority, is subject to the requirements of §2-5-1 *et seq.* R.O.A. 1994, Public Interest Organizations. The Contractor agrees to comply with all such requirements, if applicable.

12. **Establishment and Maintenance of Records.** Records shall be maintained by the Contractor in accordance with applicable law and requirements prescribed by the Water Authority with respect to all matters covered by this Agreement. Except as otherwise authorized by the Water Authority, such records shall be maintained for a period of three (3) years after receipt of final payment under this Agreement.

13. **Audits and Inspections.** At any time during the Contractor's normal business hours and as often as the Water Authority may deem necessary, there shall be made available to the Water Authority for examination all of the Contractor's records with respect to all matters covered by this Agreement. The Contractor shall permit the Water Authority to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement. All such audits and inspections shall (a) occur upon prior written notice to the Contractor; be subject to reasonable confidentiality obligations; and, (c) be at the Water Authority's sole cost and expense.

14. **Publication, Reproduction and Use of Material.** No Intellectual Property is assigned to Water Authority hereunder. Contractor shall own or continue to own all Intellectual Property used or created in the course of performing this Agreement. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Contractor by virtue of this Agreement or otherwise, and instead vests in Water Authority, Water Authority agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that Water Authority may have in and to such Intellectual Property. "Intellectual Property" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto.

Both parties shall (and shall cause their employees and contractors to) keep all Confidential Information strictly confidential and shall not disclose it to any third party, except to the extent reasonably required to perform and enforce this Agreement or as required under applicable law, court order or regulation. As used herein, "Confidential Information" means any and all non-public information of either party, including the terms of this agreement, all technical information about either party's products or services, pricing information, marketing and marketing plans, the Water Authority's Customers' data, AMI System performance, AMI System architecture and design, AMI System software, other business and financial information of either party, and all trade secrets of either party. The Confidential Information may be transmitted orally, in writing or electronically. Notwithstanding the foregoing, "Confidential Information" shall not include: (i) any information that is in the public domain other than due to a breach of this Agreement; (ii) any information in the possession of the Recipient prior to disclosure by the Discloser; or, (iii) any information independently developed by the Recipient without reliance on the information disclosed hereunder by the Discloser. "Discloser" means either party that discloses Confidential Information, and "Recipient" means either party that receives it. Upon execution of this Agreement, the parties shall issue a mutually agreed press release.

Contractor expressly agrees that nothing in this Section 14 shall be interpreted to prevent or modify the Water Authority's obligations to comply with any applicable inspection of

public records disclosure law and this Section 14 may not be used as the basis for liability for such disclosure.

15. **Compliance with Laws.** In providing the Scope of Services outlined herein, the Contractor shall comply with all applicable laws, ordinances, and codes of the federal, State, and local governments.

16. **Changes.** The Water Authority may, from time to time, request changes in the Scope of Services of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the Water Authority and the Contractor, shall be incorporated in written amendments to this Agreement. No modifications, amendments or other changes are binding unless in a writing signed by both parties.

17. **Assignability.** The Contractor shall not assign any interest in this Agreement and shall not transfer any interest in this Agreement (whether by assignment or novation), without the prior written consent of the Water Authority thereto. This provision shall not be understood to apply to a purchase of all or substantially all of the assets or share capital of the Contractor.

18. **Termination for Cause.** If, through any cause, either party (the "Breaching Party") shall materially fail to fulfill in a timely and proper manner its obligations under this Agreement or substantially violate the covenants, agreements, or stipulations of this Agreement, the other party (the "Other Party") shall thereupon have the right to terminate this Agreement by giving thirty (30) days written notice to the Breaching Party of such termination and specifying the effective date of such termination. In such event, subject always to Section 14, all finished or unfinished products of the Services under this Agreement shall, at the option of the Water Authority, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any goods delivered, amounts payable to the Contractor's manufacturers, or subcontractors or other third parties for work then in progress or goods then being manufactured for delivery under this Agreement, or Services already completed hereunder. Notwithstanding the above, but subject always to all limitations on liability in Section 21, the Breaching Party shall not be relieved of liability to the Other Party for damages sustained by the Other Party by virtue of any breach of this Agreement by the Breaching Party, and the Other Party may, subject to the duty to mitigate damages, withhold any payments or deliveries of goods or services to the Breaching Party for the purposes of set-off until such time as the exact amount of damages due is determined.

19. **Termination for Convenience of Water Authority.** The Water Authority may terminate this Agreement at any time by giving at least thirty (30) days notice in writing to the Contractor. In such event, the Contractor shall be entitled to receive just and equitable compensation for: any goods delivered; amounts payable to the Contractor's manufacturers, or subcontractors or other third parties for work then in progress or goods then being manufactured for delivery under this Agreement; or, Services already completed hereunder, less payments of compensation for any of the foregoing previously made. If this Agreement is terminated due to the fault of the Contractor, the preceding section hereof relative to termination shall apply.

20. **Construction and Severability.** If any part of this Agreement is held to be invalid or unenforceable, such holding will not affect the validity or enforceability of any other part of this Agreement so long as the remainder of the Agreement is reasonably capable of completion.

21. **Limitations on Liability.** As separate and independent limitations on liability, both the Contractor's and the Water Authority's liability to the other party shall be limited to direct damages. Neither party shall be liable for any indirect, incidental, special or consequential damages. Further, Contractor is not liable for; (i) any revenue lost by the Water Authority or its affiliates from any Customer or Customers, irrespective of whether such lost revenue is categorized as direct damages or otherwise; nor (ii) any In/Out Costs, irrespective of whether such costs are categorized as direct damages or otherwise. As used herein, "Customer" shall mean any end user of water that pays the Water Authority for the consumption of water; and "In/Out Costs" means any and all costs, expenses and/or liabilities incurred in; (i) installing or placing any meter or SmartPoint Module at any Customer's or Customers' premises or other locations; and (ii) retrieving any meter or SmartPoint Module from any End Customer's or Customers' premises or other locations.

22. **Entire Agreement.** This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith. Exhibits A and B, attached hereto, are included for information purposes only and shall not be used to expand or increase (or reduce or diminish) either party's obligations as set forth in the scope of work or elsewhere in this Agreement. To the extent there is any inconsistency between the body of this Agreement and any Exhibit, the terms of the body of this Agreement shall govern.

23. **Force Majeure.** If either party becomes unable, either wholly or in part, by an event of Force Majeure, to fulfill its obligations under this Agreement, the obligations affected by the event of Force Majeure will be suspended during the continuance of that inability. The party so affected will give written notice of the existence, extent and nature of the Force Majeure to the other party. The party so affected will take reasonable steps to mitigate the Force Majeure. The term "Force Majeure" as used in this Agreement means an event beyond the control of the affected party, including acts of God, hurricane, flood, volcano, tsunami, tornado, storm, mudslide, tempest, vandalism, illegal or unauthorized radio frequency interference, strikes, lockouts, or other industrial disturbances, complete unavailability of component parts of any goods provided hereunder, acts of public enemies, wars, blockades, insurrections, riots, epidemics, earthquakes, fires, restraints or prohibitions by any court, board, department, commission or agency of the United States or any States, any arrests and restraints, civil disturbances and explosions.

24. **Notice.** All notices, requests, demands and other communications given under this Agreement will be in writing, and, unless otherwise specified in this Agreement, will be deemed to have been given if delivered in person, or on receipt, if mailed by certified or registered mail, postage pre-paid, and addressed to the Water Authority or to the Contractor at

the following addresses, unless either party changes the address by giving written notice of the change to the other. The addresses for notices are:

Notice to Contractor:

Colin Flannery,
Vice President & General Counsel
Sensus USA Inc.
8601 Six Forks Road, Suite 700
Raleigh, N.C., 27615
Phone: (919) 845-4019
FAX: (919) 845-4036

Notice to the Water Authority:

Mark S. Sanchez, Executive Director
Albuquerque Bernalillo County Water Utility Authority
P. O. Box 1293
Albuquerque, NM 87103
Phone: (505) 768-2500
FAX: (505) 768-3629

25. **Applicable Law.** This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New Mexico.

26. **Approval Required.** This Agreement shall not become effective or binding until approved by the Water Authority's Executive Director.

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IN WITNESS WHEREOF, the Water Authority and the Contractor have executed this Agreement as of the date first above written.

ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY

Approved By:

Executive Director

Date: 3/16/11

SENSUS USA INC:

By:

Title: President + CEO

Date: 3/8/2011

Federal Tax ID No: 51-0338883

State Tax ID No: 03-056744-00-0

ATTACHMENTS

1. **Exhibit A, Request for Proposals**
2. **Exhibit B, Response**
3. **Exhibit C, Pricing**
4. **Exhibit D, Warranty**
5. **Exhibit E, Software License**
6. **Exhibit F, Spectrum**
7. **Exhibit G, Scope of Work**

Exhibit A
Request for Proposal RFP2011-02-TC

EXHIBIT

A

A	B	C	D	E
SECTION	CATEGORY AND NUMBERING	AMR/AMI REQUIREMENTS	NOT Included PROPOSED AMR/AMI	DESCRIPTION
NOTES —▶ TO RESPONDERS:		Proposers are requested to make an entry for each line-item requirement in Column E. The response may vary from "Standard AMR/AMI Functionality" (if the responder believes no further description is necessary) to a full-detail response (should the responder believe the proposed system's functionality requires clarification or somehow stands out from competing products). The responder may utilize the first line of each section ("GENERAL RESPONSE") to address the entire section with a single description. This is at the proposer's discretion; however each line-item requirement should either be addressed within the General Response or individually in Column E. Should the requirement not be met by the proposed AMR/AMI solution an indicator should be placed in Column D and a description provided in Column E.		
A	**Vendor**			
	A-1	Please provide an introduction to the Proposer's company and organization. Include the following: (Note: Respondents must have been in business for at least 5 years and be in continual good financial standing to meet the minimum standard.)		
	A-1a	· All changes of ownership		
	A-1b	· Years in business		
	A-1c	· Product evolution		
	A-1d	· Financial standing (including full disclosure of any bankruptcy or other financial situation)		
	A-1e	· Number of dedicated staff supporting the proposed system		
	A-1f	· Industry focus		
	A-1g	· Other relevant details as to provide a clear picture of the vendor being proposed.		
	A-2	Please provide a list and explanation for any contracts cancelled as a result of convenience or cause in the past five years. References for these may be requested at a future time.		
	A-3	Please provide a statement of commitment to the proposed system and to the water/wastewater industry for a period not less than seven years. Please provide information pertaining to the percentage of vendor sales within the last three (3) years to the water/wastewater community.		
	A-4	The version of the system proposed must be in production in no fewer than three (3) domestic clients in the water/wastewater industry. Please provide references for a minimum of five (5) client installations. (Note: ABCWUA will request to speak with individuals engaged in both the system implementation and subsequent daily interaction with the system.)		
	A-5	Optional: Please provide a complete list of clients in the water/wastewater industry.		
	A-6	Optional: Please provide a complete list of clients in New Mexico including those outside the water/wastewater industry.		
	A-7	A site visit may be required for the top-ranked vendor. Please provide the location and contact information of the preferred site visit location. (Locations in New Mexico are preferred, but not mandatory.)		
	A-8	Please provide evidence of the Proposer's track record with respect to on-time delivery of planned upgrades.		
	A-9	Elaborate appropriately and succinctly any Product/Company Information not called out in this section that are deemed important differentiators or essential functionality.		
B	**System Infrastructure**			
	The proposing vendor is expected to provide all necessary information regarding hardware, software, and database licensing subject to this section:			

	B-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	B-2	The system must operate in the Microsoft (MS) Windows Server 2008 and/or SUN/Netapp environment.		
	B-3	Provide a server specification including space requirements. Note: The AMI control computer shall be capable of operating in a normal office environment using normal office power supply, require no special installation, and be easily transferable. Components needing to reside in areas other than the Water Authority's office location data center need to be outlined by the Offeror. Indicate whether the system requires a temperature controlled environment. The vendor is NOT required to provide a quote for hardware.		
	B-4	The Authority prefers the Oracle database platform. Please specify the preferred database (including versions), and explain the rationale of the database choice.		
	B-5	Describe any experience utilizing server virtualization with the proposed AMR/AMI. Include any problems encountered.		
	B-6	Indicate where event triggering and transaction processing take place (e.g., database level, middleware, etc.).		
	B-7	Specify the proposed AMR/AMI architecture configuration by description and drawing (e.g., n-tier client-server, thin-client/web-enabled). No formal requirement is set forth in terms of architecture as long as it best meets the needs of the Authority.		
	B-8	Provide high-level details on the architecture of the proposed configuration, including the availability of API's, web services, and similar open architectures enabling expansion, custom reporting, and interfacing to the AMR/AMI (such description should include a listing and discussion of available web services).		
	B-9	The AMI system functions, reports, and data on the server shall be securely accessible by properly authorized persons from other workstations on the Water Authority's network. Describe how this capability is provided.		
	B-10	The Water Authority has defined the AMR/AMI as being a high priority system. Recovery of the system shall take no longer than twenty-four (24) hours after failure or disaster. Specify the disaster recovery solution to meet the 24 hour recovery including any additional hardware (server & storage), software, telecom and bandwidth requirements. The Water Authority currently has available the ability to replicate files between systems using NetApp solutions as well as other technologies like the inherent data replication within Oracle 10g/11g. The Offeror may recommend an alternative solution. Please indicate what hardware and software is required and whether it is obtainable outside the purchase contract.		
	B-11	The system must be compatible with MS Exchange Server 2005 and 2007 (for sending automated alerts, etc.) and use SMTP service. The Authority will not allow use of POP3 or IMAP services.		

	B-12	The minimum desktop/laptop/tablet configurations supported by the Authority are: desktop/laptop/tablet workstations with 2GB memory minimum, 75GB HD minimum, and standard peripheral support through USB, 10/100 NIC, and CD/DVD, running Windows XP Professional SP2. Please confirm that these configurations are acceptable along with the intent to support future versions of Windows while maintaining backward compatibility, specifically Windows 7.		
	B-13	Describe any experience or problems encountered with incompatible hardware, operating systems (specifically MS 7), server configurations, Microsoft Office 2003 or 2007 or similar issues of which the Authority should be aware regarding the related infrastructure.		
	B-14	Describe the software products and/or tools utilized in development of the AMR/AMI.		
	B-15	Describe the ability of the system to allow for active directory integration.		
	B-16	Elaborate appropriately and succinctly any System Infrastructure considerations not called out in this section that are deemed important differentiators or essential functionality.		
C	**General System**			
	C-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	C-2	Provide an overview, introduction, and history of the proposed AMR/AMI as it pertains to general system usage, differentiating features, and other relevant details.		
	C-3	The intended system must be a commercial-off-the-shelf (COTS) system; supply the following information:		
	C-3a	Number of installations following a versioning path		
	C-3b	Other information indicating a mature COTS system		
	C-4	Describe the system development plan and/or commitments to future releases, including a description of known feature, function, and/or architecture enhancements.		
	C-5	Describe the upgrade plan (i.e., Are upgrades required to maintain support? What notice is given and what upgrade paths are offered when a version approaches retirement? When is a version no longer supported, etc?). Also include the method of communication to inform the client an upgrade has been sent.		
	C-6	Describe the user interface, focusing on such items as the menu structure, screen layout, etc.		
	C-7	Explain any nomenclature associated with the proposed system that might be unique to the system (e.g., ERT/MIU, etc.).		
	C-8	Describe any event triggering available in the system and how such events are designated, added, amended, or deleted by a user or system administrator.		
	C-9	Describe the degree of configurability of the proposed system by a trained administrator. Include items such as ability to add/create user defined data fields, changing screen labels, etc.		

	C-10	Describe any third party software proposed. Include details on products, version, intended usage, and licensing.		
	C-11	Describe the proposed system's document management/attachment capabilities, including the methodology used to attach/assign documents to any record in the database. Include discussion on where documents or files are stored and managed (e.g., within the database or as external references).		
	C-12	Describe the AMR/AMI ability to allow data entry and review through browse screens (multiple record entry/review on a single screen).		
	C-13	Describe the number and type of user-definable fields available.		
	C-14	Elaborate appropriately and succinctly any General System considerations not called out in this section that are deemed important differentiators or essential functionality.		
D	**Radio Licenses**			
	D-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	D-2	Indicate what FCC or other regulatory agency licenses if, if any, the system will require. Indicate the expected length of time to acquire such licenses. Indicate what problems can occur in the process of obtaining such licenses. Describe how authorization of license use can be renewed. What alternatives are available if FCC licenses are not available in the Water Authority service area? Describe any potential conflicts with City Of Albuquerque service organizations such as Fire and Police departments or other known conflicts.		
	D-3	Offeror shall be responsible for obtaining all necessary licenses on behalf of the Water Authority. Licenses must be obtained and assigned radio frequencies verified as suitable for use with the AMR/AMI system(s) before any AMI equipment may be installed. **NOTE: If Offeror is unable to obtain the necessary licenses, the Water Authority reserves the right to cancel the contract and orders for all or part of the system, and receive a full refund from Offeror of all amounts paid.**		
	D-4	Indicate any provisions offered by the Offeror or its AMR/AMI system to identify and remove interlopers on its licensed frequency (ies).		
	D-5	Describe how interference is monitored, identified and remedied and by whom.		
	D-6	Elaborate appropriately and succinctly any Radio Licensing considerations not called out in this section that are deemed important differentiators or essential functionality.		
E	**Meter Compatibility**			
	E-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	E-2	The following list of meters are in use by the Water Authority		
	E-2a	Badger		
	E-2b	Sensus		
	E-2c	Hersey		

	E-2d	Rockwell		
	E-2e	Neptune		
	E-3	Elaborate appropriately and succinctly any Meter Compatibility considerations not called out in this section that are deemed important differentiators or essential functionality.		
F	**Meter Interface Units (MIU)**			
	F-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	F-2	Describe the physical characteristics of the MIU, including dimensions, weight and any mounting requirements or limitations (orientation, elevation, etc.). Provide pictures or drawings (to scale) when possible. If more than one design/device is offered, the Offeror should describe all models and why they are offered.		
	F-3	The Authority would prefer an MIU capable of supporting at least two meters. Describe how the MIU handles more than one meter register. Describe any degradation to MIU or battery performance if more than one meter is attached.		
	F-4	The MIU must be capable of operating in the environmental conditions found in Albuquerque NM. (Temperatures from 10F - 110F, low humidity, moderate precipitation). Describe the operating parameters the MIU functions in. Describe any degradation to MIU performance or battery life expected due to environmental factors that exist in Albuquerque NM.		
	F-5	The Authority requires the MIU to deliver a minimum of 24 meter reads per day per meter. Describe how the proposed MIU will deliver the required number of reads. Explain any available options for scheduling the delivery of reads to the AMI Control Computer (AMICC). Thoroughly explain any implications for each option that might affect or degrade the performance of the MIU, especially battery life expectancy.		
	F-6	The Authority requires the MIU battery to perform normally and meet the ABCWUA operational requirements for at least seventeen (17) years. Please describe the expected battery life of the MIU, include statistics from existing installations using the same proposed battery. Include a copy of the warranty for the battery and any assumptions made that support the warranty claims.		
	F-7	The Authority requires the MIU to connect to existing meters that currently have encoded registers. Describe how MIU's will be connected to existing meters. The connections are required to be made through the use of a waterproof connection. List all available options for the installation of your MIU into new or existing meters.		
	F-8	Can your MIU distinguish different makes and models of meter registers? Does the MIU have to be programmed or modified to accept different makes or models of meter registers? How and where is this accomplished? Are different MIUs required for different makes and models of registers? If so, how are these distinguished?		

	F-9	The MIU is required to utilize an accurate and reliable encoding technology to capture readings. Describe the encoding technology utilized in your MIU.		
	F-10	The Authority requires the MIU to operate within the existing meter boxes currently in use by the Authority. Existing configurations include: composite/plastic meter boxes with composite/plastic lids; concrete meter boxes with cast iron meter lids. Describe any expected performance degradation due to box/lid material and propose any remedies that may minimize or eliminate the performance degradation. Be sure to include any additional cost (material and/or labor) that might be required to resolve problems caused by meter box construction in the Cost Proposal.		
	F-11	The Authority requires the MIU to detect tampering to the MIU. Describe how the proposed solution handles tampering. Describe the notification options that are available to alert Authority personnel.		
	F-12	The MIU shall be permanently labeled with manufacturer's name, model number, "ABCWUA", a tamper warning, MIU identification number, required FCC labeling, input/output connections, and date of manufactured. The label should contain a bar code of the MIU identification number. Describe any other labeling options.		
	F-13	The MIU must meet and be approved by all applicable regulatory requirements. Describe all applicable regulatory requirements associated with your MIU and provide proof of applicable approvals for the device.		
	F-14	The Authority requires the MIU to be initialized or programmed during or prior to field installation. Describe all MIU programmability. Can the MIU store an account or meter number? Will this number be transmitted with the meter reading data? Can this number be programmed into the MIU from the field programming unit based on information downloaded from an installation work order database? Indicate capabilities and procedures. Indicate field length of account number.		
	F-15	The Authority requires the MIU to store, at a minimum, thirty (30) days of meter reads at the frequency detailed in F-5. Describe the MIU's capability to store additional reads and any limitations in meeting this requirement.		
	F-16	The Authority requires the MIU to return meter reads to an accuracy of .1 ccf (1 cubic foot). Describe how the system meets this requirement.		
	F-17	Describe the skill set required to maintain and service this equipment. Identify and describe all equipment required by the Water Authority to perform on-going maintenance and servicing of the MIUs.		
	F-18	Elaborate appropriately and succinctly any Meter Interface Unit (MIU) considerations not called out in this section that are deemed important differentiators or essential functionality.		
G	**Regional Collector Unit (RCU)**			

	G-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	G-2	Describe the physical characteristics of the RCU including dimensions, weight, and any mounting requirements or limitations (orientation, elevation, etc.). Provide pictures or drawings (to scale) when possible. If more than one design/device is offered, the Offeror should describe all models and why they are offered.		
	G-3	The Authority requires that RCUs be located at locations listed in file RCU Locations.xlsx included in the RFP CD. Describe any limitations these locations place on the overall system's ability to operate to meet the Authority's requirements. It is preferred that all RCUs be located first on Water Authority infrastructure. If, in some instances, that is not possible, other public sector infrastructure should be considered followed by private sector infrastructure.		
	G-4	Provide all information necessary on the required skill sets needed to locate and then set up the RCUs during the installation phase. The Offeror shall also offer options/recommendations as to where and how Water Authority staff would assist in the installations of the RCUs, the ability of the Offeror to perform this functions and if Water Authority staff can be trained or should assist in the initial deployment of these units. The Offeror shall confirm the types of mounting locations, determine arrangements, and include the estimated cost of mounting and any continuing infrastructure rental cost necessary for mounting RCUs in the appropriate locations in order to acquire reads as per the ABCWUA requirements.		
	G-5	Describe the power requirements for the RCU. Delineate who is responsible for obtaining power service if required. What are the estimated one-time and continuing costs for power? What are the consequences for the RCU when power is lost? Describe any battery backup capabilities and the purpose it serves. Describe the lifespan of the battery and any on-going maintenance required. Describe how the system preserves and delivers data during and after a power loss.		
	G-6	The RCU must be capable of operating in the environmental conditions found in Albuquerque NM. (Temperatures from 10F - 110F, low humidity, moderate precipitation). Describe the operating parameters the RCU functions in. Describe any degradation to RCU performance or battery life expected due to environmental factors that exist in Albuquerque NM.		
	G-7	Describe any additional network components (i.e., repeaters, signal boosters, etc.) that may be required by the system to meet ABCWUA system requirements. Provide details about each device and why they are required.		
	G-8	Provide the number and location of RCUs (and other necessary equipment) needed for this project. RCU number and location shall be based on propagation studies completed by the Offeror.		
	G-9	Describe how the RCU is protected against electrical surges such as lightning strikes.		

	G-10	Describe the skill set required to maintain and service this equipment. Identify and describe all equipment required by the Water Authority to perform on-going maintenance and servicing of the RCU's.		
	G-11	The Authority prefers the RCU to store, at a minimum, thirty (30) days of meter reads for all collected meters at the frequency detailed in F-5. Describe the RCU's capability to store additional reads and any limitations in meeting this requirement. If the vendor system is designed to move data from the MIU directly to the AMI database the vendor should provide documentation on how this requirement can be met with this methodology.		
	G-12	The RCU must meet and be approved by all applicable regulatory requirements. Describe all applicable regulatory requirements associated with your RCU and provide proof of applicable approvals for the device.		
	G-13	Define any applicable warranties associated with the RCU		
	G-14	Elaborate appropriately and succinctly any Regional Collector Unit (RCU) considerations not called out in this section that are deemed important differentiators or essential functionality.		
H	**Overall Network Performance**			
	H-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	H-2	The Water Authority requires guaranteed reliability to ensure reads are received from each endpoint under the network on a daily basis. Describe the mechanisms in place in your solution to ensure a minimum 98.5% probability of daily read?		
	H-3	The Authority requires the capability for unscheduled (on-demand) reads. Describe how the system meets this requirement.		
	H-4	The Authority requires that a field tester must be able to locate and diagnose problems with system components (meter register, MIU or RCU) unless the system incorporates an alternate way to make such diagnoses. The field tester should be able to ascertain the condition or remaining life of the battery in the MIU. Describe how the system meets this requirement.		
	H-5	The Authority requires that meter reads be synchronized to a clock in order to provide accurate time of day readings. Clock accuracy must be +/- 1 minute. Describe how the system meets this requirement.		
	H-6	The Authority requires that reads from all meters for the previous calendar day be delivered to the AMI Control Computer by 6:00AM MST on the next calendar day. Describe how the system meets this requirement.		
	H-7	The Authority requires that following an abnormal or delayed reading cycle (i.e., power outage) reads from all meters up to, and including the interrupted reads, shall be delivered to the AMI Control Computer within 3 calendar days. Describe how the system meets this requirement.		

	H-8	The Authority requires that the system provide a mechanism to alert and notify Authority personnel of possible leaks at a residence (Leak Detection). Describe how the system identifies, alerts and notifies leaks. Explain any options available for other methods of leak detection.		
	H-9	The Authority requires that the frequency of reads for a single meter (or group of meters) be adjustable through the AMI Control Computer to provide meter reads in frequencies up to 1 minute. Describe how the system meets this requirement and any implications this option might have on (or degrade the performance of) any system component, especially battery life expectancy. The Authority requires two-way communication.		
	H-10	Elaborate appropriately and succinctly any Overall Network Performance considerations not called out in this section that are deemed important differentiators or essential functionality.		
I	**Installation Requirements**			
	I-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	I-2	Prior to the start of the installation, the Water Authority's Project Manager will provide the Offeror with an electronic file containing the information necessary to create work orders for meter/AMI installations. The Water Authority will provide the Offeror with weekly updates to this file for routes where the AMI system has not yet been installed. For each meter, the data file will indicate the: Service Point ID, Time of Use (High, Low, Fire register) Meter Serial number (in most cases last 5 digits), meter billing size, meter location (if known), service address, Customer name and phone number that may be listed on the account. Describe any additional information required prior to installation.		
	I-3	The Authority may require that the Offeror notify the owner of a building of its intent to install the AMI system at a particular customer's premises. Prior to scheduling and commencing installation the Offeror shall submit detailed scheduling and installations procedures to the Water Authority for approval.		

	I-4	Prior to the commencement of full-scale installation, but after Offeror has installed the AMI system control computer and a sufficient quantity of RCUs, the Offeror shall install meter reading equipment on one of the Water Authority's routes (comprised of approximately 150 meters) following the Offeror's proposed installation procedures. During this test period (not longer than twenty (20) business days), the Water Authority and the Offeror shall evaluate the procedures for public notification, scheduling installations, MIU installation, data transfer to the Water Authority's billing system or MSDS, meter reading over the system, to ensure all components are working and effective. The Water Authority may require Offeror to modify any procedures that it deems are deficient or ineffective. No work will be started on other routes until the AMI system equipment is determined to be working to performance requirements on the test route, the project control procedures and systems are determined to be performing accurately, and the installation procedures have been approved by the Water Authority.		
	I-5	The Authority requires that the Offeror shall capture GPS positioning data (with accuracy of 1 foot or better), for each MIU installed on a meter (3" and larger) installed in an outdoor pit, box or vault.		
	I-6	Offeror shall be responsible for removing and properly disposing of any amount of dirt needed to access components of the system in a meter pit or vault. Dirt shall be removed such that there is a minimum of 2" clearance below the meter. All waste resulting from cleaning the meter pit as well as replacing the plate and lid must be cleaned up hauled off by the Offeror. The existing ring and lid, if replaced, shall be disposed of by the Offeror. If grass or shrubbery is damaged by the installation process, the Offeror must repair the damage to original condition to the satisfaction of the consumer by replanting, or residing. The Water Authority reserves the right to inspect any installation and clean-up work before payment is made to the Offeror. Offeror shall be responsible for claims resulting from damage caused by the installation		
	I-7	The Offeror shall be responsible for repairing any service lines it damages at its sole cost and expense, unless the Installation Manager has reported (prior to commencement of installation) a condition of antiquated or inferior plumbing to the Project Manager and the Project Manager has authorized the contractor to proceed with the work. In the event a service line fails during or after the installation procedure on the inferior plumbing has been authorized by the Project Manager, the Contractor's licensed plumber will oversee the necessary repair work to the water service line and be entitled additional negotiated compensation. The Water Authority also reserves the right to repair/replace the service lines with Water Authority crews		

	I-8	Offeror shall describe in detail its proposed system for ensuring that all data pertaining to installation is correctly recorded during installation, and that all data transferred to the AMI Control Computer system is accurate. Offeror shall describe procedures for eliminating any opportunities for a meter or MIU to be associated in the AMI Control Computer or the Authority's CC&B system with the wrong address or account number.		
	I-9	Should the Offeror receive a call or complaint from a customer or the Water Authority regarding installation, the Offertory shall immediately log the call, including caller's name, address, account number if available, date and time of call, nature of problem, and the action taken. Copies of all call logs shall be forwarded to the Water Authority's Project Manager not less than once per day.		
	I-10	The Offeror shall be responsible for replacing any supplied system component improperly installed by its Installer.		
	I-11	The Authority requires that each installation will be accepted by the Water Authority conditioned upon (1) electronic submission of a list of completed installations containing for that installation the Service Point identification number, address, MIU identification number, location of meter, installer's name, Offeror's inspector's name, and all other information relevant to the installation; (2) satisfactory inspection by meter readings from the meter and MIU by the Water Authority operating the AMI system in a normal way; and (3) confirmation that MIU identification numbers, meter register numbers and other information have been correctly captured in the AMI control system database and/or the Water Authority's MSDS for each customer's premises.		
	I-12	Offeror shall propose normal work hours, which must be approved by the Water Authority. Installers must be available for evening and Saturday installations, as well as for installations that must be conducted at other times because of special needs		
	I-13	Offeror shall conduct installations by route, or group of routes. Route groups shall be based on geographic proximity and logistics, and neighborhoods to be determined by the Water Authority in discussion with Offeror. Unless approved in writing by the Water Authority, Offeror shall complete at least 90% of the installations in one route or group of routes before commencing installation on the next route.		
	I-14	Elaborate appropriately and succinctly any Installation Requirements considerations not called out in this section that are deemed important differentiators or essential functionality.		
J	**Reporting and Data Export**			
	J-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	J-2	Describe any inherent system ad-hoc reporting functionality including the ability to export query results to third party software (i.e., Excel, Access, etc.). Description should include discussion on ability to save and share reports and to establish filters (e.g., saving the report template but allowing users to select specific criteria).		

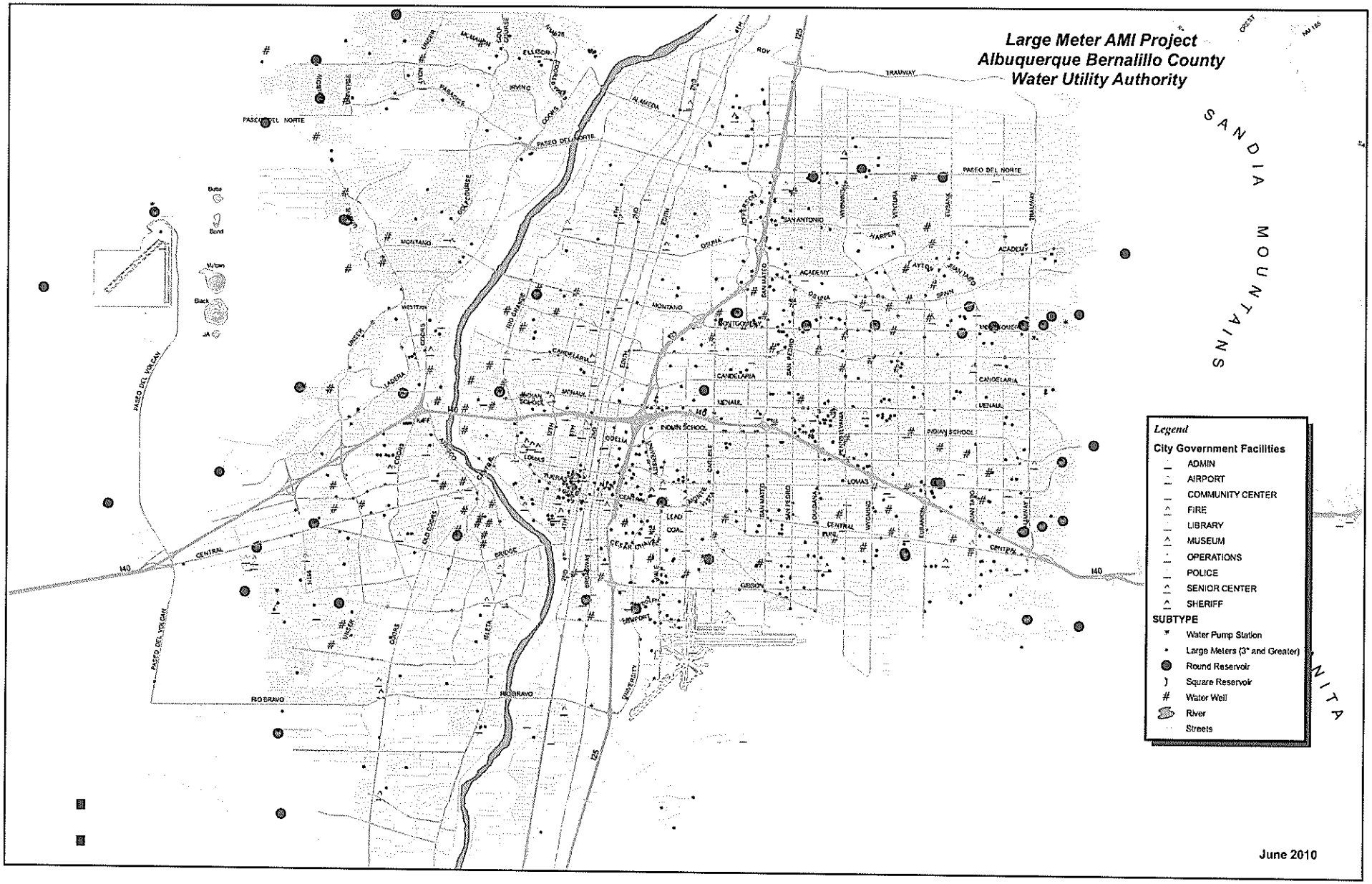
	J-3	Describe any inherent system functionality which enables/facilitates cross-source reporting (e.g., comparative analyses on different meter locations).		
	J-4	Describe any inherent system graphing functionality.		
	J-5	Describe the trending and statistical analysis capabilities of the proposed AMR/AMI.		
	J-6	Describe the use or reliance on any third party ad-hoc reporting tools (e.g., Crystal Reports) for standard or non-standard reporting.		
	J-7	The vendor must provide a minimum 5 days of report development ***in addition*** to the time necessary to customize any "standard" reports.		
	J-8	Provide a list of any "standard" reports to be supplied with the system. These reports may include those of an operational (e.g., meter listing), management (e.g., QA reporting, non-reporting meter), transactional (e.g., audit trail) and/or general system nature. Please indicate if the report and/or function is electronic, print, or both.		
	J-9	Describe the method and process, if any, for affixing electronic signature to records, reports, and documents.		
	J-10	Describe the method external customers would utilize to view reports, reads, etc. Include the file format(s) available for upload for these reports (the Authority might like to allow customers to view/print reports themselves in a format that does not allow changes by the client).		
	J-11	Any report sent by the Authority must have the ABCWUA logo. Please describe the ability of the AMR/AMI to allow for logo insertion.		
	J-12	Elaborate appropriately and succinctly any Reporting and Data Export considerations not called out in this section that are deemed important differentiators or essential functionality.		
	J-12	The Authority will require the following interfaces. The vendor should describe and cost out the level of effort to complete interfaces: 1) Oracle's Customer Care and Billing system Version 2.2 is utilized as the CIS, 2) ESRI with ARCGIS Version 9.3 with an upgrade to Version 10 late August 2010. Data will need to be made available via ODBC connection or similar.		
K	**Future Considerations**			
	K-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	K-2	The Authority desires to extend the AMI to include pressure monitoring of the Authority's service system. Describe how the proposed system could accommodate approximately 1,000 pressure (or other transducers) monitors.		
	K-3	The Authority desires to extend the AMI to include detection of fire hydrant use through the use of wet barrel sensors. Describe how the proposed system could accommodate fire hydrant use detection.		

	K-4	Elaborate appropriately and succinctly any Future considerations not called out in this section that are deemed important differentiators or essential functionality.		
L	**External Interfaces**			
	L-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	L-2	The Authority requires the proposed AMR/AMI to export AMR/AMI data for import into the Authority's (internally or third party) developed Oracle-based AMI Historian (MSDS) system via a direct database interface. Describe any limitations in meeting this requirement.		
	L-3	The Authority may desire to interface AMR/AMI with the Authority's Oracle Customer Care and Billing (CC&B). Describe any experience interfacing with Oracle's system.		
	L-4	The Authority may desire to interface AMR/AMI with the Authority's Maximo Asset Management / Maintenance System. Describe any experience interfacing with Maximo.		
	L-5	Elaborate appropriately and succinctly any External Interface considerations not called out in this section that are deemed important differentiators or essential functionality.		
M	**Handheld or Other Mobile Devices**			
	M-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	M-2	Provide a specification for handheld or other mobile devices that may be used in AMR/AMI device interrogation, programming or data gathering. Such specification(s) should be based on the Proposer's experience in delivering the same in a working environment. The Authority would use handheld devices for device configuration and data retrieval. Note: Recommended handheld devices should be quoted in **Attachment C "Cost Proposal".**		
	M-3	Describe the Proposer's experience with mobile data collection. Provide details on processes (e.g., synchronization, online availability, failure recovery, off-line capabilities, etc.) used in hand-held utilization.		
	M-4	For mobile devices, the AMR/AMI should provide a configurable data entry form and offer a bi-directional interface for such items as configuration and automated upload of collected data. Please explain the proposed system's method of achieving this result.		
	M-5	Elaborate appropriately and succinctly any Handheld Devices considerations not called out in this section that are deemed important differentiators or essential functionality.		
N	**Training and Documentation**			
	N-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	N-2	The Authority has facilities to accommodate training up to 10 people at a time. Describe the approach and curriculum for each of the classes listed below, including number of days, necessary skills of attendees, etc. (those identified should be considered the minimum requirement), and any others you recommend.		

	N-2a	End-user training classes (The Authority will have approximately 12 participants for this session)		
	N-2b	Separate System Administrator training classes for IT Administrator and Power Users (The Authority will have approximately 12 participants for this session)		
	N-2c	Separate report training depending on the method of reporting proposed: How to write reports within the AMR/AMI--from data to report.		
	N-2d	Follow-up training onsite within 30-90 days; explain how system proficiency is ensured after the follow-up training.		
	N-3	Describe the proposed system's training materials (e.g., video, online/CD training, workbooks) to enable future end users to learn the system without need of formal classroom based training. **Note: Offering a "train-the-trainer" curriculum is not sufficient for meeting this requirement.**		
	N-4	Describe any third party training necessary for use of the proposed system (e.g., Crystal Reports).		
	N-5	All training must be provided at Authority facilities. Designate any costs not covered in this proposal (e.g., travel by the Authority, and/or any assumptions on available facilities and equipment.)		
	N-6	Describe the proposed AMR/AMI documentation, including all system administration guides, technical reference guides, training materials, end-user manuals, and report development guides.		
	N-7	Describe all online help and documentation, including search capabilities, context sensitive searching, etc.		
	N-8	Describe database documentation available, including entity relationship diagrams, table structures and definitions, and other associated elements.		
	N-9	List any third party documentation to be delivered (e.g., Crystal Reports, hardware manuals, etc.)		
	N-10	Describe any regular user conferences or user group seminars sponsored by the vendor.		
	N-11	Elaborate appropriately and succinctly any Training and Documentation considerations not called out in this section that are deemed important differentiators or essential methodologies.		
O	**System Support**			
	O-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	O-2	The system must be maintained to be current with any future O/S or database upgrades such that support for these systems has not expired. Describe the process utilized to ensure compatibility with future versions of the installed platform and the infrastructure environment.		
	O-3	Describe the ability to provide the following minimum support items:		
	O-3a	The system should be provided with telephone and online support during standard business hours (8:00 a.m. to 5:00 p.m. MST). If the vendor's standard support hours fall outside of this time frame, describe the process that will used to support Authority.		

	O-3b	Response time of issues should be within 4 business hours.		
	O-3c	The system should be provided with annual upgrades and "bug" fixes as required.		
	O-3d	All upgrades or system patches must be provided with full documentation concerning the nature of the change and the process for its installation.		
	O-3e	Phone support must be available during the installation of any issued upgrade/patch.		
	O-4	Describe support procedures for incidents occurring outside normal business hours and/or emergency/critical situations.		
	O-5	Describe the process for system updates such that no content, links, configuration settings, files, etc. are abandoned.		
	O-6	Provide a statement guaranteeing future compatibility and "seamless" upgrade assuming an annual support agreement is maintained.		
	O-7	Describe any additional support functions offered as part of the proposed system (e.g., off-hours support availability).		
	O-8	Describe, with examples, the prioritization of support calls and the intended response time for resolution of each level of priority.		
	O-9	Fully describe the path for support issue escalation.		
	O-10	Indicate the duration of continued maintenance and support for superseded releases.		
	O-11	Describe any annual roadmap sessions available to communicate near-term functionality upgrades to clients.		
	O-12	Provide the cost difference between standard business hour support and 24x7 support, if available.		
	O-13	Describe any activities offered to ease the transition from implementation to support.		
	O-14	Elaborate appropriately and succinctly any System Support considerations not called out in this section that are deemed important differentiators or essential functionality.		
P	**Data Archival and Backup**			
	P-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	P-2	Describe any data archival utility feature including timing and frequency of archival, record selection and retention (e.g., by date, meter ID, etc.), restore options, etc.		
	P-3	Is the AMR/AMI provided with an inherent (or included) backup utility or does the system rely on the backup systems and processes of the operating environment (i.e., server and operating system)? Describe the functionality and/or the vendor's recommendation with respect to other tools/options for backup and/or archival.		
	P-4	Describe the proposed systems ability to retrieve archived data for inclusion in reports, and how report data may be used to obviate the need for voluminous long-term data storage. Include any 'restore' functionality and/or any limitations on the querability of such data.		
	P-5	Describe the ability to purge data from the system after a specified amount of time.		

	P-6	Elaborate appropriately and succinctly any Data Archival and Backup considerations not called out in this section that are deemed important differentiators or essential functionality.		
Q	**Security**			
	Q-1	GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.		
	Q-2	The AMR/AMI system shall provide security features to ensure that only authorized individuals enter, view and modify data. Access levels shall be definable to restrict use of system level functions (such as user authorization), and to provide data access levels to restrict the use of data entry, data approval, data retrieval, data modification, database structure creation or modification functions. Describe the security features of the proposed system, covering items such as system login, user validation (username/password), user groups, establishing privileges, etc.		
	Q-3	Describe the ability of the system to allow for complex passwords and forced expiration of passwords.		
	Q-4	Describe the ability for the AMR/AMI to allow restriction for:		
	Q-4a	Individual screens		
	Q-4b	Menus		
	Q-4c	Tables		
	Q-4d	Reports		
	Q-4e	Quality control functions		
	Q-4f	Other (please specify)		
	Q-5	Describe the auditing information (e.g., last user, last updated) stored with each database record (e.g., meter read) including any user definable options for the same.		
	Q-6	Elaborate appropriately and succinctly any Security considerations not called out in this section that are deemed important differentiators or essential functionality.		
R	**Other Requirements**			
	R-1	Elaborate appropriately and succinctly any other requirements not called out in this document and are deemed important differentiators, essential functionality, or contributing methodologies.		


Large Meter AMI Project
Albuquerque Bernalillo County
Water Utility Authority
SANDIA MOUNTAINS
Legend
City Government Facilities
ADMIN
AIRPORT
COMMUNITY CENTER
FIRE
LIBRARY
MUSEUM
OPERATIONS
POLICE
SENIOR CENTER
SHERIFF
SUBTYPE
Water Pump Station
Large Meters (3" and Greater)
Round Reservoir
Square Reservoir
Water Well
River
Streets
June 2010

Preferred Locations								
Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Admin	Water Pre-treatment Plant	6000	Alexander	BLVD	NW	5050	35.14690000000	-106.61230000000
Admin	Waste Water Treatment Plant	4201	2nd	ST	SE	4930	35.02020000000	-106.66500000000
Well	ATRISCO 3	324	46TH	ST	NW	4953	35.08716852300	-106.68880161700
Pump Station	UNKNOWN NAME	99999	81ST	ST	NW	5336	35.15926859400	-106.72840309900
Reservoir	Volcano Cliffs 1	99999	81ST	ST	NW	5342	35.15964620900	-106.72978165600
Reservoir	Volcano Cliffs 2	99999	81ST	ST	NW	5336	35.15950601700	-106.72871926600
Well	VOLCANO CLIFFS 1	99999	81ST	ST	NW	5340	35.15969681500	-106.72907254900
Well	VOLCANO CLIFFS 2	99999	81ST	ST	NW	5332	35.14579633200	-106.72834683200
Reservoir	LEAVITT RES.	1320	86TH	ST	SW	5084	35.05288070000	-106.72996789200
Well	LEAVITT 1	1320	86TH	ST	SW	5084	35.05285083200	-106.73035481300
Pump Station	WEST MESA PUMP STATION	119	94TH	ST	NW	5176	35.07468916100	-106.73841435400
Reservoir	WEST MESA RES.	119	94TH	ST	NW	5184	35.07490472600	-106.73883938600
Well	WEST MESA 1	119	94TH	ST	NW	5180	35.07455308500	-106.73885763900
Pump Station	PAAKWEREE	99999	ABEES	ST	SW	5194	35.01655890500	-106.75003627200
Reservoir	PAAKWEREE RES.	99999	ABEES	ST	SW	5194	35.01632757300	-106.75002054600
Well	PAAKWEREE	99999	ABEES	ST	SW	5196	35.01656102700	-106.75018723400
Well	WALKER	9901	ACADEMY	RD	NE	5632	35.15457086100	-106.53105240500
Well	GONZALES 2	2400	ALAMOGORDO	DR	NW	5103	35.10970798100	-106.69765974300
Well	VOLANDIA 3	4200	AMHERST	DR	NE	5112	35.12813390700	-106.60501374400
Pump Station	ATRISCO PUMP STATION	669	ATRISCO	DR	SW	4944	35.07172571000	-106.69065355600
Reservoir	ATRISCO RES.	701	ATRISCO	DR	SW	4944	35.07191560200	-106.69025264100
Well	ATRISCO 1	701	ATRISCO	DR	SW	4944	35.07159846000	-106.69002012000
Pump Station	GLENWOOD PUMP STATION	12929	BLACKSTONE	RD	NE	6014	35.13214393900	-106.49333988400
Reservoir	GLENWOOD RES. 1	12929	BLACKSTONE	RD	NE	6018	35.13226493900	-106.49297716100
Well	LEAVITT 3	9021	BLAKE	RD	SW	5084	35.04100152100	-106.73272478000
Well	VOLANDIA 5	3810	BOGAN	AV	NE	5116	35.13472282400	-106.60273618100
Pump Station	VOL-ANDIA PUMP STATION	4400	BOGAN	AV	NE	5148	35.13460402500	-106.59653337200
Reservoir	VOL-ANDIA RES. 2	4400	BOGAN	AV	NE	5148	35.13489096800	-106.59627240400
Reservoir	VOL-ANDIA RES. 1	4400	BOGAN	AV	NE	5148	35.13488860800	-106.59696699000
Well	VOLANDIA 1	4400	BOGAN	AV	NE	5146	35.13463446000	-106.59717944300
Well	ZAMORA 2	5601	BOGART	ST	NW	5162	35.14774404800	-106.71662911000
Well	YALE 1	823	BUENA VISTA	DR	SE	5160	35.07399815800	-106.62481606600
Reservoir	GLENWOOD RES. 2	4901	CALLE DE TIERRA		NE	6062	35.13467394500	-106.49033512000
Well	LEAVITT 2	99999	CAMINO SAN MARTIN		SW	5070	35.04684019100	-106.72901711500
Pump Station	BURTON PUMP STATION 2	901	CARLISLE	BLVD	SE	5314	35.06647888800	-106.60740506500

Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Reservoir	BURTON RES. 2	901	CARLISLE	BLVD	SE	5330	35.06635332000	-106.60534671200
Well	BURTON 1	901	CARLISLE	BLVD	SE	5324	35.06660494600	-106.60658870400
Pump Station	CANADA PUMP STATION	13416	CEDARBROOK	AV	NE	6172	35.13259770300	-106.48566158600
Pump Station	FIRE ACADEMY PUMP STATION	11414	CENTRAL	AV	SW	5338	35.06871972600	-106.75753789200
Reservoir	DON RES.	11414	CENTRAL	AV	SW	5338	35.06797532400	-106.75795227300
Reservoir	BCI RES.	14309	CENTRAL	AV	NW	5806	35.07992663800	-106.80815453700
Well	BCI TEMPURPEDIC	14309	CENTRAL	AV	NW	5804	35.07994085900	-106.80904751400
Pump Station	DON PUMP STATION	99999	CERRILLOS	RD	SW	5238	35.05552760000	-106.75102482900
Pump Station	DURANES PUMP STATION	1917	CHERRY	LA	NW	4966	35.11217742700	-106.67641634500
Reservoir	DURANES RES.	1917	CHERRY	LA	NW	4969	35.11256870700	-106.67663665100
Reservoir	SANTA BARBARA RES. 1	3301	CLAREMONT	AV	NE	5140	35.11349547600	-106.60739206400
Well	SANTA BARBARA 1	3301	CLAREMONT	AV	NE	5140	35.11353357700	-106.60786538100
Well	LOMAS 1	12503	CLOUDVIEW	AV	NE	5600	35.07484773400	-106.50779202300
Well	LOMAS 6	11712	COCHITI	RD	SE	5536	35.06905369000	-106.51698149600
Well	LOVE 4	9717	COPPER	AV	NE	5372	35.08675769700	-106.54982090400
Well	LOVE 2	9717	COPPER	AV	NE	5446	35.08061109800	-106.53323469000
Pump Station	SUPPER ROCK PUMP STATION	14325	COPPER	AV	NE	5914	35.07826079000	-106.48614112800
Reservoir	SUPPER ROCK RES.	14325	COPPER	AV	NE	5914	35.07800770600	-106.48596873800
Pump Station	COLLEGE PUMP STATION	8901	DESERT RAIN	RD	NW	5338	35.11290815200	-106.74298562500
Reservoir	COLLEGE RES.	8901	DESERT RAIN	RD	NW	5338	35.11310946400	-106.74410163900
Well	COLLEGE 1	8901	DESERT RAIN	RD	NW	5338	35.11304322900	-106.74305991700
Pump Station	GRIEGOS PUMP STATION	4117	DIETZ	CT	NW	4975	35.13984733200	-106.66441261300
Reservoir	GRIEGOS RES.	99999	DIETZ	CT	NW	4976	35.13944152700	-106.66442231400
Well	DURANES 2	99999	DON QUIXOTE	DR	NW	4970	35.11961709800	-106.68025378100
Well	DURANES 4	3401	DURANES	RD	NW	4962	35.10771780300	-106.68829888000
Well	LEYENDECKER 4	4500	DURANGO	CT	NE	5328	35.13733202400	-106.56904296700
Well	PONDEROSA 6	5900	ESTRELLITA DEL NORTE	RD	NE	5560	35.14745682500	-106.53976597400
Well	PONDEROSA 4	99999	EUBANK	BLVD	NE	5630	35.14326082500	-106.53040507300
Pump Station	FOUR HILLS PUMP STATION	911	FOUR HILLS	RD	SE	5694	35.05086631000	-106.49800230300
Reservoir	FOUR HILLS RES.	911	FOUR HILLS	RD	SE	5708	35.05061324700	-106.49764829300
Well	DURANES 5	717	GABALDON	RD	NW	4961	35.10155411600	-106.68843752500
Well	DURANES 7	99999	GABALDON	RD	NW	4965	35.11551502100	-106.68640084800
Well	RIDGECREST 2	121	GENERAL PATCH	ST	NE	5420	35.07425774900	-106.54385404900
Well	BURTON 4	1800	GIRARD	BLVD	SE	5276	35.06215755400	-106.61296378400
Well	ATRISCO 2	3200	GONZALES	RD	SW	4950	35.07911517900	-106.68823299600
Well	RIDGECREST 4	324	GROVE	ST	NE	5348	35.07918457000	-106.56149256000

Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Well	BURTON 2	517	HERMOSA	DR	SE	5284	35.07266759700	-106.60383391200
Reservoir	OTTO RES.	99999	HIGH MESA	DR		5598	35.08910795900	-106.77083002600
Well	DURANES 1	1941	INDIAN SCHOOL	RD	NW	4966	35.11130288300	-106.66898770800
Well	CHARLES 2	6588	INDIAN SCHOOL	RD	NE	5266	35.10140028200	-106.57134096300
Well	LOVE 6	10600	INDIAN SCHOOL	RD	NE	5506	35.09815708300	-106.52770582700
Reservoir	NM Util ?	7429	IRVING	BLVD	NW	5464	35.20423808600	-106.73967871500
Well	NM UTIL	7429	IRVING	BLVD	NW	5470	35.20386641500	-106.73965121100
Pump Station	METRO DETENTION CENTER	100	JOHN DANTIS	RD	SW	5790	35.00966749400	-106.86091874900
Reservoir	METRO DETENTION CENTER RES.2	100	JOHN DANTIS	RD	SW	5792	35.00993394900	-106.86116212200
Reservoir	METRO DETENTION CENTER RES.1	100	JOHN DANTIS	RD	SW	5792	35.00966479400	-106.86128244900
Well	METRO DETENTION CENTER 1	100	JOHN DANTIS	RD	SW	5758	35.00609010400	-106.85598299000
Well	BURTON 5	99999	KATHRYN	AV	SE	5280	35.06535781800	-106.58814448500
Well	LEYENDECKER 3	99999	KINGSTON	AV	NE	5270	35.13768153000	-106.57792475700
Reservoir	ESCONDIDO RES.	1800	LA CABRA	DR	SE	6034	35.04888622000	-106.48027289200
Well	COLLEGE 2	99999	LAVA BLUFF	DR	NW	5230	35.11278046100	-106.73399495400
Well	BURTON 3	3901	LEAD	AV	SE	5218	35.07765814200	-106.60016194600
Well	VOLANDIA 6	4651	LINCOLN	RD	NE	5182	35.14075944800	-106.59097092800
Well	LOVE WELL 3	10130	LOMAS	BLVD	NE	5408	35.08671217900	-106.53884345700
Pump Station	EUBANK PUMP STATION	10300	LOMAS	BLVD	NE	5440	35.08678918100	-106.53294399200
Reservoir	LOVE RES. 2	10611	LOMAS	BLVD	NE	5460	35.08814861100	-106.52769992800
Reservoir	LOVE RES. 1	10611	LOMAS	BLVD	NE	5470	35.08815515700	-106.52891688700
Well	LOVE 1	10611	LOMAS	BLVD	NE	5466	35.08784589900	-106.52918562300
Pump Station	SANDIA MANOR PUMP STATION	15000	LOMAS	BLVD	NE	6022	35.09440213800	-106.48687841300
Reservoir	SANDIA MANOR RES.	15000	LOMAS	BLVD	NE	6026	35.09445389300	-106.48634163100
Well	DURANES 6	2416	LOS ANAYAS	RD	NW	4968	35.11468785300	-106.67544652000
Well	LEYENDECKER 2	3617	LOUISIANA	BLVD	NE	5302	35.12479061100	-106.56907864200
Well	NM UTIL	5001	MCMAHON	BLVD	NW	5268	35.20928289600	-106.68410286200
Pump Station	LINDA VISTA PUMP STATION	14009	MEL SMITH	DR	NE	5792	35.07649937000	-106.49318124900
Reservoir	LINDA VISTA RES.	14009	MEL SMITH	DR	NE	5794	35.07626666400	-106.49291326100
Pump Station	SANTA BARBARA PUMP STATION	99999	MENAUL	RD	NE	5038	35.10822756800	-106.62703719700
Reservoir	CHARLES WELLS RES.	2421	MESILLA	ST	NE	5328	35.10743658700	-106.56341798600
Well	CHARLES 1	2421	MESILLA	ST	NE	5318	35.10797314900	-106.56395989300
Well	GRIEGOS 4	1105	MONTANO	RD	NW	4976	35.14008933700	-106.65118267000
Pump Station	LEYENDECKER PUMP STATION	6801	MONTGOMERY	BLVD	NE	5294	35.13112227900	-106.57245254600
Reservoir	LEYENDECKER RES.	6801	MONTGOMERY	BLVD	NE	5294	35.13161457700	-106.57298007100
Well	LEYENDECKER 1	6801	MONTGOMERY	BLVD	NE	5290	35.13123888000	-106.57314158300

Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Pump Station	THOMAS PUMP STATION	8505	MONTGOMERY	BLVD	NE	5444	35.13140949100	-106.54994773700
Reservoir	THOMAS RES.	8505	MONTGOMERY	BLVD	NE	5446	35.13185345400	-106.54985822500
Well	THOMAS 1	8505	MONTGOMERY	BLVD	NE	5448	35.13149238200	-106.54948314700
Well	THOMAS 2	8924	MONTGOMERY	BLVD	NE	5490	35.13026256200	-106.54378735900
Pump Station	PONDEROSA PUMP STATION	10608	MONTGOMERY	BLVD	NE	5674	35.13033676300	-106.52082937500
Reservoir	PONDEROSA RES. 1	10608	MONTGOMERY	BLVD	NE	5676	35.12985932000	-106.52046314400
Pump Station	GUTIERREZ PUMP STATION	11523	MONTGOMERY	BLVD	NE	5796	35.13142243100	-106.50952166100
Reservoir	GUTIERREZ RES.	11523	MONTGOMERY	BLVD	NE	5796	35.13178468800	-106.50974920200
Pump Station	KIVA PUMP STATION	12407	MONTGOMERY	BLVD	NE	5908	35.13194106700	-106.50006829600
Reservoir	KIVA RES. 2	12407	MONTGOMERY	BLVD	NE	5910	35.13200833800	-106.49939674900
Reservoir	KIVA RES. 1	12407	MONTGOMERY	BLVD	NE	5910	35.13223754100	-106.49992527600
Well	THOMAS 8	3305	MOON	ST	NE	5470	35.11995280200	-106.54242484900
Well	THOMAS 4	8729	OSUNA	RD	NE	5486	35.13685602300	-106.54531052300
Reservoir	PONDEROSA RES. 2	10600	OSUNA	RD	NE	5718	35.13727583000	-106.51819356800
Pump Station	GONZALES PUMP STATION	6010	OURAY	RD	NW	5106	35.11147706500	-106.70924676500
Reservoir	GONZALES RES.	6010	OURAY	RD	NW	5124	35.11191970800	-106.70914248200
Well	GONZALES 1	6010	OURAY	RD	NW	5112	35.11151214200	-106.70858556200
Well	CHARLES 5	2301	PALOMAS	DR	NE	5222	35.10430676800	-106.58374950400
Well	WALKER 2	99999	PALOMAS	AV	NE	5600	35.17312382900	-106.53731938100
Well	WEBSTER 2	7775	PALOMAS PARK	AV	NE	5388	35.17028706200	-106.56050783800
Well	LOVE 7	1925	PARSIFAL	ST	NE	5442	35.10236945900	-106.53754107200
Reservoir	CORONADO RES.	6800	PASEO DEL NORTE		NE	5296	35.17310893700	-106.57135662300
Well	CORONADO 1	6800	PASEO DEL NORTE		NE	5294	35.17342915800	-106.57161645500
Reservoir	WEBSTER RES.	8001	PASEO DEL NORTE		NE	5440	35.17537268800	-106.55481305200
Well	WEBSTER 1	8001	PASEO DEL NORTE		NE	5438	35.17511647900	-106.55531175600
Reservoir	WALKER RES.	10010	PASEO DEL NORTE		NE	5706	35.17327970300	-106.52739967400
Well	WALKER 1	10200	PASEO DEL NORTE		NE	5712	35.17348701300	-106.52677945200
Pump Station	DOUBLE EAGLE PUMP STATION 1	7401	PASEO DEL VOLCAN		NW	5812	35.16287209700	-106.79453292700
Pump Station	DOUBLE EAGLE PUMP STATION I	7401	PASEO DEL VOLCAN		NW	5808	35.16107149000	-106.79360005500
Reservoir	DOUBLE EAGLE II 2	7401	PASEO DEL VOLCAN		NW	5916	35.14002131100	-106.83079183700
Reservoir	DOUBLE EAGLE RES. 3old	7401	PASEO DEL VOLCAN		NW	5812	35.16303315500	-106.79507184100
Reservoir	DOUBLE EAGLE RES. 1old	7401	PASEO DEL VOLCAN		NW	5812	35.16514025000	-106.79391567000
Reservoir	DOUBLE EAGLE RES.2old	7401	PASEO DEL VOLCAN		NW	5810	35.16415522100	-106.79468493400
Reservoir	DOUBLE EAGLE RES. I	7401	PASEO DEL VOLCAN		NW	5808	35.16127912800	-106.79370214700
Well	LOVE 8	1260	PENNSYLVANIA	ST	NE	5316	35.09416048900	-106.55904279200
Well	CHARLES 4	1700	PENNSYLVANIA	ST	NE	5326	35.10049075900	-106.55931827000

Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Well	THOMAS 5	3905	PENNSYLVANIA	ST	NE	5360	35.12883620000	-106.56030030300
Well	THOMAS 7	7501	PENNSYLVANIA	LA	NE	5354	35.11993450100	-106.56093572700
Well	CHARLES 3	6205	PHOENIX	AV	NE	5278	35.11123444300	-106.57483538600
Well	CORONADO 2	5501	PINO	AV	NE	5244	35.16871009400	-106.57788439500
Well	PONDEROSA 2	4645	PITT	ST	NE	5602	35.13395676300	-106.53167682100
Pump Station	CHARLES WELLS PUMP STATION	7213	PROSPECT	AV	NE	5318	35.10830760200	-106.56371733100
Reservoir	NM Util ?	9901	RAINBOW	BLVD	NW	5456	35.19360975900	-106.73823975700
Well	NM UTIL	9901	RAINBOW	BLVD	NW	5458	35.19388480900	-106.73857813000
Reservoir	EMBUDO RES.	99999	RAMON	RD	NE	6256	35.09901399500	-106.47578801300
Well	GONZALES 3	5300	REDLANDS	RD	NW	5104	35.11813841700	-106.70037700400
Pump Station	YALE PUMP STATION 1	2300	REDONDO SOUTH	DR	NE	5168	35.08136498800	-106.62167228900
Reservoir	YALE RES. 1	2400	ROMA	AV	NE	5176	35.08201715700	-106.62139936400
Pump Station	SAN JOSE PUMP STATION	99999	SAN JOSE	AV	SE	4949	35.05443930500	-106.64686558000
Reservoir	SAN JOSE RES.	99999	SAN JOSE	AV	SE	4952	35.05455471800	-106.64660167300
Well	VOLANDIA 2	3700	SAN MATEO	BLVD	NE	5210	35.12540764400	-106.58447450600
Well	VOLANDIA 4	4575	SAN MATEO	BLVD	NE	5204	35.13412878900	-106.58731736800
Well	RIDGECREST 5	408	SAN PABLO	ST	SE	5356	35.07224104700	-106.56290997900
Well	WEST MESA 4	7721	SARRACINO	PL	NW	5106	35.08020998000	-106.72295336300
Well	NM UTIL	99999	SCENIC	DR	NW	5348	35.16729934400	-106.72963509400
Reservoir	CANADA RES.	99999	SIMMS PARK	RD	NE	6430	35.15229455700	-106.46573348800
Well	LOMAS 5	11117	SKYLINE	RD	NE	5504	35.07265792000	-106.52298738100
Pump Station	LOMAS PUMP STATION	13200	SKYVIEW	AV	NE	5692	35.07510682500	-106.49984609000
Reservoir	LOMAS RES. 2	13200	SKYVIEW	AV	NE	5704	35.07487256600	-106.49896433800
Reservoir	LOMAS RES. 1	13200	SKYVIEW	AV	NE	5700	35.07466717900	-106.49955526100
Well	DURANES 3	2805	SOCORRO	ST	NW	4964	35.10844546100	-106.67932675400
Well	PONDEROSA 3	9301	SPAIN	RD	NE	5528	35.13906681000	-106.53861789100
Well	WALKER	99999	TANOAN	DR	NE	5652	35.15907065200	-106.53272525400
Well	GRIEGOS 3	2322	TEODORO	RD	NW	4974	35.13482906400	-106.67448227100
Well	ZAMORA 1	6255	TESUQUE	ST	NW	5172	35.15507477400	-106.71507515900
Well	SAN JOSE 3	99999	THAXTON	AV	SE	4947	35.06199245000	-106.65098110800
Reservoir	SIMMS RES.	99999	TRAMWAY	BLVD	NE	6292	35.13527202200	-106.48098727600
Pump Station	RIDGECREST PUMP STATION	9820	TRUMBULL	AV	SE	5448	35.06850398700	-106.53878033500
Reservoir	RIDGECREST RES. 2	9820	TRUMBULL	AV	SE	5448	35.06850981400	-106.53915628600
Reservoir	RIDGECREST RES. 1	9820	TRUMBULL	AV	SE	5446	35.06794359500	-106.53901540300
Well	RIDGECREST 1	9820	TRUMBULL	AV	SE	5448	35.06820404300	-106.53896893500
Well	YALE 3	725	UNIVERSITY	BLVD	SE	5090	35.07611994600	-106.63406260800

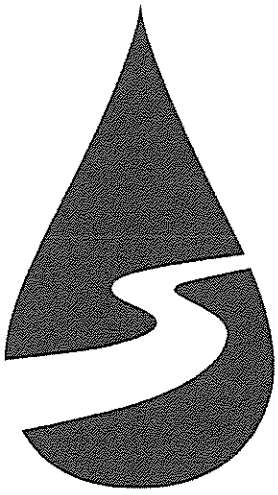
Facility Type	Facility Name	Str Num	Str Name	Dgn	Quad	Elevation	Latitude	Longitude
Well	YALE 2	1700	UNIVERSITY	BLVD	SE	5130	35.06627042700	-106.62514249600
Pump Station	MILES PUMP STATION	3108	UNIVERSITY	BLVD	SE	5154	35.05199594000	-106.63046882800
Reservoir	MILES RES.	3108	UNIVERSITY	BLVD	SE	5152	35.05227537200	-106.62975451700
Well	NM UTIL	10201	UNSER	BLVD	NW	5294	35.20484377500	-106.70397698700
Pump Station	UNSER PUMP STATION	99999	UNSER	BLVD	NW	5132	35.13061150200	-106.71988421600
Well	ATRISCO 4	99999	UTE	RD	NW	4954	35.08592407800	-106.69544901100
Well	NM UTIL	99999	VENTANA RANCH	RD	NW	5424	35.19308503100	-106.72965128800
Well	RIDGECREST 3	99999	VIRGINIA	ST	SE	5390	35.07002826700	-106.55326681700
Well	WEST MESA 3	99999	VOLCANO	RD	NW	5146	35.07908530300	-106.73225085300
Well	SAN JOSE 2	2121	WALTER	ST	SE	4992	35.06108552600	-106.64200594500
Reservoir	NM UTIL	5800	WESTSIDE	BLVD	NW	5454	35.21688734800	-106.71269145700
Well	NM UTIL	5800	WESTSIDE	BLVD	NW	5454	35.21725046700	-106.71254312100
Well	NM UTIL	7401	WOODMONT	AV	NW	5468	35.18292646500	-106.73968588800
Well	THOMAS 6	3503	WYOMING	BLVD	NE	5412	35.12227900000	-106.55140289000
Reservoir	NM Util ?	0				5586	35.18676947300	-106.75658420500
Reservoir	FRANCISCAN RES.	0				5390	35.05578328300	-106.76175655700
Well	GRIEGOS 1	0				4979	35.14095730000	-106.66392946000
Well	NM UTIL	0				5570	35.20663391000	-106.75658494100

Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: August 6, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
June 17, 2010

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INTRODUCTION

Albuquerque Bernalillo County Water Utility Authority, herein after "Water Authority", is issuing this Request for Proposals (RFP) to solicit responses from experienced, qualified Offerors and implementation services companies that specialize in supplying and implementing fully automated fixed network water meter reading systems to local governments, municipalities, and/or private entities with similar project scope and size as the Water Authority's.

The proposed system must meet the Water Authority's functional and business requirements, must have no single point of failure, and must be resilient to certain environmental considerations described in this RFP. The Water Authority intends to select an Offeror team that will provide all hardware, software, and services to implement the required solution that meets the Water Authority's water meter reading automation requirements.

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PART 1
INSTRUCTIONS TO OFFERORS

1.1 RFP Number and Title: RFP2011-002-TC, Advanced Meter Infrastructure System

1.2 Proposal Due Date: August 6, 2010 - NLT 4:00 PM (Local Time)
The time and date proposals are due shall be strictly observed.

1.2.1 Instructions regarding Pre-Proposal Conference: The Water Authority will conduct a Pre-Proposal Conference on June 24, 2010 at 8:30am. Conference will be held at 400 Marquette NW, 7th Floor, Room 7096, CIP Conference Room.

1.2.2 Non-Mandatory: This is not a mandatory pre-proposal conference, but highly recommended. Those vendors who choose not to attend shall be solely responsible for obtaining any additional information, clarification or addenda resulting from this meeting.

1.2.3 Questions: The Water Authority shall have in attendance key personnel to answer questions or discuss issues that may arise. Questions should be prepared prior to the conference and both hard and soft copy of such questions submitted to the purchasing representative on the **day of the conference. Verbal answers, oral explanations, or instructions given before the award of the contract or at any time will not be binding on the Water Authority.**

1.3 Purchasing Office: This RFP is issued on behalf of the Albuquerque Bernalillo County Water Utility Authority by the City of Albuquerque Purchasing Office, which is the sole point of contact during the entire procurement process.

1.4 Authority: The Albuquerque Bernalillo County Water Utility Authority, pursuant to Section 72-1-10, NMSA 1978, is granted all powers to carry out and effectuate its public and corporate purposes. To this end, the Water Authority has adopted the City of Albuquerque Public Purchases Ordinance. It is intended that this ordinance shall govern the purchasing transactions of the Water Authority.

1.5 Acceptance of Offer: Acceptance of Offer is contingent upon Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the following:

1.5.1 City Public Purchases Ordinance

1.5.2 City Purchasing Rules and Regulations: City of Albuquerque Purchasing Rules and Regulations: These Rules and Regulations (the "Regulations") are written to clarify and implement the provisions of the Public Purchases Ordinance (the "Ordinance"). These Regulations establish policies, procedures, and guidelines relating

to the procurement, management, control, and disposal of goods, services, and construction, as applicable, under the authority of the Ordinance.

1.5.3 Civil Rights Compliance: Acceptance of offer is contingent upon the Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the Albuquerque Human Rights Ordinance, the New Mexico Human Rights Act, Title VII of the U.S. Civil Rights Act of 1964, as amended, and all federal statutes and executive orders, New Mexico statutes and City of Albuquerque ordinances and resolutions relating to the enforcement of civil rights and affirmative action. Questions regarding civil rights or affirmative action compliance requirements should be directed to the City of Albuquerque Human Rights Division, Family and Community Services Department.

1.5.4 Americans with Disabilities Act Compliance: Offeror certifies and agrees, by submittal of its offer, to comply and act in accordance with all applicable provisions of the Americans With Disabilities Act of 1990 and federal regulations promulgated there under.

1.5.5 Insurance and Bonding Compliance: Acceptance of offer is contingent upon Offeror's ability to comply with the insurance requirements as stated herein. Please include a certificate or statement of compliance in your proposal and bonds as required.

1.5.6 Ethics:

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

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

1.5.7 Participation/Offeror Preparation: Offeror may not use the consultation or assistance of any person, firm company who has participated in whole or in part in the writing of these specifications or the Scope of Services, for the preparation of its offer or in the management of its business if awarded the contract resulting from this RFP.

1.5.8 Debarment or Ineligibility Compliance: By submitting its offer in response to this RFP, the Offeror certifies that (i) it has not been debarred or otherwise found ineligible to receive funds by any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States; and (ii) should any notice of debarment, suspension, ineligibility or exclusion be received by the Offeror, the Offeror will notify the Water Authority immediately.

1.5.9 Goods Produced Under Decent Working Conditions: It is the policy of the Water Authority not to purchase, lease, or rent goods for use or for resale at Water Authority owned enterprises that were produced under sweatshop conditions. The Offeror certifies, by submittal of its offer in response to this solicitation, that the goods offered to the Water Authority were produced under decent working conditions. The Water Authority defines "under decent working conditions" as production in a factory in which child labor and forced labor are not employed; in which adequate wages and benefits are paid to workers; in which workers are not required to work more than 48 hours per week (or less if a shorter workweek applies); in which employees are free from physical, sexual or verbal harassment; and in which employees can speak freely about working conditions and can participate in and form unions. [*Council Bill No. M-8, Enactment No. 9-1998*]

1.5.10 Graffiti Free: When required, the Contractor will be required to furnish equipment, facilities, or other items required to complete these services, that are graffiti-free. Failure of Contractor to comply with this requirement may result in cancellation of the contract resulting from this RFP.

1.6 City Contact: The sole point of contact for this Request for Proposals is the City of Albuquerque Purchasing Division. Contact the following individual(s) regarding this RFP:

- Thomas Courtin, Senior Buyer, Department of Finance and Administrative Services, Purchasing Division,
- Phone: (505) 768-3504 or E-Mail: tkcourtin@abcwua.org
- Post Office Box 1293, Albuquerque, New Mexico 87103

1.7 Contract Management: The contract resulting from this RFP will be managed by the Albuquerque Bernalillo County Water Utility Authority.

1.8 Clarification: Any explanation desired by an Offeror regarding the meaning or interpretation of this Request For Proposals must be requested in writing not less than ten (10) working days prior to the hour and date specified for the receipt of offers to allow sufficient time for a reply to reach Offerors before the submission of their offers. All inquiries must be directed to the Purchasing Office as stated herein. Oral explanations or instructions given before the award of the contract or at any time will not be binding. Any information given to a prospective Offeror concerning this Request For Proposals, will be furnished to all prospective Offerors as an amendment to this Request for Proposals, if such information is necessary to Offerors in

submitting offers on this Request For Proposals or if the lack of such information would be prejudicial to uninformed Offerors.

1.9 Submission of Offers: The Offeror's sealed proposal must be in the format outlined in Part 2 of this Request for Proposals and mailed or delivered pursuant to the following requirements:

1.9.1 Envelope preparation. Offers and modifications thereof shall be enclosed in sealed envelopes and have the following identifying information on the outside:

- Name and address of Offeror
- Closing Date and Time
- Request for Proposals Number
- RFP Title

1.9.2 Ship, Deliver or Hand Carry Sealed Offers to: The Office of the City Clerk, City /County Government Center, Basement Level, Room 2041, One Civic Plaza, N.W., Albuquerque, New Mexico 87102. Mark all packages as stated above.

1.9.3 Mail Sealed Responses to: Office of the City Clerk, Post Office Box 1293, Albuquerque, New Mexico 87103. (Certified Mail is recommended). The City shall not be responsible for the failure of mailed offers to actually be received by the Office of the City Clerk by 4:00 of the day of closing.

Note: The City picks up mail at the post office **only once** per day usually at 7:00 AM (Local Time). **Note: ALL SEALED PROPOSALS MUST BE RECEIVED BY THE OFFICE OF THE CITY CLERK NO LATER THAN 4:00 PM, LOCAL TIME AS RECORDED IN THE CITY CLERK'S OFFICE.**

1.9.4 No other methods of delivery: Neither telephone, facsimile, electronic, nor telegraphic offers shall be accepted.

1.9.5 Submit Hard and Soft Copies of the Proposal as follows:

- **Hard Copy - 1 original and 10 copies of your Technical Proposal. Submit 1 original and 1 copy of your Cost Proposal. Soft Copy - Submit 1 Original Technical and Cost Proposal on a CD.**

1.9.6 Modification or Withdrawal of Offer: Offers may be modified by submittal of a substitute or supplemental proposal to the City Clerk's Office following the submission requirements set out above. Offers may be withdrawn by written request provided to the City Clerk. In either case, such action must occur prior to the hour and date specified for receipt of offers.

1.9.7 Failure to Submit Offer: If no offer is to be submitted, the recipient shall not return the Request For Proposals.

1.10 Receipt of Proposals: The only acceptable evidence to establish the time of receipt of proposals at the City Clerk's Office is the time-date stamp of such office on the proposal wrapper or other documentary evidence of receipt maintained by the office.

1.11 Acknowledgment of Amendments to the Request For Proposals: Receipt of an amendment to the Request For Proposals by an Offeror must be acknowledged (a) by signing and returning the amendment, (b) by letter, or (c) by mention in your proposal. Such acknowledgment may be submitted with your offer.

1.12 Deleted

1.13 Draft Agreement: A copy of the Draft Agreement to be entered into is attached. Please state that you accept the terms and conditions of the Draft Agreement, or note exceptions.

1.14 Evaluation period: The Water Authority reserves the right to analyze, examine and interpret any offer for a period of ninety (90) days after the hour and date specified for the receipt of offers.

1.15 Evaluation Assistance: The Water Authority, in evaluating proposals, reserves the right to use any assistance deemed advisable, including Water Authority contractors and consultants.

1.16 Rejection and Waiver: The Water Authority reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

1.17 Debarment of Offeror: Any proposal received from an Offeror that is, at the time of submitting its proposal or prior to receipt of award of a contract, debarred by or otherwise ineligible to receive funds from any agency of the State of New Mexico, any local public body of the State, or any state of the United States, shall be rejected.

1.18 Award of Contract:

1.18.1 When Award Occurs: Award of contract occurs when a Purchase Order is issued or other evidence of acceptance by the Water Authority is provided to the Offeror. A Recommendation of Award does not constitute award of contract.

1.18.2 Award: If a contract is awarded, it shall be awarded to the responsive and responsible Offeror whose offer conforming to the Request for Proposals will be most advantageous to the Water Authority as set forth in the Evaluation Criteria.

1.18.3 Contract Term: The contract term shall be for a period of two (2) years from the effective date of the contract and/or final execution by the Water Authority. This contract term may be extended to complete Phase 1. Funding for additional periods of time and phases are subject to appropriations. See Part 6. 3.C.

1.18.4 Type of Contract: Time and Materials.

1.18.5 Debarment/Cancellation of Contract: Upon receipt of notice of debarment of an Offeror awarded a contract as a result of this RFP (the "Contractor"), or other ineligibility of the Contractor to receive funds from any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States, the Water Authority shall have the right to cancel the contract with the Contractor resulting from this RFP for cause as provided in accordance with the terms of said contract.

1.19 Cancellation: This Request for Proposals may be canceled and any and all proposals may be rejected in whole or in part when it is in the best interest of the Water Authority.

1.20 Negotiations: Negotiations may be conducted with the Offeror(s) recommended for award of contract.

1.21 Water Authority Furnished Property: No material, labor, or facilities will be furnished by the Water Authority unless otherwise provided for in the Request for Proposals.

1.22 Proprietary Data: This Request for Proposals shall be open to public inspection after the recommendation of award of a contract has been signed by the Executive Director, except to the extent the Offeror designates trade secrets or other proprietary data to be confidential. Material so designated must be separated from the Offeror's main proposal and each page shall be clearly marked in order to consider confidential and to facilitate public inspection of the non-confidential portion of the proposal. Prices and makes and models or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available regardless of any designation to the contrary. The Water Authority will endeavor to restrict distribution of the material designated as confidential or proprietary to only those individuals involved in the review and analysis of the proposals. Offerors are cautioned that materials designated as confidential may nevertheless be subject to disclosure under the New Mexico Inspection of Public Records Act (Sections 14-2-1 et seq, NMSA 1978).

1.23 Preferences: Preferences for local, small and resident businesses may be available under the City of Albuquerque Public Purchases Ordinance, for this procurement. See Part 5 of this Request for Proposals for additional information.

1.24 REQUEST FOR PROPOSALS (RFP) PROTEST PROCESS:

1.24.1 When: If the protest concerns the specifications for a competitive solicitation or other matters pertaining to the solicitation documents, it must be received by the Purchasing Officer no later than ten working days prior to the deadline for the receipt of offers.

1.24.2 Recommendation of Award: If the protest concerns other matters relating to this solicitation, the protest must be filed within ten working days after the receipt of notice of the Recommendation of Award.

1.24.3 Timely Protests: Protests must be received by the Purchasing Officer prior to the appropriate deadline as set out herein, or they will not be considered valid. The Purchasing Officer may waive the deadline for good cause, including a delay caused by the fault of the City. Late delivery by the U.S. Postal Service or other carrier shall not be considered good cause.

1.24.4 How to File: The protest shall be addressed to the Purchasing Officer, must be submitted in written form and must be legible. Protests may be hand-delivered or mailed. Facsimile, telephonic, telegraphic or electronic protests will not be accepted.

1.24.5 Required Information: The protest shall contain at a minimum the following;

- The name and address of the protesting party;
- The number of the competitive solicitation;
- A clear statement of the reason(s) for the protest;
- Details concerning the facts, which support the protest;
- Attachments of any written evidence available to substantiate the claims of the protest; and
- A statement specifying the ruling requested.

1.24.6 Address Letters and Envelopes as Follows:

- City of Albuquerque
- Purchasing Division
- PO Box 1293
- Albuquerque, New Mexico 87103

RFP Number
PROTEST

1.24.7 Protest Response by Purchasing Officer: All protests will be responded to by the Purchasing Officer upon evaluation. The Purchasing Officer will, after evaluation of a protest, issue a response. Only the issues outlined in the written protest will be considered by the Purchasing Officer.

1.24.8 Protest Hearing: If a hearing is requested, the request must be included in the protest and received within the time limit to be allowed. The filing fee of twenty dollars ($20.00) must accompany the request for hearing. Only the issues outlined in the protest will be considered by the Purchasing Officer, or may be raised at a protest hearing. The granting of a hearing shall be at the discretion of the Purchasing Officer following review of the request.

1.25 BONDS and INSURANCE:

1.25.1 General Conditions: The Water Authority will require that the successful Offeror, referred to as the Contractor, procure and maintain at its expense during the term of the contract resulting from the RFP, insurance in the kinds and amounts hereinafter

provided with insurance companies authorized to do business in the State of New Mexico, covering all operations of the Contractor under the contract. Upon execution of the contract and on the renewal of all coverage, the Contractor shall furnish to the Water Authority a certificate or certificates in form satisfactory to the Water Authority showing that it has complied with these insurance requirements. All certificates of insurance shall provide that thirty (30) days written notice be given to the Risk Manager, Department of Finance and Administrative Services, City of Albuquerque, P.O. Box 470, Albuquerque, New Mexico, 87103, before a policy is canceled, materially changed, or not renewed. Various types of required insurance may be written in one or more policies. **The Albuquerque Bernalillo County Water Utility Authority shall be named an additional insured for Commercial General Liability insurance and Automobile Insurance and the coverages afforded shall be primary with respect to operations provided.**

1.25.2 Approval of Insurance: Even though the Contractor may have been given notice to proceed, it shall not begin any work under the contract resulting from this RFP until the required insurance has been obtained and the proper certificates (or policies) filed with the Water Authority. Neither approval nor failure to disapprove certificates, policies, or the insurance by the Water Authority shall relieve the Contractor of full responsibility to maintain the required insurance in full force and effect. If part of the contract is sublet, the Contractor shall include any or all subcontractors in its insurance policies, or require the subcontractor to secure insurance to protect itself against all hazards enumerated herein, which are not covered by the Contractor's insurance policies.

1.25.3 Coverage Required: The kinds and amounts of insurance required are as follows:

1.25.3.1 **Commercial General Liability Insurance.** A commercial general liability insurance policy with combined limits of liability for bodily injury or property damage as follows:

$1,000,000	Per Occurrence
$1,000,000	Policy Aggregate
$1,000,000	Products Liability/Completed Operations
$1,000,000	Personal and Advertising Injury
$ 50,000	Fire Legal
$ 5,000	Medical Payments

Said policy of insurance must include coverage for all operations performed for the Water Authority by the Contractor and contractual liability coverage shall specifically insure the hold harmless provisions of the contract resulting from this RFP.

1.25.3.2 Automobile Liability Insurance. A comprehensive automobile liability insurance policy with liability limits in amounts not less than $1,000,000 combined single limit of liability for bodily injury, including death, and property

damage in any one occurrence. The policy must include coverage for the use of all owned, non-owned, hired automobiles, vehicles and other equipment both on and off work.

1.25.3.3 Workers' Compensation Insurance. Workers' compensation insurance policy for the Contractor's employees, in accordance with the provisions of the Workers' Compensation Act of the State of New Mexico, (the "Act"). If the Contractor employs fewer than three employees and has determined that it is not subject to the Act, it will certify, in a signed statement, that it is not subject to the Act. The Contractor will notify the Water Authority and comply with the Act should it employ three or more persons during the term of the contract resulting from this RFP.

1.25.3.4 Bonds. The Offeror and the Contractor shall furnish a separate Proposal Bond, Performance Bond, and Labor and Material Payments Bond as follows:

PROPOSAL BOND: Each offer MUST be accompanied by a proposal bond (one original and one copy provided in a separate sealed envelope) issued by a surety, duly authorized to conduct business in the State of New Mexico and acceptable to the City, in the amount of five percent (5%) of the total amount offered and written on the form provided in this RFP. The Proposal Bond is submitted as a guaranty that the OFFEROR, if awarded the contract, will promptly execute such contract in accordance with this Request for Proposals, will furnish good and sufficient bond for the faithful performance of the contract and for the payment of all labor and materials. The OFFEROR must be named as principal on the bond. NO THIRD PARTY BID BONDS WILL BE ACCEPTED.

PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENTS BOND: The Contractor will be required to furnish separate surety bonds each in the amount of one hundred percent (100%) of the total contract amount, offered as security for the faithful performance of the contract and for the payment of all labor and materials. These bonds must be written on the forms provided in this RFP and furnished prior to or at the time of the issuance of a written notice of award of a contract resulting from this RFP. The Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the City.

CASHIER'S CHECKS, CERTIFIED CHECKS, PERSONAL CHECKS, LETTERS OF CREDIT, CASH OR OTHER SUBSTITUTES WILL NOT BE ACCEPTED IN LIEU OF THESE BONDS.

Upon execution of the contract resulting from this RFP, and annually fifteen (15) calendar days prior to the commencement of each fiscal year (July 1 to June 30), the Contractor will furnish separate surety bonds (performance and labor and material payment bonds) as security for the faithful performance of the contract by the Contractor during the fiscal year and shall be XXX Dollars ($X,XXX,XXX) each and this amount

may be increased by the Water Authority after the first fiscal year if annual usage is in excess of this amount. The bonds may be renewed annually at the option of the surety by means of a continuation certificate. These bonds must be written on the forms provided in this RFP and the Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the Water Authority.

1.25.5 Increased Limits: During the life of the contract the Water Authority may require the Contractor to increase the maximum limits of any insurance required herein. In the event that the Contractor is so required to increase the limits of such insurance, an appropriate adjustment in the contract amount will be made.

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PART 2
PROPOSAL FORMAT

2.1 Technical Proposal Format, Section One

2.1.1 The Technical proposal must be ordered and organized using the Sections as described below. Failure to follow these instructions may result in the proposal being considered as non-responsive and rejected by the Ad-Hoc Committee.

2.1.2 Submittals should include but are not limited to, the proposal itself followed by Attachments A, B, C, D, and E. NOTE: Proposers should consider first completing the Requirements Matrix, Attachment A, and if any portion of the following information is fully represented there, simply include a cross reference in the proposal to the item number in the matrix that contains the relevant information.

2.1.3 The proposal itself should adhere to the following format and include:

2.1.4 Cover Letter

One or two page introduction, and signed statement of commitment to the RFP requirements.

2.1.5 Description of the Company

Provide a description of the proposing company, including, but not limited to:

- Years in business;
- Changes in ownership;
- The AMR/AMI product evolution;
- Number of dedicated AMR/AMI employees and contractors;
- List of Water/Wastewater clients (emphasize New Mexico clients, if any);
- Percent of sales to Water/Wastewater clients in the previous three years;
- Number and list of "other-than-Water/Wastewater" clients (emphasize New Mexico clients);
- Any contracts canceled for convenience or cause in the previous five years;
- Activities and actions by the company that demonstrate long-term commitment and support for Water/Wastewater clients;
- Track record for on-time delivery of planned upgrades.

2.1.6 Project Understanding

In this section, demonstrate an understanding of the project, with relevant assumptions and dependencies, including onsite space and network requirements for implementation staff and Water Authority staff requirements during each phase of the scope of work.

2.1.7 Project Personnel

Include an organizational chart of the proposed implementation team, employees and contractors by name and function, indicating their availability and working addresses. Please clearly distinguish if proposed members are employees or contractors and indicate their direct experience implementing the proposed solution. Experience that is relevant to water and/or wastewater analyses should be emphasized.

2.1.8 Project Dedication

Please provide a breakdown of the percentage of time each team member will be dedicated to this project. For each phase of implementation, indicate time and function requirements and expectations for Water Authority personnel.

2.1.9 Related Experience of Vendor Firm

Provide a description of current and past work experience (minimum of three (3), maximum of eight (8)) performed on projects of a similar nature and size that would substantiate the qualifications of the Vendor Firm for the work specified in the Scope of Work. Include contactable references for all projects. Water and wastewater industry projects and contacts are preferred.

2.1.10 Project Schedule and Implementation Work Plan

A Project Schedule (relative to the Notice to Proceed) shall be furnished by the Proposer showing the personnel engaged in each task, the deliverables, and the significant completion dates (days after contract start, not specific dates) for the major tasks of the project. Appropriate review periods should be indicated, as specified in Part 3 (Scope of Services). An overview of the project schedule should be illustrated in a Gantt chart.

Include any anticipated risks, negative or positive, and proposed response strategies. Include the Proposer's perception of the degree of Water Authority participation required to complete the tasks in the Scope of Work, and when each task involving Water Authority participants should be completed.

The Implementation Work plan should be a task-based elaboration that is fully represented as the Scope of Services and Schedule, to include, at a minimum:

- Project kickoff meeting;
- Project management coordination with the Water Authority project manager, resource planning, assignment of roles and responsibilities, etc. It should also include a thorough discussion as to what the process is for Change Management, how deviations in schedule and cost are communicated to the Water Authority (e.g., is there a Water Authority sign-off for changes), and how the Vendor will manage the human aspects of business process changes due to the new AMR/AMI;
- Communication planning for all stakeholders;

- System configuration and stakeholder reviews;
- Data migration activities (if any). Vendor to analyze data and provide full direction as to how to best cleanse data to fit Vendor data structure;
- Report development;
- User and System Acceptance Test planning, including Final System Acceptance signoff followed by a ninety 90-day warranty period;
- Planning for parallel operation during the warranty period;
- Training;
- Go-Live assistance;
- Support subsequent to warrant period.

Please note: In preparation of the project work plan, schedule, and resource commitments, a practical approach and realistic projection of timing is of primary importance. In addition, clearly identify where each work activity will take place (e.g., on/off-site, via remote connection, etc.)

2.1.11 Attachment A: Requirements Matrix

All Requirements Matrix items shall be addressed in detail by the Proposer to give the Water Authority an idea as to how the proposed AMR/AMI offer will fit the business needs. Proposers should feel free to expand columns or otherwise alter the format of the Requirements Matrix to best facilitate their response. The Requirements Matrix shall also be included in electronic format on the submittal CD. Please note that all answers must reflect current capabilities. Any future capabilities must be stated as such and outlined with a development schedule. Please provide any impact your responses may have on future phases/expansion of the AMI.

2.1.12 Attachment B: Resumes of Proposed Implementation Team

The Proposer shall provide resumes of all individuals proposed as part of the Implementation Team in the Work Plan. All resumes shall follow the same format. The team resumes shall also be included in electronic format on the submittal CD.

2.1.13 Attachment C: Propagation Study

The Proposer shall provide a propagation study for the service area that contains the large meters as identified in this RFP. Functionality, the propagation study should be of adequate detail that will ensure 95% or greater probability that all large meters listed in the RFP will have adequate coverage for daily downloading of all interval read and event data. Technically, the propagation study should include the RF link budget and link margin for each of the 850 large meter locations along with a description of the model used and assumptions made.

Note: It is preferred that all RCUs be located first on Water Authority infrastructure. If, in some instances, that is not possible, other public sector infrastructure should be considered followed by private sector infrastructure.

2.1.14 Attachment D: Cost of Services

Proposers shall thoroughly complete Attachment D in the format provided. Details may be added as necessary. As part of Attachment D, the Proposer shall include a proposed Payment Schedule. The Cost of Services and Payment Schedule shall also be included in electronic format on the submittal CD. Attachment D, the cost proposal shall be provided in a separate sealed envelope per 1.9.5, and distinctly marked as "Cost Proposal".

2.1.15 Attachment E: Additional Considerations

Proposers shall include additional items or differentiating factors not addressed in the RFP, either in the proposal or Attachment A, that are considered essential for the successful completion of the project.

PART 3
SCOPE OF SERVICES

There are approximately **190,000** meters in the system, 94% are read manually, 6% are read with mobile automatic meter reading solutions. Of theses, approximately 850 are considered large meters. The Water Authority plans to expand AMR to a Fixed Network Advanced Meter Infrastructure System (AMI) that will cover large meters throughout the service area and which should provide increased meter reading accuracy, improve customer service, reduce data collection costs and quickly gather critical information that provides insight to decision-makers.

This Request for Proposals (RFP) only pertains to the implementation of an AMI solution for the Water Authority's large meters. This includes hardware, software, and installation services of MIUs, regional collectors, hand held devices, network installation labor, etc., in other words, a "turn-key" solution. The Water Authority expects the Offeror to perform and provide in its response a propagation study that supports their solution.

Future phases will address the remaining meters in the Water Authoritys' water distribution system that are expected to be equipped with AMI. However, these phases have yet to be scheduled and are not part of this RFP. The Water Authority does not intend to issue another RFP for AMR/AMI software or services on subsequent phases; however, the Water Authority may choose to do so at its sole discretion.

The Water Authority understands that one single technology solution may not be appropriate for serving areas with varying meter densities including both dense urban areas and sparsely populated rural/farming areas. It is the Water Authority's intent to install a fixed based only system. However, a hybrid system solution for a partial fixed based and partial mobile system may be considered if the Offeror can demonstrate a benefit to the Water Authority. In answering Attachment A – Requirements Matrix, describe whether the proposed system is a hybrid system and clearly delineate the benefits over a fixed based only system.

In addition, it is understood that the proposer may offer software that can be categorized as an MDMS (Meter Data Management System) or may have implemented its solution with a third-party MDMS. If so, the Offeror should provide information on either of these options in its technical proposal in Attachment E referencing Attachment A as needed.

Information regarding the location and meter specifications is included in this RFP. All costs must be included as specified in Part 4.

In addition to this RFP, each vendor wishing to respond will receive the following files to assist them in their completion of this RFP. Due to their size, these files will be made available via a website and compact disc (CD). The information regarding the below files, access to the website and obtaining the CD will be provided at the pre-proposal conference as noted in Part 1.

- Table 1.xlsx – Phase 1 listing of Addresses included as part of Phase 1
- Map 1.pdf: - Service area for the entire Water Authority and Phase 1

- RCU Locations.xlsx – Listing of all likely RCU location

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PART 4
EVALUATION OF OFFERS

4.1 **4.1 Selection Process.** The Executive Director of the Albuquerque Bernalillo County Water Utility Authority shall name, for the purpose of evaluating the proposals, an Ad Hoc Advisory Committee. On the basis of the evaluation criteria established in this RFP, the committee shall submit to the Executive Director a list of qualified firms in the order in which they are recommended. Proposal documentation requirements set forth in this RFP are designed to provide guidance to the Offeror concerning the type of documentation that will be used by the Ad Hoc Advisory Committee. Offerors should be prepared to respond to requests by the Purchasing Office on behalf of the Ad Hoc Advisory Committee for oral presentations, facility surveys, demonstrations or other areas deemed necessary to assist in the detailed evaluation process. Offerors are advised that the Water Authority, at its option, may award this request on the basis of the initial offers.

4.2 Evaluation Criteria. The following general criteria, not listed in order or significance, will be used by the Ad Hoc Advisory Committee in recommending contract award to the Executive Director. The proposal factors will be rated on a scale of **0-1000** with weight relationships as stated below.

4.2.1 Evaluation Factors:

Company Qualifications	100 Points
Price	250 Points
Project Personnel	100 Points
Project Approach	200 Points
Adherence to Requirements and Propagation Study	350 Points

The Selection Committee may wish to request additional information from Vendors. Following the review of Proposals, the Selection Committee may select one or more vendors to interview for additional information or clarification of their response. The interview will be done at the Authority's convenience. Additionally, negotiations may be conducted with selected Vendor(s) until such time as the Authority determines that the best value for the Authority has been obtained.

4.2.2 Cost/Price Factors: The evaluation of cost factors in the selection will be determined by a cost/price analysis using your proposed figures. Please note that the lowest cost is not the sole criterion for recommending contract award.

4.2.3 Cost Evaluation. The cost/price evaluation will be performed by the City Purchasing Division or designee. A preliminary cost review will ensure that each Offeror has complied with all cost instructions and requirements. In addition, proposals will be examined to ensure that all proposed elements are priced and clearly presented. Cost

proposals that are incomplete or reflect significant inconsistencies or inaccuracies will be scored accordingly or may be rejected by the Ad Hoc Advisory Committee if lacking in information to determine the value/price/cost relative to the services proposed.

4.3 Preferences

Preferences for local, small and resident (state) businesses may be available under the Water Authority of Albuquerque Public Purchases Ordinance, for this procurement. See Part 5 of this Request for Proposals for additional information. For those Offerors qualifying for a preference, a 1.05 or 1.10 multiplier, whichever applies, will be applied to the total raw score assigned to its proposal by the ad hoc evaluation committee.

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PART 5
Instructions for PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

1. **ALL INFORMATION MUST BE PROVIDED.** A 5% small business preference and a 5% local preference or resident business preference are available for this procurement. To qualify, an Offeror **MUST** complete and submit this Form **WITH ITS OFFER.** If an offer is received without the Form attached, completed, signed and certified, or if the Form is received without the required information, the preference will not be applied. **THE FORM OR A CORRECTED FORM WILL NOT BE ACCEPTED AFTER THE DEADLINE FOR RECEIPT OF BIDS OR PROPOSALS.**

2. **PHYSICAL LOCATION MUST BE STATED.** To qualify for the small business or local preference, a business must have its principal office and place of business in the Greater Albuquerque Metropolitan Area. The business location inserted on the Form must be a physical location, street address or such. **DO NOT** use a post office box or other postal address.

3. **FORM MUST BE COMPLETED BY PRINCIPAL OFFEROR.** This Form must be completed for the Principal Offeror, or one of the Principal Offerors if the Offeror is a joint venture or partnership, by an individual authorized to sign for the Offeror. Subcontractors of the Offeror may not qualify an offer for a preference and should not complete or submit the Form.

4. **APPLICATION OF PREFERENCES.** The small business preference and the local business preference will be applied to all offers submitted by eligible small businesses. The local preference only will be applied to all offers submitted by eligible local businesses which are not small businesses. If there are no offers submitted in response to a solicitation that are eligible for the local preference, then the Resident Business Preference will be applied to any offers submitted which have provided a valid, State of New Mexico-issued, Resident Business or Resident Manufacturer Certification Number.

5. **DEFINITIONS.** The following definitions apply:

- The Greater Albuquerque Metropolitan Area includes all locations within the Water Authority of Albuquerque and Bernalillo County.
- A local business is a business with its principal office and place of business in the Greater Albuquerque Metropolitan Area.
- A small business is a local business which employs an average of fewer than 20 full-time employees in a calendar year. The calendar year immediately prior to the request for the preference should be used.
- A principal office is the main or home office of the business as identified in tax returns, business licenses and other official business documents.
- A place of business is a location where the business conducts its daily operations, for the general public, if applicable.
- A full-time employee is an employee of the business who is hired to work at least forty (40) hours per week, whether in a permanent, temporary or seasonal status. If all full-time employees of the business are hired to work a shorter work week, the Water Authority's Purchasing Officer may reduce this requirement, upon receipt of adequate documentation.

6. **ADDITIONAL DOCUMENTATION.** If requested, a business will be required to provide, within three working days of receipt of the request, documentation to substantiate the information provided on the Form. The Water Authority's Purchasing Officer shall determine the sufficiency of such documentation.

PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

RFP NO: RFP2011-002-TC

Business Name:

_____

Principal Office:

_____
Street Address State Zip code

Place of Business:

_____
Street Address State Zip code

☞ *If your Principal Office and Place of Business are in the Greater Albuquerque Metropolitan Area (see definitions in Instructions attached), please provide the following information:*

Average Number of Full-time Employees over the Prior Calendar Year: SELECT ONE

☐ 0 – 19 employees.

☐ 20 employees or more.

☞ *If applicable, insert State of New Mexico Resident Business or Resident Manufacturer Certification Number:* _____

CERTIFICATION

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the Water Authority, will provide, within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: _____

Printed Name: _____

Title: _____ **Date:** _____

YOU MUST RETURN THIS FORM WITH YOUR OFFER

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, NMSA 1978 Sections 13-1-28, et seq., as amended, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars ($250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

"**Applicable public official**" means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

"**Campaign Contribution**" means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals

who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

"**Family member**" means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

"**Pendency of the procurement process**" means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

"**Prospective contractor**" means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

"**Representative of a prospective contractor**" means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Names of Applicable Public Officials (completed by State Agency or Local Public Body)**:**

Mayor Richard J. Berry	Rey Garduno
Alan B. Armijo	Debbie O'Malley
Art de la Cruz	Maggie Hart Stebbins
Trudy Jones	Pablo R. Rael

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(Attach extra pages if necessary)

Contractor Firm Name

Signature

Date

Title (position)

--OR—

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS ($250) WERE MADE to an applicable public official by me, a family member or representative.

Contractor Firm Name

Signature

Date

Title (Position)

PART 6
DRAFT AGREEMENT

THIS AGREEMENT is made and entered into on the date last entered below, by and between the Albuquerque Bernalillo County Water Utility Authority, a political subdivision of the State of New Mexico (Water Authority), and _____, hereinafter referred to as the "Contractor"), a _____, whose address is _____.

RECITALS

WHEREAS, the Water Authority issued a Request For Proposals for the, RFP2011-002-TC, titled "Advanced Meter Infrastructure System" attached hereto as Exhibit A and by this reference made a part of this Agreement; and

WHEREAS, the Contractor submitted its proposal, dated _____, in response to RFP2011-002-TC which proposal is attached hereto as Exhibit B and by this reference made a part of this Agreement; and

WHEREAS, the Water Authority desires to engage the Contractor to render certain services in connection therewith, and the Contractor is willing to provide such services.

NOW, THEREFORE, in consideration of the premises and mutual obligations herein, the parties hereto do mutually agree as follows:

1. **Scope of Services.** The Contractor shall perform the following services (hereinafter the "Services") in a satisfactory and proper manner, as determined by the Water Authority:

Provide implementation services for an advance meter infrastructure system in accordance with Exhibit A as supplemented by Exhibit B.

2. **Time of Performance.** Services of the Contractor shall commence on the date of final execution of this Agreement and shall be undertaken and completed in such sequence as to assure their expeditious completion in light of the purposes of this Agreement; provided, however, that in any event, all of the Services required hereunder shall be completed within two years of the date of execution of this Agreement. This Agreement may be extended for future phases/periods upon written agreement of the parties.

3. **Compensation and Method of Payment.**

A. **Compensation.** For performing the Services specified in Section 1 hereof, the Water Authority agrees to pay the Contractor up to the amount of _____ Dollars ($_____), which amount includes any applicable gross receipts taxes and which amount shall constitute full and complete compensation for the

Contractor's Services under this Agreement, including all expenditures made and expenses incurred by the Contractor in performing such Services.

B. Method of Payment. Such amount shall be paid to the Contractor in installments based on the payment schedule and milestones as identified in Exhibit C, which include any applicable gross receipts taxes. Payments shall be made to the Contractor upon completion of each task, upon receipt by the Water Authority of a properly documented requisition for payment as determined by the budgetary and fiscal guidelines of the Water Authority and on the condition that the Contractor has accomplished the Services to the satisfaction of the Water Authority.

C. Appropriations. Notwithstanding any other provisions in this Agreement, the terms of this Agreement are contingent upon the Water Board of the Albuquerque Bernalillo County Water Utility Authority making the appropriations necessary for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the Water Board, this Agreement may be terminated at the end of the Water Authority's then current fiscal year upon written notice given by the Water Authority to the Contractor. Such event shall not constitute an event of default. All payment obligations of the Water Authority and all of its interest in this Agreement will cease upon the date of termination. The Water Authority's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.

4. Independent Contractor. The Contractor is considered as an independent contractor at all times in the performance of the services described in Section 1. The Contractor further agrees that neither it nor its employees are entitled to any benefits from the Water Authority under the provisions of the Workers' Compensation Act of the State of New Mexico, or to any of the benefits granted to employees of the Water Authority under the provisions of the Merit System Ordinance as now enacted or hereafter amended.

5. Personnel.

A. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing all of the Services required under this Agreement. Such personnel shall not be employees of or have any contractual relationships with the Water Authority.

B. All the Services required hereunder will be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local law to perform such Services.

C. None of the work or Services covered by this Agreement shall be subcontracted without the prior written approval of the Water Authority. Any work or Services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this Agreement.

6. **Indemnity.** The Contractor agrees to defend, indemnify, and hold harmless the Water Authority and their officials, agents, and employees from and against any and all claims, actions, suits, or proceedings of any kind brought against said parties for or on account of any matter arising from the Services performed by the Contractor under this Agreement. The indemnity required herein shall not be limited by reason of the specification of any particular insurance coverage in this Agreement.

7. **Insurance.** The Contractor shall not commence any work under this Agreement until the insurances required in Exhibit A, Section 1.25, have been obtained and the proper certificates (or policies) have been submitted to the Water Authority.

8. **Discrimination Prohibited.** In performing the Services required hereunder, the Contractor shall not discriminate against any person on the basis of race, color, religion, gender, sexual preference, sexual orientation, national origin or ancestry, age, physical handicap or disability, as defined in the Americans With Disabilities Act of 1990, as currently enacted or hereafter amended.

9. **ADA Compliance.** In performing the Services required hereunder, the Contractor agrees to meet all the requirements of the Americans With Disabilities Act of 1990 (the "ADA"), which are imposed directly on the Contractor or which would be imposed on the Water Authority as a public entity. The Contractor agrees to be responsible for knowing all applicable rules and requirements of the ADA and to defend, indemnify and hold harmless the Water Authority, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of any acts or omissions of the Contractor or its agents in violation of the ADA.

10. **Reports and Information.** At such times and in such forms as the Water Authority may require, there shall be furnished to the Water Authority such statements, records, reports, data and information, as the Water Authority may request pertaining to matters covered by this Agreement. Unless authorized by the Water Authority, the Contractor will not release any information concerning the work product including any reports or other documents prepared pursuant to the Agreement until the final product is submitted to the Water Authority.

11. **Open Meetings Requirements.** Any nonprofit organization in the Water Authority which receives funds appropriated by the Water Authority, or which has as a member of its governing body an elected official, or appointed administrative official, as a representative of the Water Authority, is subject to the requirements of §2-5-1 *et seq.* R.O.A. 1994, Public Interest Organizations. The Contractor agrees to comply with all such requirements, if applicable.

12. **Establishment and Maintenance of Records.** Records shall be maintained by the Contractor in accordance with applicable law and requirements prescribed by the Water Authority with respect to all matters covered by this Agreement. Except as otherwise authorized by the Water Authority, such records shall be maintained for a period of three (3) years after receipt of final payment under this Agreement.

13. **Audits and Inspections.** At any time during normal business hours and as often as the Water Authority may deem necessary, there shall be made available to the Water Authority for examination all of the Contractor's records with respect to all matters covered by this Agreement. The Contractor shall permit the Water Authority to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement.

14. **Publication, Reproduction and Use of Material.** No material produced in whole or in part under this Agreement shall be subject to copyright in the United States or in any other country. The Water Authority shall have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data or other materials prepared under this Agreement.

15. **Compliance with Laws.** In providing the Scope of Services outlined herein, the Contractor shall comply with all applicable laws, ordinances, and codes of the federal, State, and local governments.

16. **Changes.** The Water Authority may, from time to time, request changes in the Scope of Services of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the Water Authority and the Contractor, shall be incorporated in written amendments to this Agreement.

17. **Assignability.** The Contractor shall not assign any interest in this Agreement and shall not transfer any interest in this Agreement (whether by assignment or novation), without the prior written consent of the Water Authority thereto.

18. **Termination for Cause.** If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligation under this Agreement or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Agreement, the Water Authority shall thereupon have the right to terminate this Agreement by giving five (5) days written notice to the Contractor of such termination and specifying the effective date of such termination. In such event, all finished or unfinished documents, data, and reports prepared by the Contractor under this Agreement shall, at the option of the Water Authority, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder. Notwithstanding the above, the Contractor shall not be relieved of liability to the Water Authority for damages sustained by the Water Authority by virtue of any breach of this Agreement by the Contractor, and the Water Authority may withhold any payments to the Contractor for the purposes of set-off until such time as the exact amount of damages due the Water Authority from the Contractor is determined.

19. **Termination for Convenience of Water Authority.** The Water Authority may terminate this Agreement at any time by giving at least fifteen (15) days notice in writing to the Contractor. If the Contractor is terminated by the Water Authority as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the

Services actually performed bear to the total Services of the Contractor covered by this Agreement, less payments of compensation previously made. If this Agreement is terminated due to the fault of the Contractor, the preceding section hereof relative to termination shall apply.

20. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, such holding will not affect the validity or enforceability of any other part of this Agreement so long as the remainder of the Agreement is reasonably capable of completion.

21. Enforcement. The Contractor agrees to pay to the Water Authority all costs and expenses including reasonable attorney's fees incurred by the Water Authority in exercising any of its rights or remedies in connection with the enforcement of this Agreement.

22. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith. Exhibits A and B, attached hereto, are hereby made a part of this Agreement.

23. Applicable Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New Mexico, and the laws, rules and regulations of the Water Authority of Albuquerque.

24. Approval Required. This Agreement shall not become effective or binding until approved by the Water Authority's Executive Director.

{INTENTIONALLY LEFT BLANK}

IN WITNESS WHEREOF, the Water Authority and the Contractor have executed this Agreement as of the date first above written.

ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY

Approved By:

_____
Executive Director

Date: _____

_____
_____**, Director**

Department _____

Date: _____

CONTRACTOR:

By: _____

Title: _____

Date: _____

Federal Tax ID No:
_____

State Tax ID No:
_____

ATTACHMENT A – REQUIREMENTS MATRIX

ATTACHMENT B – AMR/AMI IMPLEMENTATION TEAM RESUMES

Submitted proposals shall include the resumes of the Proposer's AMR/AMI implementation project team, employees, and contractors. **NOTE**: The proposed project manager shall be committed throughout the project and be available for the initial interview prior to selection.

ATTACHMENT C – PROPAGATION STUDY

ATTACHMENT D – COST PROPOSAL

Submitted proposals should include but are not limited to the following information. The Water Authority seeks firm prices for the products and services outlined in Section 2.1.10 (Implementation Work Plan items) and Part 3 (Scope of Services) of Proposals. As part of Attachment D, the Proposer shall include a proposed Payment Schedule. The Cost of Services and Payment Schedule shall also be included in electronic format on the submittal CD.

Further granularity within the sections below is encouraged to indicate **EXACTLY** what is included in the quoted price. The Proposer assumes all liabilities with respect to any ambiguity in presentation of cost. Note: The Water Authority does *not* wish for the Proposer to include its own quotation format.

The vendor shall submit the following cost proposals in the format shown on the following pages: All cost proposals are on a not to exceed basis for each cost item below. Specify terms and conditions for site licenses, delivery, payment, and other applicable goods and servicesPrices must be in effect for three (3) years after the Notice to Proceed date, including freight charges, applicable taxes, any other delivery costs incurred, and installation.

1. Cost Proposal 1: System Costs
   Explain any necessary customization for mandatory Authority requirements and cost them out separately
2. Cost Proposal 2: Summary Cost by Activity
3. Cost Proposal 3: Annual Maintenance Support Costs
4. Cost Proposal 4: Other Contract Costs

COST PROPOSAL 1 - SYSTEM COST

List all software cost being proposed including one-time cost. Indicate product number when applicable for product line.

SOFTWARE NAME AND DESCRIPTION (list software name, description, version no. and purpose)	**PRODUCT NUMBER**	**QTY**	**UNIT COST**	**TOTAL COST**	**WARRANTY PERIOD**
Licenses for AMR/AMI. Please note version and any limitation or restrictions. Please base pricing on either 100 named users or 25 concurrent users. Please note the Authority prefers concurrent licensing if available.					
Additional Licensing required for establishment of a AMR/AMI test environment.					
Any third party software/hardware required to meet the stated functionality. Please note licensing registrations (number and type).					
Licenses for Interfaces to third party systems. Please provide a cost for each system listed in the requirements matrix.					
Network hardware (MIUs, RCUs, etc.) as required in the Requirements Matrix.					
Other products required to meet the RFP requirements. Please list and explain. Please price each product separately.					
Modifications proposed including any third-party software/hardware to meet the requirements.					
COST PROPOSAL 1 TOTAL					

COST PROPOSAL 2 - SUMMARY COST BY ACTIVITY

ACTIVITY	VENDOR HOURS	VENDOR PERSONNEL COST	VENDOR EXPENSES	TOTAL COST
Project management, quality assurance, or other administrative services.				
Implementation services as described in proposal. Include all elements of delivery such as installation, configuration, acceptance testing, etc., with the following five items separate:				
• Report Development. Indicate number of reports proposed. (Minimum of those named reports in requirements matrix, plus 10 additional days).				
• Data Migration (if any)				
• System Interfaces				
• Documentation				
• Training. Indicate number of days per class and number of hours per day below:				
System Administrator/Technical				
End-User				
Optional: Other, please specify_____				
Modifications necessary to meet the stated functionality.				
Other services required to meet the RFP requirements. Please explain.				
COST PROPOSAL 2 SUBTOTAL				
Travel and Related Expenses • A not-to-exceed estimate should be provided. The Authority will not accept "as incurred" or similar response. (Note: Vendor should indicate the total number of trips and days onsite proposed).				
COST PROPOSAL 2 TOTAL				

COST PROPOSAL 3 - ANNUAL MAINTENANCE SUPPORT CONTRACT COST

The vendor shall submit an itemized listing of each component in the maintenance support contract. Specify proposed terms of the maintenance cost. The vendor shall also describe in detail the annual percentage charged for maintenance based upon each cost item. The cost item shall also be defined.

Provide cost figured for annual maintenance and future releases. Maintenance costs shall not exceed a five percent (5%) increase over the previous year's amount. Specify costs for future releases as the lower of, a state percentage off of the then current list price, or today's current price. Describe when the maintenance will become effective.

MAINTENANCE SUPPORT AND DESCRIPTION	ANNUAL MAINTENANCE COST
Annual support for one year; support to commence after 90-day warranty period following formal system acceptance. Also include, if available, the cost for 24x7 support.	
Pricing for any additional support services as per the requirements matrix (Attachment A). Please list by line item.	
COST PROPOSAL 3 TOTAL	

COST PROPOSAL 4 – OTHER CONTRACT COSTS

The following items will need to be specified for future use by the Water Authority and may be incorporated as part of the final contract.

COST ACTIVITY	COST
Per hour cost for custom programming and/or requested enhancements	
Per day cost of on-site, non-maintenance related activity. Include all expenses	
Cost of additional user/seat licenses. Also include options for enterprise licensing.	
Please note any cost incurred for an addition database instance to be used for testing/development.	
Future annual support. Please note any escalators.	
COST PROPOSAL 4 TOTAL	

The undersigned certifies that the proposed AMR/AMI will satisfy all elements and requirements of the related RFP.

Proposer Name:_____

Signature:_____

Title:_____

Date:_____

ATTACHMENT E – ADDITIONAL CONSIDERATIONS

Proposers should include additional items or differentiating factors not addressed in the RFP, either in the proposal or Attachment A, that are considered essential for the successful completion of the project.

ATTACHMENT F – BOND FORMS

Proposal Bond

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
_____
as Principal, hereinafter called the Principal, and _____
_____,
a corporation duly organized and existing under and by virtue of the laws of the State of _____
_____ and authorized to do business in the State of New Mexico, as Surety, hereinafter called the Surety, are held and firmly bound unto the Albuquerque Bernalillo County Water Utility Authority (Water Authority), as Obligee, hereinafter called the City, in the sum of _____ _____Dollars ($_____) for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted the accompanying Proposal dated _____ _____, 2010, for "Advanced Meter Infrastructure System", which Proposal is by reference made a part hereof and is hereinafter referred to as the Proposal.

NOW, THEREFORE, the condition of this obligation is such that, if the Water Authority shall accept the Proposal of the Principal and the Principal shall enter into a Contract with the Water Authority in accordance with the terms of such Proposal, and give such bond or bonds as may be specified in the Request for Proposals with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof or in the event of this failure of the Principal to enter into such contract and give such bond or bonds, if the Principal shall pay to the Water Authority the difference not to exceed the penalty hereof between the amount specified in said Proposal and such larger amount for which the Water Authority may in good faith contract with another party to perform the work covered by said Proposal, then this obligation shall be null and void, otherwise to remain in full force and effect.

SIGNED AND SEALED this _____ day of _____, 20_____.

_____
Principal

ATTEST: By: _____

_____ Title: _____

_____
Surety

ATTEST: By: _____

Performance Bond

KNOW ALL MEN BY THESE PRESENTS:

THAT_____
_____ as Principal, hereinafter called the Contractor, and
_____,
a corporation duly organized and existing under and by virtue of the laws of the State of _____
_____ and authorized to do business in the State of New Mexico, as Surety, hereinafter called the Surety, are held and firmly bound unto the f Albuquerque Bernalillo County Water Utility Authority, as Obligee, hereinafter called the Water Authority, in the amount of _____ for the payment whereof the Contractor and Surety firmly bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has submitted a Proposal in response to RFP2011-002-TC, entitled "Advanced Meter Infrastructure System", and shall by written agreement enter into a contract with the Water Authority described as follows: _____
_____,
which contract shall by reference be made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if the Contractor shall faithfully perform and complete said Contract according to its terms and comply with all requirements of law, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Water Authority.

The Surety hereby consents to progress payments to the Contractor and acknowledges that such payments shall not preclude the Water Authority from showing the true character and quality of materials furnished or services rendered or from recovering from the Contractor or Surety such damages as the Water Authority may sustain by reason of deficiency in quantity or quality of materials or services furnished with respect to which a progress payment was made.

Whenever the Contractor shall be, and is declared by the Water Authority to be, in default under the Contract, the Water Authority having performed its obligations thereunder; the Surety may promptly remedy the default or shall promptly:

1. Complete the Contract in accordance with its terms and conditions, or

2. Obtain a proposal or proposals for submission to the Water Authority for completing the Contract in accordance with its terms and conditions and, upon determination by the Water Authority and Surety of the responsive and responsible Offeror, arrange for a contract

between such Offeror and the Water Authority and make available as the work progresses (even though there should be default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph shall mean the total amount payable by the Water Authority to the Contractor under the Contract and any amendments thereto, less the amount properly paid by the Water Authority to the Contractor.

The Surety acknowledges that the Contract may contain express guarantees and agrees that said guarantees, if any, are covered by the Surety's obligation hereunder.

Any suit under this bond must be instituted before the expiration of three years from the date on which final payment under the Contract falls due, except that, with respect to express guarantees of a longer term, a suit thereon must be initiated within six months following the expiration of said express guarantees, if any.

Right of action with respect to any express guarantees, if any, in the Contract shall accrue following completion and formal acceptance of the work under the Contract.

No right of action shall accrue on this bond to or for the use of any persons or corporation other than the Water Authority named herein or its successors or assigns.

SIGNED AND SEALED this _____ day of _____, 20_____.

_____
Contractor

ATTEST: By: _____

_____ Title: _____

_____
Surety

ATTEST: By: _____

_____ Title: _____

Claims or Notice given to Surety pursuant to this Bond shall be sent to the following mailing address:

_____
_____
_____
_____

Labor and Material Payment Bond

KNOW ALL MEN BY THESE PRESENTS:

THAT _____
_____
as Principal, hereinafter called the Contractor, and _____
_____,
a corporation duly organized and existing under and by virtue of the laws of the State of _____
_____ and authorized to do business in the State of New Mexico, as Surety, hereinafter called the Surety, are held and firmly bound unto the Albuquerque Bernalillo County Water Utility Authority, as Obligee, hereinafter called the Water Authority, in the amount of
_____ _____
_____ Dollars ($_____) for the payment whereof the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has submitted a Proposal in response to RFP2011-002-TC, entitled "Advanced Meter Infrastructure System" and shall by written agreement enter into a contract with the Water Authority described as follows:

_____
_____.
which contract shall by reference be made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if the Contractor shall pay as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work under said Contract, whether said labor be performed and materials and supplies be furnished under the original Contract or any contract thereunder, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

The right to sue on this bond accrues only to the Water Authority and the parties to whom Sections 13-4-18 through 13-4-20 NMSA 1978, as amended, grant such right; and any such right shall be exercised only in accordance with the provisions and limitations of said statutes.

SIGNED AND SEALED this _____ day of _____, 20_____.

_____
Contractor

ATTEST:

By: _____

_____

Title: _____

_____
Surety

ATTEST:

By: _____

_____

Title: _____

Claims or Notice given to Surety pursuant to this Bond shall be sent to the following mailing address:

_____
_____
_____
_____

This Bond is issued simultaneously with the Performance Bond in favor of the Water Authority for the faithful performance of the Contract.

Count	PREM_ID	SP_ID	MFR	Meter No	Muti-Dial	BILLSIZE	UOM	TOU	Dial type	Cycle	Rte	MtrInstlYr	ERT_ID	Service Address	City	ST	POSTAL	CC&B Customer	LATITUDE	LONGITUDE	ELEV
1	8651436560	8651436034	Badger	09335792	Y	5	CF	HIGH	AMI DIAL	15	000053	2009		12021 SKYLINE RD NE	ALBUQUERQUE	NM	87123-3069	CNC INVESTMENTS	35.07340	-106.51075	5564
2	8651436560	8651436034	Badger	09335792	Y	5	CF	LOW	AMI DIAL	15	000053	2009		12021 SKYLINE RD NE	ALBUQUERQUE	NM	87123-3069	CNC INVESTMENTS	35.07340	-106.51075	5564
3	6407336560	6407336732	Sensus	26919	N	5	CF		AMI DIAL	14	000054	2000	56027345	401 WESTERN SKIES DR SE	ALBUQUERQUE	NM	87123-3701	CACTUS CANYON INVESTMENTS LLC	35.06405	-106.51015	5568
4	6377336560	6377336039	Sensus	54664	N	7	CF		AMI DIAL	15	000053	1990	25557303	8302 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110-7613	Presbyterian Healthcare Svcs Facilities Director	35.09222	-106.55331	5346
5	8657336560	8657336718	Sensus	27014	N	8	CF		AMI DIAL	19	000058	2004	25651869	7001 OSUNA RD NE	ALBUQUERQUE	NM	87109-2955	GOLF MGMT DIV	35.14320	-106.56802	5336
6	6414336560	6414336131	Sensus	02886	N	6	CF		AMI DIAL	19	000058	2004	25651796	6200 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-7379	OVERLOOK APARTMENTS	35.15076	-106.52223	5732
7	6369336560	6369336553	Sensus	88817	N	5	CF		AMI DIAL	12	000049	2002	13831911	601 LAGUNA BLVD SW	ALBUQUERQUE	NM	87104-1020	ALBUQUERQUE COUNTRY CLUB	35.08692	-106.67093	4952
8	8631436560	8631436625	Sensus	N3610	Y	8	CF	FIRE	AMI DIAL	14	000051	2004	23323544	5741 OSUNA RD NE	ALBUQUERQUE	NM	87109-2567	OWNER,CURRENT	35.14552	-106.58323	5224
9	8631436560	8631436625	Sensus	N3610	Y	8	CF		AMI DIAL	14	000051	2004	25346496	5741 OSUNA RD NE	ALBUQUERQUE	NM	87109-2567	OWNER,CURRENT	35.14552	-106.58323	5224
10	8606336560	8606336904	Sensus	E2163	Y	7	CF		AMI DIAL	15	000053	2004	25554443	701 STEPHEN MOODY ST SE	ALBUQUERQUE	NM	87123-1992	MIRABELLA HEIGHTS-PMG C/O VELOCITY	35.06511	-106.53020	5480
11	8606336560	8606336904	Sensus	E2163	Y	7	CF	FIRE	AMI DIAL	15	000053	2004	25555202	701 STEPHEN MOODY ST SE	ALBUQUERQUE	NM	87123-1992	MIRABELLA HEIGHTS-PMG C/O VELOCITY	35.06511	-106.53020	5480
12	4989336560	4989336997	Sensus	46892	N	6	CF		AMI DIAL	14	000051	2004	26592313	12400 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111-4156	C/o FPI Management	35.12981	-106.50037	5880
13	2526336560	2526336293	Sensus	66226711	N	5	CF		AMI DIAL	16	000055	2006		904 LAS LOMAS AVE NE	ALBUQUERQUE	NM	87102-2608	Total Community Care	35.08864	-106.63477	5074
14	4697415560	4697415718	Sensus	65407	N	6	CF		AMI DIAL	01	000005	2003	24714771	1213 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1703	UNM HOSPITAL	35.09605	-106.62702	5102
15	0016336560	0016336590	Sensus	01803	N	5	CF		AMI DIAL	12	000050	2004	25554627	8600 ALAMEDA PARK DR NE	ALBUQUERQUE	NM	87122	Parks and Recreation Department	35.18161	-106.60614	5048
16	2064336560	2064336809	Sensus	66287437	N	6	CF		AMI DIAL	16	000057	2006		201 3RD ST NW	ALBUQUERQUE	NM	87102-3370	ALBUQUERQUE HYATT	35.08638	-106.65102	4954
17	5018336560	5018336838	Sensus	E0617	N	5	CF		AMI DIAL	15	000053	2004	24928343	12800 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87112-4722	Crossroads Calvary Chapel	35.09560	-106.50129	5790
18	2531436560	2531436540	Sensus	67136106	N	5	CF		AMI DIAL	12	000050	2009		5801 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-3411	SANDIA PAPER CO	35.14929	-106.59474	5156
19	2529336560	2529336873	Sensus	46897	N	6	CF		AMI DIAL	19	000059	1993	25557673	12300 LOMAS BLVD NE	ALBUQUERQUE	NM	87112	MANZANO HIGH 530	35.08324	-106.51108	5602
20	5007336560	5007336673	Sensus	41937	N	5	CF		AMI DIAL	19	000059	2004	56025014	215 ALTEZ ST SE	ALBUQUERQUE	NM	87123-3203	UNIFIRST CORP./ENGINEERING	35.07110	-106.53952	5440
21	2080318825	2080311468	Badger	95006907	N	5	NMUU		AMI DIAL	NW04	066	2008	4142075	SERVICE CRT #7 NW	ALBUQUERQUE	NM	87114	SIMON PROPERTIES,STORE#0549			0
22	2557336560	2557336680	Sensus	49545	N	5	CF		AMI DIAL	14	000051	2004		7436 PRAIRIE RD NE	ALBUQUERQUE	NM	87109-1803	LITTLE TURTLE TN HMS	35.13333	-106.56198	5364
23	2551436560	2551436995	Badger	09059838	Y	5	CF	LOW	AMI DIAL	16	000057	2009		500 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-5340	REIT MANAGMENT LLC	35.08827	-106.65234	4956
24	2551436560	2551436995	Badger	09059838	Y	5	CF	HIGH	AMI DIAL	16	000057	2009		500 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-5340	REIT MANAGMENT LLC	35.08827	-106.65234	4956
25	0039336560	0039336987	Hersey	N6677	Y	6	CF	LOW	NON-AMI DIAL	16	000056	1993		6701 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	WEST MESA 570	35.09450	-106.71254	5102
26	0039336560	0039336987	Hersey	N6677	Y	6	CF	HIGH	NON-AMI DIAL	16	000056	1993		6701 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	WEST MESA 570	35.09450	-106.71254	5102
27	2549336560	2549336270	Hersey	77054	N	5	CF		NON-AMI DIAL	12	000050	1999		8200 WASHINGTON ST NE	ALBUQUERQUE	NM	87113-1605	MATHESON TRI-GAS INDUSTRIAL GAS GROUP	35.17661	-106.59437	5116
28	2549336560	2549336286	Hersey	E7272	Y	5	CF	HIGH	NON-AMI DIAL	12	000050	1974		8200 WASHINGTON ST NE	ALBUQUERQUE	NM	87113-1605	MATHESON TRI-GAS INDUSTRIAL GAS GROUP	35.17661	-106.59504	5112
29	2549336560	2549336286	Hersey	E7272	Y	5	CF	LOW	NON-AMI DIAL	12	000050	1974		8200 WASHINGTON ST NE	ALBUQUERQUE	NM	87113-1605	MATHESON TRI-GAS INDUSTRIAL GAS GROUP	35.17661	-106.59504	5112
30	2549336560	2549336305	Sensus	67021627	N	5	CF		AMI DIAL	12	000050	2008		8200 WASHINGTON ST NE	ALBUQUERQUE	NM	87113-1605	MATHESON TRI-GAS INDUSTRIAL GAS GROUP	35.17662	-106.59428	5116
31	5030510438	5030528179	Sensus	60875924	N	8	CF	LOW	AMI DIAL	16	000057	2008		8441 WYOMING BLVD NE	ALBUQUERQUE	NM	87113	NORTH DOMINGO BACA PARK-CITY JV ACCT	35.17558	-106.56015	5386
32	2546336560	2546336595	Sensus	98960	N	7	CF		AMI DIAL	19	000059	2004	25555063	120 OAK ST SE	ALBUQUERQUE	NM	87106	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.08160	-106.63633	5056
33	2126336560	2126336217	Sensus	49548	N	5	CF		AMI DIAL	14	000054	2004	25555732	933 BRADBURY DR SE	ALBUQUERQUE	NM	87106-4301	UNM PHYSICAL PLANT	35.07036	-106.63331	5114
34	2569336560	2569336595	Sensus	F3617	Y	8	CF		AMI DIAL	19	000059	2003	24966386	605 GREEN VALLEY DR SE	ALBUQUERQUE	NM	87123-4112	HIDDEN VALLEY ASSOCIATION	35.05736	-106.50338	5530
35	2569336560	2569336595	Sensus	F3617	Y	8	CF	FIRE	AMI DIAL	19	000059	2003	24968540	605 GREEN VALLEY DR SE	ALBUQUERQUE	NM	87123-4112	HIDDEN VALLEY ASSOCIATION	35.05736	-106.50338	5530
36	0056336560	0056336710	Sensus	69360467	N	5	CF		AMI DIAL	16	000057	2008		601 4TH ST SW	ALBUQUERQUE	NM	87102-3840	SOUTH AREA 017	35.07921	-106.65271	4951
37	2566336560	2566336015	Sensus	66250118	N	5	CF		AMI DIAL	16	000057	2006		201 3RD ST NW	ALBUQUERQUE	NM	87102-3370	ALBUQ PLAZA	35.08590	-106.65060	4954
38	0059336560	0059336400	Hersey	N4438	Y	6	CF		AMI DIAL	16	000052	2004	25557304	2120 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1713	DAYS,INN	35.10853	-106.62022	5060
39	0059336560	0059336400	Hersey	N4438	Y	6	CF	FIRE	AMI DIAL	16	000052	2004	25557132	2120 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1713	DAYS,INN	35.10853	-106.62022	5060
40	0067336560	0067336791	Sensus	26918	N	5	CF		AMI DIAL	19	000058	2004	56025284	7600 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1532	PINNACLE VIEW	35.13058	-106.55578	5392
41	0060665560	0060665021	Sensus	66241695	N	5	CF		AMI DIAL	13	000027	2006		4310 THE 25 WAY NE	ALBUQUERQUE	NM	87109-5849	DRURY INNS%ACCOUNTS PAYABLE	35.14321	-106.59535	5154
42	2586336560	2586336405	Sensus	00666	N	7	CF		AMI DIAL	16	000055	2004	25274823	2323 KATHRYN AVE SE	ALBUQUERQUE	NM	87106-3404	MOUNTAIN VIEW THREE APTS.	35.06587	-106.61760	5212
43	7356046560	7356046531	Badger	95165177	N	6	NMUU		AMI DIAL	NW04	070	2010	70612874	4816 MCMAHON BLVD NW	ALBUQUERQUE	NM	87114-5046	PUERTA DEL SOL APTS	35.20583	-106.67888	5210
44	4777280552	4777202194	Sensus	61072160	Y	5	CF	HIGH	AMI DIAL	09	000028	2009		743 SILVERBERRY CR SE	ALBUQUERQUE	NM	87116	KIRTLAND FAMILY HOUSING	35.06453	-106.54994	5408
45	4777280552	4777202194	Sensus	61072160	Y	5	CF	LOW	AMI DIAL	09	000028	2009		743 SILVERBERRY CR SE	ALBUQUERQUE	NM	87116	KIRTLAND FAMILY HOUSING	35.06453	-106.54994	5408
46	0076336560	0076336143	Sensus	70876	N	5	CF		AMI DIAL	12	000049	1995	24299554	219 CENTRAL AVE NW	ALBUQUERQUE	NM	87102-3346	DOWNTOWN LOFTS LLC	35.08450	-106.65026	4954
47	2577336560	2577336083	Sensus	E2655	N	5	CF		AMI DIAL	15	000053	2004		1601 PENNSYLVANIA ST NE	ALBUQUERQUE	NM	87110-5546	WINROCK VILLAS CONDOS	35.09877	-106.55977	5320
48	2316336560	2316336066	Sensus	89517	N	5	CF		AMI DIAL	21	000060	2004	25962724	1500 CENTRAL AVE SW	ALBUQUERQUE	NM	87104-1176	HUNING CASTLE APTS.	35.08972	-106.66462	4954
49	5073336560	5073336323	Neptune	44444	N	5	CF		NON-AMI DIAL	21	000061	1997		4122 HANNETT AVE NE	ALBUQUERQUE	NM	87110	ALTURA,PARK	35.09866	-106.59995	5178
50	2600436560	2600436325	Badger	09061910	Y	6	CF	LOW	AMI DIAL	15	000053	2010		911 FOUR HILLS RD SE	ALBUQUERQUE	NM	87123-4337	FOUR HILLS COUNTRY CLUB	35.05073	-106.49711	5706
51	2600436560	2600436325	Badger	09061910	Y	6	CF	HIGH	AMI DIAL	15	000053	2010		911 FOUR HILLS RD SE	ALBUQUERQUE	NM	87123-4337	FOUR HILLS COUNTRY CLUB	35.05073	-106.49711	5706
52	2614336560	2614336169	Sensus	68372924	N	5	CF		AMI DIAL	21	000060	2008		111 COORS BLVD NW	ALBUQUERQUE	NM	87121-2006	KROGER CO. 70640498	35.08028	-106.71372	5098
53	5093336560	5093336699	Rockwell	01477	N	5	CF		AMI DIAL	19	000059	2004	25557677	621 KENTUCKY ST SE	ALBUQUERQUE	NM	87108	EMMERSON MID SCHOOL NO 255	35.06762	-106.56984	5330
54	0115773574	0115773576	Badger	09059793	N	6	NMUU		AMI DIAL	NW01	017	2010	81384373	6200 BURGOS AV NW	Albuquerque	NM	87114	SEVILLE PARK/ DEPT OF MUNICIPAL DEV.	35.20614	-106.72170	5384
55	5101436560	5101436986	Sensus	23877	N	5	CF		AMI DIAL	12	000049	2004	25558102	3501 6TH ST NW	ALBUQUERQUE	NM	87107-2418	PARK MANAGEMENT DIVISION	35.11888	-106.64926	4970
56	5097336560	5097336415	Sensus	67011754	N	5	CF		AMI DIAL	15	000053	2007		2205 AMBASSADOR RD NE	ALBUQUERQUE	NM	87112-2724	LA VIDA BUENA APTS.	35.10692	-106.54437	5422
57	0124336560	0124336261	Badger	09055735	Y	5	CF	HIGH	AMI DIAL	19	000059	2009		5851 ANDERSON AVE SE	ALBUQUERQUE	NM	87108-5428	BADIHA AND PIERRE ALWAN/BRANDYWOOD PARK APARTMEN	35.06486	-106.58091	5298
58	0124336560	0124336261	Badger	09055735	Y	5	CF	LOW	AMI DIAL	19	000059	2009		5851 ANDERSON AVE SE	ALBUQUERQUE	NM	87108-5428	BADIHA AND PIERRE ALWAN/BRANDYWOOD PARK APARTMEN	35.06486	-106.58091	5298
59	2618336560	2618336949	Sensus	69360455	N	5	CF	HIGH	AMI DIAL	16	000056	2008		5402 HANOVER RD NW	ALBUQUERQUE	NM	87105	ADAMS 405	35.10030	-106.69969	5097
60	5098330851	5098351410	Badger	09059829	Y	5	CF	HIGH	AMI DIAL	21	000041	2009		6700 FORTUNA RD NW	ALBUQUERQUE	NM	87121	CEDAR RIDGE POND/PARK	35.09428	-106.71390	5104
61	5098330851	5098351410	Badger	09059829	Y	5	CF	LOW	AMI DIAL	21	000041	2009		6700 FORTUNA RD NW	ALBUQUERQUE	NM	87121	CEDAR RIDGE POND/PARK	35.09428	-106.71390	5104
62	5115336560	5115336796	Sensus	52715	N	5	CF		AMI DIAL	12	000049	2004	25965192	5301 GUADALUPE TRL NW	ALBUQUERQUE	NM	87107	PARK,COLUMBUS	35.13902	-106.65511	4976
63	0138262935	0138229924	Sensus	70015686	N	5	CF		AMI DIAL	23	000040	2009		3110 LISA RD SW	ALBUQUERQUE	NM	87121-6404	BENAVIDEZ,KATHY	35.00731	-106.72114	4940
64	0135060755	0135024929	Badger	95008114	N	7	NMUU		AMI DIAL	NW03	033	2008	70612885	10035 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	DESERT GREENS GOLF COURSE INC.	35.19762	-106.68509	5254
65	5119336560	5119336587	Sensus	49576	N	6	CF		AMI DIAL	16	000052	2004	24928306	6303 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-5328	APARTMENTS,LANDMARK	35.10199	-106.57381	5252
66	5120436560	5120436590	Sensus	'86812	N	6	CF		AMI DIAL	16	000057	2002		8200 GUADALUPE TRL NW	ALBUQUERQUE	NM	87114-1121	TAYLOR MID SCHOOL 457	35.17587	-106.63994	4991
67	2654336560	2654336735	Sensus	67855942	N	5	CF		AMI DIAL	21	000060	2007		6030 ILIFF RD NW	ALBUQUERQUE	NM	87121-0905	THREE ALBUQUERQUE HOTELS,LP	35.10331	-106.70759	5097
68	2689336560	2689336924	Sensus	49533	N	5	CF		AMI DIAL	12	000049	2004	25965312	715 KATHRYN AVE SE	ALBUQUERQUE	NM	87102-4748	PARK MANAGEMENT DIVISION	35.06583	-106.64062	4996
69	2499336560	2499336093	Sensus	49588	N	7	CF		AMI DIAL	16	000055	2004	24928344	1001 YALE BLVD NE	ALBUQUERQUE	NM	87106-3825	UNM PHYSICAL PLANT	35.09337	-106.62081	5156
70	5140436560	5140436835	Sensus	63408	N	5	CF		AMI DIAL	15	000053	2003	25984545	770 JUAN TABO BLVD NE	ALBUQUERQUE	NM	87123-1436	RIO VISTA	35.08396	-106.51481	5572
71	5127336560	5127336036	Rockwell	78994	N	5	CF		AMI DIAL	19	000059	2004	25557007	120 SIERRA DR NE	ALBUQUERQUE	NM	87108-1171	QWEST ALBQ-EAST 546012	35.07967	-106.59634	5230
72	5132366801	5132366810	Badger	94656655	N	5	NMUU		AMI DIAL	NW04	053	2010	70139854	3305 CALLE CUERVO NW #10	ALBUQUERQUE	NM	87114	SCI CAMINO REAL FUND LLC	35.20694	-106.64602	5011
73	5135336560	5135336254	Neptune	E6183	Y	6	CF	LOW	AMI DIAL	12	000050	1997	24906279	4901 PAN AMERICAN EAST HY NE	ALBUQUERQUE	NM	87109-2230	CENTURY THEATRES #419 C/O ADVANTAGE IQ MS 1271	35.14150	-106.60166	5120
74	5135336560	5135336254	Neptune	E6183	Y	6	CF	HIGH	AMI DIAL	12	000050	1997	24906286	4901 PAN AMERICAN EAST HY NE	ALBUQUERQUE	NM	87109-2230	CENTURY THEATRES #419 C/O ADVANTAGE IQ MS 1271	35.14150	-106.60166	5120
75	0206336560	0206336790	Badger	33333	N	6	CF		NON-AMI DIAL	30	000053	2002		5800 SHELLY RD NW	ALBUQUERQUE	NM	87121	BERNALILLO COUNTY FINANCE DEPT	35.00944	-106.85788	5768
76	0199336560	0199336035	Sensus	49566	N	5	CF		AMI DIAL	12	000050	2004	24928310	5815 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3151	WEINGARTEN REALTY	35.14553	-106.55629	5424
77	5158336560	5158336498	Sensus	62646899	N	6	CF		AMI DIAL	16	000057	2007		2020 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1715	ELEGANTE,MCM	35.10851	-106.62290	5052
78	4934336560	4934336461	Sensus	22836	N	6	CF		AMI DIAL	12	000049	2004	25632527	336 WOODWARD RD SE	ALBUQUERQUE	NM	87102-5135	GE A.E. UTILITY AUTO PAY	35.04906	-106.64885	4940
79	5147336560	5147336414	Badger	09335799	Y	5	CF	HIGH	AMI DIAL	16	000052	2009		5404 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1371	THE TOWERS APARTMENTS	35.12992	-106.58084	5234

80	5147336560	5147336414	Badger	09335739	Y	5	CF	LOW	AMI DIAL	16	000052	2009		5404 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1371	THE TOWERS APARTMENTS	35.12992	-106.58084	5234
81	5160436560	5160436213	Hersey	E2476	Y	5	CF		AMI DIAL	16	000057	2004	56025520	1500 MONTANO RD NW	ALBUQUERQUE	NM	87107-3236	RANCHO CABALLERO H.O ASSOC.	35.14067	-106.65631	4976
82	5160436560	5160436213	Hersey	E2476	Y	5	CF	FIRE	AMI DIAL	16	000057	2004	56027233	1500 MONTANO RD NW	ALBUQUERQUE	NM	87107-3236	RANCHO CABALLERO H.O ASSOC.	35.14067	-106.65631	4976
83	5155336560	5155336684	Sensus	70050159	N	5	CF		AMI DIAL	15	000053	2005	25889368	1111 WADE CIR NE	ALBUQUERQUE	NM	87112	PARK,WADE CR	35.08852	-106.53379	5440
84	2453036581	2453057155	Sensus	67608554	Y	5	CF	FIRE	AMI DIAL	16	000057	2007		601 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1529	THE VILLAS C/O CANYON GATE REAL ESTATE	35.11006	-106.63602	5004
85	2453036581	2453057155	Sensus	67608554	Y	5	CF		AMI DIAL	16	000057	2007		601 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1529	THE VILLAS C/O CANYON GATE REAL ESTATE	35.11006	-106.63602	5004
86	2453036581	2453037788	Sensus	66986650	Y	5	CF	FIRE	AMI DIAL	16	000057	2007		601 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1529	THE VILLAS C/O CANYON GATE REAL ESTATE	35.11359	-106.63519	4992
87	2453036581	2453037788	Sensus	66986650	Y	5	CF		AMI DIAL	16	000057	2007		601 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1529	THE VILLAS C/O CANYON GATE REAL ESTATE	35.11359	-106.63519	4992
88	2444336560	2444336480	Rockwell	84053	N	6	CF		AMI DIAL	21	000060	1988	25557453	10 SUNPORT BLVD SE	ALBUQUERQUE	NM	87106	AVIATION DEPT CITY OF ALBUQUER	35.05059	-106.61937	5292
89	2719336560	2719336720	Sensus	49580	N	6	CF		AMI DIAL	12	000050	2004	24928363	5555 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3133	Academy Heights Apartments	35.14459	-106.55302	5450
90	0226336560	0226336236	Sensus	N4452	Y	8	CF		AMI DIAL	21	000060	2004	25557371	310 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87106	UNM PHYSICAL PLANT	35.08368	-106.62566	5146
91	0226336560	0226336236	Sensus	N4452	Y	8	CF	FIRE	AMI DIAL	21	000060	2004	25558224	310 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87106	UNM PHYSICAL PLANT	35.08368	-106.62566	5146
92	2464336560	2464336899	Sensus	04780	N	7	CF		AMI DIAL	19	000059	2004	56026315	7600 SOUTHERN AVE SE	ALBUQUERQUE	NM	87108	PARKS & RECREATION	35.06702	-106.56007	5366
93	5194336560	5194336389	Neptune	04388	N	6	CF		AMI DIAL	19	000059	2004	25634756	821 EUBANK BLVD NE	ALBUQUERQUE	NM	87123-1201	LOS ALTOS PARK	35.08606	-106.53405	5430
94	5195336560	5195336552	Sensus	01609252	N	5	CF		AMI DIAL	19	000058	2005		7101 ARVADA AVE NE	ALBUQUERQUE	NM	87110-4510	ADVANTAGE IQ-MS 1517/APPLE-HILTON SITE 69725	35.10470	-106.56664	5298
95	5175336560	5175336092	Sensus	N2792	Y	5	CF	LOW	AMI DIAL	12	000049	2004	25630328	415 THAXTON AVE SE	ALBUQUERQUE	NM	87102-4855	EAST SAN JOSE NO. 252	35.06287	-106.64720	4953
96	5175336560	5175336092	Sensus	N2792	Y	5	CF	HIGH	AMI DIAL	12	000049	2004	25634967	415 THAXTON AVE SE	ALBUQUERQUE	NM	87102-4855	EAST SAN JOSE NO. 252	35.06287	-106.64720	4953
97	2716336560	2716336159	Sensus	70375	N	5	CF		AMI DIAL	21	000060	1972	24299557	2101 GEORGE RD SE	ALBUQUERQUE	NM	87106-5609	CURRENT RESIDENT	35.04862	-106.62347	5298
98	5178336560	5178336862	Sensus	68543049	N	6	CF		AMI DIAL	12	000049	2009		1911 2ND ST NW	ALBUQUERQUE	NM	87102-1452	DEAN FOODS	35.10357	-106.64563	4964
99	5185144547	5185150125	Badger	95008113	N	7	NMUU		AMI DIAL	NW03	033	2008	70612915	10035 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	DESERT GREENS GOLF COURSE INC.	35.19762	-106.68509	5254
100	5180436560	5180436631	Sensus	66287422	N	5	CF		AMI DIAL	19	000058	2006	25276065	6200 UPTOWN BLVD NE	ALBUQUERQUE	NM	87110-4159	BETTMAN MANAGEMENT	35.10388	-106.57398	5256
101	5208336560	5208336663	Sensus	49554	N	5	CF		AMI DIAL	14	000051	2004	19457967	12015 TIVOLI AVE NE	ALBUQUERQUE	NM	87111-5309	JOHN BAKER 217	35.12338	-106.50607	5758
102	9838217778	9838217714	Badger	09059826	Y	5	CF	HIGH	AMI DIAL	16	000055	2009		1101 CAMINO DE SALUD NE	ALBUQUERQUE	NM	87102	STATE OF NEW MEXICO	35.09549	-106.63033	5064
103	9838217778	9838217714	Badger	09059826	Y	5	CF	LOW	AMI DIAL	16	000055	2009		1101 CAMINO DE SALUD NE	ALBUQUERQUE	NM	87102	STATE OF NEW MEXICO	35.09549	-106.63033	5064
104	7508336560	7508336741	Sensus	55454	N	7	CF		AMI DIAL	19	000059	2004	24966170	10900 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87112	THE SHORES	35.10155	-106.52567	5524
105	0229336560	0229336796	Sensus	23584	N	6	CF		AMI DIAL	15	000053	2003	24968539	10300 HOTEL CIR NE	ALBUQUERQUE	NM	87123-1202	HOWARD JOHNSONS HOTEL/CONVENTION CTR	35.08539	-106.53009	5452
106	0231436560	0231436528	Sensus	45456	N	5	CF		AMI DIAL	12	000050	2004	25222153	6100 PAN AMERICAN PL NE	ALBUQUERQUE	NM	87109-3427	PRES. HEALTH CARE REAL ESTATE	35.15543	-106.58706	5188
107	5204336560	5204336952	Sensus	28846	N	5	CF		AMI DIAL	21	000060	1992	24300222	2301 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-4270	REIT MANAGEMENT LLC	35.05546	-106.62584	5160
108	0251436560	0251436921	Sensus	84051	N	6	CF		AMI DIAL	12	000050	2004	25252312	7777 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-4343	A.P.C	35.16868	-106.59214	5142
109	0249336560	0249336213	Sensus	78967	N	5	CF		AMI DIAL	19	000058	2004	56024958	2403 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87110-4058	INTEGRITY ASSET MANAGEMENT	35.10708	-106.58858	5192
110	2739336560	2739336137	Sensus	23559	N	6	CF		AMI DIAL	14	000051	2003		5001 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1308	GOODMAN REALTY GROUP (90's)	35.13354	-106.58897	5192
111	2776336560	2776336257	Sensus	E1520	Y	5	CF	LOW	AMI DIAL	12	000049	2004	25975096	1100 DOUGLAS MACARTHUR RD NW	ALBUQUERQUE	NM	87107-5145	MACARTHUR 303	35.13683	-106.64945	4976
112	2776336560	2776336257	Sensus	E1520	Y	5	CF	HIGH	AMI DIAL	12	000049	2004	25975027	1100 DOUGLAS MACARTHUR RD NW	ALBUQUERQUE	NM	87107-5145	MACARTHUR 303	35.13683	-106.64945	4976
113	2759336560	2759336496	Sensus	23548	N	5	CF		AMI DIAL	12	000049	2003	24967657	318 SILVER AVE SW	ALBUQUERQUE	NM	87102-3328	ST JOHN CATHEDAL	35.08205	-106.65159	4954
114	0266336560	0266336958	Sensus	68543044	N	5	CF		AMI DIAL	12	000049	2008		218 7TH ST NW	ALBUQUERQUE	NM	87102	IMMACULATE CONCEPTION	35.08691	-106.65475	4956
115	2756336560	2756336862	Sensus	23577	N	5	CF		AMI DIAL	16	000056	2003	24956189	1015 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87104-2031	RIO GRANDE INN	35.10355	-106.67145	4960
116	0277336560	0277336001	Sensus	E1546	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25634878	145 WINROCK CENTER NE	ALBUQUERQUE	NM	87110-5498	DILLARDS (EAST)	35.09951	-106.56382	5302
117	0277336560	0277336001	Sensus	E1546	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25964025	145 WINROCK CENTER NE	ALBUQUERQUE	NM	87110-5498	DILLARDS (EAST)	35.09951	-106.56382	5302
118	7587336560	7587336301	Sensus	N4079	N	5	CF		AMI DIAL	14	000051	2004	24928304	8400 SPAIN RD NE	ALBUQUERQUE	NM	87111-2018	MISSION HILL N ASSOC	35.13988	-106.54919	5444
119	5287336560	5287336244	Rockwell	01202	N	7	CF		AMI DIAL	19	000058	2004	23366534	7311 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-4705	DEL REY INVESTMENT LLC	35.16408	-106.57264	5290
120	0300436560	0300436271	Sensus	67021696	N	7	CF		AMI DIAL	19	000059	2008		2721 MARIE PARK DR NE	ALBUQUERQUE	NM	87112	PARK MANAGEMENT DIVISION	35.11335	-106.49962	5772
121	5283336560	5283336508	Sensus	N7471	Y	6	CF	LOW	AMI DIAL	14	000051	2004	24906233	12200 ACADEMY RD NE	ALBUQUERQUE	NM	87111-7245	VENTANA,LA	35.15203	-106.50048	5970
122	5283336560	5283336508	Sensus	N7471	Y	6	CF	HIGH	AMI DIAL	14	000051	2004	24865515	12200 ACADEMY RD NE	ALBUQUERQUE	NM	87111-7245	VENTANA,LA	35.15203	-106.50048	5970
123	0338336560	0338336193	Sensus	49583	N	6	CF		AMI DIAL	16	000055	2004	24928333	609 ENCINO PL NE	ALBUQUERQUE	NM	87102-2613	ENCINO HOUSE	35.08723	-106.63369	5092
124	5317336560	5317336865	Sensus	78964	N	5	CF		AMI DIAL	15	000053	2004	26591959	10100 LOMAS BLVD NE	ALBUQUERQUE	NM	87112-5279	LOS ALTOS/SPORTS DIVISION	35.08713	-106.53749	5418
125	5314890343	5314853545	Sensus	67011756	N	5	CF		AMI DIAL	17	000004	2007		8300 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110-7613	PRESBYTERIAN HEALTHCARE/FACIUTIES DIRECTOR	35.09277	-106.55220	5354
126	5309336560	5309336417	Neptune	N1565	Y	6	CF	HIGH	AMI DIAL	14	000051	2004	25634838	4401 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1208	SANDPIPER APARTMENTS C/O PACIFICAP PROPERTIES	35.13108	-106.59348	5164
127	5309336560	5309336417	Neptune	N1565	Y	6	CF	LOW	AMI DIAL	14	000051	2004	25964121	4401 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1208	SANDPIPER APARTMENTS C/O PACIFICAP PROPERTIES	35.13108	-106.59348	5164
128	5296336560	5296336540	Sensus	78978	N	5	CF		AMI DIAL	14	000054	2004	56025361	925 CAGUA DR SE	ALBUQUERQUE	NM	87108	PARKVIEW ASSC. JOHN MCMULLAN	35.06462	-106.57872	5304
129	5311436560	5311436209	Sensus	13441	N	6	CF		AMI DIAL	12	000050	2004	25557232	5501 PINO AVE NE	ALBUQUERQUE	NM	87109-5704	PARK MANAGEMENT/MICHELLE	35.16891	-106.57899	5234
130	0325235498	0325235468	Sensus	01105544	N	8	CF		AMI DIAL	01	000005	2009		2191 TUCKER RD NE	ALBUQUERQUE	NM	87131	UNM PHYSICAL PLANT DEPT	35.09188	-106.62172	5144
131	7596336560	7596336597	Sensus	78972	N	5	CF		AMI DIAL	19	000059	2004	56024961	444 FLORIDA ST SE	ALBUQUERQUE	NM	87108-3848	PLAYA DEL SOL TODD SEIDENSCHWARZ	35.07132	-106.57294	5312
132	7609336560	7609336493	Rockwell	09740	N	6	CF		AMI DIAL	14	000051	2004	56025349	5323 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1302	DEL NORTE HIGH 514	35.13309	-106.58625	5212
133	0334336560	0334336423	Sensus	49540	N	5	CF		AMI DIAL	16	000021	2004	24928445	7500 BARSTOW ST NE	ALBUQUERQUE	NM	87109-4951	DENNIS CHAVEZ 203	35.16710	-106.55010	5476
134	7610436560	7610436497	Badger	09335753	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		200 COPPER AVE NW	ALBUQUERQUE	NM	87102	HISTORIC HOTEL LLC/GOODMAN REALTY	35.08487	-106.64923	4954
135	7610436560	7610436497	Badger	09335753	Y	5	CF	LOW	AMI DIAL	12	000049	2009		200 COPPER AVE NW	ALBUQUERQUE	NM	87102	HISTORIC HOTEL LLC/GOODMAN REALTY	35.08487	-106.64923	4954
136	7605336560	7605336688	Sensus	77999	N	5	CF		AMI DIAL	21	000060	2004	25451883	3165 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87103	AVIATION DEPT CITY OF ALBQ	35.04897	-106.63104	5160
137	5345336560	5345336524	Sensus	02541	N	5	CF		AMI DIAL	16	000057	2004	25973552	4501 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87107	COA MONTANO BRIDGE MEDIANS	35.14325	-106.66648	4977
138	7625336560	7625336143	Sensus	68543043	N	5	CF		AMI DIAL	16	000057	2008		9521 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87113-2237	ADVANTAGE IQ-MS 1903/CITIGROUP SW SITE # 11390	35.19722	-106.58868	5128
139	5348336560	5348336364	Neptune	E7386	Y	6	CF	HIGH	AMI DIAL	16	000055	2003	25294026	800 ODELIA RD NE	ALBUQUERQUE	NM	87102-1619	ALBUQ HIGH 590	35.09696	-106.63607	5030
140	5348336560	5348336364	Neptune	E7386	Y	6	CF	LOW	AMI DIAL	16	000055	2003	25294415	800 ODELIA RD NE	ALBUQUERQUE	NM	87102-1619	ALBUQ HIGH 590	35.09696	-106.63607	5030
141	2844336560	2844336569	Sensus	01202832	N	6	CF		AMI DIAL	12	000049	2005	25967060	415 TIJERAS AVE NW	ALBUQUERQUE	NM	87102-3233	BERNALILLO COUNTY COURTHOUSE	35.08685	-106.65188	4954
142	7637336560	7637336319	Sensus	23576	N	5	CF		AMI DIAL	16	000052	2003	23311656	3901 LAFAYETTE DR NE	ALBUQUERQUE	NM	87107-4606	LOGAN PROPERTY MANAGEMENT	35.12600	-106.60861	5102
143	7648336560	7648336421	Sensus	49579	N	6	CF		AMI DIAL	12	000049	2004	24928214	1135 BROADWAY BLVD NE	ALBUQUERQUE	NM	87102	USPS,PLANT MAINT.	35.09353	-106.64296	4958
144	7645336560	7645336588	Sensus	67011757	N	5	CF		AMI DIAL	12	000049	2007		1602 KIT CARSON AVE SW	ALBUQUERQUE	NM	87104	COA KIT CARSON PARK	35.08290	-106.66888	4950
145	5325336560	5325336067	Sensus	69360460	N	5	CF	LOW	AMI DIAL	14	000054	2009		1801 YALE BLVD SE	ALBUQUERQUE	NM	87106-4137	ECONO LODGE INN AND SUITES	35.06202	-106.62313	5164
146	5337336560	5337336243	Sensus	26920	N	7	CF		AMI DIAL	19	000058	2004	56027350	3900 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87110	CANYON VISTA/ATTEN:PROP MGR	35.13077	-106.60055	5132
147	0354336560	0354336681	Sensus	47698	N	6	CF		AMI DIAL	14	000054	1988	25962148	1920 YALE BLVD SE	ALBUQUERQUE	NM	87106-4175	MARRIOTT-S.CNTRL REGION/MS913	35.05985	-106.62155	5188
148	2828336560	2828336120	Sensus	51952	N	6	CF		AMI DIAL	19	000059	1973	25651777	700 YALE BLVD SE	ALBUQUERQUE	NM	87106-5114	FAIRVIEW,MEMORIAL	35.07953	-106.62173	5162
149	2824336560	2824336372	Sensus	72652	N	8	CF		AMI DIAL	14	000054	2004	56009127	1 KAFB ST SE	ALBUQUERQUE	NM	87117-0001	Kirtland AFB/ATTN: DENNIS WARREN	35.06753	-106.53897	5446
150	2879336560	2879336781	Sensus	E4451	Y	8	CF		AMI DIAL	16	000052	2004	25558190	6600 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3428	CORONADO CENTER,ATTENTION MARCIA	35.10895	-106.57235	5288
151	2879336560	2879336781	Sensus	E4451	Y	8	CF	FIRE	AMI DIAL	16	000052	2004	19744942	6600 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3428	CORONADO CENTER,ATTENTION MARCIA	35.10895	-106.57235	5288
152	2894734256	2894734207	Badger	09062772	N	7	NMUU		AMI DIAL	NW01	018	2010	70612909	10000 UNIVERSE BLVD NW	Albuquerque	NM	87114	VENTANA RANCH COMMUNITY PARK	35.19388	-106.72741	5420
153	7684336560	7684336303	Badger	09059831	Y	5	CF	HIGH	AMI DIAL	12	000050	2010		4441 OSUNA RD NE	ALBUQUERQUE	NM	87109-4448	ACCOR ECONOMY LODGING MS-1133	35.15516	-106.59062	5166
154	7684336560	7684336303	Badger	09059831	Y	5	CF	LOW	AMI DIAL	12	000050	2010		4441 OSUNA RD NE	ALBUQUERQUE	NM	87109-4448	ACCOR ECONOMY LODGING MS-1133	35.15516	-106.59062	5166
155	7685054172	7685079319	Sensus	67011761	N	5	CF		AMI DIAL	21	000032	2007		3704 LADERA DR NW	ALBUQUERQUE	NM	87120-3777	LADERA SENIOR HOUSING/20pvt.comp	35.12451	-106.71001	5118
156	2899336560	2899336163	Sensus	68372928	N	5	CF		AMI DIAL	12	000049	2008		101 BROADWAY BLVD NE	ALBUQUERQUE	NM	87102-3420	FIRST BAPTIST CHURCH	35.08395	-106.64592	4962
157	7690436560	7690436891	Sensus	67780432	N	6	CF		AMI DIAL	14	000051	2007	25252305	4301 MORRIS ST NE	ALBUQUERQUE	NM	87111-3753	RHAC-MONTGOMERY LLC	35.13196	-106.52529	5640
158	5370436560	5370436446	Sensus	25822	N	7	CF		AMI DIAL	19	000058	2004	24950699	2101 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-5401	COLUMBIA SUSSEX CORPORATION	35.09960	-106.56980	5272
159	5365336560	5365336920	Sensus	70039247	N	5	CF		AMI DIAL	16	000052	2005	25635316	8310 CUTLER AVE NE	ALBUQUERQUE	NM	87110-4719	INEZ PARK	35.10396	-106.55251	5366

160	0389336560	0389336857	Sensus	66297419	N	5	CF		AMI DIAL	12	000049	2006		400 ANDERSON AVE SE	ALBUQUERQUE	NM	87102	EAST SAN JOSE 252	35.06282	-106.64625	4960
161	5368336560	5368336706	Sensus	N5322	Y	6	CF	HIGH	AMI DIAL	12	000049	2004	25964480	1860 GRIEGOS RD NW	ALBUQUERQUE	NM	87107-2835	OF GUADALUPE CH,OUR LADY	35.13247	-106.66547	4972
162	5368336560	5368336706	Sensus	N5322	Y	6	CF	LOW	AMI DIAL	12	000049	2004	25975095	1860 GRIEGOS RD NW	ALBUQUERQUE	NM	87107-2835	OF GUADALUPE CH,OUR LADY	35.13247	-106.66547	4972
163	5388336560	5388336054	Sensus	27347	N	6	CF		AMI DIAL	19	000059	2004	56027347	9000 TRUMBULL AVE SE	ALBUQUERQUE	NM	87123-3166	KINGSLEY MANAGEMENT CORPORATIO	35.06784	-106.54888	5408
164	5390436560	5390436833	Sensus	68543051	N	6	CF		AMI DIAL	19	000058	2009		7501 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1528	CANDLELIGHT SQUARE APTS	35.13229	-106.55997	5366
165	5384336560	5384336265	Sensus	68670354	Y	8	CF		AMI DIAL	14	000051	2009	25651823	6000 CORTADERIA ST NE	ALBUQUERQUE	NM	87111-8002	Broadstone High Desert, LLC c/o ALNC Convservice	35.15009	-106.48928	6110
166	5384336560	5384336265	Sensus	68670354	Y	8	CF	FIRE	AMI DIAL	14	000051	2009	25651812	6000 CORTADERIA ST NE	ALBUQUERQUE	NM	87111-8002	Broadstone High Desert, LLC c/o ALNC Convservice	35.15009	-106.48928	6110
167	5385336560	5385336368	Neptune	48855	N	5	CF		AMI DIAL	21	000060	2004	25634881	2 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	Owner,Current	35.04386	-106.62847	5192
168	7668336560	7668336783	Sensus	23581	N	6	CF		AMI DIAL	12	000049	2003	24967654	200 LOMAS BLVD NW	ALBUQUERQUE	NM	87102-2241	WELLS FARGO 100006 C/O ADVANTAGE IQ	35.09068	-106.64913	4958
169	7650436560	7650436105	Sensus	64126926	N	6	CF		AMI DIAL	16	000055	2007		3901 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3841	SR ALBUQUERQUE APARTMENTS LLC	35.10213	-106.60081	5172
170	7670436560	7670436520	Neptune	N8255	Y	5	CF	LOW	AMI DIAL	19	000058	2004	25632632	2300 SAN MATEO PL NE	ALBUQUERQUE	NM	87110-4051	FREEDOM HIGH SCHOOL 596	35.10550	-106.58575	5214
171	7670436560	7670436520	Neptune	N8255	Y	5	CF	HIGH	AMI DIAL	19	000058	2004	25632629	2300 SAN MATEO PL NE	ALBUQUERQUE	NM	87110-4051	FREEDOM HIGH SCHOOL 596	35.10550	-106.58575	5214
172	2864336560	2864336985	Sensus	67021710	N	7	CF		AMI DIAL	19	000059	2007		801 VASSAR DR NE	ALBUQUERQUE	NM	87106-2725	US INDIAN HOSPITAL (RICHARD E	35.08907	-106.61433	5176
173	7665336560	7665336984	Neptune	39245	N	5	CF		AMI DIAL	14	000054	2004	25630150	1001 SAN PEDRO DR SE	ALBUQUERQUE	NM	87108	PARK,WILSON	35.06177	-106.57766	5312
174	7695045560	7695045319	Rockwell	78003	N	5	CF		AMI DIAL	07	000009	2004	25346471	901 CARLISLE BLVD SE	ALBUQUERQUE	NM	87106	BURTON PARK/DIANE SCENA	35.06570	-106.60480	5324
175	0419336560	0419336644	Sensus	26927	N	6	CF		NON-AMI DIAL	19	000058	1990		7801 CANDELARIA RD NE	ALBUQUERQUE	NM	87110-3757	SANDIA HIGH 550	35.11762	-106.55971	5366
176	0416336560	0416336085	Sensus	41621	N	5	CF		AMI DIAL	21	000060	2004	25961122	1501 SUNPORT PL SE	ALBUQUERQUE	NM	87106-1743	HOLIDAY INN-C/O AMERITUS	35.04937	-106.63280	5132
177	0421436560	0421436360	Sensus	26935	N	6	CF		AMI DIAL	15	000053	2004	56025145	500 PAISANO CT NE	ALBUQUERQUE	NM	87123-1460	LAS COLINAS VILLAGE	35.07355	-106.51393	5542
178	2906336560	2906336977	Sensus	89515	N	5	CF		AMI DIAL	16	000057	2004		1001 WOODWARD PL NE	ALBUQUERQUE	NM	87102-2705	TRI-CORE LABS	35.09202	-106.63705	5038
179	2966336560	2966336123	Sensus	23570	N	5	CF		AMI DIAL	12	000049	2003	24966284	401 2ND ST NW	ALBUQUERQUE	NM	87102-2203	SMG-ALBUQUERQUE CONV. CENTER	35.08773	-106.64970	4956
180	0439336560	0439336063	Sensus	70376	N	6	CF		AMI DIAL	16	000056	2004	25554687	1700 MAE AVE SW	ALBUQUERQUE	NM	87105-2822	VALLE VISTA 370	35.07746	-106.68135	4948
181	2929336560	2929336968	Sensus	68543047	N	6	CF		AMI DIAL	21	000060	2009		6701 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	WEST MESA HIGH SCHOOL 570	35.09454	-106.71480	5104
182	2931436560	2931436660	Sensus	63486	N	6	CF		AMI DIAL	16	000055	1984	24300089	1501 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87102-1637	VILLAGE,NETHERWOOD	35.09898	-106.62796	5078
183	0441436560	0441436749	Sensus	63259	N	6	CF		AMI DIAL	12	000050	2004	25441094	5241 SAN ANTONIO DR NE	ALBUQUERQUE	NM	87109-4135	LA QUINTA-C/O ADVANTAGE IQ	35.16068	-106.58516	5210
184	0436336560	0436336423	Sensus	N1548	Y	5	CF	HIGH	AMI DIAL	16	000055	2004	25889177	1201 MOUNTAIN RD NE	ALBUQUERQUE	NM	87102-2716	LEGION POST 13,AMERICAN	35.09263	-106.63152	5098
185	0436336560	0436336423	Sensus	N1548	Y	5	CF	LOW	AMI DIAL	16	000055	2004	25634856	1201 MOUNTAIN RD NE	ALBUQUERQUE	NM	87102-2716	LEGION POST 13,AMERICAN	35.09263	-106.63152	5098
186	2926336560	2926336366	Sensus	88819	N	5	CF		AMI DIAL	12	000049	2002	13832549	805 COPPER AVE NE	ALBUQUERQUE	NM	87102	1ST UNTD PRESBYTERIAN	35.08397	-106.63825	5024
187	0456336560	0456336786	Sensus	92394	N	5	CF		AMI DIAL	16	000057	1982	24300087	724 SILVER AVE SW	ALBUQUERQUE	NM	87102-3019	ALB, FIRE 1	35.08303	-106.65624	4951
188	0467336560	0467336886	Sensus	26916	N	5	CF		AMI DIAL	16	000052	2004	56027349	2500 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-4343	DRY LAKE LLC/01-47322-25	35.10836	-106.56864	5298
189	2937665560	2937694395	Sensus	66606855	N	5	CF		AMI DIAL	13	000003	2007		4300 ALEXANDER BD NE	ALBUQUERQUE	NM	87107-6801	ALBQ TORTILLA COMPANY	35.12833	-106.61957	5052
190	2946336560	2946336690	Sensus	05658	N	5	CF		AMI DIAL	16	000057	1995	24300170	320 GOLD AVE SW	ALBUQUERQUE	NM	87102-3202	BGK ALBUQUERQUE PROPERTY MANAGEMENT LLC	35.08345	-106.65157	4954
191	2940921536	2940920774	Sensus	67855944	N	5	CF		AMI DIAL	13	000023	2008		800 VISTA MONTE DR NE	ALBUQUERQUE	NM	87113	PARKS & REC / PARK MANAGMENT	35.16232	-106.61121	5038
192	2957336560	2957336772	Sensus	57632	N	5	CF		AMI DIAL	19	000058	2001	25346030	7303 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1512	ARIOSO C/O PACIFICAP PROPERTIES GROUP	35.13088	-106.56313	5340
193	7753336560	7753336131	Neptune	44444	N	6	CF		NON-AMI DIAL	21	000061	1997		12412 BRENTWOOD HILLS BLVD NE	ALBUQUERQUE	NM	87112	PARK,ONATE	35.10503	-106.50602	5730
194	7801436560	7801436117	Sensus	47566	N	6	CF		AMI DIAL	12	000049	2001	25554697	400 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-2167	CITY/COUNTY BLDG. SERVICES DEP	35.08757	-106.65214	4956
195	2971161950	2971128621	Sensus	68230390	N	6	CF		AMI DIAL	13	000016	2007		3901 ALAMEDA "E" NE	ALBUQUERQUE	NM	87122	BALLOON FIESTA - MUSEUM NE	35.18945	-106.59727	5084
196	7777336560	7777336136	Rockwell	70377	N	5	CF		AMI DIAL	15	000053	2004	25975266	8200 DELLWOOD RD NE	ALBUQUERQUE	NM	87110-2416	SANDIA HIGH, 550	35.11726	-106.55549	5384
197	7797336560	7797336567	Sensus	67855940	N	5	CF		AMI DIAL	15	000053	2007	26591927	2613 EUBANK BLVD NE	ALBUQUERQUE	NM	87112-1312	EAST AREA 015	35.11312	-106.53340	5498
198	7786336560	7786336463	Sensus	78965	N	5	CF		AMI DIAL	14	000054	2004	56025039	4308 MESA GRANDE PL SE	ALBUQUERQUE	NM	87108-2711	PARK VIEW ASSOC.	35.07692	-106.59612	5236
199	7792648366	7792648382	Badger	95165174	N	6	NMUU		AMI DIAL	NW04	065	2009	70612907	CIBOLA HS	ALBUQUERQUE	NM	87114	APS SCHOOLS-CIBOLA, # 580	35.20348	-106.66368	5090
200	7793336560	7793336843	Badger	09055731	Y	5	CF	HIGH	AMI DIAL	12	000050	2009		5101 ELLISON ST NE	ALBUQUERQUE	NM	87109-4349	HAMPTON INNS	35.16153	-106.58899	5180
201	7793336560	7793336843	Badger	09055731	Y	5	CF	LOW	AMI DIAL	12	000050	2009		5101 ELLISON ST NE	ALBUQUERQUE	NM	87109-4349	HAMPTON INNS	35.16153	-106.58899	5180
202	5473336560	5473336387	Neptune	44444	N	5	CF		NON-AMI DIAL	21	000061	1997		4631 SORREL LN SW	ALBUQUERQUE	NM	87105-6389	GARDENS,VALLEY	35.00720	-106.70681	4922
203	5497336560	5497336491	Badger	09149915	Y	5	CF	HIGH	AMI DIAL	15	000053	2010		2800 LEXINGTON PL NE	ALBUQUERQUE	NM	87112-1360	LEXINGTON PLACE APTS.	35.11496	-106.53689	5486
204	5497336560	5497336491	Badger	09149915	Y	5	CF	LOW	AMI DIAL	15	000053	2010		2800 LEXINGTON PL NE	ALBUQUERQUE	NM	87112-1360	LEXINGTON PLACE APTS.	35.11496	-106.53689	5486
205	0504336560	0504336009	Sensus	E4436	Y	6	CF	HIGH	AMI DIAL	14	000051	2004	25557137	5301 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3129	PARK MANAGEMENT DIVISION	35.13980	-106.55646	5398
206	0504336560	0504336009	Sensus	E4436	Y	6	CF	FIRE	AMI DIAL	14	000051	2004	25558275	5301 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3129	PARK MANAGEMENT DIVISION	35.13980	-106.55646	5398
207	5493336560	5493336772	Sensus	70015684	N	5	CF		AMI DIAL	12	000049	2009		1315 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1633	REGENCY STONE VENTURES LP	35.10932	-106.62839	5030
208	7815336560	7815336958	Sensus	10705	N	7	CF		AMI DIAL	21	000060	2004	25556973	2601 CENTRAL AVE NW	ALBUQUERQUE	NM	87104-1615	COA BIOLOGICAL PARK	35.09372	-106.67989	4954
209	7807336560	7807363488	Sensus	69360450	N	5	CF		AMI DIAL	14	000054	2009		10500 COPPER POINTE WY NE	ALBUQUERQUE	NM	87123-2840	COPPER POINTE	35.08051	-106.52709	5468
210	3037336560	3037336167	Sensus	32041	N	5	CF		AMI DIAL	16	000052	2004	25454061	3000 AZTEC RD NE	ALBUQUERQUE	NM	87107-4318	AZTEC VILLAGE LLC	35.12009	-106.61044	5112
211	7840436560	7840436003	Sensus	N2669	Y	6	CF	LOW	AMI DIAL	16	000055	2003	25293470	3912 ISLETA BLVD SW	ALBUQUERQUE	NM	87105-6131	HARRISON 415	35.01872	-106.68197	4930
212	7840436560	7840436003	Sensus	N2669	Y	6	CF	HIGH	AMI DIAL	16	000055	2003	25294413	3912 ISLETA BLVD SW	ALBUQUERQUE	NM	87105-6131	HARRISON 415	35.01872	-106.68197	4930
213	3005336560	3005336545	Sensus	N6092	Y	7	CF	FIRE	AMI DIAL	14	000054	2004	25558236	1907 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-4140	UNIVERSITY VILLAGE	35.06009	-106.62416	5160
214	3005336560	3005336545	Sensus	N6092	Y	7	CF		AMI DIAL	14	000054	2004	25558234	1907 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-4140	UNIVERSITY VILLAGE	35.06009	-106.62416	5160
215	3017336560	3017336827	Rockwell	78976	N	5	CF		AMI DIAL	19	000059	2004	25557356	430 GENERAL SOMERVELL ST NE	ALBUQUERQUE	NM	87123-1150	HAWTHORNE 270	35.07888	-106.54221	5416
216	3025336560	3025336996	Badger	09055734	Y	5	CF	HIGH	AMI DIAL	12	000050	2009		5151 JOURNAL CENTER BLVD NE	ALBUQUERQUE	NM	87109-5905	MARRIOTT COURTYARD	35.17130	-106.58580	5182
217	3025336560	3025336996	Badger	09055734	Y	5	CF	LOW	AMI DIAL	12	000050	2009		5151 JOURNAL CENTER BLVD NE	ALBUQUERQUE	NM	87109-5905	MARRIOTT COURTYARD	35.17130	-106.58580	5182
218	3011436560	3011436152	Sensus	47391	N	6	CF		AMI DIAL	19	000058	2004	25440853	4200 SPANISH BIT ST NE	ALBUQUERQUE	NM	87111-4263	ALTA VISTA	35.12907	-106.49625	5930
219	5515336560	5515336882	Badger	09335798	Y	5	CF	HIGH	AMI DIAL	14	000051	2010		4440 MORRIS ST NE	ALBUQUERQUE	NM	87111-6946	HOLIDAY RETIREMENT CORP	35.13333	-106.52436	5656
220	5515336560	5515336882	Badger	09335798	Y	5	CF	LOW	AMI DIAL	14	000051	2010		4440 MORRIS ST NE	ALBUQUERQUE	NM	87111-6946	HOLIDAY RETIREMENT CORP	35.13333	-106.52436	5656
221	3030436560	3030436682	Sensus	23563	N	5	CF		AMI DIAL	16	000057	2003		401 ROMA AVE NW	ALBUQUERQUE	NM	87102-2122	Bernalillo County/Finance	35.08965	-106.65073	4956
222	7847336560	7847336566	Sensus	E2162	Y	5	CF	FIRE	AMI DIAL	14	000051	2004	26482988	4725 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2690	Mr. Beller c/o El Camino Hermoso HOA	35.13867	-106.57867	5264
223	7847336560	7847336566	Sensus	E2162	Y	5	CF	HIGH	AMI DIAL	14	000051	2004	19674316	4725 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2690	Mr. Beller c/o El Camino Hermoso HOA	35.13867	-106.57867	5264
224	5547336560	5547336509	Sensus	70722656	N	5	CF		AMI DIAL	16	000052	2009		6500 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1426	GATEWOOD APTS.	35.12982	-106.57434	5274
225	3048336560	3048336326	Sensus	23582	N	6	CF		AMI DIAL	21	000060	2003	25346165	215 SYCAMORE ST NE	ALBUQUERQUE	NM	87106-4624	MC HENBURK PARTNERS	35.08395	-106.63153	5106
226	0528336560	0528336082	Sensus	67780488	N	6	CF		AMI DIAL	16	000056	2007		7500 BLUEWATER RD NW	ALBUQUERQUE	NM	87121-1962	ACCOUNTS PAYABLE	35.08408	-106.72099	5106
227	5535336560	5535336349	Sensus	68572046	N	6	CF		AMI DIAL	12	000050	2008		8801 HORIZON BLVD NE	ALBUQUERQUE	NM	87113-1533	westlake Horizon Blvd c/o accounts payable	35.18478	-106.60298	5068
228	3045336560	3045336451	Sensus	66287422	N	5	CF		AMI DIAL	16	000052	2006	26702658	6901 ARVADA AVE NE	ALBUQUERQUE	NM	87110-4291	ADVANTAGE IQ MS1933	35.10475	-106.56819	5288
229	0524336560	0524336318	Neptune	12336	N	7	CF		AMI DIAL	19	000059	2004	25973899	1101 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106	UNM PHYSICAL PLANT/ATTN: TONY	35.06672	-106.62424	5142
230	5540436560	5540436927	Sensus	49546	N	5	CF		AMI DIAL	12	000049	2004	24928332	7100 2ND ST NW	ALBUQUERQUE	NM	87107-6702	MESA EQUIPMENT	35.15985	-106.63028	4986
231	3099611201	3099624814	Sensus	68372933	N	7	CF		AMI DIAL	12	000003	2009		2211 LOMAS BLVD NE	ALBUQUERQUE	NM	87106	UNM HOSPITAL	35.08838	-106.61590	5166
232	3084336560	3084336198	Sensus	68572047	N	6	CF		AMI DIAL	14	000051	2008	26704479	6001 MOON ST NE	ALBUQUERQUE	NM	87111-1461	LA PALOMA	35.14645	-106.54661	5506
233	3085336560	3085336295	Badger	09149911	Y	5	CF	HIGH	AMI DIAL	14	000054	2010		4600 GIBSON BLVD SE	ALBUQUERQUE	NM	87108	WESTWIND LANDSCAPING CONSTR.	35.05806	-106.59503	5330
234	3085336560	3085336295	Badger	09149911	Y	5	CF	LOW	AMI DIAL	14	000054	2010		4600 GIBSON BLVD SE	ALBUQUERQUE	NM	87108	WESTWIND LANDSCAPING CONSTR.	35.05806	-106.59503	5330
235	7894336560	7894336526	Sensus	E6741	Y	6	CF		AMI DIAL	16	000057	2004	25254462	8000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-5645	FAA ACCTS PAYABLE,AMZ-110	35.17413	-106.56651	5338
236	7894336560	7894336526	Sensus	E6741	Y	6	CF	FIRE	AMI DIAL	16	000057	2004	25651834	8000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-5645	FAA ACCTS PAYABLE,AMZ-110	35.17413	-106.56651	5338
237	7895336560	7895336717	Sensus	E3433	Y	5	CF	HIGH	AMI DIAL	16	000056	2001	56786361	6801 GLENRIO RD NW	ALBUQUERQUE	NM	87121-7890	RIVER GLEN APARTMENTS	35.10038	-106.71580	5110
238	7895336560	7895336717	Sensus	E3433	Y	5	CF	LOW	AMI DIAL	16	000056	2001	56786293	6801 GLENRIO RD NW	ALBUQUERQUE	NM	87121-7890	RIVER GLEN APARTMENTS	35.10038	-106.71580	5110
239	7895336560	7895336717	Sensus	E3433	Y	5	CF	FIRE	AMI DIAL	16	000056	2001	56786373	6801 GLENRIO RD NW	ALBUQUERQUE	NM	87121-7890	RIVER GLEN APARTMENTS	35.10038	-106.71580	5110

240	3090436560	3090436785	Sensus	78997	N	6	CF		AMI DIAL	16	000056	2004	25975337	18000 CENTRAL AVE SW	ALBUQUERQUE	NM	87121	LOST HORIZON	35.06855	-106.75811	5344
241	7898336560	7898336322	Sensus	00566	N	6	CF		AMI DIAL	16	000055	2000	13831887	4665 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3918	BGK ALBUQUERQUE PROPERTY MANAGEMENT LLC	35.10205	-106.59404	5200
242	0568892335	0568892330	Badger	95165171	N	6	NMUU		AMI DIAL	NW04	065	2009	70612906	1510 ELLISON DR NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-CIBOLA, # 580	35.20442	-106.66438	5084
243	0564336560	0564336915	Sensus	N6900	Y	5	CF		AMI DIAL	12	000049	2004	25435865	101 WOODWARD RD SW	ALBUQUERQUE	NM	87102	BNSF RAILWAY COMPANY C/O LPB ENERGY MANAGEMENT	35.04447	-106.65486	4942
244	0564336560	0564336915	Sensus	N6900	Y	5	CF	FIRE	AMI DIAL	12	000049	2004	25555207	101 WOODWARD RD SW	ALBUQUERQUE	NM	87102	BNSF RAILWAY COMPANY C/O LPB ENERGY MANAGEMENT	35.04447	-106.65486	4942
245	5555336560	5555336767	Sensus	68543045	N	5	CF		AMI DIAL	15	000053	2008		10511 LEXINGTON AVE NE	ALBUQUERQUE	NM	87112	PARK,MATHESON	35.11206	-106.52298	5554
246	3065336560	3065336863	Sensus	66287420	N	5	CF		AMI DIAL	16	000056	2006		2600 AMERICARE CT NW	ALBUQUERQUE	NM	87120-6182	VILLA HERMOSA APTS.	35.11423	-106.70388	5107
247	5560436560	5560436289	Sensus	78983	N	5	CF		AMI DIAL	19	000058	2004	25557451	6000 UPTOWN BLVD NE	ALBUQUERQUE	NM	87110-4162	6000UPTOWNPLAZAPARTN	35.10536	-106.57698	5254
248	3070436560	3070436387	Sensus	70015690	N	5	CF		AMI DIAL	21	000060	2009		6001 ILIFF RD NW	ALBUQUERQUE	NM	87121-0906	BUFFET PARTNERS LP.(FURRS)	35.10346	-106.70663	5098
249	0579336560	0579336743	Sensus	N3606	Y	7	CF	FIRE	AMI DIAL	14	000051	2003		4321 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1109	AZTEC VILLAGE C/O PACIFICAP PROPERTIES GROUP	35.13103	-106.58825	5190
250	0579336560	0579336743	Sensus	N3606	Y	7	CF		AMI DIAL	14	000051	2003	24950695	4321 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1109	AZTEC VILLAGE C/O PACIFICAP PROPERTIES GROUP	35.13103	-106.58825	5190
251	3057336560	3057336585	Sensus	63524298	N	5	CF		AMI DIAL	14	000051	2009	26592383	6121 OSUNA RD NE	ALBUQUERQUE	NM	87109-2555	Chateau Apartments	35.14353	-106.57891	5256
252	5575336560	5575333184	Neptune	E7037	Y	6	CF	FIRE	NON-AMI DIAL	16	000056	1999		9301 VOLCANO RD NW	ALBUQUERQUE	NM	87121-2034	WESTRIDGE LTD C/O GINA SEELEY	35.07644	-106.73723	5168
253	5575336560	5575333184	Neptune	E7037	Y	6	CF		NON-AMI DIAL	16	000056	1999		9301 VOLCANO RD NW	ALBUQUERQUE	NM	87121-2034	WESTRIDGE LTD C/O GINA SEELEY	35.07644	-106.73723	5168
254	5578336560	5578336959	Sensus	60941625	N	6	CF		AMI DIAL	21	000060	2007		1500 INDIAN SCHOOL RD NW	ALBUQUERQUE	NM	87104-2306	CTR FOR WOMEN,JOB CORP	35.11050	-106.66257	4964
255	7872286117	7872286191	Badger	17150090	N	6	NMUU		AMI DIAL	NW04	053	2009	4425909	CALLE CUERVO (NW) NW	ALBUQUERQUE	NM	87114	RIVERWALK APARTMENTS	35.20766	-106.64646	5013
256	7855336560	7855336831	Sensus	70033151	N	5	CF		AMI DIAL	16	000056	2005	25634622	1400 MENAUL BLVD NW	ALBUQUERQUE	NM	87107	PARK,FOUR-H	35.11248	-106.66038	4964
257	7874336560	7874336179	Sensus	66588870	N	5	CF		AMI DIAL	16	000057	2007		4800 ALAMEDA BLVD NE	ALBUQUERQUE	NM	87113-1647	CENTRAL NEW MEXICO COMMUNITY COLLEGE	35.18441	-106.59404	5114
258	7875336560	7875336260	Sensus	67780484	N	6	CF		AMI DIAL	12	000050	2007		8901 JEFFERSON ST NE	ALBUQUERQUE	NM	87113-2226	DESERT WILLOW APTS	35.18633	-106.59212	5124
259	7858336560	7858336629	Sensus	47150	N	6	CF		AMI DIAL	16	000057	1984	24300219	412 GOLD AVE SW	ALBUQUERQUE	NM	87102-3224	JTS SIMS C/O GRUBB & ELLIS/NM	35.08351	-106.65202	4954
260	7878336560	7878336016	Sensus	79004	N	6	CF		AMI DIAL	19	000059	2004	25557358	4700 COAL AVE SE	ALBUQUERQUE	NM	87108-2804	HIGHLAND 520	35.07420	-106.59332	5244
261	7860436560	7860436366	Sensus	66287421	N	6	CF		AMI DIAL	16	000055	2006		3801 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106-5605	ETHICON ENDO/THOMAS MONTOYA	35.02734	-106.63237	5236
262	7880436560	7880436747	Sensus	32040	N	5	CF		AMI DIAL	19	000059	2001	25554623	14225 COPPER AVE NE	ALBUQUERQUE	NM	87123-1859	COPPERFIELD APTS	35.07938	-106.49001	5858
263	5594336560	5594336472	Sensus	67021688	N	6	CF		AMI DIAL	16	000057	2006		1000 WOODWARD PL NE	ALBUQUERQUE	NM	87102-2704	WINE GARDNER & HAMMONS	35.09235	-106.63648	5026
264	5595336560	5595336647	Sensus	05183	N	5	CF		AMI DIAL	14	000054	2003	24945545	2601 MULBERRY ST SE	ALBUQUERQUE	NM	87106-5223	WR Management DBA Country Inn & Suites	35.05665	-106.63536	5050
265	0629336560	0629336892	Sensus	N9456	N	6	CF		AMI DIAL	15	000053	1990	25556863	12400 LOMAS BLVD NE	ALBUQUERQUE	NM	87112	WILSON STADIUM 715	35.09010	-106.63596	5036
266	0626336560	0626336312	Sensus	E5185	N	5	CF		AMI DIAL	16	000055	2004	25557032	717 ENCINO PL NE	ALBUQUERQUE	NM	87102-2611	ENCINO MEDICAL PLAZA CONDO ASSOC	35.08874	-106.63178	5126
267	5580436560	5580436690	Sensus	67136102	N	5	CF		AMI DIAL	14	000054	2008		11100 GIBSON BLVD SE	ALBUQUERQUE	NM	87123-3403	SOUTH POINT LLC.	35.05512	-106.52001	5518
268	7908336560	7908336819	Neptune	N4324	Y	5	CF	HIGH	AMI DIAL	15	000053	2004	25634957	12415 BRENTWOOD HILLS BLVD NE	ALBUQUERQUE	NM	87112-3611	ONATE ELEM 227	35.10478	-106.50327	5766
269	7908336560	7908336819	Neptune	N4324	Y	5	CF	LOW	AMI DIAL	15	000053	2004	25634956	12415 BRENTWOOD HILLS BLVD NE	ALBUQUERQUE	NM	87112-3611	ONATE ELEM 227	35.10478	-106.50327	5766
270	3118336560	3118336857	Sensus	49555	N	5	CF		AMI DIAL	19	000059	2004	24928268	1410 CHELWOOD BLVD NE	ALBUQUERQUE	NM	87112	CHELWOOD 236	35.09498	-106.50555	5722
271	3201436560	3201436002	Badger	09335797	Y	5	CF	HIGH	AMI DIAL	14	000054	2009		717 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106-4329	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.07657	-106.62841	5134
272	3201436560	3201436002	Badger	09335797	Y	5	CF	LOW	AMI DIAL	14	000054	2009		717 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106-4329	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.07657	-106.62841	5134
273	0651436560	0651436015	Sensus	70015687	N	5	CF		AMI DIAL	16	000052	2009	25345803	2015 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1716	COMFORT INN MIDTOWN	35.11023	-106.62367	5052
274	0646336560	0646336614	Sensus	23555	N	5	CF		AMI DIAL	14	000054	2003	25556250	400 MAPLE ST SE	ALBUQUERQUE	NM	87106-4855	GIPSON ENTERPRISES	35.07836	-106.63084	5108
275	0656150282	0656164469	Sensus	68230378	N	5	CF		AMI DIAL	16	000018	2007		8301 PALOMAS AVE NE	ALBUQUERQUE	NM	87109-5203	Paloma Landing LLC	35.17321	-106.55330	5452
276	0657336560	0657336699	Sensus	66250117	N	5	CF		AMI DIAL	16	000052	2007	26702641	6910 NATALIE AVE NE	ALBUQUERQUE	NM	87110-1323	CLEVELAND JR HIGH 407	35.12869	-106.56888	5298
277	0649336560	0649336324	Neptune	N3299	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25632612	5300 CLAREMONT AVE NE	ALBUQUERQUE	NM	87110-3102	QUEEN OF HEAVEN PARSH	35.11270	-106.58420	5224
278	0649336560	0649336324	Neptune	N3299	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25630143	5300 CLAREMONT AVE NE	ALBUQUERQUE	NM	87110-3102	QUEEN OF HEAVEN PARSH	35.11270	-106.58420	5224
279	0666336560	0666336066	Sensus	49558	N	5	CF		AMI DIAL	12	000049	2001	25451848	308 COPPER AVE NW	ALBUQUERQUE	NM	87102	AT & T ACCOUNTS	35.08545	-106.65102	4954
280	7986353737	7986353766	Badger	95006903	N	5	NMUU		AMI DIAL	NW02	022	2010	70696939	PARADISE PARK NW	ALBUQUERQUE	NM	87114	BERNALILLO COUNTY STE FACILITY	35.20360	-106.75807	5558
281	7987336560	7987336396	Sensus	67011758	N	5	CF		AMI DIAL	15	000053	2007	26591225	2201 AMBASSADOR RD NE	ALBUQUERQUE	NM	87112-2725	BUENA SO APTS,LA VIDA	35.10612	-106.54478	5414
282	7983336560	7983336680	Sensus	27500	N	5	CF		AMI DIAL	14	000051	2004	25345773	10500 ACADEMY RD NE	ALBUQUERQUE	NM	87111-7306	MONTEBELLO INC C/O 5 STAR	35.15215	-106.52217	5744
283	3173336560	3173336339	Neptune	44444	N	5	CF		NON-AMI DIAL	21	000061	1997		4200 HANNETT AVE NE	ALBUQUERQUE	NM	87110	Owner,Current	35.09854	-106.59868	5184
284	3197336560	3197336434	Sensus	32039	N	5	CF		AMI DIAL	15	000053	2002	25555437	2200 LESTER DR NE	ALBUQUERQUE	NM	87112-2600	JAMBOREE MANAGEMENT	35.10550	-106.54576	5406
285	5656982780	5656905856	Sensus	61072158	Y	5	CF	LOW	AMI DIAL	01	000007	2008		301 ARNO ST NE	ALBUQUERQUE	NM	87102	BELVEDERE,ASSO	35.08545	-106.64310	4978
286	5656982780	5656905856	Sensus	61072158	Y	5	CF	HIGH	AMI DIAL	01	000007	2008		301 ARNO ST NE	ALBUQUERQUE	NM	87102	BELVEDERE,ASSO	35.08545	-106.64310	4978
287	5606765151	5606717952	Badger	95008115	N	7	NMUU		AMI DIAL	NW03	033	2008	81376012	10035 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	DESERT GREENS GOLF COURSE INC.	35.19762	-106.68509	5254
288	5608336560	5608336760	Sensus	26922	N	5	CF		AMI DIAL	15	000053	2004	56025151	25 HOTEL CIR NE	ALBUQUERQUE	NM	87123-1202	QUALITY INN	35.08424	-106.52955	5456
289	5629132455	5629132415	Badger	94656656	N	5	NMUU		AMI DIAL	NW04	053	2009	70139857	3305 CALLE CUERVO NW #13	ALBUQUERQUE	NM	87114	SCI CAMINO REAL FUND LLC	35.20726	-106.64548	5010
290	3235336560	3235336273	Sensus	N0712	Y	6	CF	HIGH	AMI DIAL	16	000057	2004	25555215	8000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-5645	FAA ACCTS PAYABLE,AMZ-110	35.17413	-106.56844	5324
291	3235336560	3235336273	Sensus	N0712	Y	6	CF	FIRE	AMI DIAL	16	000057	2004	25554829	8000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-5645	FAA ACCTS PAYABLE,AMZ-110	35.17413	-106.56844	5324
292	8016336560	8016336012	Sensus	75923	N	6	CF		AMI DIAL	16	000057	2004	25961650	2115 2ND ST SW	ALBUQUERQUE	NM	87102	Owner,Current	35.06085	-106.65304	4944
293	0700436560	0700436341	Sensus	68372929	N	5	CF		AMI DIAL	19	000059	2008	25555198	9107 ORLANDO PL NE	ALBUQUERQUE	NM	87111-3333	PARK MANAGEMENT DIVISION	35.12427	-106.54104	5484
294	0686336560	0686336429	Sensus	92579	N	5	CF		AMI DIAL	16	000055	2003	25556935	2800 VAIL AVE SE	ALBUQUERQUE	NM	87106-3128	EAGLES NEST CONDOS	35.06143	-106.61414	5268
295	3215336560	3215336812	Hersey	N3710	Y	6	CF	FIRE	AMI DIAL	16	000055	2004	25452241	2503 COORS BLVD SW	ALBUQUERQUE	NM	87121-5018	RIVERSIDE WEST, LLC/ ATTN GILBERT LOVATO	35.04341	-106.71261	4980
296	3215336560	3215336812	Hersey	N3710	Y	6	CF	LOW	AMI DIAL	16	000055	2004	25652025	2503 COORS BLVD SW	ALBUQUERQUE	NM	87121-5018	RIVERSIDE WEST, LLC/ ATTN GILBERT LOVATO	35.04341	-106.71261	4980
297	3215336560	3215336812	Hersey	N3710	Y	6	CF	HIGH	AMI DIAL	16	000055	2004	25452253	2503 COORS BLVD SW	ALBUQUERQUE	NM	87121-5018	RIVERSIDE WEST, LLC/ ATTN GILBERT LOVATO	35.04341	-106.71261	4950
298	3219336560	3219336606	Sensus	25150	N	6	CF		AMI DIAL	19	000059	2004	56025150	1400 VIRGINIA ST NE	ALBUQUERQUE	NM	87110-7626	VIRGINIAN APARTMENTS	35.09610	-106.55261	5352
299	5683336560	5683336603	Sensus	65857559	N	5	CF		AMI DIAL	16	000057	2006	25554372	801 LOCUST PL NE	ALBUQUERQUE	NM	87102-1651	VILLAGE APTS,SUN	35.10160	-106.63377	5028
300	5737336560	5737336338	Rockwell	78973	N	5	CF		AMI DIAL	19	000058	2004	25557302	4400 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1298	SUN PLAZA APARTMENTS	35.13080	-106.59384	5164
301	5745336560	5745336604	Sensus	70002540	N	5	CF		AMI DIAL	14	000051	2005	25630332	3515 CHERAZ RD NE	ALBUQUERQUE	NM	87111	Aztec Park	35.12134	-106.54074	5482
302	5748336560	5748336440	Sensus	23587	N	6	CF		AMI DIAL	16	000055	2003	24967647	1127 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1740	UNM PHYSICAL PLANT	35.09327	-106.62600	5114
303	8039336560	8039336006	Sensus	N4453	Y	8	CF	LOW	AMI DIAL	16	000056	2004	25557672	9169 COORS BLVD NW	ALBUQUERQUE	NM	87120-3101	SWRO Division of accounting	35.17717	-106.67013	4990
304	8039336560	8039336006	Sensus	N4453	Y	8	CF	HIGH	AMI DIAL	16	000056	2004	25558233	9169 COORS BLVD NW	ALBUQUERQUE	NM	87120-3101	SWRO Division of accounting	35.17717	-106.67013	4990
305	0714336560	0714336188	Sensus	28848	N	5	CF		AMI DIAL	19	000058	1988	26482978	5400 CUTLER AVE NE	ALBUQUERQUE	NM	87110-4073	NEW FUTURES SCHOOL-549	35.10544	-106.58461	5218
306	0718336560	0718336968	Sensus	N3614	Y	5	CF	FIRE	AMI DIAL	21	000060	2004	25554514	3100 ATRISCO DR NW	ALBUQUERQUE	NM	87120	VILLA DE PAZ HOMEOWNER'S ASSC	35.12371	-106.70205	5109
307	0718336560	0718336968	Sensus	N3614	Y	5	CF		AMI DIAL	21	000060	2004	25554654	3100 ATRISCO DR NW	ALBUQUERQUE	NM	87120	VILLA DE PAZ HOMEOWNER'S ASSC	35.12371	-106.70205	5109
308	5705336560	5705336704	Sensus	67780485	N	6	CF		AMI DIAL	16	000056	2007		1919 LADERA DR NW	ALBUQUERQUE	NM	87120-6125	RIO VOLCAN APARTMENTS 90s	35.10510	-106.72747	5180
309	5696336560	5696336616	Sensus	68543037	N	5	CF		AMI DIAL	14	000054	2008		624 GEORGIA ST SE	ALBUQUERQUE	NM	87108-3806	EMERSON 255	35.06777	-106.57192	5322
310	5709336560	5709336509	Sensus	26929	N	6	CF		AMI DIAL	16	000052	2004	56025036	6300 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1422	APARTMENTS,GATEWOOD	35.13068	-106.57540	5270
311	5725336560	5725336162	Sensus	N4102	Y	5	CF	HIGH	AMI DIAL	12	000050	2004	24869511	5251 SAN ANTONIO DR NE	ALBUQUERQUE	NM	87109-4135	QUALITY SUITES	35.16056	-106.58401	5220
312	5725336560	5725336162	Sensus	N4102	Y	5	CF	LOW	AMI DIAL	12	000050	2004	24869512	5251 SAN ANTONIO DR NE	ALBUQUERQUE	NM	87109-4135	QUALITY SUITES	35.16056	-106.58401	5220
313	3274336560	3274336039	Sensus	77997	N	5	CF		AMI DIAL	21	000060	2004	25451612	3 UNSER BLVD NW	ALBUQUERQUE	NM	87120	PARKS & RECREATION	35.12758	-106.72302	5154
314	3275336560	3275336111	Sensus	67011755	N	5	CF		AMI DIAL	16	000052	2007	25986459	7201 PROSPECT PL NE	ALBUQUERQUE	NM	87110-4238	WOODMARK,UPTOWN	35.10544	-106.56475	5308
315	0738336560	0738336269	Sensus	45459	N	5	CF		AMI DIAL	21	000060	2004	25451588	6015 ILIFF RD NW	ALBUQUERQUE	NM	87121-0906	ACCOR ECONOMY LODGING MS-1133	35.10347	-106.70736	5097
316	5730436560	5730436758	Rockwell	78987	N	5	CF		AMI DIAL	21	000060	2004	25558284	1500 INDIAN SCHOOL RD NW	ALBUQUERQUE	NM	87104-2306	ALBUQ JOB CORP	35.10738	-106.66143	4964
317	3278336560	3278336883	Sensus	00789	N	5	CF		AMI DIAL	16	000057	2004	25975270	5100 2ND ST NW	ALBUQUERQUE	NM	87107-4009	BERNALILLO COUNTY FINANCE DEPT.	35.13279	-106.63876	4974
318	8036336560	8036336385	Sensus	46891	N	5	CF		AMI DIAL	12	000049	2004	25451614	500 WALTER ST NE	ALBUQUERQUE	NM	87102-2534	LOVELACE MEDICAL CENTER	35.08731	-106.64002	4986
319	3247336560	3247336433	Sensus	68372931	N	7	CF		AMI DIAL	14	000051	2009	19673305	4949 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2519	CASA TIERRA APARTMENTS	35.14137	-106.57717	5278

320	3255336560	3255336700	Sensus	21001	N	7	CF		AMI DIAL	12	000049	2004	25737366	333 LOMAS BLVD NW	ALBUQUERQUE	NM	87102-2272	G.S.A. FINANCE DIV.	35.09234	-106.64910	4952
321	8021436560	8021436322	Sensus	05646	N	5	CF		AMI DIAL	15	000053	2004	25558227	8300 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110-7613	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.09286	-106.55158	5358
322	3240436560	3240436854	Rockwell	72651	N	8	CF		AMI DIAL	14	000054	2004	56025239	1606 SAN PEDRO DR SE	ALBUQUERQUE	NM	87110	PARK MANAGEMENT DIVISION	35.05293	-106.57762	5344
323	3308336560	3308336682	Neptune	E0418	N	5	CF	LOW	AMI DIAL	14	000051	2004	26703968	12015 TIVOLI AVE NE	ALBUQUERQUE	NM	87111-5309	HOOVER JR HIGH 418	35.12083	-106.50551	5742
324	8072937678	8072995278	Badger	1988293	N	6	NMUU		AMI DIAL	NW04	070	2008	1988293	10501 GOLF COURSE RD NW	ALBUQUERQUE	NM	87114	LOVELACE HEALTH SYSTEM, INC.	35.20792	-106.67725	5208
325	8076336560	8076336162	Sensus	05451	N	5	CF		AMI DIAL	16	000056	2004	25346101	1600 12TH ST NW	ALBUQUERQUE	NM	87104-2204	GSA 65235344,P0725111,07020806	35.10285	-106.65757	4962
326	0754336560	0754336754	Sensus	80565	N	6	CF		AMI DIAL	14	000054	1990	13833441	300 VALENCIA DR SE	ALBUQUERQUE	NM	87108-3058	BROOKDALE SENIOR LIVING INC., SITE # 00759	35.07483	-106.58087	5282
327	0789336560	0789336940	Sensus	71758	N	5	CF		AMI DIAL	14	000054	2004	56025235	400 JACKSON ST SE	ALBUQUERQUE	NM	87108-2846	SCOTT HIGHLAND POOL	35.07405	-106.58927	5260
328	5790436560	5790436910	Sensus	68543035	N	5	CF		AMI DIAL	21	000060	2008		6325 MILNE RD NW	ALBUQUERQUE	NM	87120-1691	CHAPPAREL 234	35.13218	-106.71183	5112
329	5788336560	5788336149	Sensus	09741	N	6	CF		AMI DIAL	14	000054	2004	25557456	12300 HORSESHOE TRL SE	ALBUQUERQUE	NM	87123-3816	MEADOWS REALTY C/O FOUR HILLS	35.06659	-106.51355	5552
330	8067336560	8067336810	Sensus	69360457	N	5	CF		AMI DIAL	19	000058	2009		7600 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1532	VIEW APTS,PINNACLE	35.13061	-106.55935	5370
331	5784336560	5784336322	Sensus	68230388	N	6	CF		AMI DIAL	16	000052	2007	26702662	2500 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1865	MIDTOWN,HOSPITALITY	35.10873	-106.61459	5100
332	5785336560	5785336457	Badger	09059823	Y	5	CF	HIGH	AMI DIAL	21	000060	2009		3400 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87117	COA AVIATION DEPT.	35.04074	-106.62448	5250
333	5785336560	5785336457	Badger	09059823	Y	5	CF	LOW	AMI DIAL	21	000060	2009		3400 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87117	COA AVIATION DEPT.	35.04074	-106.62448	5250
334	5765336560	5765336000	Sensus	67021695	N	6	CF		AMI DIAL	21	000060	2008		3401 LOMAS BLVD NE	ALBUQUERQUE	NM	87106	MEMORIAL PARK,BATAAN	35.08787	-106.60563	5188
335	3304336560	3304336971	Sensus	28847	N	5	CF		AMI DIAL	21	000060	2004	25273862	701 ELECTRIC AV SE	ALBUQUERQUE	NM	87105	PNM RESOURCES GENERAL SERVICES DEPARTMENT	35.02523	-106.64451	5016
336	5770436560	5770436539	Sensus	46882	N	5	CF		AMI DIAL	19	000059	2004	24966252	712 GIRARD BLVD NE	ALBUQUERQUE	NM	87106-2714	JEFFERSON MIDDLE, 425	35.08843	-106.61304	5178
337	3294336560	3294336405	Sensus	66250119	N	5	CF		AMI DIAL	21	000060	2007		6707 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	Owner,Current	35.09451	-106.71765	5108
338	3295336560	3295336571	Sensus	01606098	N	6	CF		AMI DIAL	14	000054	2005	25967029	820 LOUISIANA BLVD SE	ALBUQUERQUE	NM	87108-1087	Aspen Ridge Apartments	35.06342	-106.56855	5338
339	3298336560	3298336206	Sensus	69360452	N	6	CF		AMI DIAL	15	000053	2008	26591940	557 TRAMWAY BLVD NE	ALBUQUERQUE	NM	87123-2145	COPPER RIDGE APTS RIVERSTONE RESIDENTIAL	35.07792	-106.49765	5736
340	5768336560	5768336802	Sensus	44021	N	6	CF		AMI DIAL	12	000049	2002	24300171	600 2ND ST NW	ALBUQUERQUE	NM	87102-2265	COA FACILITIES MAINT/PLAZA	35.08891	-106.64807	4956
341	5750436560	5750436124	Sensus	78986	N	5	CF		AMI DIAL	16	000055	2004	25557136	4001 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3816	ALTURA OFFICE COMPLEX ATTN: NAN AYZE, ACCOUNTING	35.10209	-106.60010	5172
342	3383336560	3383336527	Sensus	N1470	Y	6	CF	LOW	AMI DIAL	14	000051	2004	24906230	4777 TRAMWAY BLVD NE	ALBUQUERQUE	NM	87111-2974	CURRENT,OWNER	35.13428	-106.49884	5932
343	3383336560	3383336527	Sensus	N1470	Y	6	CF	HIGH	AMI DIAL	14	000051	2004	25632669	4777 TRAMWAY BLVD NE	ALBUQUERQUE	NM	87111-2974	CURRENT,OWNER	35.13428	-106.49884	5932
344	3387336560	3387336263	Sensus	E9050	Y	8	CF	LOW	AMI DIAL	19	000058	2004	56009977	6401 ACADEMY RD NE	ALBUQUERQUE	NM	87109-3350	ACADEMY TERRACE APTS-PMG C/O VELOCITY	35.14635	-106.57988	5244
345	3387336560	3387336263	Sensus	E9050	Y	8	CF	HIGH	AMI DIAL	19	000058	2004	56025031	6401 ACADEMY RD NE	ALBUQUERQUE	NM	87109-3350	ACADEMY TERRACE APTS-PMG C/O VELOCITY	35.14635	-106.57988	5244
346	5869336560	5869336629	Sensus	23570	N	6	CF		AMI DIAL	12	000049	2003		134 14TH ST SW	ALBUQUERQUE	NM	87102-2822	PARK PLAZA CONDOS	35.08756	-106.66296	4954
347	8128336560	8128336044	Sensus	54833	N	5	CF		AMI DIAL	16	000056	2004	25454057	1440 GATEWOOD RD SW	ALBUQUERQUE	NM	87105-3717	ARMIJO 215	35.06119	-106.67438	4944
348	8110436560	8110436408	Sensus	49544	N	5	CF		AMI DIAL	12	000050	2004	24928262	111 MONTANO RD NE	ALBUQUERQUE	NM	87107-5028	EARTHGRAINS 25032/AP40051800	35.13753	-106.63037	4982
349	0839336560	0839336156	Sensus	05664	N	5	CF		AMI DIAL	16	000052	2003	26592028	4300 PAN AMERICAN PL NE	ALBUQUERQUE	NM	87107-4706	DESERT CREEK APTS.	35.13074	-106.61141	5094
350	0819336560	0819336739	Sensus	E6748	Y	6	CF		AMI DIAL	12	000050	2004	25408358	6504 HARPER DR NE	ALBUQUERQUE	NM	87109-3604	ARROYO DEL OSO 329	35.15326	-106.57499	5282
351	0819336560	0819336739	Sensus	E6748	Y	6	CF	FIRE	AMI DIAL	12	000050	2004	25554386	6504 HARPER DR NE	ALBUQUERQUE	NM	87109-3604	ARROYO DEL OSO 329	35.15326	-106.57499	5282
352	0803552129	0803523322	Sensus	66705607	N	5	CF		AMI DIAL	13	000017	2006	57942529	5701 BALLOON FIESTA PKWY NE	ALBUQUERQUE	NM	87113-2447	BLUE CROSS BLUE SHIELD HEADQUARTERS	35.19940	-106.57847	5202
353	0821436560	0821436436	Sensus	46896	N	6	CF		AMI DIAL	14	000054	1984	25557274	5901 ZUNI RD SE	ALBUQUERQUE	NM	87108-3073	BERNALILLO COUNTY FINANCE DEPT	35.07346	-106.58084	5284
354	0816336560	0816336178	Sensus	N3124	Y	7	CF		AMI DIAL	16	000055	2004	25557452	2910 YALE BLVD SE	ALBUQUERQUE	NM	87106-4242	APHM SUNPORT LLC	35.05146	-106.62180	5272
355	0816336560	0816336178	Sensus	N3124	Y	7	CF	FIRE	AMI DIAL	16	000055	2004	25557270	2910 YALE BLVD SE	ALBUQUERQUE	NM	87106-4242	APHM SUNPORT LLC	35.05146	-106.62180	5272
356	3425336560	3425336086	Badger	09055730	Y	5	CF	HIGH	AMI DIAL	16	000052	2009		2401 WELLESLEY DR NE	ALBUQUERQUE	NM	87107-1811	Suburban Extended Stay Hotel	35.10787	-106.60721	5114
357	3425336560	3425336086	Badger	09055730	Y	5	CF	LOW	AMI DIAL	16	000052	2009		2401 WELLESLEY DR NE	ALBUQUERQUE	NM	87107-1811	Suburban Extended Stay Hotel	35.10787	-106.60721	5114
358	3437336560	3437336262	Sensus	49560	N	5	CF		AMI DIAL	14	000051	2003	24928259	3825 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-0900	HILLCREST PARK	35.13193	-106.60237	5126
359	3445336560	3445336540	Neptune	33158	N	5	CF		AMI DIAL	16	000055	2004	25889379	2613 MORROW AVE NE	ALBUQUERQUE	NM	87106	Owner,Current	35.10266	-106.61789	5128
360	0867336560	0867336963	Badger	79008	N	7	CF		AMI DIAL	16	000052	2004	56025028	6400 UPTOWN BLVD NE	ALBUQUERQUE	NM	87110-4202	CITY CENTER LOC 180	35.10198	-106.57299	5256
361	3409336560	3409336436	Sensus	78996	N	6	CF		AMI DIAL	16	000052	2004	25557306	4515 SHEPARD RD NE	ALBUQUERQUE	NM	87110-1848	THE ARBORS	35.11918	-106.59312	5174
362	3417336560	3417336884	Rockwell	78995	N	5	CF		AMI DIAL	19	000059	2004	25557308	7801 MARBLE AVE NE	ALBUQUERQUE	NM	87110-7354	SENA PROPERTIES, INC	35.08864	-106.56038	5330
363	3396336560	3396336559	Sensus	78982	N	5	CF		AMI DIAL	19	000059	2004	25554375	1101 SAN PEDRO DR SE	ALBUQUERQUE	NM	87108	WILSON MIDDLE, 470	35.06126	-106.57767	5312
364	3416991035	3416908302	Badger	95008111	N	7	NMUU		AMI DIAL	NW03	033	2008	81375397	10035 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	DESERT GREENS GOLF COURSE INC.	35.19762	-106.68509	5254
365	3405336560	3405336631	Sensus	67780487	N	6	CF		AMI DIAL	21	000060	2007		9911 AVALON RD NW	ALBUQUERQUE	NM	87121-7617	FLYING J INC.	35.07870	-106.74502	5240
366	0856336560	0856336881	Neptune	N5167	Y	5	CF	HIGH	AMI DIAL	16	000056	2004	25889250	757 98TH ST SW	ALBUQUERQUE	NM	87121-7840	DEEMER,JAMES R. & LINDA M.	35.05910	-106.74318	5180
367	0856336560	0856336881	Neptune	N5167	Y	5	CF	LOW	AMI DIAL	16	000056	2004	25889237	757 98TH ST SW	ALBUQUERQUE	NM	87121-7840	DEEMER,JAMES R. & LINDA M.	35.05910	-106.74318	5180
368	8164336560	8164336845	Sensus	69360454	N	5	CF		AMI DIAL	21	000060	2008	16250137	5700 BOGART ST NW	ALBUQUERQUE	NM	87120-4215	PARK MGMT/MICHELLE	35.14945	-106.71654	5162
369	0859336560	0859336515	Sensus	66287430	N	6	CF		AMI DIAL	19	000059	2006		525 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-4023	Central NM Community College/Cheryl Hall	35.07511	-106.62527	5148
370	5897336560	5897336586	Sensus	69432670	Y	7	CF	HIGH	AMI DIAL	15	000053	2010		10000 MENAUL BLVD NE	ALBUQUERQUE	NM	87112-2312	MONARCH INVESTMENT & MANAGEMENT GROUP,LLC	35.10878	-106.52959	5508
371	5897336560	5897336586	Sensus	69432670	Y	7	CF	LOW	AMI DIAL	15	000053	2010		10000 MENAUL BLVD NE	ALBUQUERQUE	NM	87112-2312	MONARCH INVESTMENT & MANAGEMENT GROUP,LLC	35.10878	-106.52959	5508
372	5877336560	5877336155	Sensus	49587	N	7	CF		AMI DIAL	15	000053	2004	24508095	3400 WYOMING BLVD NE	ALBUQUERQUE	NM	87111-4431	TGM/SEDONA RIDGE	35.12339	-106.54993	5426
373	5893336560	5893336862	Sensus	97830	N	5	CF		AMI DIAL	14	000051	2004	23311647	7015 VENTURA ST NE	ALBUQUERQUE	NM	87109	PARK MGMT.	35.15959	-106.54275	5548
374	5901436560	5901436136	Rockwell	11548	N	8	CF		AMI DIAL	16	000055	1983	25557360	300 NORTH ST SW	ALBUQUERQUE	NM	87105	RECLAMATION PLT,PWD	35.01623	-106.66391	4937
375	3485336560	3485336384	Sensus	E6082	Y	6	CF	LOW	NON-AMI DIAL	14	000051	2000		10301 SAN FRANCISCO DR NE	ALBUQUERQUE	NM	87122-3437	ALBUQUERQUE NEW MEXICO TEMPLE	35.16814	-106.52472	5736
376	3485336560	3485336384	Sensus	E6082	Y	6	CF	HIGH	NON-AMI DIAL	14	000051	2000		10301 SAN FRANCISCO DR NE	ALBUQUERQUE	NM	87122-3437	ALBUQUERQUE NEW MEXICO TEMPLE	35.16814	-106.52472	5736
377	3488336560	3488336073	Sensus	68572048	N	6	CF		AMI DIAL	14	000054	2009		9000 ZUNI RD SE	ALBUQUERQUE	NM	87123-3116	KINGSLEY MANAGEMENT CORPORATIO	35.07270	-106.54725	5408
378	3465336560	3465336936	Neptune	33156	N	5	CF		AMI DIAL	15	000053	2002	25630331	2314 GENERAL ARNOLD ST NE	ALBUQUERQUE	NM	87112	PARK,HOFFMAN	35.11164	-106.54666	5420
379	3468336560	3468336725	Sensus	02355	N	6	CF		AMI DIAL	16	000056	2003	24956009	800 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87104-2007	OLD TOWN SHERATON/COMPTROLLER	35.10114	-106.66918	4962
380	3470436560	3470436466	Sensus	09746	N	6	CF		AMI DIAL	16	000057	2004	25252281	5600 JEFFERSON ST NE	ALBUQUERQUE	NM	87109	REIT MANAGEMENT & RESEARCH LLC	35.14507	-106.59170	5176
381	3490436560	3490436852	Sensus	F3215	Y	8	CF	HIGH	AMI DIAL	12	000049	2003	24966254	903 10TH ST SW	ALBUQUERQUE	NM	87102-4029	ZOO,RIO GRANDE	35.07802	-106.65996	4946
382	3490436560	3490436852	Sensus	F3215	Y	8	CF	FIRE	AMI DIAL	12	000049	2003	24966293	903 10TH ST SW	ALBUQUERQUE	NM	87102-4029	ZOO,RIO GRANDE	35.07802	-106.65996	4946
383	5915336560	5915336977	Sensus	68230377	N	5	CF		AMI DIAL	21	000060	2007		2601 CENTRAL AVE NW	ALBUQUERQUE	NM	87104-1615	COA BIOLOGICAL PARK	35.09204	-106.67975	4954
384	8190025549	8190078335	Sensus	66606860	N	5	CF		AMI DIAL	21	000060	2006		1520 SUNPORT PL SE	ALBUQUERQUE	NM	87106-1738	HOMEWOOD SUITES C/O LEGACY HOSPITALITY	35.04965	-106.63192	5150
385	5920436560	5920436663	Sensus	57179	N	6	CF		AMI DIAL	16	000056	2004	25451858	5701 MOJAVE ST NW	ALBUQUERQUE	NM	87120-3032	HUGHES ELEMENTARY 365	35.16012	-106.70563	5136
386	8197024257	8197009915	Sensus	68372919	N	5	CF		AMI DIAL	23	000052	2008		10800 DENNIS CHAVEZ BLVD SW	ALBUQUERQUE	NM	87121	ATRISCO HERITAGE ACADEMY LOC 576	35.02241	-106.74874	5170
387	8197024257	8197088877	Sensus	68572052	N	6	CF		AMI DIAL	23	000052	2008		10800 DENNIS CHAVEZ BLVD SW	ALBUQUERQUE	NM	87121	ATRISCO HERITAGE ACADEMY LOC 576	35.02241	-106.74874	5170
388	8199336560	8199336055	Sensus	78993	N	5	CF		AMI DIAL	14	000054	2004	25558223	412 ALVARADO DR SE	ALBUQUERQUE	NM	87108-2938	ENCINO HOUSE EAST	35.07363	-106.58169	5284
389	8213230289	8213233026	Badger	10016918	N	5	CF		AMI DIAL	02	000009	2010		320 1ST ST SW	ALBUQUERQUE	NM	87102-3405	438500 First Group, Mail Stop #3	35.08217	-106.64835	4956
390	8206336560	8206336809	Sensus	70015683	N	5	CF		AMI DIAL	14	000054	2009		2400 CENTRE AVE SE	ALBUQUERQUE	NM	87106-4190	MARRIOTT TOWN PLACE SUITE	35.05967	-106.61965	5220
391	5958336560	5958336649	Sensus	68572045	N	6	CF		AMI DIAL	16	000057	2008		500 GOLD AVE SW	ALBUQUERQUE	NM	87102-3118	65235331, P0725111, NM00302Z	35.08365	-106.65315	4956
392	5951453385	5951453311	Badger	96479541	N	5	NMUU		AMI DIAL	NW03	026	2009	70285960	6100 SAGITARUS NW	ALBUQUERQUE	NM	87114	PARADISE SKIES PARK	35.20967	-106.70993	5342
393	5927336560	5927336147	Sensus	67021717	Y	8	CF		AMI DIAL	16	000052	2004	56025042	2500 CARLISLE BLVD NE	ALBUQUERQUE	NM	87110-3808	Park Plaza HOTEL	35.10720	-106.60402	5130
394	5927336560	5927336147	Sensus	67021717	Y	8	CF	FIRE	AMI DIAL	16	000052	2004	56025058	2500 CARLISLE BLVD NE	ALBUQUERQUE	NM	87110-3808	Park Plaza HOTEL	35.10720	-106.60402	5130
395	5938336560	5938336307	Sensus	63947	N	6	CF		AMI DIAL	12	000050	2004	25451890	500 TYLER RD NE	ALBUQUERQUE	NM	87113-1144	OWNER,CURRENT	35.15606	-106.61713	5032
396	5928770877	5928770813	Sensus	66253309	N	5	CF		AMI DIAL	21	000008	2009		5605 BICE RD NW	ALBUQUERQUE	NM	87120	PARKS AND REC/I40 AND COORS STREETSCAPE	35.10407	-106.70284	5103
397	5940436560	5940436022	Sensus	23568	N	5	CF		AMI DIAL	16	000055	2003	24945966	2311 BARCELONA RD SW	ALBUQUERQUE	NM	87105-5606	BARCELONA 225	35.03081	-106.69346	4930
398	5930877419	5930877438	Badger	09335813	Y	5	CF	HIGH	AMI DIAL	02	000009	2010		100 SILVER AV SW	ALBUQUERQUE	NM	87102	GERALD MARTIN GENERAL CONTRACTOR	35.08160	-106.64861	4954
399	5930877419	5930877438	Badger	09335813	Y	5	CF	LOW	AMI DIAL	02	000009	2010		100 SILVER AV SW	ALBUQUERQUE	NM	87102	GERALD MARTIN GENERAL CONTRACTOR	35.08160	-106.64861	4954

400	0876336560	0876336276	Sensus	09989	N	5	CF		AMI DIAL	12	000049	1993	13833839	1212 CANDELARIA RD NW	ALBUQUERQUE	NM	87107-2738	HOUSING AUTHORITY	35.12288	-106.65701	4970
401	8229336560	8229336816	Badger	61149581	N	6	CF		AMI DIAL	15	000053	2010		13220 CANDELARIA RD NE	ALBUQUERQUE	NM	87112-2172	THE POINTE CONDOMINIUMS	35.11443	-106.49205	5904
402	8231436560	8231436547	Sensus	23589	N	7	CF		AMI DIAL	14	000051	2003	24966121	5800 OSUNA RD NE	ALBUQUERQUE	NM	87109-6240	OAK TREE PARK	35.14418	-106.58460	5226
403	0904336560	0904336041	Sensus	E3011	Y	6	CF	FIRE	AMI DIAL	14	000051	2004	25554462	5301 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3129	PARK MGMT	35.13978	-106.55333	5416
404	0904336560	0904336041	Sensus	E3011	Y	6	CF		AMI DIAL	14	000051	2004	25252352	5301 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3129	PARK MGMT	35.13978	-106.55333	5416
405	5980436560	5980490878	Sensus	67780490	N	6	CF		AMI DIAL	13	000014	2007	23366889	4701 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1219	LOVELACE HEALTH SYSTEMS ATTN: ACCOUNTS PAYABLE	35.13193	-106.59065	5180
406	5980436560	5980436766	Sensus	76036	N	6	CF		AMI DIAL	19	000058	2004		4701 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1219	LOVELACE HEALTH SYSTEMS ATTN: ACCOUNTS PAYABLE	35.13110	-106.59172	5172
407	5975336560	5975336279	Sensus	TEMP0952	N	6	CF		AMI DIAL	16	000056	2006	25889234	3828 RINCON RD NW	ALBUQUERQUE	NM	87105-1741	PARK,PAT HURLEY	35.08879	-106.69725	4960
408	6014336560	6014336057	Sensus	46045	N	6	CF		AMI DIAL	21	000060	1987	24299541	1 SUNPORT LOOP SE	ALBUQUERQUE	NM	87106	AVIATION DEPT CITY OF ALBUQUER	35.04717	-106.61521	5318
409	8246336560	8246336538	Sensus	N3298	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25973896	2350 AZTEC RD NE	ALBUQUERQUE	NM	87107-4226	R. L. R. INVESTMENT LLC	35.12006	-106.61901	5090
410	8246336560	8246336538	Sensus	N3298	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25562851	2350 AZTEC RD NE	ALBUQUERQUE	NM	87107-4226	R. L. R. INVESTMENT LLC	35.12006	-106.61901	5090
411	8251436560	8251436937	Sensus	66287423	N	5	CF		AMI DIAL	16	000052	2006	25961925	2500 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87107-1732	THREE ALBUQUERQUE HOTELS,LP	35.11149	-106.62363	5066
412	8249336560	8249336232	Sensus	09247	N	5	CF		AMI DIAL	19	000058	2004	25558282	5328 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87110	CASA DEL VERDE APT C/O WESTERN PACIFIC INVESTMENT	35.13003	-106.58255	5224
413	0924336560	0924336388	Rockwell	56055	N	8	CF		AMI DIAL	14	000054	2004	56025015	1 KAFB ST SE	ALBUQUERQUE	NM	87117-0001	Kirtland AFB/ATTN: DENNIS WARREN	35.05837	-106.56870	5338
414	5998336560	5998336341	Sensus	N3533	Y	6	CF	HIGH	AMI DIAL	16	000055	2004	25554686	440 JEFFERSON ST NE	ALBUQUERQUE	NM	87108-1235	ZIA 385	35.08562	-106.59292	5222
415	5998336560	5998336341	Sensus	N3533	Y	6	CF	FIRE	AMI DIAL	16	000055	2004	25555214	440 JEFFERSON ST NE	ALBUQUERQUE	NM	87108-1235	ZIA 385	35.08562	-106.59292	5222
416	6000436560	6000436217	Sensus	26931	N	5	CF		AMI DIAL	15	000053	2004	56025279	1401 PENNSYLVANIA ST NE	ALBUQUERQUE	NM	87110-7501	APARTMENTS,PINE	35.09570	-106.55993	5314
417	8277336560	8277336020	Sensus	78969	N	5	CF		AMI DIAL	16	000052	2004	56027021	6200 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-5316	Uptown Park Place LLC	35.10195	-106.57665	5238
418	8266336560	8266336977	Badger	09055738	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		501 COPPER AVE NW	ALBUQUERQUE	NM	87102-3129	MAIN LIBRARY	35.08586	-106.65319	4954
419	8266336560	8266336977	Badger	09055738	Y	5	CF	LOW	AMI DIAL	12	000049	2009		501 COPPER AVE NW	ALBUQUERQUE	NM	87102-3129	MAIN LIBRARY	35.08586	-106.65319	4954
420	6038336560	6038336174	Sensus	E6745	Y	6	CF		AMI DIAL	16	000055	2004	25454024	900 MEDICAL ARTS AVE NE	ALBUQUERQUE	NM	87102-2707	Plaza Inn ABQ LLC - DBA Plaza Inn	35.09090	-106.63257	5088
421	6038336560	6038336174	Sensus	E6745	Y	6	CF	FIRE	AMI DIAL	16	000055	2004	25451686	900 MEDICAL ARTS AVE NE	ALBUQUERQUE	NM	87102-2707	Plaza Inn ABQ LLC - DBA Plaza Inn	35.09090	-106.63257	5088
422	6034336560	6034336404	Rockwell	78981	N	5	CF		AMI DIAL	19	000059	2004	56024956	400 WYOMING BLVD NE	ALBUQUERQUE	NM	87123-1034	ATTN: AFRC-CAR-EN-B	35.08110	-106.55006	5382
423	6035349478	6035349453	Badger	99916492	N	5	NMUU		AMI DIAL	NW02	019	2009	3785129	6100 PARADISE BLVD NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-JAMES MONROE	35.19099	-106.71585	5390
424	0964336560	0964336001	Sensus	N6759	Y	5	CF	LOW	AMI DIAL	21	000060	2003	25294411	3720 SPIRIT DR SE	ALBUQUERQUE	NM	87106-5630	AVIATION DEPT. CITY OF ALBUQ.	35.03299	-106.62344	5310
425	0964336560	0964336001	Sensus	N6759	Y	5	CF	HIGH	AMI DIAL	21	000060	2003	25294412	3720 SPIRIT DR SE	ALBUQUERQUE	NM	87106-5630	AVIATION DEPT. CITY OF ALBUQ.	35.03299	-106.62344	5310
426	6069369658	6069354299	Sensus	68670369	N	5	CF		AMI DIAL	15	000007	2008		2222 UPTOWN LOOP RD NE	ALBUQUERQUE	NM	87110	ABQ UPTOWN VILLAGE APARTMENTS	35.10398	-106.56476	5306
427	0999336560	0999336182	Sensus	26923	N	6	CF		AMI DIAL	15	000053	2004	56025065	12805 CENTRAL AVE NE	ALBUQUERQUE	NM	87123	CANYON RIDGE APTS ATTN: PROPERTY MANAGER	35.07043	-106.50827	5574
428	6074336560	6074336024	Sensus	E3709	Y	5	CF	FIRE	AMI DIAL	19	000058	2004	25273860	7901 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-5553	SANTA BARBARA HOMEOWNERS ASSOCIATION	35.17145	-106.56326	5366
429	6074336560	6074336024	Sensus	E3709	Y	5	CF	LOW	AMI DIAL	19	000058	2004	25439801	7901 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-5553	SANTA BARBARA HOMEOWNERS ASSOCIATION	35.17145	-106.56326	5366
430	3540225896	3540237179	Sensus	68423308	N	6	CF		AMI DIAL	21	000023	2007		8100 RAINBOW BLVD NW	ALBUQUERQUE	NM	87120	VOLCANO VISTA HIGH SCHOOL Loc 575	35.17635	-106.73412	5406
431	3540225896	3540215762	Sensus	68230379	N	5	CF		AMI DIAL	21	000023	2007		8100 RAINBOW BLVD NW	ALBUQUERQUE	NM	87120	VOLCANO VISTA HIGH SCHOOL Loc 575	35.17662	-106.73440	5408
432	6054336560	6054336627	Sensus	64819479	N	6	CF		AMI DIAL	19	000058	2008		10600 OSUNA RD NE	ALBUQUERQUE	NM	87111	PARK MGMT. - MICHELLE	35.13818	-106.51665	5732
433	3635336560	3635336368	Sensus	67855541	N	5	CF		AMI DIAL	14	000054	2007		7505 KATHRYN AVE SE	ALBUQUERQUE	NM	87108-5260	CHAVEZ COMM CTR,CESAR	35.06530	-106.56540	5348
434	6136336560	6136336404	Sensus	23550	N	5	CF		AMI DIAL	16	000057	2003	24966169	1401 BROADWAY BLVD NE	ALBUQUERQUE	NM	87102-1545	RED MTN	35.09689	-106.64219	4960
435	3640436560	3640436946	Badger	09335794	Y	5	CF	HIGH	AMI DIAL	16	000055	2009		2936 HUGHES RD SW	ALBUQUERQUE	NM	87105-5509	NAVAJO 327	35.03277	-106.70922	4932
436	3640436560	3640436946	Badger	09335794	Y	5	CF	LOW	AMI DIAL	16	000055	2009		2936 HUGHES RD SW	ALBUQUERQUE	NM	87105-5509	NAVAJO 327	35.03277	-106.70922	4932
437	3593336560	3593336792	Sensus	49259	N	6	CF		AMI DIAL	14	000051	2004	26704122	1 LOWELL ST NE	ALBUQUERQUE	NM	87111	AMERICAN GOLF CORP	35.15676	-106.50634	5902
438	3601436560	3601436060	Sensus	68372918	N	5	CF		AMI DIAL	12	000049	2008		301 ROMA AVE NW	ALBUQUERQUE	NM	87102	REIT,MANAGEMENT LLC.	35.08953	-106.65008	4958
439	3597336560	3597336510	Sensus	23546	N	5	CF		AMI DIAL	15	000053	2003	24956611	2800 LEXINGTON PL NE	ALBUQUERQUE	NM	87112-1360	LEXINGTN PLACE APTS.	35.11498	-106.53715	5482
440	1063336560	1063336179	Sensus	65978346	N	5	CF		AMI DIAL	16	000055	2008		1351 MARQUETTE PL NE	ALBUQUERQUE	NM	87106-4611	PARK,SPRUCE	35.08622	-106.62976	5134
441	1008336560	1008336605	Sensus	23557	N	5	CF		AMI DIAL	15	000053	2003	24966155	10801 LEXINGTON AVE NE	ALBUQUERQUE	NM	87112-1654	MATHESON PARK 305	35.11379	-106.52095	5574
442	1004336560	1004336897	Rockwell	05061	N	7	CF		AMI DIAL	14	000054	2004	25557237	5400 GIBSON BLVD SE	ALBUQUERQUE	NM	87108-4729	Gibson Medical Center	35.05698	-106.58129	5320
443	1079336560	1079336671	Sensus	E6743	Y	8	CF	LOW	AMI DIAL	12	000050	2004	25252348	6565 ACADEMY RD NE	ALBUQUERQUE	NM	87109	VILLA ENCANTADA HOMEOWNERS ASSOC	35.15206	-106.49048	6092
444	1079336560	1079336671	Sensus	E6743	Y	8	CF	HIGH	AMI DIAL	12	000050	2004	25252306	6565 ACADEMY RD NE	ALBUQUERQUE	NM	87109	VILLA ENCANTADA HOMEOWNERS ASSOC	35.15206	-106.49048	6092
445	8389336560	8389336876	Sensus	78968	N	5	CF		AMI DIAL	16	000055	2004	56025346	1820 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87110	PARK MANAGEMENT DIVISION	35.09533	-106.58589	5228
446	3647336560	3647336528	Sensus	78985	N	5	CF		AMI DIAL	19	000058	2004	25557307	6500 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1426	GATEWOOD APTS.	35.12982	-106.57434	5274
447	8286336560	8286336368	Badger	69432671	Y	5	CF		AMI DIAL	21	000060	2010		1200 DICKERSON DR SE	ALBUQUERQUE	NM	87106-1052	LA VIDA NUEVA APTS.	35.06868	-106.61980	5172
448	8286336560	8286336368	Badger	69432671	Y	5	CF	FIRE	AMI DIAL	21	000060	2010		1200 DICKERSON DR SE	ALBUQUERQUE	NM	87106-1052	LA VIDA NUEVA APTS.	35.06868	-106.61980	5172
449	8314336560	8314336111	Sensus	70015685	N	5	CF		AMI DIAL	16	000052	2009	25557450	6501 AMERICAS PARKWAY NE	ALBUQUERQUE	NM	87110-5375	REIT MANAGMENT LLC	35.10109	-106.57136	5266
450	8300436560	8300436287	Sensus	E4440	Y	7	CF	FIRE	AMI DIAL	14	000051	2004	25557139	8401 SPAIN RD NE	ALBUQUERQUE	NM	87111-2026	SPAIN GARDENS-PMG C/O VELOCITY	35.14004	-106.54884	5448
451	8300436560	8300436287	Sensus	E4440	Y	7	CF	HIGH	AMI DIAL	14	000051	2004	25558272	8401 SPAIN RD NE	ALBUQUERQUE	NM	87111-2026	SPAIN GARDENS-PMG C/O VELOCITY	35.14004	-106.54884	5448
452	3627336560	3627336090	Sensus	68372920	N	5	CF		AMI DIAL	16	000055	2008		2600 MARBLE AVE NE	ALBUQUERQUE	NM	87106-2058	UNM PHYSICAL PLANT	35.09101	-106.61640	5170
453	3615336560	3615336901	Sensus	N7012	Y	8	CF		AMI DIAL	16	000052	2004	25634885	6000 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3322	CORONADO CENTER	35.10898	-106.57400	5276
454	3615336560	3615336901	Sensus	N7012	Y	8	CF	FIRE	AMI DIAL	16	000052	2004	25634876	6000 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3322	CORONADO CENTER	35.10898	-106.57400	5276
455	8354336560	8354319939	Sensus	68699123	Y	6	CF	LOW	AMI DIAL	14	000054	2009		300 SAN PEDRO DR NE	ALBUQUERQUE	NM	87108-2812	EXPO NEW MEXICO	35.08223	-106.57726	5288
456	8354336560	8354319939	Sensus	68699123	Y	6	CF	HIGH	AMI DIAL	14	000054	2009		300 SAN PEDRO DR NE	ALBUQUERQUE	NM	87108-2812	EXPO NEW MEXICO	35.08223	-106.57726	5288
457	8338336560	8338336212	Sensus	66287435	N	6	CF		AMI DIAL	21	000060	2009		1501 TIJERAS AVE NE	ALBUQUERQUE	NM	87106-4518	GRAND RETIREMNT,ALBUQ. HM	35.08417	-106.62873	5116
458	3620436560	3620436625	Sensus	69869125	Y	8	CF	FIRE	AMI DIAL	14	000051	2009	56028580	5601 MOON ST NE	ALBUQUERQUE	NM	87111	SPAIN GARDENS-PMG C/O VELOCITY	35.14197	-106.54372	5498
459	3620436560	3620436625	Sensus	69869125	Y	8	CF		AMI DIAL	14	000051	2009	25555731	5601 MOON ST NE	ALBUQUERQUE	NM	87111	SPAIN GARDENS-PMG C/O VELOCITY	35.14197	-106.54372	5498
460	6084053235	6084053203	Badger	01024707	N	5	NMUU		AMI DIAL	NW04	064	2009	5410433	4501 SEVEN BAR SOUTH NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-SEVEN BAR, #265	35.20528	-106.67111	5176
461	6116336560	6116336028	Sensus	61189516	N	5	CF		AMI DIAL	12	000050	2004	25556412	5320 SAN ANTONIO DR NE	ALBUQUERQUE	NM	87109-4157	HILTON GARDEN C/O LEGACY HOSPITALITY	35.15944	-106.58372	5224
462	6118766197	6118733265	Badger	96479542	N	5	NMUU		AMI DIAL	NW04	066	2008	3657618	10000 COORS BY-PASS NW (THEATRE)	ALBUQUERQUE	NM	87114	SIMON PROPERTIES,STORE#0549	35.19598	-106.65569	5048
463	6161436560	6161436096	Sensus	N3608	Y	5	CF	FIRE	AMI DIAL	19	000058	2003	25274841	5801 LOWELL ST NE	ALBUQUERQUE	NM	87111-5942	PROSPECTOR'S POINT C/O AMMRE INC	35.14632	-106.50711	5874
464	6161436560	6161436096	Sensus	N3608	Y	5	CF		AMI DIAL	19	000058	2003	25274838	5801 LOWELL ST NE	ALBUQUERQUE	NM	87111-5942	PROSPECTOR'S POINT C/O AMMRE INC	35.14632	-106.50711	5874
465	1105336560	1105336564	Sensus	64935961	N	6	CF		AMI DIAL	14	000054	2006		500 SPRUCE ST SE	ALBUQUERQUE	NM	87106	Owner,Current	35.07666	-106.63337	5084
466	1083336560	1083336473	Sensus	23566	N	5	CF		AMI DIAL	15	000053	2003	25346499	1115 ZENA LONA ST NE	ALBUQUERQUE	NM	87112	PARK MAINTENANCE	35.09133	-106.50938	5650
467	1087336560	1087336193	Sensus	67011289	N	6	CF		AMI DIAL	12	000050	2007		6400 WYOMING BLVD NE	ALBUQUERQUE	NM	87111	ALBQ ACADEMY 069000	35.15233	-106.55587	5446
468	3655336560	3655336783	Sensus	70039242	N	5	CF		AMI DIAL	15	000053	2005	25634624	2800 DOROTHY ST NE	ALBUQUERQUE	NM	87112	PARK,MATHESON	35.11400	-106.52211	5568
469	3658336560	3658336575	Badger	09055748	Y	6	CF	LOW	AMI DIAL	16	000057	2009		3200 BROADWAY BLVD SE	ALBUQUERQUE	NM	87105-0400	CHEVRON PRODUCTS 1324760	35.04738	-106.64663	4941
470	3658336560	3658336575	Badger	09055748	Y	6	CF	HIGH	AMI DIAL	16	000057	2009		3200 BROADWAY BLVD SE	ALBUQUERQUE	NM	87105-0400	CHEVRON PRODUCTS 1324760	35.04738	-106.64663	4941
471	6159336560	6159336419	Sensus	49557	N	5	CF		AMI DIAL	15	000053	2004	24928276	11600 HAINES AVE NE	ALBUQUERQUE	NM	87112-4452	US POSTAL SERVICE (RM 219)	35.09920	-106.51557	5614
472	3660436560	3660436308	Sensus	49559	N	5	CF		AMI DIAL	21	000060	1989	25252391	1807 PATTON RD SW	ALBUQUERQUE	NM	87105-4829	BERNALILLO COUNTY HOUSING	35.04264	-106.68370	4937
473	8419336560	8419336663	Neptune	E6080	Y	6	CF	LOW	AMI DIAL	16	000052	2004	25632664	7010 PHOENIX AVE NE	ALBUQUERQUE	NM	87110-3548	UPTOWN SQUARE APARTMENTS	35.11089	-106.56557	5322
474	8419336560	8419336663	Neptune	E6080	Y	6	CF	HIGH	AMI DIAL	16	000052	2004	25964564	7010 PHOENIX AVE NE	ALBUQUERQUE	NM	87110-3548	UPTOWN SQUARE APARTMENTS	35.11089	-106.56557	5322
475	3698336560	3698336282	Sensus	E7091	Y	6	CF	FIRE	AMI DIAL	16	000055	2004	56025247	5301 CENTRAL AVE NE	ALBUQUERQUE	NM	87108-1513	CENTURION PACIFIC	35.07789	-106.58582	5262
476	3698336560	3698336282	Sensus	E7091	Y	6	CF		AMI DIAL	16	000055	2004	56025017	5301 CENTRAL AVE NE	ALBUQUERQUE	NM	87108-1513	CENTURION PACIFIC	35.07789	-106.58582	5262
477	8421436560	8421436379	Sensus	45460	N	5	CF		AMI DIAL	14	000051	2004	25451094	103 HOSPITAL LOOP NE	ALBUQUERQUE	NM	87109-2115	ALBUQUERQUE HEIGHTS HEALTHCARE AND REHABILITATION	35.13285	-106.59084	5180
478	1125336560	1125336016	Sensus	F3611	Y	6	CF	HIGH	AMI DIAL	16	000056	2003	24966358	8200 BRIDGE BLVD SW	ALBUQUERQUE	NM	87121-7501	Wells Fargo Commercial Mortgage-Servicing	35.07085	-106.72733	5106
479	1125336560	1125336016	Sensus	F3611	Y	6	CF	FIRE	AMI DIAL	16	000056	2003	25557034	8200 BRIDGE BLVD SW	ALBUQUERQUE	NM	87121-7501	Wells Fargo Commercial Mortgage-Servicing	35.07085	-106.72733	5106

480	3694336560	3694336517	Sensus	75934	N	6	CF		AMI DIAL	16	000055	2005	25965975	2000 ALVARADO DR NE	ALBUQUERQUE	NM	87110	Parks and Rec / Park Management	35.09923	-106.58142	5238
481	3695336560	3695336666	Sensus	52713	N	5	CF		NON-AMI DIAL	14	000054	2001		1606 SAN PEDRO DR SE	ALBUQUERQUE	NM	87108	PARK,BULL HEAD	35.05252	-106.56930	5364
482	3674336560	3674336122	Sensus	E2881	Y	5	CF	HIGH	AMI DIAL	15	000053	2004	25634574	3501 MOON ST NE	ALBUQUERQUE	NM	87111-4619	MADISON MIDDLE 435	35.12191	-106.54421	5458
483	3674336560	3674336122	Sensus	E2881	Y	5	CF	LOW	AMI DIAL	15	000053	2004	25634613	3501 MOON ST NE	ALBUQUERQUE	NM	87111-4619	MADISON MIDDLE 435	35.12191	-106.54421	5458
484	3675336560	3675336203	Neptune	N7064	Y	5	CF	HIGH	NON-AMI DIAL	16	000052	1999		2300 CARLISLE BLVD NE	ALBUQUERQUE	NM	87110-3962	ALBHI LIMITED PARTNERSHIP	35.10566	-106.60166	5136
485	3675336560	3675336203	Neptune	N7064	Y	5	CF	LOW	NON-AMI DIAL	16	000052	1999		2300 CARLISLE BLVD NE	ALBUQUERQUE	NM	87110-3962	ALBHI LIMITED PARTNERSHIP	35.10566	-106.60166	5136
486	6167336560	6167336829	Rockwell	78974	N	5	CF		AMI DIAL	19	000058	2004	25557427	6300 CLAREMONT AVE NE	ALBUQUERQUE	NM	87110-3355	ZUNI 388	35.11269	-106.57567	5270
487	8416336560	8416336104	Sensus	23603	N	8	CF		AMI DIAL	16	000052	2004	56025283	6600 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3428	CORONADO CENTER	35.10654	-106.56901	5290
488	1117336560	1117336846	Sensus	49561	N	5	CF		AMI DIAL	15	000053	2004	24928263	13110 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87112-6111	PHILIP J. SALLEY TRUST DBA MOUNTAIN VISTA APTS.	35.09392	-106.50077	5784
489	1109336560	1109336360	Badger	09061915	Y	6	CF	LOW	AMI DIAL	19	000059	2010		712 GIRARD BLVD NE	ALBUQUERQUE	NM	87106-2714	JEFFERSON MIDDLE, 425	35.08762	-106.61092	5184
490	1109336560	1109336360	Badger	09061915	Y	6	CF	HIGH	AMI DIAL	19	000059	2010		712 GIRARD BLVD NE	ALBUQUERQUE	NM	87106-2714	JEFFERSON MIDDLE, 425	35.08762	-106.61092	5184
491	8459336560	8459336476	Sensus	49542	N	5	CF		AMI DIAL	16	000056	2004	24928255	800 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87104-2007	SHERATON OLD TOWN/COMPTROLLER	35.10018	-106.67049	4960
492	8456336560	8456336805	Sensus	23565	N	5	CF		AMI DIAL	16	000057	2003	24967650	723 SILVER AVE SW	ALBUQUERQUE	NM	87102-3018	FLYING STAR	35.08324	-106.65655	4952
493	1137336560	1137336186	Neptune	E2796	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25633913	3801 MORNINGSIDE DR NE	ALBUQUERQUE	NM	87110-1013	HODGIN 273	35.12495	-106.59976	5140
494	1137336560	1137336186	Neptune	E2796	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25633919	3801 MORNINGSIDE DR NE	ALBUQUERQUE	NM	87110-1013	HODGIN 273	35.12495	-106.59976	5140
495	8436336560	8436336442	Sensus	23567	N	5	CF		AMI DIAL	21	000060	2000	24968541	1613 LOMAS BLVD NE	ALBUQUERQUE	NM	87102	GALLES CHEVROLET	35.09127	-106.62543	5104
496	1145336560	1145336470	Sensus	88818	N	5	CF		AMI DIAL	14	000054	2002	13833216	2300 CENTRE AVE SE	ALBUQUERQUE	NM	87106-4197	CAMPBELL LODGING/DBA FAIRFIELD INN	35.05969	-106.62105	5198
497	1148336560	1148336345	Sensus	30400	N	6	CF		AMI DIAL	12	000049	2004	25554412	715 DR MARTIN L KING JR AVE NE	ALBUQUERQUE	NM	87102-3661	LOVELACE SANDIA HEALTH SYSTEMS	35.08563	-106.63919	5014
498	1165336560	1165336882	Neptune	E3708	Y	5	CF	HIGH	NON-AMI DIAL	16	000055	1999		4000 BLAKE RD SW	ALBUQUERQUE	NM	87121-2538	SUNSHINE MOBILE HOME PARK	35.03737	-106.71868	4992
499	1165336560	1165336882	Neptune	E3708	Y	5	CF	LOW	NON-AMI DIAL	16	000055	1999		4000 BLAKE RD SW	ALBUQUERQUE	NM	87121-2538	SUNSHINE MOBILE HOME PARK	35.03737	-106.71868	4992
500	1165336560	1165336882	Neptune	E3708	Y	5	CF	FIRE	NON-AMI DIAL	16	000055	1999		4000 BLAKE RD SW	ALBUQUERQUE	NM	87121-2538	SUNSHINE MOBILE HOME PARK	35.03737	-106.71868	4992
501	8439336560	8439336082	Neptune	N8431	Y	7	CF	LOW	AMI DIAL	12	000049	2003	25634608	201 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-2248	DOUBLE TREE HOTEL	35.08891	-106.64925	4956
502	8439336560	8439336082	Neptune	N8431	Y	7	CF	HIGH	AMI DIAL	12	000049	2003	25634591	201 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-2248	DOUBLE TREE HOTEL	35.08891	-106.64925	4956
503	8441436560	8441436768	Sensus	68372934	N	7	CF		AMI DIAL	16	000055	2007		1801 RANDOLPH RD SE	ALBUQUERQUE	NM	87106-4230	REIT MANAGEMENT LLC	35.05300	-106.62664	5180
504	1157336560	1157336604	Sensus	70875	N	5	CF		AMI DIAL	19	000058	2004	25451611	6001 TOPKE PL NE	ALBUQUERQUE	NM	87109-7106	THE COURTYARDS (TONY)	35.13577	-106.58087	5242
505	3708336560	3708336780	Sensus	E6725	Y	5	CF	LOW	AMI DIAL	15	000053	2004	25975097	10601 LOMAS BLVD NE	ALBUQUERQUE	NM	87112-5470	ATRIUM OFFICES	35.08757	-106.52659	5482
506	3708336560	3708336780	Sensus	E6725	Y	5	CF	HIGH	AMI DIAL	15	000053	2004	25973894	10601 LOMAS BLVD NE	ALBUQUERQUE	NM	87112-5470	ATRIUM OFFICES	35.08757	-106.52659	5482
507	3715407968	3715407932	Badger	09059837	Y	5	CF	HIGH	AMI DIAL	14	000051	2010		11300 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111	ELDORADO HIGH SCHOOL, # 515	35.12721	-106.51039	5746
508	3715407968	3715407932	Badger	09059837	Y	5	CF	LOW	AMI DIAL	14	000051	2010		11300 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111	ELDORADO HIGH SCHOOL, # 515	35.12721	-106.51039	5746
509	6228336560	6228336063	Sensus	46889	N	5	CF		AMI DIAL	12	000049	2004	25252311	807 MOUNTAIN RD NE	ALBUQUERQUE	NM	87102-2441	CAREER ENRICHMENT 592	35.09408	-106.63617	5018
510	1185336560	1185336311	Sensus	01580558	N	5	CF		AMI DIAL	16	000052	2005	26702634	4100 PAN AMERICAN EAST HY NE	ALBUQUERQUE	NM	87107	NEW MEXICO EDUCATORS	35.12764	-106.61509	5072
511	1184336560	1184336217	Hersey	N7548	Y	6	CF	FIRE	AMI DIAL	16	000057	2004	25430786	9401 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87113-2232	SITIX,SUMITOMO	35.19334	-106.58801	5144
512	1184336560	1184336217	Hersey	N7548	Y	6	CF		AMI DIAL	16	000057	2004	25437828	9401 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87113-2232	SITIX,SUMITOMO	35.19334	-106.58801	5144
513	1218336560	1218336876	Sensus	W8782	N	5	CF		AMI DIAL	15	000053	2004	25557359	721 TOMASITA ST NE	ALBUQUERQUE	NM	87123-1251	TOMASITA 363	35.08165	-106.52389	5490
514	3783336560	3783336622	Sensus	60875933	N	5	CF		AMI DIAL	14	000054	2005	25556207	301 SAN MATEO BLVD SE	ALBUQUERQUE	NM	87108-2919	WALMART ATTN: C&I DEPT STORES 1-831 (SW)	35.07579	-106.58858	5258
515	6264336560	6264336861	Badger	09055737	Y	5	CF	HIGH	AMI DIAL	12	000050	2009		5601 MIDWAY PARK BLVD NE	ALBUQUERQUE	NM	87109-5808	MSR-FSR	35.14414	-106.60381	5112
516	6264336560	6264336861	Badger	09055737	Y	5	CF	LOW	AMI DIAL	12	000050	2009		5601 MIDWAY PARK BLVD NE	ALBUQUERQUE	NM	87109-5808	MSR-FSR	.35.14414	-106.60381	5112
517	8564336560	8564336934	Rockwell	71689	N	6	CF		AMI DIAL	21	000060	2004	25558274	6701 TAYLOR RANCH DR NW	ALBUQUERQUE	NM	87120	MARIPOSA,PARK	35.16027	-106.69363	5116
518	8565366560	8565301314	Sensus	68423311	N	6	CF		AMI DIAL	21	000060	2008		4400 TOWER RD SW	ALBUQUERQUE	NM	87121-3422	WAYCOR	35.06719	-106.70476	5012
519	8544336560	8544336515	Sensus	62223549	N	5	CF		AMI DIAL	16	000056	2008		1221 ARENAL RD SW	ALBUQUERQUE	NM	87105-4027	BERNALILLO COUNTY FINANCE DEPT	35.05294	-106.67358	4941
520	3795955068	3795964868	Badger	96479539	N	5	NMUU		AMI DIAL	NW04	052	2008	70579780	2608 THE AMERICAN RD	RIO RANCHO	NM	87124	EXTENDED STAY AMERICA	35.21201	-106.65956	5130
521	3787336560	3787336339	Sensus	49553	N	5	CF		AMI DIAL	15	000053	2004	26591163	2208 LESTER DR NE	ALBUQUERQUE	NM	87112-2639	JAMBOREE MANAGEMENT	35.10676	-106.54706	5408
522	3796336560	3796336635	Sensus	E5182	N	5	CF		AMI DIAL	14	000054	2004	56025149	920 CONTINENTAL LOOP SE	ALBUQUERQUE	NM	87108-5012	WARREN PROPERTIES 014-000	35.06230	-106.56684	5344
523	3805336560	3805336723	Neptune	N8872	Y	5	CF	HIGH	AMI DIAL	15	000053	2004	25633894	450 PAISANO ST NE	ALBUQUERQUE	NM	87123-1470	THREE ALBUQUERQUE HOTELS,LP	35.07716	-106.51310	5560
524	3805336560	3805336723	Neptune	N8872	Y	5	CF	LOW	AMI DIAL	15	000053	2004	25632651	450 PAISANO ST NE	ALBUQUERQUE	NM	87123-1470	THREE ALBUQUERQUE HOTELS,LP	35.07716	-106.51310	5560
525	3825336560	3825336181	Sensus	66287426	N	5	CF		AMI DIAL	16	000056	2007	25554669	5601 TAYLOR RANCH DR NW	ALBUQUERQUE	NM	87120-2661	AMERICAN REALCORP(TAYLOR RANCH APTS)	35.14957	-106.68947	5053
526	6329336560	6329336835	Sensus	46896	N	6	CF		AMI DIAL	19	000059	2004	25558311	11800 PRINCESS JEANNE AVE NE	ALBUQUERQUE	NM	87112-4426	ACOMA 204	35.09687	-106.51802	5584
527	6306336560	6306336828	Sensus	69032675	Y	8	CF	LOW	AMI DIAL	14	000054	2008		200 VALENCIA DR SE	ALBUQUERQUE	NM	87108-1901	COURT APARTMENT,VALENCIA	35.07602	-106.58084	5280
528	6306336560	6306336828	Sensus	69032675	Y	8	CF	HIGH	AMI DIAL	14	000054	2008		200 VALENCIA DR SE	ALBUQUERQUE	NM	87108-1901	COURT APARTMENT,VALENCIA	35.07602	-106.58084	5280
529	3830436560	3830436777	Sensus	26937	N	6	CF		AMI DIAL	16	000052	2004	23311717	2600 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-3604	UPTOWN,SHERATON	35.11029	-106.56672	5316
530	3809336560	3809336528	Sensus	67021690	N	6	CF		AMI DIAL	16	000052	2010		6910 NATALIE AVE NE	ALBUQUERQUE	NM	87110-1323	CLEVELAND JR HIGH 407	35.12869	-106.56888	5298
531	3810436560	3810436517	Sensus	05660	N	6	CF		AMI DIAL	16	000057	1980	24300095	414 SILVER AVE SW	ALBUQUERQUE	NM	87102-3289	PNM GENERAL SERVICES DEPT.	35.08262	-106.65209	4954
532	6331436560	6331436566	Sensus	63259	N	6	CF		AMI DIAL	19	000058	2004	25408359	5524 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87109-6238	VILLAS C/O FIRST PACIFIC INVES	35.14229	-106.58570	5218
533	3850436560	3850436143	Sensus	66287447	N	5	CF		AMI DIAL	19	000058	2007		7511 BURKE ST NE	ALBUQUERQUE	NM	87109	PARK MANAGEMENT DIVISION	35.16517	-106.56158	5382
534	3868336560	3868336822	Sensus	67021693	N	6	CF		AMI DIAL	12	000049	2008		100 ROMA AVE NW	ALBUQUERQUE	NM	87102-2125	AMERIPRIDE/WPS ENERGY SERV ATTN: NISC/C&I DEPT	35.08873	-106.64781	4956
535	6357336560	6357336642	Badger	09149919	Y	5	CF	HIGH	AMI DIAL	14	000051	2010		4201 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2014	Owner,Current	35.13263	-106.57877	5258
536	6357336560	6357336642	Badger	09149919	Y	5	CF	LOW	AMI DIAL	14	000051	2010		4201 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2014	Owner,Current	35.13263	-106.57877	5258
537	6346336560	6346336557	Sensus	49563	N	5	CF		AMI DIAL	16	000052	2004	24928307	2929 VASSAR DR NE	ALBUQUERQUE	NM	87107-1805	VASSAR ENTERPRISES LLC	35.11452	-106.61527	5104
538	3837336560	3837336357	Rockwell	78990	N	5	CF		AMI DIAL	19	000058	2004	25557305	4400 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1298	SUN PLAZA APARTMENTS	35.13079	-106.59479	5160
539	3870436560	3870436558	Sensus	09744	N	6	CF		AMI DIAL	12	000050	2004	25651836	5900 FOREST HILLS DR NE	ALBUQUERQUE	NM	87109-4129	THE REHABILITATION CENTER OF ALBUQUERQUE	35.15589	-106.58685	5190
540	3845336560	3845336620	Neptune	02554	N	5	CF		NON-AMI DIAL	16	000056	1997		6540 SUNSET GARDENS RD SW	ALBUQUERQUE	NM	87121	PARK MANAGEMENT	35.07222	-106.70719	5016
541	6366336560	6366336996	Badger	09149917	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		505 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-3157	CENTURION SOUTHWEST,LLC	35.08893	-106.65313	4956
542	6366336560	6366336996	Badger	09149917	Y	5	CF	LOW	AMI DIAL	12	000049	2009		505 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-3157	CENTURION SOUTHWEST,LLC	35.08893	-106.65313	4956
543	3865336560	3865336016	Neptune	E2222	Y	6	CF	HIGH	AMI DIAL	16	000056	1999	56759712	1919 LADERA DR NW	ALBUQUERQUE	NM	87120-6125	RIO VOLCAN APARTMENTS	35.10724	-106.72435	5166
544	3865336560	3865336016	Neptune	E2222	Y	6	CF	FIRE	AMI DIAL	16	000056	1999	56125013	1919 LADERA DR NW	ALBUQUERQUE	NM	87120-6125	RIO VOLCAN APARTMENTS	35.10724	-106.72435	5166
545	3865336560	3865336016	Neptune	E2222	Y	6	CF	LOW	AMI DIAL	16	000056	1999	56786291	1919 LADERA DR NW	ALBUQUERQUE	NM	87120-6125	RIO VOLCAN APARTMENTS	35.10724	-106.72435	5166
546	6351436560	6351436956	Sensus	68230383	N	5	CF		AMI DIAL	16	000055	2007		2300 YALE BLVD SE	ALBUQUERQUE	NM	87106-4273	COMFORT INN	35.05618	-106.62064	5216
547	8841436560	8841436844	Sensus	49539	N	6	CF		AMI DIAL	16	000056	2004	24928260	3501 ATRISCO DR NW	ALBUQUERQUE	NM	87120-1424	MESA RIDGE APT	35.12270	-106.70564	5120
548	1394336560	1394336421	Sensus	25821	N	7	CF		AMI DIAL	21	000060	1995	25975264	10200 CENTRAL AVE SW	ALBUQUERQUE	NM	87121-7692	LONG VIEW MOBILE HOME COMMUNITY	35.07150	-106.74659	5244
549	1378336560	1378336902	Sensus	58603	N	6	CF		AMI DIAL	12	000049	2004	25274839	5600 2ND ST NW	ALBUQUERQUE	NM	87107-5029	MONTANO DISTRIBUTION	35.13807	-106.63403	4976
550	6567336560	6567336905	Sensus	E3604	Y	5	CF		AMI DIAL	16	000052	2004	25556950	6300 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110	WARREN PROPERTIES	35.10084	-106.57566	5248
551	6567336560	6567336905	Sensus	E3604	Y	5	CF	FIRE	AMI DIAL	16	000052	2004	25274822	6300 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110	WARREN PROPERTIES	35.10084	-106.57566	5248
552	8836336560	8836336480	Sensus	N3264	Y	5	CF	LOW	AMI DIAL	16	000055	2004	25964144	1100 ODELIA RD NE	ALBUQUERQUE	NM	87106	ST PAUL LUTHERN CHRCH	35.09791	-106.62946	5070
553	8836336560	8836336480	Sensus	N3264	Y	5	CF	HIGH	AMI DIAL	16	000055	2004	25889377	1100 ODELIA RD NE	ALBUQUERQUE	NM	87106	ST PAUL LUTHERN CHRCH	35.09791	-106.62946	5070
554	8856336560	8856336901	Sensus	54539	N	5	CF		AMI DIAL	16	000056	2004	25435904	1215 CERRILLOS RD SW	ALBUQUERQUE	NM	87121-8016	CARLOS REY 339	35.05258	-106.75070	5232
555	4048035560	4048035224	Sensus	68543039	N	5	CF		AMI DIAL	04	000004	2008		400 19TH ST NW	ALBUQUERQUE	NM	87104-1441	Owner,Current	35.09643	-106.66713	4961
556	6556336560	6556336824	Sensus	88820	N	5	CF		AMI DIAL	12	000049	2003	25554626	1020 CENTRAL AVE SW	ALBUQUERQUE	NM	87102-2905	MOTEL,LOR LODGE	35.08699	-106.65961	4954
557	1398336560	1398336225	Neptune	N2690	Y	6	CF	HIGH	AMI DIAL	15	000053	2004	25632624	12901 CENTRAL AVE NE	ALBUQUERQUE	NM	87123-3027	SHALAKO APARTMENTS	35.06911	-106.50493	5598
558	1398336560	1398336225	Neptune	N2690	Y	6	CF	LOW	AMI DIAL	15	000053	2004	25850100	12901 CENTRAL AVE NE	ALBUQUERQUE	NM	87123-3027	SHALAKO APARTMENTS	35.06911	-106.50493	5598
559	6576336560	6576336219	Sensus	52716	N	5	CF		AMI DIAL	12	000050	2004	25634778	111 MONTANO RD NE	ALBUQUERQUE	NM	87107-5028	EARTH GRAINSA/P 40051800	35.13753	-106.63037	4982

560	1375336560	1375336130	Sensus	52717	N	5	CF		NON-AMI DIAL	15	000053	2002		12200 LOMAS BLVD NE	ALBUQUERQUE	NM	87112-5804	MANZANO HIGH SCHOOL NO. 530	35.08647	-106.51069	5618
561	1297336560	1297336453	Rockwell	N8463	N	5	CF		AMI DIAL	15	000053	2004	25558222	9200 SHOSHONE RD NE	ALBUQUERQUE	NM	87111	SOMBRA DEL MONTE 357	35.11802	-106.54112	5472
562	6489336560	6489336892	Sensus	78877	N	5	CF		AMI DIAL	16	000055	2004	56025365	1932 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87110	PARK MANAGEMENT DIVISION	35.09816	-106.58610	5232
563	1301436560	1301436021	Sensus	E4284	N	8	CF	LOW	AMI DIAL	21	000060	2004	56025233	1818 CAMINO SERVICIO NE	ALBUQUERQUE	NM	87106-2745	UNIVERSITY HOSPITAL	35.08761	-106.61759	5148
564	1319336560	1319336629	Sensus	49584	N	6	CF		AMI DIAL	15	000053	2004		1601 PENNSYLVANIA ST NE	ALBUQUERQUE	NM	87110-5546	WINROCK VILLAS CONDO	35.09912	-106.55980	5320
565	6519336560	6519336682	Rockwell	47695	N	6	CF		AMI DIAL	15	000053	2004	25557262	7801 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-4603	WATER COND INC,CULLIGAN	35.10951	-106.55708	5360
566	1327336560	1327336055	Sensus	23532	N	5	CF		AMI DIAL	16	000055	2003	24956226	3211 MONTE VISTA BLVD NE	ALBUQUERQUE	NM	87106-2119	MONTE VISTA 312	35.08230	-106.61005	5178
567	6516336560	6516336124	Sensus	49589	N	6	CF		AMI DIAL	16	000057	2004	25555062	7999 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-5553	HEAVEN CEMETERY,GATE OF	35.17167	-106.56021	5394
568	1340436560	1340436870	Sensus	68423309	N	6	CF		AMI DIAL	14	000051	2007	25440695	4700 MORRIS ST NE	ALBUQUERQUE	NM	87111-3704	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.13453	-106.52124	5684
569	6521436560	6521436398	Sensus	75929	N	5	CF		AMI DIAL	16	000056	2005	25554417	1400 CORRIZ DR SW	ALBUQUERQUE	NM	87121-8311	M.A. BINFORD, 250	35.05049	-106.72575	5054
570	1293336560	1293336715	Sensus	E4431	Y	5	CF	LOW	AMI DIAL	16	000055	2004	25652041	4501 BLAKE RD SW	ALBUQUERQUE	NM	87121-5030	SOL,VISTA DEL	35.04390	-106.72605	5050
571	1293336560	1293336715	Sensus	E4431	Y	5	CF	FIRE	AMI DIAL	16	000055	2004	25452243	4501 BLAKE RD SW	ALBUQUERQUE	NM	87121-5030	SOL,VISTA DEL	35.04390	-106.72605	5050
572	1293336560	1293336715	Sensus	E4431	Y	5	CF	HIGH	AMI DIAL	16	000055	2004	25652019	4501 BLAKE RD SW	ALBUQUERQUE	NM	87121-5030	SOL,VISTA DEL	35.04390	-106.72605	5050
573	1315336560	1315336831	Neptune	02549	N	5	CF		AMI DIAL	12	000049	1996	25630327	2904 LEOPOLDO RD NW	ALBUQUERQUE	NM	87104-2728	DURANES PARK,LOS	35.11034	-106.68378	4963
574	1335336560	1335336292	Neptune	N7791	Y	5	CF	HIGH	AMI DIAL	12	000050	2004	24906276	8400 BARSTOW ST NE	ALBUQUERQUE	NM	87122-2832	DESERT RIDGE NO. 430	35.17854	-106.54920	5490
575	1335336560	1335336292	Neptune	N7791	Y	5	CF	LOW	AMI DIAL	12	000050	2004	24860462	8400 BARSTOW ST NE	ALBUQUERQUE	NM	87122-2832	DESERT RIDGE NO. 430	35.17854	-106.54920	5490
576	6438336560	6438336231	Sensus	67136107	N	5	CF		AMI DIAL	12	000049	2007		2025 2ND ST NW	ALBUQUERQUE	NM	87102-1042	434100 Family Dollar 06570-Albuquerque NM 06570	35.10704	-106.64556	4966
577	6454336560	6454336716	Sensus	65992340	N	5	CF		AMI DIAL	12	000050	2006		4315 HAWKINS ST NE	ALBUQUERQUE	NM	87109-4530	MISSION LINEN - ACCT PAYABLE	35.16325	-106.59568	5126
578	1355336560	1355336719	Sensus	70041171	N	5	CF		AMI DIAL	14	000051	2005	25889374	13100 ACADEMY RD NE	ALBUQUERQUE	NM	87110	DESERT PARK,HIGH	35.15359	-106.48981	6108
579	8738336560	8738336292	Sensus	N4456	Y	7	CF	HIGH	AMI DIAL	14	000054	1995	56025348	425 TOWNE PARK DR NE	ALBUQUERQUE	NM	87123-4876	TOWN PARK/HOME ASSOC.	35.07510	-106.53195	5464
580	8738336560	8738336292	Sensus	N4456	Y	7	CF	FIRE	AMI DIAL	14	000054	1995	56025146	425 TOWNE PARK DR NE	ALBUQUERQUE	NM	87123-4876	TOWN PARK/HOME ASSOC.	35.07510	-106.53195	5464
581	1358336560	1358336537	Rockwell	52299	N	6	CF		AMI DIAL	19	000059	2004	25975271	110 OAK ST SE	ALBUQUERQUE	NM	87106	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.08208	-106.63628	5054
582	8789336560	8789336959	Sensus	49572	N	6	CF		AMI DIAL	15	000053	2004	25982903	1111 EASTERDAY ST NE	ALBUQUERQUE	NM	87112-5115	GRANT JR HIGH 413	35.09057	-106.54341	5392
583	8821436560	8821436455	Sensus	45152	N	5	CF		AMI DIAL	12	000050	2004	25346500	6110 ACADEMY RD NE	ALBUQUERQUE	NM	87109-3334	CURRENT,RESIDENT	35.14513	-106.57888	5246
584	8744178351	8744178368	Badger	95165176	N	6	NMUU		AMI DIAL	NW04	062	2009	70579779	SALIDA DEL SOL	ALBUQUERQUE	NM	87154	CITY OF ALBUQUERQUE	35.21129	-106.67438	5130
585	8700436560	8700436357	Sensus	49547	N	5	CF		AMI DIAL	19	000059	2004	24928311	2519 ALGODONES ST NE	ALBUQUERQUE	NM	87112-1808	PARK MANAGEMENT DIVISION	35.11236	-106.51224	5640
586	8801005418	8801070796	Sensus	68372930	N	7	CF		AMI DIAL	02	000011	2009		913 ATLANTIC AVE SW	ALBUQUERQUE	NM	87102	COA PARKS & REC / PARK MANAGMENT	35.07803	-106.65861	4947
587	8801005418	8801066304	Sensus	68543041	N	5	CF		AMI DIAL	02	000011	2009		913 ATLANTIC AVE SW	ALBUQUERQUE	NM	87102	COA PARKS & REC / PARK MANAGMENT	35.07803	-106.65861	4947
588	8810406784	8810406721	Badger	96305470	N	5	NMUU		AMI DIAL	NW03	041	2009	70139856	5100 MARNA LYNN AVE NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-PETROGLYPH, 317	35.18512	-106.68186	5170
589	1347336560	1347336452	Sensus	23578	N	5	CF		AMI DIAL	14	000051	2003	19346625	5900 OSUNA RD NE	ALBUQUERQUE	NM	87109-2537	C/O SOVEREIGN MGMT	35.14466	-106.58139	5236
590	3884336560	3884336341	Sensus	66606857	N	5	CF		AMI DIAL	19	000058	2007		3705 ALVARADO DR NE	ALBUQUERQUE	NM	87110	Owner,Current	35.12562	-106.58032	5234
591	3885336560	3885336476	Sensus	01585151	N	5	CF		AMI DIAL	12	000050	2005	25556206	8300 CARMEL AVE NE	ALBUQUERQUE	NM	87122-3147	SUN VISTA	35.17498	-106.55247	5462
592	3890436560	3890436929	Badger	09149928	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		400 COPPER AVE NW	ALBUQUERQUE	NM	87102	PARKING DEPARTMENT	35.08528	-106.65156	4954
593	3890436560	3890436929	Badger	09149928	Y	5	CF	LOW	AMI DIAL	12	000049	2009		400 COPPER AVE NW	ALBUQUERQUE	NM	87102	PARKING DEPARTMENT	35.08528	-106.65156	4954
594	1273336560	1273336355	Neptune	44444	N	5	CF		NON-AMI DIAL	21	000061	1997		4105 ASPEN AVE NE	ALBUQUERQUE	NM	87110	ALTURA,PARK	35.09762	-106.59979	5180
595	3986336560	3986336482	Sensus	60875936	N	5	CF		AMI DIAL	14	000054	2007		1177 CARDENAS DR SE	ALBUQUERQUE	NM	87108-4863	JAMBOREE MANAGEMENT	35.06018	-106.58100	5300
596	3969336560	3969336648	Badger	09055749	Y	6	CF	HIGH	AMI DIAL	14	000054	2009		5600 GIBSON BLVD SE	ALBUQUERQUE	NM	87108-4840	BERNARD ALLISON MGT/SPRING CREEK APT/BRENDA FISHER	35.05815	-106.57862	5308
597	3969336560	3969336648	Badger	09055749	Y	6	CF	LOW	AMI DIAL	14	000054	2009		5600 GIBSON BLVD SE	ALBUQUERQUE	NM	87108-4840	BERNARD ALLISON MGT/SPRING CREEK APT/BRENDA FISHER	35.05815	-106.57862	5308
598	4003155560	4003198744	Sensus	67011760	N	5	CF		AMI DIAL	09	000018	2007		13001 CENTRAL AVE NE	ALBUQUERQUE	NM	87123-3029	VALUE PLACE (ALBUQUERQUE)	35.06883	-106.50260	5620
599	3977336560	3977336174	Sensus	79003	N	6	CF		AMI DIAL	19	000058	2004	56025011	8005 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1653	BRIDGE ALBUQUERQUE VISTA MONTANA, LLC/CONSERVICE	35.13038	-106.55170	5430
600	4031436560	4031436493	Sensus	66606856	N	5	CF		AMI DIAL	12	000050	2006		6500 PAN AMERICAN PL NE	ALBUQUERQUE	NM	87109-4209	NATIVO LODGE/ PAN AMERICAN HOTEL INVEST. LLC	35.15294	-106.58578	5194
601	6539336560	6539336102	Sensus	41039	N	6	CF		AMI DIAL	12	000049	2003	24967676	401 BROADWAY BLVD NE	ALBUQUERQUE	NM	87102-2330	NM DOL/GENERAL SERVICES BUR.	35.08725	-106.64433	4962
602	3973336560	3973336457	Badger	09061911	Y	6	CF	LOW	AMI DIAL	19	000059	2010		7205 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110	PARK MGMT DIVISION	35.09461	-106.56486	5298
603	3973336560	3973336457	Badger	09061911	Y	6	CF	HIGH	AMI DIAL	19	000059	2010		7205 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110	PARK MGMT DIVISION	35.09461	-106.56486	5298
604	4006336560	4006336755	Sensus	30402	N	5	CF		AMI DIAL	16	000055	2003	24946096	2601 YALE BLVD SE	ALBUQUERQUE	NM	87106-4216	HILTON GARDEN INN C/O LEGACY HOSPITALITY	35.05357	-106.62215	5228
605	6536336560	6536336461	Sensus	N4578	Y	6	CF	FIRE	AMI DIAL	16	000055	1997	25557277	1127 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1740	UNM PHYSICAL PLANT	35.09377	-106.62621	5112
606	6536336560	6536336461	Sensus	N4578	Y	6	CF		AMI DIAL	16	000055	1997	25557273	1127 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1740	UNM PHYSICAL PLANT	35.09377	-106.62621	5112
607	3993336560	3993336878	Sensus	44086	N	5	CF		AMI DIAL	16	000056	2003	25346197	2724 CENTRAL AVE SW	ALBUQUERQUE	NM	87104	THE BEACH APARTMENTS C/O MONARCH PROPERTY INC	35.09177	-106.67854	4959
608	4029336560	4029336777	Sensus	15001245	N	5	CF		AMI DIAL	15	000053	2008	53955930	8911 NORTHEASTERN AVE NE	ALBUQUERQUE	NM	87112-2727	EAST APTS,AMBASSADOR	35.10708	-106.54308	5428
609	8646336560	8646336633	Sensus	E3265	Y	5	CF	HIGH	AMI DIAL	12	000049	2004	25973845	1500 WALTER ST SE	ALBUQUERQUE	NM	87102-4658	MULTI-CENTER,JOHN MARSH	35.06894	-106.64179	4998
610	8646336560	8646336633	Sensus	E3265	Y	5	CF	LOW	AMI DIAL	12	000049	2004	25973843	1500 WALTER ST SE	ALBUQUERQUE	NM	87102-4658	MULTI-CENTER,JOHN MARSH	35.06894	-106.64179	4998
611	8629336560	8629336911	Badger	E2272	N	6	CF		AMI DIAL	15	000053	2004	25975265	12801 COPPER AVE NE	ALBUQUERQUE	NM	87123-1649	VISTA GRANDE ALBUQUERQUE	35.08017	-106.50615	5642
612	8626336560	8626336331	Sensus	N9639	Y	5	CF	HIGH	AMI DIAL	16	000055	2004	25974225	1515 COPPER AVE NE	ALBUQUERQUE	NM	87106-4511	ANN SCHREIBER	35.08273	-106.62906	5130
613	8626336560	8626336331	Sensus	N9639	Y	5	CF	LOW	AMI DIAL	16	000055	2004	25974166	1515 COPPER AVE NE	ALBUQUERQUE	NM	87106-4511	ANN SCHREIBER	35.08273	-106.62906	5130
614	6386336560	6386336387	Sensus	F3609	Y	7	CF		AMI DIAL	21	000060	2004		1515 COLUMBIA DR SE	ALBUQUERQUE	NM	87106-1034	MOUNTAIN VIEW TWO APTS.	35.06641	-106.61732	5214
615	6386336560	6386336387	Sensus	F3609	Y	7	CF	FIRE	AMI DIAL	21	000060	2004		1515 COLUMBIA DR SE	ALBUQUERQUE	NM	87106-1034	MOUNTAIN VIEW TWO APTS.	35.06641	-106.61732	5214
616	8666336560	8666336085	Sensus	45463	N	5	CF		AMI DIAL	12	000049	2001	25556249	120 4TH ST NW	ALBUQUERQUE	NM	87102	AT&T-ACCOUNTS PAYABLE RM 1175	35.08524	-106.65147	4954
617	8599336560	8599336112	Sensus	00790	N	5	CF		AMI DIAL	14	000051	2004	25557688	9801 ACADEMY HILLS DR NE	ALBUQUERQUE	NM	87111-1311	HUBERT HUMPHREY 221	35.15054	-106.52927	5662
618	8649336560	8649336343	Sensus	69360463	N	5	CF		AMI DIAL	16	000052	2008	26592013	2710 MADEIRA DR NE	ALBUQUERQUE	NM	87110	QUEEN OF HEAVEN	35.11272	-106.58503	5222
619	6396495565	6396404413	Badger	95006905	N	5	NMUU		AMI DIAL	NW02	020	2008	70139853	5901 PARADISE BLVD NW	ALBUQUERQUE	NM	87114	BERNALILLO COUNTY STE FACILTY	35.19522	-106.71310	5378
620	4267336560	4267336848	Neptune	E9381	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25632400	7111 PROSPECT PL NE	ALBUQUERQUE	NM	87110-4309	B L M W CORP C/O NAI VAUGHAN MANAGEMENT COMPANY	35.10675	-106.56550	5306
621	4267336560	4267336848	Neptune	E9381	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25632665	7111 PROSPECT PL NE	ALBUQUERQUE	NM	87110-4309	B L M W CORP C/O NAI VAUGHAN MANAGEMENT COMPANY	35.10675	-106.56550	5306
622	4239336560	4239336025	Sensus	55444	N	6	CF		AMI DIAL	16	000056	2004	25274784	6625 BLUEWATER RD NW	ALBUQUERQUE	NM	87121-1920	THOMAS & BETTS,ELASTIMOLD	35.08606	-106.71501	5104
623	4216336560	4216336047	Badger	09055752	Y	6	CF	HIGH	AMI DIAL	16	000056	2009		8001 DAYTONA RD NW	ALBUQUERQUE	NM	87121	CITY TRANSIT DEPT	35.08860	-106.73447	5202
624	4216336560	4216336047	Badger	09055752	Y	6	CF	LOW	AMI DIAL	16	000056	2009		8001 DAYTONA RD NW	ALBUQUERQUE	NM	87121	CITY TRANSIT DEPT	35.08860	-106.73447	5202
625	4241436560	4241436711	Sensus	00787	N	5	CF		AMI DIAL	21	000060	2004	25557690	2929 YALE BLVD SE	ALBUQUERQUE	NM	87106	AVIATION DEPT CITY OF ALBUQUER	35.04843	-106.62144	5310
626	4256336560	4256336748	Sensus	45464	N	5	CF		AMI DIAL	12	000049	1982	24299950	600 ALCALDE PL SW	ALBUQUERQUE	NM	87104-1066	OFFICES	35.08234	-106.66532	4949
627	1568336560	1568336744	Sensus	46612	N	6	CF		AMI DIAL	12	000049	1991	24300164	100 8TH ST NW	ALBUQUERQUE	NM	87102	HOTEL BLUE	35.08522	-106.65611	4954
628	9057701413	9057707681	Sensus	68543036	N	5	CF		AMI DIAL	21	000060	2009		1350 SUNPORT PL SE	ALBUQUERQUE	NM	87106-1739	GROUP OF COMPANIES	35.04927	-106.63417	5094
629	4259336560	4259336438	Sensus	23551	N	5	CF		AMI DIAL	12	000049	2003	24961294	900 10TH ST SW	ALBUQUERQUE	NM	87102	DOLORES GONZALES 244	35.07689	-106.65967	4947
630	4221436560	4221436341	Sensus	F3607	Y	5	CF		AMI DIAL	16	000056	2003	24966370	6041 SEQUOIA RD NW	ALBUQUERQUE	NM	87120-3440	AMMRE	35.12198	-106.70638	5118
631	4221436560	4221436341	Sensus	F3607	Y	5	CF	FIRE	AMI DIAL	16	000056	2003	24966369	6041 SEQUOIA RD NW	ALBUQUERQUE	NM	87120-3440	AMMRE	35.12198	-106.70638	5118
632	4189336560	4189336819	Sensus	05181	N	5	CF		AMI DIAL	12	000049	2000	24299947	501 DR MARTIN L KING JR AVE NE	ALBUQUERQUE	NM	87102	LONGFELLOW 291	35.08585	-106.64117	4992
633	1565336560	1565336952	Sensus	70033155	N	5	CF		AMI DIAL	15	000053	2005	25889248	8714 FAIRBANKS RD NE	ALBUQUERQUE	NM	87112	Owner,Current	35.11099	-106.54756	5414
634	1570436560	1570436482	Badger	09055750	Y	6	CF	HIGH	AMI DIAL	21	000060	2009		1820 VALDORA RD SW	ALBUQUERQUE	NM	87105-4551	ERNIE PYLE 450	35.04998	-106.68242	4940
635	1570436560	1570436482	Badger	09055750	Y	6	CF	LOW	AMI DIAL	21	000060	2009		1820 VALDORA RD SW	ALBUQUERQUE	NM	87105-4551	ERNIE PYLE 450	35.04998	-106.68242	4940
636	1537336560	1537336281	Sensus	70877	N	5	CF		AMI DIAL	14	000051	2004	25451615	3825 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-0900	PARK,HILLCREST	35.13305	-106.60180	5126
637	6751436560	6751436053	Sensus	66705809	N	5	CF		AMI DIAL	12	000050	2004	24906236	7620 PAN AMERICAN PL NE	ALBUQUERQUE	NM	87109-4642	NORTH ALBUQUERQUE HOTEL LP	35.16613	-106.58417	5198
638	1530436560	1530436720	Sensus	67021714	Y	6	CF	FIRE	AMI DIAL	14	000054	2009	25557135	1100 CENTRAL AVE SE	ALBUQUERQUE	NM	87106-4930	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.08010	-106.63665	5062
639	1530436560	1530436720	Sensus	67021714	Y	6	CF		AMI DIAL	14	000054	2009	25975268	1100 CENTRAL AVE SE	ALBUQUERQUE	NM	87106-4930	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.08010	-106.63665	5062

640	6757336560	6757336734	Sensus	23556	N	5	CF		AMI DIAL	19	000058	2003	24966387	4215 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-1837	BRIDGE ALBUQUEQUE VILLA DEL OSO, LLC	35.13323	-106.56976	5316
641	1461436560	1461436111	Sensus	68887432	N	6	CF		AMI DIAL	21	000060	2007		4201 COORS BLVD SW	ALBUQUERQUE	NM	87121-5335	COUNTRY SIDE PROPERTIES	35.01553	-106.71594	4926
642	1505336560	1505336650	Neptune	E7120	Y	5	CF	LOW	AMI DIAL	12	000050	2004	24869516	7630 PAN AMERICAN EAST HY NE	ALBUQUERQUE	NM	87109-4642	HOWARD JOHNSONS	35.16678	-106.58418	5200
643	1505336560	1505336650	Neptune	E7120	Y	5	CF	HIGH	AMI DIAL	12	000050	2004	24869514	7630 PAN AMERICAN EAST HY NE	ALBUQUERQUE	NM	87109-4642	HOWARD JOHNSONS	35.16678	-106.58418	5200
644	1509336560	1509336455	Sensus	49574	N	6	CF		AMI DIAL	14	000051	2004	25986257	5327 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1333	NORTH PARK APTS.	35.13187	-106.58120	5238
645	1517336560	1517336903	Badger	09335795	Y	5	CF	HIGH	AMI DIAL	14	000054	2010		7100 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110-7149	CASA PLACITA APTS #74	35.09445	-106.56667	5292
646	1517336560	1517336903	Badger	09335795	Y	5	CF	LOW	AMI DIAL	14	000054	2010		7100 CONSTITUTION AVE NE	ALBUQUERQUE	NM	87110-7149	CASA PLACITA APTS #74	35.09445	-106.56667	5292
647	1408336560	1408336701	Sensus	23547	N	5	CF		AMI DIAL	14	000051	2003	24946094	4201 LA CHARLES DR NE	ALBUQUERQUE	NM	87111	EL DORADO HIGH 515	35.12724	-106.51315	5718
648	1483336560	1483336546	Sensus	67021692	N	6	CF		AMI DIAL	19	000058	2009		7000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-3972	TELEGRAPH HILL APARTMENTS	35.15835	-106.56544	5360
649	1510436560	1510436459	Sensus	78989	N	5	CF		AMI DIAL	19	000058	2004	25557363	2400 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-4303	LIBRE PROPERTIES	35.10556	-106.56634	5296
650	1545336560	1545336556	Sensus	67855949	N	5	CF		AMI DIAL	16	000055	2007		1717 PRINCETON DR NE	ALBUQUERQUE	NM	87106	Owner,Current	35.10340	-106.61656	5096
651	1511436560	1511436225	Neptune	19341	N	6	CF		AMI DIAL	12	000049	2004	25293610	2001 4TH ST SW	ALBUQUERQUE	NM	87102-4520	EL ENCANTO INC.	35.06608	-106.65412	4942
652	6749336560	6749336362	Rockwell	54810	N	5	CF		AMI DIAL	16	000052	2004	25557376	5700 HENDRIX RD NE	ALBUQUERQUE	NM	87110-1257	GOV BENT 230	35.12891	-106.57983	5242
653	1548336560	1548336383	Sensus	05655	N	6	CF		AMI DIAL	16	000057	2004	25252351	301 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1527	SCHOOL,MENAUL	35.11040	-106.63617	5004
654	1404336560	1404336994	Sensus	E5687	Y	6	CF	HIGH	AMI DIAL	15	000053	2004	25430336	2900 VISTA DEL REY NE	ALBUQUERQUE	NM	87112-2188	AMMRE/VISTA DEL REY	35.11464	-106.48977	5944
655	1404336560	1404336994	Sensus	E5687	Y	6	CF	FIRE	AMI DIAL	15	000053	2004	25451095	2900 VISTA DEL REY NE	ALBUQUERQUE	NM	87112-2188	AMMRE/VISTA DEL REY	35.11464	-106.48977	5944
656	1404336560	1404336994	Sensus	E5687	Y	6	CF	LOW	AMI DIAL	15	000053	2004	25556866	2900 VISTA DEL REY NE	ALBUQUERQUE	NM	87112-2188	AMMRE/VISTA DEL REY	35.11464	-106.48977	5944
657	6746336560	6746336652	Sensus	23545	N	5	CF		AMI DIAL	12	000049	2003	24957011	2116 HINKLE ST SE	ALBUQUERQUE	NM	87102-4930	COMMUNITY DENTAL SERVICES	35.06173	-106.64774	4952
658	1525336560	1525336105	Sensus	67855950	N	5	CF		AMI DIAL	16	000056	2007		5601 TAYLOR RANCH DR NW	ALBUQUERQUE	NM	87120-2661	C/O AMERICAN REAL CORP 30comp	35.14819	-106.69059	5036
659	1550436560	1550436073	Sensus	79576	N	5	CF		AMI DIAL	19	000059	2004	25273865	12910 GRANITE AVE NE	ALBUQUERQUE	NM	87112-6018	PARK MANAGEMENT DIVISION	35.08943	-106.50337	5714
660	8979336560	8979336800	Sensus	F4445	Y	7	CF		AMI DIAL	19	000059	2004	25557272	801 VASSAR DR NE	ALBUQUERQUE	NM	87106-2725	HOSPITAL,US INDIAN	35.08799	-106.61440	5170
661	8979336560	8979336800	Sensus	F4445	Y	7	CF	FIRE	AMI DIAL	19	000059	2004	25558216	801 VASSAR DR NE	ALBUQUERQUE	NM	87106-2725	HOSPITAL,US INDIAN	35.08799	-106.61440	5170
662	6729336560	6729336930	Sensus	68572051	N	6	CF		AMI DIAL	16	000056	2008		4208 CENTRAL AVE SW	ALBUQUERQUE	NM	87105-1646	KMART C/O FACILITY IQ MS-1139 (40comp)	35.08404	-106.68382	4953
663	6706336560	6706336923	Sensus	N3074	N	8	CF		NON-AMI DIAL	12	000050	2003		6800 VISTA DEL NORTE DR NE	ALBUQUERQUE	NM	87113	Current Owner	35.15614	-106.61035	5054
664	6706336560	6706336942	Sensus	S3078	N	6	CF		NON-AMI DIAL	12	000050	2003		6800 VISTA DEL NORTE DR NE	ALBUQUERQUE	NM	87113	Current Owner	35.15614	-106.61035	5054
665	6699336560	6699336131	Sensus	26936	N	6	CF		AMI DIAL	15	000053	2004	56025034	13121 SKYVIEW AVE NE	ALBUQUERQUE	NM	87123-2120	PARK MANAGEMENT DIVISION	35.07478	-106.50111	5674
666	9004336560	9004336917	Sensus	28883	N	5	CF		AMI DIAL	12	000050	1987	25346100	7000 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-4313	HEALTHSOUTH -C/O ADVANTAGEIQ MS144	35.16008	-106.59226	5158
667	6740140778	6740190743	Sensus	68230381	N	5	CF		AMI DIAL	21	000065	2007	26591195	9180 COORS BD NW	ALBUQUERQUE	NM	87120-3112	SAN MIGUEL III 2016	35.17863	-106.66723	4991
668	9008336560	9008336624	Sensus	70015681	N	5	CF		AMI DIAL	19	000058	2009		11200 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111-2677	HINKLE CORP	35.12981	-106.51457	5732
669	8999336560	8999336201	Sensus	90970	N	8	CF		AMI DIAL	16	000055	2004	25252278	1700 GIRARD BLVD SE	ALBUQUERQUE	NM	87106-3132	GOLF MGMT DIV.	35.06274	-106.61304	5286
670	6728552404	6728552485	Badger	08173811	N	5	NMUU		AMI DIAL	NW01	016	2010	81541724	8101 RAINBOW BLVD NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-TONY HILLERMAN, LOC. 492	35.17913	-106.73442	5416
671	6604336560	6604336025	Sensus	46901	N	6	CF		AMI DIAL	19	000058	2004		5510 PONDEROSA AVE NE	ALBUQUERQUE	NM	87110	PARK MANAGEMENT DIVISION	35.12632	-106.58274	5220
672	4152828478	4152828481	Badger	96305469	N	5	NMUU		AMI DIAL	NW02	022	2010	70285962	10220 PASEO DEL NORTE NW	ALBUQUERQUE	NM	87114	APS SCHOOLS-SIERRA VISTA	35.20029	-106.70853	5370
673	4136581375	4136517814	Sensus	66287428	N	6	CF		AMI DIAL	21	000060	2007	57927489	5650 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87105-7413	ALBUQ STUDIOS	34.99166	-106.61615	5302
674	6679336560	6679336762	Sensus	F3613	Y	8	CF		AMI DIAL	14	000054	2004	24967667	1422 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	UNM PHYSICAL PLANT/ATTN: TONY	35.07340	-106.63121	5118
675	6679336560	6679336762	Sensus	F3613	Y	8	CF	FIRE	AMI DIAL	14	000054	2004	24967742	1422 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	UNM PHYSICAL PLANT/ATTN: TONY	35.07340	-106.63121	5118
676	4100436560	4100436236	Sensus	49536	N	5	CF		AMI DIAL	14	000051	2004	23311650	7230 PRAIRIE RD NE	ALBUQUERQUE	NM	87109	PARK MANAGEMENT DIVISION	35.13383	-106.56479	5352
677	4086336560	4086336314	Sensus	49535	N	5	CF		AMI DIAL	16	000056	2004	24928446	1800 INDIAN SCHOOL RD NW	ALBUQUERQUE	NM	87104-2346	VALLEY APARTMENTS	35.11070	-106.66515	4964
678	4154336560	4154336643	Sensus	66287418	N	5	CF		AMI DIAL	16	000052	2006	26702643	6565 AMERICAS PARKWAY NE	ALBUQUERQUE	NM	87110-8116	HINES INTEREST LP	35.10060	-106.57076	5270
679	6664336560	6664336950	Neptune	43230	N	7	CF		AMI DIAL	16	000057	2004	25629277	3501 PASEO DEL NORTE NE	ALBUQUERQUE	NM	87113-1511	JIT SERVICES INC C/O GENERAL MILLS INC	35.17511	-106.60640	5064
680	6644336560	6644336531	Sensus	46047	N	6	CF		AMI DIAL	21	000060	1988	24300225	2 SUNPORT LOOP SE	ALBUQUERQUE	NM	87106	AVIATION DEPT CITY OF ABQ MAINTENANCE SHOP	35.04929	-106.61532	5306
681	6624336560	6624336337	Sensus	01200	N	7	CF		AMI DIAL	14	000054	2004	25962332	1340 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	SPORTS STADIUM/DFAS	35.06986	-106.62909	5104
682	4135815107	4135815144	Badger	95006904	N	5	NMUU		AMI DIAL	NW03	033	2010	70133769	5350 JUSTIN DR NW	ALBUQUERQUE	NM	87114	CITY VIEW LLC	35.19349	-106.69684	5312
683	8949335240	8949350340	Sensus	1105643	N	6	CF		AMI DIAL	21	000060	2009		4600 UNSER BD NW	ALBUQUERQUE	NM	87120	PARKS & REC. PARK MANAGEMENT	35.13519	-106.71431	5112
684	8944336560	8944336607	Badger	09055736	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		111 LOMAS BLVD NW	ALBUQUERQUE	NM	87102-2313	GULFSTREAM WORLDWIDE,INC.	35.09099	-106.64780	4956
685	8944336560	8944336607	Badger	09055736	Y	5	CF	LOW	AMI DIAL	12	000049	2009		111 LOMAS BLVD NW	ALBUQUERQUE	NM	87102-2313	GULFSTREAM WORLDWIDE,INC.	35.09099	-106.64780	4956
686	8928336560	8928336155	Sensus	05661	N	6	CF		AMI DIAL	14	000054	2003	25276475	1800 COAL AVE SE	ALBUQUERQUE	NM	87106-4025	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.07445	-106.62850	5128
687	4446336560	4446336576	Hersey	26991	N	5	CF		AMI DIAL	19	000059	2004	56025280	201 CEDAR ST SE	ALBUQUERQUE	NM	87106-4917	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.08100	-106.63535	5068
688	4449336560	4449336251	Sensus	84588	N	7	CF		AMI DIAL	12	000050	2004	25451849	7112 PAN AMERICAN PL NE	ALBUQUERQUE	NM	87109-4209	ALBUQUERQUE MEADOWS	35.16144	-106.58149	5234
689	1755336560	1755336759	Neptune	39240	N	5	CF		NON-AMI DIAL	12	000049	1998		302 DELAMAR AVE NW	ALBUQUERQUE	NM	87107-5106	PARK,GOODRICH	35.13480	-106.64028	4974
690	1760436560	1760436327	Sensus	23585	N	6	CF		AMI DIAL	16	000055	2003	25275213	3713 ISLETA BLVD SW	ALBUQUERQUE	NM	87105-5990	HORIZON ACADEMY	35.02318	-106.68294	4930
691	4451436560	4451436976	Sensus	30422	N	6	CF		AMI DIAL	12	000050	2004	25966985	7801 WILSHIRE AVE NE	ALBUQUERQUE	NM	87122-2807	LA CUEVA HIGH SCHOOL 525	35.18162	-106.55694	5424
692	4429336560	4429336854	Sensus	28057180	N	6	CF		AMI DIAL	15	000053	2005		12200 LOMAS BLVD NE	ALBUQUERQUE	NM	87112-5804	MANZANO HIGH 530	35.08313	-106.51065	5606
693	6939336560	6939336194	Sensus	N4435	Y	5	CF		AMI DIAL	12	000050	2004	25558305	5600 JEFFERSON ST NE	ALBUQUERQUE	NM	87110-9111	REIT MNGT & RESEARCH LLC	35.16519	-106.59198	5146
694	6939336560	6939336194	Sensus	N4435	Y	5	CF	FIRE	AMI DIAL	12	000050	2004	25558314	5600 JEFFERSON ST NE	ALBUQUERQUE	NM	87110-9111	REIT MNGT & RESEARCH LLC	35.16519	-106.59198	5146
695	1735336560	1735336384	Sensus	68230384	N	5	CF		AMI DIAL	21	000060	2007		1400 SUNPORT BLVD SE	ALBUQUERQUE	NM	87106-5636	AMERI,SUITES	35.04916	-106.63260	5132
696	1736144228	1736144299	Sensus	1278002	N	5	CF		AMI DIAL	21	000025	2009	19768259	4941 UNSER BLVD NW	Albuquerque	NM	87120	PARKS AND RECREATION/PARK MANAGEMENT	35.14041	-106.71014	5136
697	6941436560	6941436863	Badger	09055732	Y	5	CF	HIGH	AMI DIAL	16	000052	2009		6301 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-8102	BGK ALBUQUERQUE PROPERTY MANAGEMENT LLC	35.10284	-106.57511	5244
698	6941436560	6941436863	Badger	09055732	Y	5	CF	LOW	AMI DIAL	16	000052	2009		6301 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-8102	BGK ALBUQUERQUE PROPERTY MANAGEMENT LLC	35.10284	-106.57511	5244
699	1740436560	1740436965	Sensus	46902	N	7	CF		AMI DIAL	16	000056	2004	25345772	2300 ARENAL RD SW	ALBUQUERQUE	NM	87105-4160	RIO GRANDE HIGH 540	35.05113	-106.69198	4940
700	4431436560	4431436585	Sensus	N6081	N	6	CF		AMI DIAL	19	000058	1997	13831837	5324 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87109-6234	VILLAS C/O FIRST PACIFIC INVES	35.14124	-106.58417	5228
701	1758336560	1758336591	Sensus	49577	N	6	CF		AMI DIAL	12	000049	2004	24928257	1410 IRON AVE SW	ALBUQUERQUE	NM	87104-1065	PARKS & REC /ATT:CHUCK SALAZAR	35.08120	-106.66513	4949
702	6956336560	6956336920	Sensus	N4449	Y	8	CF	FIRE	AMI DIAL	16	000057	1990	25557457	3939 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87107-3147	CIMINO COMPOUND C/O CAROL RICKERT	35.13789	-106.66878	4975
703	6956336560	6956336920	Sensus	N4449	Y	8	CF	HIGH	AMI DIAL	16	000057	1990	25558252	3939 RIO GRANDE BLVD NW	ALBUQUERQUE	NM	87107-3147	CIMINO COMPOUND C/O CAROL RICKERT	35.13789	-106.66878	4975
704	1715336560	1715336920	Neptune	N7013	Y	8	CF		AMI DIAL	16	000052	2004	25632625	6000 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3322	CORONADO CENTER	35.10605	-106.57744	5252
705	1715336560	1715336920	Neptune	N7013	Y	8	CF	FIRE	AMI DIAL	16	000052	2004	25632648	6000 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-3322	CORONADO CENTER	35.10605	-106.57744	5252
706	6936336560	6936336499	Sensus	E2161	Y	8	CF	HIGH	AMI DIAL	16	000052	2004	56025372	1901 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1713	ALBUQUERQUE HILTON	35.10844	-106.62534	5042
707	6936336560	6936336499	Sensus	E2161	Y	8	CF	FIRE	AMI DIAL	16	000052	2004	56025035	1901 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1713	ALBUQUERQUE HILTON	35.10844	-106.62534	5042
708	1727336560	1727336109	Sensus	49543	N	5	CF		AMI DIAL	16	000055	2004	24928274	2901 EUCLID AVE NE	ALBUQUERQUE	NM	87106-1749	SANDIA SHADOWS-MH,LLC.	35.10400	-106.61376	5126
709	4426336560	4426336274	Sensus	00399	N	7	CF		AMI DIAL	16	000055	1989	25555109	801 ENCINO PL NE	ALBUQUERQUE	NM	87102-2612	Coolidge Medical Arts LLC c/o Cauwels & Stuve Rlty	35.08976	-106.63115	5124
710	1582215560	1582215507	Badger	09060556	Y	5	CF	HIGH	AMI DIAL	01	000013	2009		1921 YALE BLVD SE	ALBUQUERQUE	NM	87106-4138	110 SUNPORT, LLC. DBA HOLIDAY INN EXPRESS	35.06050	-106.62263	5178
711	1582215560	1582215507	Badger	09060556	Y	5	CF	LOW	AMI DIAL	01	000013	2009		1921 YALE BLVD SE	ALBUQUERQUE	NM	87106-4138	110 SUNPORT, LLC. DBA HOLIDAY INN EXPRESS	35.06050	-106.62263	5178
712	1584336560	1584336284	Sensus	N6742	Y	8	CF		AMI DIAL	14	000051	2004	25254516	6000 CORTADERIA ST NE	ALBUQUERQUE	NM	87111-8002	Broadstone High Desert LLC c/o ALNC Conservice	35.15070	-106.49276	6064
713	1584336560	1584336284	Sensus	N6742	Y	8	CF	FIRE	AMI DIAL	14	000051	2004	25252393	6000 CORTADERIA ST NE	ALBUQUERQUE	NM	87111-8002	Broadstone High Desert LLC c/o ALNC Conservice	35.15070	-106.49276	6064
714	1606223129	1606223112	Badger	06387305	Y	6	CF	LOW	AMI DIAL	14	000054	2010		201 LOUISIANA NE	Albuquerque	NM	87108	EXPO NEW MEXICO	35.07677	-106.56875	5324
715	1606223129	1606223112	Badger	06387305	Y	6	CF	HIGH	AMI DIAL	14	000054	2010		201 LOUISIANA NE	Albuquerque	NM	87108	EXPO NEW MEXICO	35.07677	-106.56875	5324
716	1585336560	1585336403	Sensus	E4471	Y	6	CF	HIGH	AMI DIAL	21	000060	2000	25967028	1700 MARKET ST NW	ALBUQUERQUE	NM	87120-4119	CANON DE ARROWHEAD c/o Evergreene Mgt Group,Inc	35.10305	-106.72667	5170
717	1585336560	1585336403	Sensus	E4471	Y	6	CF	FIRE	AMI DIAL	21	000060	2000	25967059	1700 MARKET ST NW	ALBUQUERQUE	NM	87120-4119	CANON DE ARROWHEAD c/o Evergreene Mgt Group,Inc	35.10305	-106.72667	5170
718	1615515783	1615515778	Badger	95165179	N	6	NMUU		AMI DIAL	NW03	033	2010	70612873	4709 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	PARADISE VIEW CONDOS	35.20254	-106.68120	5194
719	1588336560	1588336092	Sensus	26932	N	6	CF		AMI DIAL	14	000054	2004	56025345	9000 ZUNI RD SE	ALBUQUERQUE	NM	87123-3116	KINGSLEY MANAGEMENT CORPORATIO	35.06931	-106.54869	5406

720	6800436560	6800436373	Sensus	23546	N	5	CF		AMI DIAL	19	000059	2003	24966255	440 JEFFERSON ST NE	ALBUQUERQUE	NM	87108-1235	PARK MANAGEMENT	35.08523	-106.59290	5222
721	9111436560	9111436190	Sensus	E8714	Y	6	CF	LOW	AMI DIAL	12	000050	2004	25558281	5501 PINO AVE NE	ALBUQUERQUE	NM	87109-5704	FLEET MANAGEMENT	35.16891	-106.57899	5234
722	9111436560	9111436190	Sensus	E8714	Y	6	CF	HIGH	AMI DIAL	12	000050	2004	25557675	5501 PINO AVE NE	ALBUQUERQUE	NM	87109-5704	FLEET MANAGEMENT	35.16891	-106.57899	5234
723	9111436560	9111436190	Sensus	E8714	Y	6	CF	FIRE	AMI DIAL	12	000050	2004	25557276	5501 PINO AVE NE	ALBUQUERQUE	NM	87109-5704	FLEET MANAGEMENT	35.16891	-106.57899	5234
724	9137336560	9137336205	Sensus	23571	N	5	CF		AMI DIAL	14	000051	2003	24950665	3825 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-0900	HILLCREST PARK HOMEOWNERS ASSOCIATION	35.13155	-106.60221	5124
725	9157336560	9157336627	Sensus	N3123	Y	7	CF	FIRE	AMI DIAL	14	000051	2004	26592380	4951 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2512	CHIMNEY RIDGE ASSOC	35.14167	-106.57705	5276
726	9157336560	9157336627	Sensus	N3123	Y	7	CF		AMI DIAL	14	000051	2004	25558273	4951 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2512	CHIMNEY RIDGE ASSOC	35.14167	-106.57705	5276
727	9165336560	9165336901	Sensus	E6186	N	6	CF		AMI DIAL	12	000050	1998	25555041	101 SUN AVE NE	ALBUQUERQUE	NM	87109-4373	GOODMAN REALTY GROUP	35.16594	-106.58865	5168
728	9168336560	9168336668	Badger	09054643	Y	6	CF	LOW	AMI DIAL	16	000056	2009		2436 ZICKERT RD NW	ALBUQUERQUE	NM	87104-2831	DURANES 249	35.11072	-106.67442	4964
729	9168336560	9168336668	Badger	09054643	Y	6	CF	HIGH	AMI DIAL	16	000056	2009		2436 ZICKERT RD NW	ALBUQUERQUE	NM	87104-2831	DURANES 249	35.11072	-106.67442	4964
730	9125336560	9125336035	Sensus	65978348	N	6	CF		AMI DIAL	15	000053	2009		9425 CLAREMONT AVE NE	ALBUQUERQUE	NM	87112	Owner,Current	35.11225	-106.53653	5478
731	9150436560	9150436041	Sensus	68520350	N	6	CF		AMI DIAL	16	000056	2008		229 ATRISCO DR SW	ALBUQUERQUE	NM	87105	BERNALILLO COUNTY FINANCE DEPT	35.08238	-106.68395	4952
732	9145336560	9145336489	Sensus	70053906	N	5	CF		AMI DIAL	12	000050	2004	25974167	8400 BARSTOW ST NE	ALBUQUERQUE	NM	87122-2832	Owner,Current	35.17854	-106.54920	5490
733	9087336560	9087345402	Sensus	66287510	N	8	CF		AMI DIAL	12	000050	2008		6400 WYOMING BLVD NE	ALBUQUERQUE	NM	87109-3843	ALBQ ACADEMY 069000	35.15248	-106.55573	5446
734	6814336560	6814336207	Sensus	67021697	N	6	CF		AMI DIAL	14	000051	2009	16250127	2 LOWELL ST NE	ALBUQUERQUE	NM	87110	AMERICAN GOLF CORP	35.15677	-106.50632	5902
735	9105336560	9105336580	Sensus	70016688	N	6	CF		AMI DIAL	16	000055	2009		2903 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	Owner,Current	35.05392	-106.63092	5120
736	6818336560	6818336987	Sensus	46887	N	5	CF		AMI DIAL	16	000056	2004	25252397	5101 ST JOSEPHS PL NW	ALBUQUERQUE	NM	87105	CATHOLIC CENTER	35.12825	-106.69715	5120
737	9130436560	9130436701	Sensus	N4444	Y	7	CF	FIRE	AMI DIAL	12	000050	2004	25557375	5901 MCKINNEY DR NE	ALBUQUERQUE	NM	87109-3543	CAROL RICKERT & ASSOC.	35.14845	-106.58041	5238
738	9130436560	9130436701	Sensus	N4444	Y	7	CF		AMI DIAL	12	000050	2004	25558270	5901 MCKINNEY DR NE	ALBUQUERQUE	NM	87109-3543	CAROL RICKERT & ASSOC.	35.14845	-106.58041	5238
739	9109336560	9109336379	Sensus	51943	N	6	CF		AMI DIAL	19	000058	2001	25556550	4500 CARLISLE BLVD NE	ALBUQUERQUE	NM	87109-1025	CASA BONITA C/O PACIFICAP PROPERTIES GROUP	35.13291	-106.60393	5116
740	1701436560	1701436079	Sensus	47459	N	6	CF		AMI DIAL	12	000049	1983	24299949	400 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-2167	PARK MANAGEMENT DIVISION	35.08675	-106.65131	4954
741	9190436560	9190436801	Sensus	23966	N	6	CF		AMI DIAL	12	000050	2004	56028856	7777 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-4343	JOURNAL CENTER	35.16868	-106.59214	5142
742	1707336560	1707336770	Sensus	N3573	N	5	CF		AMI DIAL	15	000053	2003	24945724	12800 COPPER AVE NE	ALBUQUERQUE	NM	87123-1647	APACHE 214	35.07906	-106.50190	5686
743	6915552407	6915548471	Sensus	68543038	N	5	CF		AMI DIAL	01	000013	2008		2301 INTERNATIONAL AVE SE	ALBUQUERQUE	NM	87106-4198	RESIDENCE INN	35.06193	-106.62146	5184
744	9216108683	9216184058	Sensus	68945546	Y	5	CF		AMI DIAL	21	000011	2008	16250016	6200 MONTANO PLAZA DR NW	ALBUQUERQUE	NM	87120	SFP/MONTANO LTD, CO.	35.15335	-106.68664	5061
745	9216108683	9216184058	Sensus	68945546	Y	5	CF	HIGH	AMI DIAL	21	000011	2008	16250011	6200 MONTANO PLAZA DR NW	ALBUQUERQUE	NM	87120	SFP/MONTANO LTD, CO.	35.15335	-106.68664	5061
746	1677336560	1677336098	Sensus	67855948	N	5	CF		AMI DIAL	15	000053	2007	26591937	1700 PENNSYLVANIA ST NE	ALBUQUERQUE	NM	87110-5544	INEZ 276	35.10089	-106.55968	5324
747	9170436560	9170436407	Sensus	78991	N	5	CF		AMI DIAL	19	000058	2004	25557134	2155 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-5409	CITY PLACE	35.10263	-106.57059	5274
748	1697336560	1697336529	Sensus	46883	N	5	CF		AMI DIAL	14	000051	2004	25451635	4236 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-3423	SIERRA MEADOW APARTMENTS/MAEGHER FAMILY TRUST	35.12881	-106.53318	5566
749	6921436560	6921436474	Rockwell	05062	N	8	CF		AMI DIAL	14	000051	2004	25557362	5800 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-6122	MOUNTAIN RUN APARTMENTS	35.14566	-106.52673	5674
750	9218336560	9218336895	Sensus	52878	N	5	CF		AMI DIAL	15	000053	2004	56025012	11829 MARQUETTE AVE NE	ALBUQUERQUE	NM	87123-1304	PARK MANAGEMENT DIVISION	35.08444	-106.51549	5568
751	9207336560	9207336694	Neptune	E8820	Y	7	CF	HIGH	AMI DIAL	14	000054	2004	25889238	300 DORADO PL SE	ALBUQUERQUE	NM	87123-3810	MANZANO VISTA APTS	35.06448	-106.50480	5590
752	9207336560	9207336694	Neptune	E8820	Y	7	CF	LOW	AMI DIAL	14	000054	2004	24869524	300 DORADO PL SE	ALBUQUERQUE	NM	87123-3810	MANZANO VISTA APTS	35.06448	-106.50480	5590
753	6916336560	6916336198	Sensus	N6913	Y	5	CF	LOW	AMI DIAL	14	000054	2004	25973982	601 MESA ST SE	ALBUQUERQUE	NM	87124	ST CHARLES SCHOOL	35.07673	-106.62636	5144
754	6916336560	6916336198	Sensus	N6913	Y	5	CF	HIGH	AMI DIAL	14	000054	2004	25974120	601 MESA ST SE	ALBUQUERQUE	NM	87124	ST CHARLES SCHOOL	35.07673	-106.62636	5144
755	1693336560	1693336808	Sensus	67021620	N	5	CF		AMI DIAL	12	000050	2007		9011 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87113	PARK MGMT.	35.18844	-106.59179	5116
756	9218526560	9218539987	Sensus	66287424	N	5	CF		AMI DIAL	21	000042	2006	23311783	7000 CENTRAL AVE SW	ALBUQUERQUE	NM	87121-2096	VERIZON WIRELESS	35.07745	-106.71528	5092
757	9184336560	9184336233	Sensus	81086	N	5	CF		AMI DIAL	16	000056	2004	25975025	7 UNSER BLVD NW	ALBUQUERQUE	NM	87120	PARK MANAGEMENT/ATTN: AL	35.14502	-106.71269	5130
758	9185336560	9185336330	Sensus	82664	N	6	CF		NON-AMI DIAL	16	000057	1999		9660 4TH ST NW	ALBUQUERQUE	NM	87114-2102	MR PILLAI	35.19146	-106.61655	5000
759	6919336560	6919336758	Sensus	63949	N	6	CF		AMI DIAL	14	000051	2004	25554659	11001 CAMERO AVE NE	ALBUQUERQUE	NM	87111-1802	EISENHOWER 480	35.14497	-106.51711	5774
760	4399336560	4399336074	Sensus	49532	N	5	CF		AMI DIAL	14	000054	2004	24928295	1815 ST CYR AVE SE	ALBUQUERQUE	NM	87106	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.07347	-106.62921	5128
761	4406336560	4406336847	Sensus	E2027	Y	8	CF	FIRE	AMI DIAL	12	000050	2002	25967022	8100 BARSTOW ST NE	ALBUQUERQUE	NM	87122-2801	ALLIANCE RESIDENTIAL CO/BROADSTONE HEIGHTS	35.17646	-106.54936	5488
762	4406336560	4406336847	Sensus	E2027	Y	8	CF		AMI DIAL	12	000050	2002	25556277	8100 BARSTOW ST NE	ALBUQUERQUE	NM	87122-2801	ALLIANCE RESIDENTIAL CO/BROADSTONE HEIGHTS	35.17646	-106.54936	5488
763	4276336560	4276336181	Sensus	47583	N	5	CF		AMI DIAL	16	000057	2004	25274169	120 WOODLAND AVE NW	ALBUQUERQUE	NM	87107-1498	NORTH AREA 019	35.11063	-106.64382	4970
764	4379336560	4379336724	Sensus	63878975	N	5	CF		AMI DIAL	14	000054	2007		5601 GIBSON BLVD SE	ALBUQUERQUE	NM	87108-4842	HOUSING AUTHORITY	35.05861	-106.57886	5308
765	4324336560	4324336299	Sensus	E4434	Y	6	CF	FIRE	AMI DIAL	16	000057	2004	25558231	517 GOLD AVE SW	ALBUQUERQUE	NM	87102-3117	GOLD AVE REALTY	35.08380	-106.65343	4954
766	4324336560	4324336299	Sensus	E4434	Y	6	CF		AMI DIAL	16	000057	2004	25558304	517 GOLD AVE SW	ALBUQUERQUE	NM	87102-3117	GOLD AVE REALTY	35.08380	-106.65343	4954
767	4364336560	4364336880	Sensus	68372925	N	5	CF		AMI DIAL	14	000054	2008		800 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	CNM COMMUNITY COLLEGE/CHERYL HALL	35.07300	-106.62882	5130
768	6908558873	6908558862	Badger	17150688	N	6	NMUU		AMI DIAL	NW01	017	2009	80747438	10549 UNIVERSE BLVD NW	ALBUQUERQUE	NM	87114	CITY OF ABQ PARK MANAGEMENT	35.20357	-106.72978	5414
769	6889336560	6889336978	Sensus	26938	N	6	CF		AMI DIAL	14	000054	2004	56009978	301 WESTERN SKIES DR SE	ALBUQUERQUE	NM	87123-3622	CANYON POINT ASSOCIATES LLC	35.06665	-106.50914	5570
770	2106336560	2106336774	Sensus	27079	N	8	CF		NON-AMI DIAL	12	000050	2002		3901 ALAMEDA BLVD NE	ALBUQUERQUE	NM	87114	FSTA LAUNCH FLD,BALLOON	35.19548	-106.59745	5050
771	4744336560	4744336550	Sensus	E9007	Y	5	CF	LOW	AMI DIAL	12	000049	2004	25973572	513 6TH ST NW	ALBUQUERQUE	NM	87102-2005	LEW WALLACE 373	35.09001	-106.65318	4956
772	4744336560	4744336550	Sensus	E9007	Y	5	CF	HIGH	AMI DIAL	12	000049	2004	25973560	513 6TH ST NW	ALBUQUERQUE	NM	87102-2005	LEW WALLACE 373	35.09001	-106.65318	4956
773	4764336560	4764336966	Sensus	67855545	N	5	CF		AMI DIAL	21	000060	2007		6811 TAYLOR RANCH DR NW	ALBUQUERQUE	NM	87120-2957	L.B.J. MIDDLE SCHOOL 485	35.16208	-106.69687	5122
774	9653336560	9653336115	Neptune	44444	N	6	CF		NON-AMI DIAL	21	000061	1997		2107 APACHE PL NE	ALBUQUERQUE	NM	87112-3604	PARK,ONATE	35.10686	-106.50546	5734
775	4724336560	4724336356	Rockwell	50140	N	8	CF		NON-AMI DIAL	14	000054	1982		1 KAFB ST SE	ALBUQUERQUE	NM	87117-0001	Kirtland AFB/ATTN: DENNIS WARREN	35.05764	-106.60399	5324
776	4725675714	4725616527	Sensus	68372922	N	5	CF		AMI DIAL	06	000011	2010		2300 12TH ST NW	ALBUQUERQUE	NM	87104	HOLIDAY INN EXPRESS/ IPFDC 3	35.11011	-106.65824	4966
777	7318336560	7318336915	Sensus	N4441	Y	5	CF		AMI DIAL	19	000059	2000	25557374	1016 NAKOMIS DR NE	ALBUQUERQUE	NM	87112-7004	CASA HERMOSA HOMEOWNER ASSOCIATION	35.08947	-106.50183	5734
778	7318336560	7318336915	Sensus	N4441	Y	5	CF	FIRE	AMI DIAL	19	000059	2000	25558283	1016 NAKOMIS DR NE	ALBUQUERQUE	NM	87112-7004	CASA HERMOSA HOMEOWNER ASSOCIATION	35.08947	-106.50183	5734
779	2099336560	2099336016	Sensus	79000	N	6	CF		NON-AMI DIAL	14	000054	1977		9125 COPPER AVE NE	ALBUQUERQUE	NM	87123-1041	LOS ALTOS TOWERS C/O JAMBOREE MGT	35.08336	-106.54651	5390
780	4713795234	4713712024	Sensus	66606854	N	5	CF		AMI DIAL	21	000060	2007	57927464	5600 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87105-7413	Mesa Del Sol	34.99714	-106.62045	5306
781	4728336560	4728336101	Sensus	23588	N	6	CF		AMI DIAL	14	000054	2003	24950677	619 YALE BLVD SE	ALBUQUERQUE	NM	87106	GORE TRANSIT DIVISION	35.07167	-106.62225	5154
782	7307336560	7307336717	Sensus	79006	N	5	CF		AMI DIAL	15	000053	2004	56025347	1357 WAGON TRAIN DR SE	ALBUQUERQUE	NM	87123-4281	VILLA SERENA TOWNHOMES	35.04293	-106.49949	5714
783	9642777275	9642745271	Sensus	68543042	N	5	CF		AMI DIAL	16	000055	2008		1201 CAMINO DE SALUD NE	ALBUQUERQUE	NM	87102	UNM PHYSICAL PLANT DEPT	35.09538	-106.62938	5074
784	1990436560	1990436948	Badger	09335790	Y	5	CF	HIGH	AMI DIAL	16	000057	2009		412 ALAMEDA BLVD NW	ALBUQUERQUE	NM	87114-2020	ALAMEDA ELEMENTARY 207	35.18973	-106.61884	5002
785	1990436560	1990436948	Badger	09335790	Y	5	CF	LOW	AMI DIAL	16	000057	2009		412 ALAMEDA BLVD NW	ALBUQUERQUE	NM	87114-2020	ALAMEDA ELEMENTARY 207	35.18973	-106.61884	5002
786	1909336560	1909336547	Sensus	51947	N	6	CF		AMI DIAL	16	000057	2004	25556941	4000 OSUNA RD NE	ALBUQUERQUE	NM	87109-4423	WAGNER EQUIPMENT COMPANY	35.15523	-106.59843	5118
787	1965336560	1965336035	Sensus	67855946	N	5	CF		AMI DIAL	16	000056	2007		8101 GAVIN RD NW	ALBUQUERQUE	NM	87120-5536	PAINTED SKY ELEM NO 275	35.09461	-106.73642	5222
788	1930436560	1930436797	Rockwell	57177	N	6	CF		AMI DIAL	16	000055	1987	25557138	5201 ROMA AVE NE	ALBUQUERQUE	NM	87108-1334	MANZANO DEL SOL	35.08644	-106.58639	5242
789	1910436560	1910436536	Sensus	41930	N	5	CF		AMI DIAL	21	000060	2004	56025062	1 RIO BRAVO BLVD SW	ALBUQUERQUE	NM	87105	BERNALILLO COUNTY FINANCE DEPT	35.01895	-106.68030	4928
790	1883336560	1883336641	Sensus	63644	N	6	CF		AMI DIAL	16	000057	2004	25965666	5151 SAN FRANCISCO RD NE	ALBUQUERQUE	NM	87109-4641	WINEGARDNER & HAMMONS	35.16850	-106.58593	5186
791	2024336560	2024336242	Sensus	54538	N	5	CF		AMI DIAL	16	000056	2004	24928215	5301 ST JOSEPHS AVE NW	ALBUQUERQUE	NM	87120-1712	ST. PUIS HIGH SCHOOL	35.12907	-106.69848	5115
792	1917336560	1917336979	Sensus	23544	N	5	CF		AMI DIAL	16	000055	2003	24950691	5700 COPPER AVE NE	ALBUQUERQUE	NM	87108-1671	HILL TOP APTS.	35.08022	-106.58189	5272
793	1970436560	1970436577	Sensus	00299	N	5	CF		AMI DIAL	21	000060	1982	25966991	2301 GIRARD BLVD SE	ALBUQUERQUE	NM	87106	AVIATION DEPT CITY OF ALBUQUER	35.05447	-106.61523	5298
794	1945336560	1945336636	Sensus	66250154	N	5	CF		AMI DIAL	14	000051	2009	19674352	9115 HEADINGLY AVE NE	ALBUQUERQUE	NM	87111	Owner,Current	35.12034	-106.54098	5480
795	2010436560	2010436389	Sensus	26924	N	6	CF		AMI DIAL	19	000059	2004	56025040	500 WYOMING BLVD NE	ALBUQUERQUE	NM	87123	ATTN: AFRC-CAR-EN-B	35.08014	-106.54930	5388
796	1948336560	1948336459	Sensus	61149558	N	6	CF		AMI DIAL	16	000052	2007		2501 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87107-1707	76 TRK STOP,UNION	35.11056	-106.62402	5054
797	1950436560	1950436159	Sensus	07321	N	6	CF		AMI DIAL	16	000057	2004	25451891	1825 EDITH BLVD NE	ALBUQUERQUE	NM	87102	PARK MANAGEMENT/Santa Barbara/Martineztown	35.10283	-106.63785	4992
798	2028336560	2028336025	Badger	09335796	Y	5	CF	HIGH	AMI DIAL	16	000056	2009		1201 ATRISCO DR SW	ALBUQUERQUE	NM	87105-3550	ATRISCO 216	35.06284	-106.69322	4942
799	2028336560	2028336025	Badger	09335796	Y	5	CF	LOW	AMI DIAL	16	000056	2009		1201 ATRISCO DR SW	ALBUQUERQUE	NM	87105-3550	ATRISCO 216	35.06284	-106.69322	4942

800	1985336560	1985336495	Sensus	86811	N	6	CF		AMI DIAL	12	000049	2000	24300218	400 LOMAS BLVD NW	ALBUQUERQUE	NM	87102-2222	BERNALILLO CO.FINANCE	35.09042	-106.65160	4956
801	1887336560	1887336358	Sensus	23562	N	5	CF		AMI DIAL	15	000053	2003		2208 LESTER DR NE	ALBUQUERQUE	NM	87112-2639	THREE,FOUNTAIN,APARTMENTS	35.10725	-106.54707	5410
802	1925336560	1925336200	Sensus	69360461	N	5	CF		AMI DIAL	16	000055	2009		5041 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3959	TC ALBUQ. ROSE INTEREST LLC	35.10211	-106.58942	5212
803	1988336560	1988336168	Sensus	64126934	N	6	CF		AMI DIAL	14	000054	2009		12300 SINGING ARROW ST SE	ALBUQUERQUE	NM	87123-3704	MEADOWS REALTY C/O FOUR HILLS	35.06300	-106.51337	5550
804	1905336560	1905336742	Sensus	68543050	N	6	CF		AMI DIAL	12	000050	2009		3901 ALAMEDA BLVD NE	ALBUQUERQUE	NM	87113	LITTLE LEAGUE,EASTDALE	35.19232	-106.59859	5060
805	1937336560	1937336376	Sensus	E6739	Y	7	CF	FIRE	AMI DIAL	14	000051	2004	25252307	4321 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1109	AZTEC VILLAGE C/O PACIFICAP PROPERTIES GROUP(OT)	35.13110	-106.59014	5180
806	1937336560	1937336376	Sensus	E6739	Y	7	CF	HIGH	AMI DIAL	14	000051	2004	26592027	4321 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1109	AZTEC VILLAGE C/O PACIFICAP PROPERTIES GROUP(OT)	35.13110	-106.59014	5180
807	9374336560	9374336071	Neptune	78001	N	5	CF		NON-AMI DIAL	21	000060	1993		1 UNSER BLVD NW	ALBUQUERQUE	NM	87121	PARKS & REC/ MICHELLE HERRERA	35.11871	-106.72755	5172
808	9375336560	9375336146	Sensus	67780483	N	6	CF		AMI DIAL	12	000050	2007		4920 UNION WAY NE	ALBUQUERQUE	NM	87107-7014	LIFESTYLE APTS.	35.13946	-106.61699	5042
809	9315336560	9315336847	Sensus	84084	N	5	CF		AMI DIAL	21	000060	2004	25965219	2601 CENTRAL AVE NW	ALBUQUERQUE	NM	87104-1615	BIOLOGICAL PARK	35.09380	-106.68343	4957
810	9378336560	9378336921	Badger	09054637	Y	6	CF	LOW	AMI DIAL	16	000057	2009		1620 VAN CLEAVE RD NW	ALBUQUERQUE	NM	87107-3442	GRIEGOS 267	35.12901	-106.66481	4970
811	9378336560	9378336921	Badger	09054637	Y	6	CF	HIGH	AMI DIAL	16	000057	2009		1620 VAN CLEAVE RD NW	ALBUQUERQUE	NM	87107-3442	GRIEGOS 267	35.12901	-106.66481	4970
812	9297336560	9297336472	Sensus	69360456	N	5	CF		AMI DIAL	15	000053	2008		3501 MOON ST NE	ALBUQUERQUE	NM	87111-4619	MADISON JR HIGH 435	35.12214	-106.54221	5472
813	9327336560	9327336071	Sensus	F3612	Y	8	CF		AMI DIAL	19	000059	2003	25555206	2835 CAMPUS BLVD NE	ALBUQUERQUE	NM	87106-2701	UNM PHYSICAL PLANT	35.08508	-106.61367	5160
814	9327336560	9327336071	Sensus	F3612	Y	8	CF	FIRE	AMI DIAL	19	000059	2003	25554624	2835 CAMPUS BLVD NE	ALBUQUERQUE	NM	87106-2701	UNM PHYSICAL PLANT	35.08508	-106.61367	5160
815	9429736560	9429730863	Sensus	68230386	N	6	CF		AMI DIAL	01	000007	2007		505 ELM ST NE	ALBUQUERQUE	NM	87102-2500	ST. JOSEPHS HEALTHCARE	35.08679	-106.63892	4992
816	9355336560	9355336735	Sensus	66287449	N	5	CF		AMI DIAL	14	000054	2007		6601 RIDGECREST DR SE	ALBUQUERQUE	NM	87110	PARK,LASSETER	35.06881	-106.60063	5308
817	9358336560	9358336556	Badger	17000823	N	6	CF		AMI DIAL	14	000054	2009		912 LOCUST ST SE	ALBUQUERQUE	NM	87106	LINCOLN 064	35.07414	-106.63858	5042
818	9366770235	9366788949	Sensus	68543055	N	6	CF		AMI DIAL	21	000060	2009		5201 HAWKING DR SE	ALBUQUERQUE	NM	87105	SCHOTT SOLAR INC.	35.00013	-106.60977	5296
819	9360436560	9360436251	Sensus	70015689	N	5	CF		AMI DIAL	19	000058	2009		4700 MORRIS ST NE	ALBUQUERQUE	NM	87111-3704	CENTRAL NEW MEXICO COMMUNITY COLLEGE/CHERYL HALL	35.13453	-106.51980	5700
820	9293336560	9293336734	Sensus	28850	N	5	CF		AMI DIAL	12	000049	1986	24300165	401 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102	GENERAL SERVICES	35.08896	-106.65188	4956
821	9394336560	9394361506	Sensus	89518	N	5	CF		AMI DIAL	14	000054	2004	25451684	13229 RACHEL RD SE	ALBUQUERQUE	NM	87123	PARKS & REC / PARK MANAGEMENT	35.06425	-106.49808	5634
822	9395336560	9395336609	Sensus	06335	N	6	CF		AMI DIAL	12	000049	2003	24966280	1701 4TH ST SW	ALBUQUERQUE	NM	87102-4508	State of NM/Hispanic C.C.	35.06717	-106.65438	4944
823	9335336560	9335336311	Sensus	69360458	N	6	CF		AMI DIAL	16	000056	2008		5401 HOMESTEAD CIR NW	ALBUQUERQUE	NM	87120-2900	CHAMIZA ELEMENTARY NO 295	35.16849	-106.70180	5192
824	9398631413	9398631499	Badger	30070226	N	5	NMUU		AMI DIAL	NW04	047	2009	70428555	GOLF CO PASEO DEL NORTE NW	ALBUQUERQUE	NM	87114	CITY OF ABQ PARK MANAGEMENT	35.18314	-106.67062	5048
825	9347336560	9347336471	Sensus	54394	N	7	CF		AMI DIAL	14	000051	2004	25558280	4301 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-7136	ECHO RIDGE HOMES INC	35.13468	-106.57770	5264
826	9340436560	9340436889	Sensus	49567	N	5	CF		AMI DIAL	12	000050	2004	24928346	725 MISSION AVE NE	ALBUQUERQUE	NM	87107-4909	MISSION AVE 309	35.14164	-106.61662	5050
827	4494767154	4494725195	Sensus	68230376	N	5	CF		AMI DIAL	15	000007	2007		6510 AMERICAS PKWY NE	ALBUQUERQUE	NM	87110-5368	New Omni Hospitality LLC	35.10109	-106.57096	5268
828	4500436560	4500436306	Sensus	05644	N	5	CF		AMI DIAL	16	000057	2004	25346491	1101 PARK AVE SW	ALBUQUERQUE	NM	87102-2967	WASHINGTON 465	35.08550	-106.66032	4950
829	7020436560	7020436571	Sensus	23553	N	5	CF		AMI DIAL	14	000051	2003	19252873	9801 ACADEMY RD NE	ALBUQUERQUE	NM	87111	AMERICAN GOLF CORPORATION	35.15518	-106.51928	5776
830	7011586769	7011593658	Badger	95006906	N	5	NMUU		AMI DIAL	NW04	066	2008	2396677	SERVICE CRT #4 NW	ALBUQUERQUE	NM	87114	SIMON PROPERTIES STORE # 0549			0
831	4514336560	4514336150	Badger	09061913	Y	6	CF	LOW	AMI DIAL	19	000058	2010		6200 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-7379	OVERLOOK APARTMENTS	35.15047	-106.52515	5704
832	4514336560	4514336150	Badger	09061913	Y	6	CF	HIGH	AMI DIAL	19	000058	2010		6200 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-7379	OVERLOOK APARTMENTS	35.15047	-106.52515	5704
833	4455572173	4455587392	Sensus	67136103	N	5	CF		AMI DIAL	23	000023	2007		480 SUNSET CA RD SW	ALBUQUERQUE	NM	87105	BERNALILLO COUNTY FINANCE DEPT	35.07616	-106.67620	4952
834	6976336560	6976336295	Sensus	78755	N	7	CF		AMI DIAL	21	000060	2003	24966285	1750 INDIAN SCHOOL RD NW	ALBUQUERQUE	NM	87104-2325	ST ANTHONY PLAZA C/O PACIFICAP PROPERTIES GROUP	35.10784	-106.66543	4964
835	7035336560	7035336235	Sensus	E6184	Y	6	CF	HIGH	AMI DIAL	12	000050	2004	24869518	8810 HORIZON BLVD NE	ALBUQUERQUE	NM	87113-1690	VILLAGE OF ALAMEDA	35.18694	-106.60213	5074
836	7035336560	7035336235	Sensus	E6184	Y	6	CF	LOW	AMI DIAL	12	000050	2004	24906232	8810 HORIZON BLVD NE	ALBUQUERQUE	NM	87113-1690	VILLAGE OF ALAMEDA	35.18694	-106.60213	5074
837	4518336560	4518336930	Sensus	69360466	N	5	CF	HIGH	AMI DIAL	16	000056	2009		5401 GLENRIO RD NW	ALBUQUERQUE	NM	87105-1273	JOHN ADAM JR HIGH 405	35.09738	-106.70015	5095
838	4469336560	4469336572	Sensus	62223552	N	5	CF		AMI DIAL	12	000049	2005	24966952	501 TIJERAS AVE NW	ALBUQUERQUE	NM	87102-3109	BERNALILLO COUNTY FINANCE	35.08743	-106.65237	4956
839	7027336560	7027336017	Sensus	30401	N	5	CF		AMI DIAL	16	000055	2004	25346214	4901 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3924	Y.M.C.A.	35.10202	-106.59013	5218
840	4457336560	4457336661	Sensus	49550	N	5	CF		AMI DIAL	14	000051	2004	24928254	7449 PRAIRIE RD NE	ALBUQUERQUE	NM	87109-1827	LITTLE TURTLE TN HMS	35.13347	-106.56202	5366
841	7015336560	7015336777	Sensus	67855943	N	5	CF		AMI DIAL	21	000060	2007		6100 ILIFF RD NW	ALBUQUERQUE	NM	87121-0900	QUILITY INN & SUITES	35.10333	-106.70879	5097
842	9565336560	9565336968	Sensus	66287448	N	5	CF		AMI DIAL	12	000049	2008		2208 9TH ST NW	ALBUQUERQUE	NM	87102-1005	PARK,GRAVES	35.10815	-106.65378	4964
843	7284336560	7284336249	Sensus	69360454	N	5	CF		AMI DIAL	16	000052	2009	26591951	3119 TILEY DR NE	ALBUQUERQUE	NM	87110	PARKS & GEN SERVICE GRISHAM PK	35.11926	-106.59859	5150
844	9505336560	9505336669	Sensus	68230387	N	6	CF		AMI DIAL	16	000056	2007		9180 COORS BLVD NW	ALBUQUERQUE	NM	87120-3112	SIMPSON C/O SAN MIGUEL 2015	35.17897	-106.66659	4994
845	9509336560	9509336474	Sensus	N9457	Y	6	CF	HIGH	AMI DIAL	14	000051	2004	25974095	5323 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1302	DEL NORTE HIGH 514	35.13106	-106.58289	5228
846	9509336560	9509336474	Sensus	N9457	Y	6	CF	LOW	AMI DIAL	14	000051	2004	25889376	5323 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1302	DEL NORTE HIGH 514	35.13106	-106.58289	5228
847	9568336560	9568336763	Sensus	23583	N	6	CF		AMI DIAL	12	000049	2003	24967658	200 3RD ST NW	ALBUQUERQUE	NM	87102-3334	BGK ALBUQUERQUE PROPERTY MANAGEMENT LLC	35.08537	-106.64931	4954
848	9517336560	9517336922	Sensus	78988	N	5	CF		AMI DIAL	19	000059	2004	25558310	800 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87108	MARKET PLACE NM	35.08509	-106.56850	5310
849	7285336560	7285336349	Sensus	88465	N	5	CF		AMI DIAL	16	000056	2000	25967066	8901 BLUEWATER RD NW	ALBUQUERQUE	NM	87121-2024	JIMMY CARTER MID. SCHOOL 445	35.08243	-106.73146	5148
850	9510436560	9510436478	Rockwell	79002	N	6	CF		AMI DIAL	16	000052	2004	25557271	2400 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-4303	GRUBB & ELLIS NEW MEXICO	35.10554	-106.56704	5292
851	9545336560	9545336572	Sensus	70033157	N	5	CF		AMI DIAL	15	000053	2006	25630330	1229 KATIE ST NE	ALBUQUERQUE	NM	87110	Owner,Current	35.09493	-106.55661	5328
852	9570436560	9570436501	Sensus	78652	N	6	CF		AMI DIAL	19	000058	2004	25556370	6100 HARPER DR NE	ALBUQUERQUE	NM	87109-3575	HOUSING AUTHORITY	35.15276	-106.58285	5218
853	7290436560	7290436817	Sensus	68543052	N	6	CF		AMI DIAL	19	000058	2009		4701 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1219	LOVELACE HEALTH SYSTEMS/WOMEN'S HOSPITAL	35.13147	-106.58996	5180
854	9490706582	9490730400	Sensus	68572050	N	6	CF		AMI DIAL	16	000056	2008		8501 TOWER RD SW	ALBUQUERQUE	NM	87121	TOWER PARK	35.06375	-106.72859	5100
855	9511436560	9511436246	Sensus	68520349	N	8	CF		AMI DIAL	12	000050	2008		5110 WILSHIRE AVE NE	ALBUQUERQUE	NM	87113	SUN NORTH ESTATES	35.18154	-106.58916	5152
856	9548336560	9548336402	Sensus	66287433	N	6	CF		AMI DIAL	12	000050	2007		4201 EDITH BLVD NE	ALBUQUERQUE	NM	87107-2225	PNM RESOURCES GENERAL SERVICES DEPARTMENT	35.12416	-106.63301	4982
857	7288336560	7288336035	Sensus	60875935	N	6	CF		AMI DIAL	19	000059	2007		700 LOUISIANA BLVD SE	ALBUQUERQUE	NM	87108-3847	VAN BUREN MIDDLE, 460	35.06715	-106.56753	5338
858	9590436560	9590436871	Sensus	47151	N	6	CF		AMI DIAL	16	000055	1983	.24299946	1650 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1726	UNIVERSITY TOWERS	35.10279	-106.62545	5084
859	9550436560	9550436089	Sensus	42003	N	5	CF		AMI DIAL	19	000059	2004	56025236	13205 SAN JUAN RD NE	ALBUQUERQUE	NM	87108	PARK MANAGEMENT DIVISION	35.08563	-106.50026	5738
860	9496336560	9496336578	Sensus	67011753	N	5	CF		AMI DIAL	14	000054	2007		6231 GIBSON BLVD SE	ALBUQUERQUE	NM	87108-4970	B.J.W. ASSOCIATION/GALES APTS	35.05868	-106.57311	5324
861	9525336560	9525336124	Sensus	69360462	N	5	CF		AMI DIAL	16	000056	2008		7901 LOS VOLCANES RD NW	ALBUQUERQUE	NM	87121-1921	CCE SHARED SRVS-UTILITIES-coca-cola	35.08862	-106.72834	5154
862	9585336560	9585336422	Sensus	27078	N	8	CF		NON-AMI DIAL	16	000057	2000		3901 ALAMEDA BLVD NE	ALBUQUERQUE	NM	87113	Parks and Recreation	35.19223	-106.59633	5058
863	9537336560	9537336300	Sensus	67855947	N	5	CF		AMI DIAL	14	000051	2007	26702633	3825 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-0900	HILLCREST PARK HOMEOWNERS ASSOCIATION	35.13306	-106.60231	5126
864	9588336560	9588336111	Badger	09335791	Y	6	CF	HIGH	AMI DIAL	14	000054	2009		1001 JUAN TABO BLVD SE	ALBUQUERQUE	NM	87112	MEADOWS REALTY C/O FOUR HILLS	35.05718	-106.51716	5530
865	9588336560	9588336111	Badger	09335791	Y	6	CF	LOW	AMI DIAL	14	000054	2009		1001 JUAN TABO BLVD SE	ALBUQUERQUE	NM	87112	MEADOWS REALTY C/O FOUR HILLS	35.05718	-106.51716	5530
866	9487336560	9487336282	Sensus	23575	N	5	CF		AMI DIAL	14	000051	2003	25556881	8436 CHAMBERS CT NE	ALBUQUERQUE	NM	87111-2167	MISSION HILL N ASSOC	35.13976	-106.54737	5454
867	9530436560	9530436739	Sensus	67608563	Y	7	CF	FIRE	AMI DIAL	12	000050	2009		6118 EDITH BLVD NE	ALBUQUERQUE	NM	87107-5054	VINEYARD LIMITED	35.14389	-106.62189	5014
868	9530436560	9530436739	Sensus	67608563	Y	7	CF		AMI DIAL	12	000050	2009		6118 EDITH BLVD NE	ALBUQUERQUE	NM	87107-5054	VINEYARD LIMITED	35.14389	-106.62189	5014
869	4616336560	4616336140	Sensus	54540	N	5	CF		AMI DIAL	21	000060	1991	24300081	3 SUNPORT BLVD SE	ALBUQUERQUE	NM	87117-0001	AVIATION DEPT CITY OF ALBUQ	35.04948	-106.61802	5304
870	4639336560	4639336121	Sensus	46886	N	5	CF		AMI DIAL	14	000051	2004	25555204	4100 MARLA DR NE	ALBUQUERQUE	NM	87109-1983	PARK MANAGEMENT DIVISION	35.13149	-106.57369	5282
871	4656336560	4656336843	Neptune	E5819	Y	7	CF	LOW	AMI DIAL	16	000056	2004	25889178	2821 MOUNTAIN RD NW	ALBUQUERQUE	NM	87104-1726	PLAZA DAVID CHAVEZ	35.10020	-106.68082	4957
872	4656336560	4656336843	Neptune	E5819	Y	7	CF	HIGH	AMI DIAL	16	000056	2004	25889233	2821 MOUNTAIN RD NW	ALBUQUERQUE	NM	87104-1726	PLAZA DAVID CHAVEZ	35.10020	-106.68082	4957
873	4534336560	4534336442	Sensus	N4443	Y	8	CF		AMI DIAL	12	000050	2004	25558315	4000 EDITH BLVD NE	ALBUQUERQUE	NM	87107-2222	N.M. YOUTH DIAGNOSTIC CENTER	35.11954	-106.63369	4982
874	4534336560	4534336442	Sensus	N4443	Y	8	CF	FIRE	AMI DIAL	12	000050	2004	25558307	4000 EDITH BLVD NE	ALBUQUERQUE	NM	87107-2222	N.M. YOUTH DIAGNOSTIC CENTER	35.11954	-106.63369	4982
875	4577254611	4577298651	Sensus	68230389	N	6	CF		AMI DIAL	14	000054	2007		1101 BASEHEART BLVD SE	ALBUQUERQUE	NM	87106	MILNE LOC 710	35.07318	-106.63349	5082
876	4619336560	4619336701	Sensus	45303	N	6	CF		AMI DIAL	12	000050	2004	25634612	7700 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109	NORTH HILL PARK MAI	35.13389	-106.56839	5330
877	4636203424	4636264997	Badger	95008112	N	7	NMUU		AMI DIAL	NW03	033	2008	81375366	10035 COUNTRY CLUB LN NW	ALBUQUERQUE	NM	87114	DESERT GREENS GOLF COURSE INC.	35.19762	-106.68509	5254
878	4676336560	4676336238	Sensus	69899993	N	5	CF		AMI DIAL	12	000049	2009		1100 SOLAR RD NW	ALBUQUERQUE	NM	87107-5754	ALVARADO 213	35.15170	-106.65456	4980
879	4621436560	4621436417	Sensus	67780489	N	6	CF		AMI DIAL	16	000056	2007		6101 SEQUOIA RD NW	ALBUQUERQUE	NM	87120-3412	TOWN MANAGEMENTbroadstone/ladera	35.12175	-106.70729	5118

880	4532118482	4532118414	Badger	95165175	N	6	NMUU		AMI DIAL	NW04	053	2010	71839543	CALLE CUERVO (NW) NW	ALBUQUERQUE	NM	87114	LA PAZ APARTMENTS	35.20769	-106.64758	5018
881	4589336560	4589336908	Sensus	78971	N	5	CF		AMI DIAL	16	000055	2004	56025344	2004 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87110	PARK MANAGEMENT DIVISION	35.18192	-106.58700	5166
882	7270436560	7270436427	Sensus	46898	N	6	CF		AMI DIAL	16	000057	2004	25651835	9201 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87113-2227	HONEYWELL	35.19075	-106.58663	5156
883	7209336560	7209336398	Sensus	49578	N	6	CF		AMI DIAL	19	000058	2004	24928258	4001 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1101	SUNPOINTE PARK	35.13106	-106.59903	5140
884	7245336560	7245336505	Sensus	N7787	Y	5	CF	LOW	AMI DIAL	14	000051	2004	25973780	12201 ACADEMY BLVD NE	ALBUQUERQUE	NM	87111-8051	ALBERTSONS,INC SITE 00939 C/O FACILITY IQ-MS 1547	35.15457	-106.49931	6000
885	7245336560	7245336505	Sensus	N7787	Y	5	CF	HIGH	AMI DIAL	14	000051	2004	25973782	12201 ACADEMY BLVD NE	ALBUQUERQUE	NM	87111-8051	ALBERTSONS,INC SITE 00939 C/O FACILITY IQ-MS 1547	35.15457	-106.49931	6000
886	7108336560	7108336644	Sensus	4689C	N	5	CF		AMI DIAL	19	000058	2004	26482985	3501 JUAN TABO BLVD NE	ALBUQUERQUE	NM	87111-5141	SANDIA PLAZA HOA	35.12149	-106.51587	5656
887	7183336560	7183336489	Sensus	68543046	N	6	CF		AMI DIAL	19	000058	2009		7000 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-3972	TELEGRAPH HILL APARTMENTS	35.15882	-106.56839	5344
888	7250436560	7250436057	Sensus	49571	N	6	CF		AMI DIAL	16	000056	2004	24928210	2900 ARENAL RD SW	ALBUQUERQUE	NM	87121	BERNALILLO COUNTY / FINANCE DEPT	35.05201	-106.71377	5002
889	7196336560	7196336521	Sensus	67136104	N	5	CF		AMI DIAL	14	000054	2007		1111 CARDENAS DR SE	ALBUQUERQUE	NM	87108-4736	APARTMENTS	35.06186	-106.58064	5300
890	7225336560	7225336051	Sensus	68372926	N	5	CF		AMI DIAL	14	000054	2008		7600 SOUTHERN AVE SE	ALBUQUERQUE	NM	87108	COA VETERNANS MEMORIAL PARK	35.06351	-106.56457	5352
891	7104336560	7104336936	Sensus	66287425	N	5	CF		AMI DIAL	12	000050	2006		7000 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-4313	HEALTH SOUTH-C/O ADAVANTAGEIQ MS 144	35.16008	-106.59226	5158
892	7237336560	7237336224	Sensus	E9622	N	5	CF		AMI DIAL	14	000051	2004	26702636	3825 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-0900	HILLCREST PARK	35.13261	-106.60215	5126
893	7187336560	7187336225	Sensus	23558	N	5	CF		AMI DIAL	14	000051	2003	19674283	4715 MOON ST NE	ALBUQUERQUE	NM	87111-2101	OSUNA 332	35.13447	-106.54225	5506
894	7140756560	7140791171	Sensus	66588869	N	5	CF		AMI DIAL	23	000044	2006		2920 ISLETA BLVD SW	ALBUQUERQUE	NM	87105-5817	BERNALILLO COUNTY FINANCE DEPT.	35.03289	-106.67854	4933
895	7205336560	7205336596	Sensus	65375	N	5	CF		AMI DIAL	16	000055	2004	25554380	2907 UNIVERSITY BLVD SE	ALBUQUERQUE	NM	87106	Owner,Current	35.06418	-106.63150	5100
896	7268336560	7268336687	Sensus	66287429	N	6	CF		AMI DIAL	16	000056	2006	25961811	9400 BENAVIDES RD SW	ALBUQUERQUE	NM	87121-7910	TRUMAN MIDDLE, 475	35.05220	-106.73847	5132
897	7058336560	7058336479	Sensus	68543053	N	6	CF		AMI DIAL	16	000055	2008		1520 UNIVERSITY BLVD NE	ALBUQUERQUE	NM	87102-1718	CITADEL APARTMENTS	35.09851	-106.62707	5080
898	1780436560	1780436709	Sensus	60941524	N	6	CF		AMI DIAL	19	000058	2009		10501 LAGRIMA DE ORO RD NE	ALBUQUERQUE	NM	87111-3737	LA VIDA LLENA HLTH CARE CENTER	35.13403	-106.51947	5708
899	7075336560	7075336073	Sensus	66287427	N	5	CF		AMI DIAL	14	000054	2006		10420 RESEARCH RD SE	ALBUQUERQUE	NM	87123-3452	ENCORE	35.05526	-106.53057	5478
900	7094336560	7094336373	Badger	09061309	Y	6	CF	LOW	AMI DIAL	16	000056	2009		1318 DELGADO DR SW	ALBUQUERQUE	NM	87121-8073	COA Park, Carlos Rey School	35.05081	-106.75198	5246
901	7094336560	7094336373	Badger	09061309	Y	6	CF	HIGH	AMI DIAL	16	000056	2009		1318 DELGADO DR SW	ALBUQUERQUE	NM	87121-8073	COA Park, Carlos Rey School	35.05081	-106.75198	5246
902	7095336560	7095336533	Sensus	1632038	N	5	CF		AMI DIAL	14	000054	2005		2425 RIDGECREST DR SE	ALBUQUERQUE	NM	87108-5129	LOVELACE SCIENTIFIC RESOURCES	35.05592	-106.57909	5328
903	1808336560	1808336800	Sensus	66692402	N	5	CF		AMI DIAL	15	000053	2010		13200 CANDELARIA RD NE	ALBUQUERQUE	NM	87112-2172	LA VILLITA / CAROL RICKERT AND ASSOCIATION	35.11366	-106.49215	5912
904	7060436560	7060436194	Badger	09054535	Y	5	CF	LOW	AMI DIAL	12	000049	2009		520 5TH ST NW	ALBUQUERQUE	NM	87102	BERNALILLO COUNTY FINANCE DEPT.	35.08979	-106.65175	4956
905	7060436560	7060436194	Badger	09054535	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		520 5TH ST NW	ALBUQUERQUE	NM	87102	BERNALILLO COUNTY FINANCE DEPT.	35.08979	-106.65175	4956
906	7098336560	7098336187	Sensus	66278434	N	6	CF		AMI DIAL	14	000054	2007		12300 PIRU BLVD SE	ALBUQUERQUE	NM	87123-3563	MEADOWS REALTY C/O FOUR HILLS	35.05972	-106.51362	5552
907	7080436560	7080436612	Sensus	49570	N	6	CF		AMI DIAL	16	000057	2004	25555203	4800 ALAMEDA BLVD NE	ALBUQUERQUE	NM	87113-1647	CNM	35.18438	-106.59333	5118
908	1774336560	1774336141	Sensus	30319	N	5	CF		AMI DIAL	15	000053	1993	13833330	10330 HOTEL AVE NE	ALBUQUERQUE	NM	87123-1248	HOLIDAY,INN	35.08590	-106.53041	5452
909	1775336560	1775336222	Sensus	E7065	Y	6	CF	HIGH	AMI DIAL	12	000049	2004	25973571	504 ELM ST NE	ALBUQUERQUE	NM	87102-2512	HOSPITAL,HEART	35.08740	-106.63759	5022
910	1775336560	1775336222	Sensus	E7065	Y	6	CF	LOW	AMI DIAL	12	000049	2004	25973561	504 ELM ST NE	ALBUQUERQUE	NM	87102-2512	HOSPITAL,HEART	35.08740	-106.63759	5022
911	7047336560	7047336395	Sensus	23561	N	5	CF		AMI DIAL	16	000052	2003	24967599	3621 MENAUL BLVD NE	ALBUQUERQUE	NM	87110-2856	WALMART ATTN: C&I DEPT STORE 850	35.10986	-106.60130	5160
912	7055336560	7055336668	Sensus	70002552	N	5	CF		AMI DIAL	15	000053	2007	25964565	2820 CLAREMONT PL NE	ALBUQUERQUE	NM	87110	PARK,QUIGLEY	35.11308	-106.57876	5254
913	1778336560	1778336978	Sensus	23586	N	6	CF		AMI DIAL	14	000054	2003	24966287	1309 WELLESLEY DR SE	ALBUQUERQUE	NM	87106-2425	SHC-NM, INC.	35.06346	-106.60876	5320
914	2341436560	2341436730	Sensus	78980	N	5	CF		AMI DIAL	14	000054	2004		500 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87108-2051	MANOR,ALBUQ.	35.08365	-106.56780	5312
915	2376336560	2376336200	Sensus	39904	N	6	CF		AMI DIAL	12	000049	2004	25346476	3501 6TH ST NW	ALBUQUERQUE	NM	87107-2418	GARFIELD 410	35.11810	-106.64825	4968
916	2356336560	2356336767	Sensus	68372927	N	5	CF		AMI DIAL	16	000057	2008		414 SILVER AVE SW	ALBUQUERQUE	NM	87102-3289	PNM GENERAL SERVICES DEPT.	35.08228	-106.65317	4953
917	2339336560	2339336044	Sensus	60875937	N	6	CF		AMI DIAL	16	000056	2007		7501 CENTRAL AVE NW	ALBUQUERQUE	NM	87121-2101	LOON CREEK LLC C/O UCMC	35.07819	-106.71962	5094
918	2367336560	2367336867	Neptune	N1561	Y	5	CF	LOW	AMI DIAL	16	000052	2004	25632402	2444 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-4312	7/25/02 MG.VESTMENT GROUP	35.10783	-106.56843	5296
919	2367336560	2367336867	Neptune	N1561	Y	5	CF	HIGH	AMI DIAL	16	000052	2004	25632652	2444 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87110-4312	7/25/02 MG.VESTMENT GROUP	35.10783	-106.56843	5296
920	2359336560	2359336457	Sensus	N6746	Y	6	CF	FIRE	AMI DIAL	14	000054	2004	25966125	921 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-5158	UNM PHYSICAL PLANT	35.07135	-106.62424	5152
921	2359336560	2359336457	Sensus	N6746	Y	6	CF		AMI DIAL	14	000054	2004	25252392	921 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-5158	UNM PHYSICAL PLANT	35.07135	-106.62424	5152
922	2214336560	2214336076	Sensus	01478	N	5	CF		AMI DIAL	12	000049	1981	25961649	220 7TH ST NW	ALBUQUERQUE	NM	87102-3100	ST. MARYS SCHOOL	35.08732	-106.65459	4956
923	2254336560	2254336662	Sensus	12165	N	6	CF		AMI DIAL	21	000060	2004	25254523	1700 YALE BLVD SE	ALBUQUERQUE	NM	87106	LOMA LINDA CC/YOLIE ARAGON	35.06374	-106.62129	5184
924	2289336560	2289336838	Sensus	05180	N	5	CF		AMI DIAL	16	000052	2004	25346498	2401 COMANCHE RD NE	ALBUQUERQUE	NM	87107-4701	UPS COMANCHE BLD. SPREAD971332	35.12398	-106.61771	5068
925	2189988710	2189984207	Sensus	64091504	N	5	CF	LOW	AMI DIAL	02	000010	2005		1800 TINGLEY DR SW	ALBUQUERQUE	NM	87102	CULTURAL SERVICES BIO PARK	35.07657	-106.66474	4955
926	2240172713	2240172762	Badger	17150892	N	6	NMUU		AMI DIAL	NW04	053	2010	5698018	BLDG 12 EAST APT METER	ALBUQUERQUE	NM	87114	LA PAZ APARTMENTS	35.20736	-106.64728	5017
927	2200436560	2200436252	Badger	09061912	Y	6	CF	LOW	AMI DIAL	12	000049	2010		425 ROMA AVE NW	ALBUQUERQUE	NM	87102-2122	ATTN ACCT.PAYABLE DEPT, CORNELL COMPANIES,INC	35.08936	-106.65172	4956
928	2200436560	2200436252	Badger	09061912	Y	6	CF	HIGH	AMI DIAL	12	000049	2010		425 ROMA AVE NW	ALBUQUERQUE	NM	87102-2122	ATTN ACCT.PAYABLE DEPT, CORNELL COMPANIES,INC	35.08936	-106.65172	4956
929	2146336560	2146336519	Sensus	49549	N	5	CF		AMI DIAL	16	000052	2004	19744961	2108 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1713	ROADWAY INN	35.10790	-106.62151	5058
930	2186336560	2186336333	Sensus	49537	N	5	CF		AMI DIAL	16	000056	2004	24928278	1800 INDIAN SCHOOL RD NW	ALBUQUERQUE	NM	87104-2346	VALLEY APARTMENTS	35.10956	-106.66678	4966
931	2131436560	2131436512	Sensus	23967	N	6	CF		AMI DIAL	16	000056	2004	25557377	1 ST JOSEPHS DR NW	ALBUQUERQUE	NM	87120	PARK MANAGEMENT	35.13194	-106.70047	5108
932	2506336560	2506336866	Sensus	69869124	Y	8	CF		AMI DIAL	14	000054	2009		700 EUBANK BLVD SE	ALBUQUERQUE	NM	87123-3357	MESA APARTMENTS,MANZANO	35.06515	-106.53227	5472
933	2506336560	2506336866	Sensus	69869124	Y	8	CF	FIRE	AMI DIAL	14	000054	2009		700 EUBANK BLVD SE	ALBUQUERQUE	NM	87123-3357	MESA APARTMENTS,MANZANO	35.06515	-106.53227	5472
934	9758336560	9758336610	Sensus	33997	N	6	CF		AMI DIAL	16	000057	1982	24284100	625 SILVER AVE SW	ALBUQUERQUE	NM	87102-3123	CENTURION SILVER, LLC.	35.08299	-106.65486	4952
935	9780436560	9780436728	Sensus	46885	N	5	CF		AMI DIAL	16	000057	2004	25451885	6700 PALOMAS DR NE	ALBUQUERQUE	NM	87109-5630	E.G. ROSS, 219	35.17273	-106.57318	5280
936	9673336560	9673336403	Sensus	01607	N	5	CF		AMI DIAL	21	000060	2004	25963740	6701 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	WEST MESA HIGH SCHOOL 570	35.09717	-106.71544	5106
937	9693336560	9693336824	Sensus	88466	N	5	CF		AMI DIAL	19	000058	2004	24928266	8888 HARPER DR NE	ALBUQUERQUE	NM	87111-1000	BAPTIST CHURCH,HOFFMAN	35.15369	-106.54420	5532
938	9707336560	9707336789	Sensus	20917	N	5	CF		AMI DIAL	15	000053	2004	56027348	13141 CENTRAL AVE NE	ALBUQUERQUE	NM	87123-3031	ROADWAY INN	35.06856	-106.49988	5644
939	9701436560	9701436098	Sensus	67136105	N	5	CF		AMI DIAL	12	000049	2007		400 MARQUETTE AVE NW	ALBUQUERQUE	NM	87102-2167	CITY HALL/SERV DEPT	35.08675	-106.65146	4954
940	9735336560	9735336403	Sensus	68543048	N	6	CF		AMI DIAL	21	000060	2009		6705 FORTUNA RD NW	ALBUQUERQUE	NM	87121-1306	CULT & REC. SVC-CHUCK SALAZAR	35.09448	-106.71657	5106
941	9686336560	9686336444	Sensus	68372921	N	5	CF		AMI DIAL	19	000059	2008		3309 PERSHING AVE SE	ALBUQUERQUE	NM	87106-1515	BANDELIER 222	35.07177	-106.60772	5258
942	9769685150	9769685135	Badger	94656657	N	5	NMUU		AMI DIAL	NW04	053	2009	70139855	3305 CALLE CUERVO NW	ALBUQUERQUE	NM	87114	SCI CAMINO REAL FUND: LLC.C/O CONSERVICE	35.20600	-106.64540	5012
943	9747336560	9747336547	Sensus	00788	N	5	CF		AMI DIAL	19	000058	2004	25557455	4949 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2519	CASA TIERRA APARTMENTS	35.14147	-106.57715	5276
944	9794336560	9794336507	Sensus	98932	N	7	CF		AMI DIAL	19	000059	2004	56025234	1501 SAN PEDRO DR SE	ALBUQUERQUE	NM	87108-5153	VET. ADM. HOSP/Eng SVC (138) Pur #501 C95124	35.05774	-106.58635	5328
945	9795336560	9795336701	Sensus	17358	N	6	CF		NON-AMI DIAL	12	000050	2001		7801 WILSHIRE AVE NE	ALBUQUERQUE	NM	87122-2807	LA CUEVA #525	35.18420	-106.55804	5414
946	9740436560	9740436984	Sensus	23680	N	6	CF		AMI DIAL	16	000055	2003	24945786	3912 ISLETA BLVD SW	ALBUQUERQUE	NM	87105-6131	BERN CO DEPT OF FINANCE	35.01894	-106.68188	4930
947	9669336560	9669336610	Sensus	N4446	Y	5	CF	FIRE	AMI DIAL	12	000050	2004	25558276	7401 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-4611	C/O E.T. CONSULTANTS MDWBROOK	35.16342	-106.57878	5248
948	9669336560	9669336610	Sensus	N4446	Y	5	CF		AMI DIAL	12	000050	2004	25557133	7401 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-4611	C/O E.T. CONSULTANTS MDWBROOK	35.16342	-106.57878	5248
949	9798336560	9798336302	Sensus	68423310	N	5	CF		AMI DIAL	16	000055	2007		300 SAN MATEO BLVD NE	ALBUQUERQUE	NM	87108-1519	CENTURION PACIFIC	35.07992	-106.58601	5256
950	9715336560	9715336939	Badger	09055736	Y	6	CF	LOW	AMI DIAL	16	000056	2009		8200 BRIDGE BLVD SW	ALBUQUERQUE	NM	87121-7501	WELLS FARGO COMMERCIAL MORTGAGE SERVICING	35.07265	-106.73019	5118
951	9715336560	9715336939	Badger	09055736	Y	6	CF	FIRE	AMI DIAL	16	000056	2009		8200 BRIDGE BLVD SW	ALBUQUERQUE	NM	87121-7501	WELLS FARGO COMMERCIAL MORTGAGE SERVICING	35.07265	-106.73019	5118
952	9715336560	9715336939	Badger	09055736	Y	6	CF	HIGH	AMI DIAL	16	000056	2009		8200 BRIDGE BLVD SW	ALBUQUERQUE	NM	87121-7501	WELLS FARGO COMMERCIAL MORTGAGE SERVICING	35.07265	-106.73019	5118
953	9774336560	9774336160	Sensus	E6758	Y	5	CF	LOW	AMI DIAL	12	000050	2004	25973593	8040 ACADEMY RD NE	ALBUQUERQUE	NM	87111-1159	KROGER CO. 70640450	35.14628	-106.54953	5474
954	9774336560	9774336160	Sensus	E6758	Y	5	CF	HIGH	AMI DIAL	12	000050	2004	25634593	8040 ACADEMY RD NE	ALBUQUERQUE	NM	87111-1159	KROGER CO. 70640450	35.14628	-106.54953	5474
955	9677336560	9677336117	Rockwell	79005	N	7	CF		AMI DIAL	15	000053	2004	25965285	7801 CANDELARIA RD NE	ALBUQUERQUE	NM	87110-3757	SANDIA HIGH 550	35.11788	-106.55976	5364
956	9697336560	9697336548	Sensus	09248	N	5	CF		AMI DIAL	14	000051	2002	13832526	10121 COMANCHE RD NE	ALBUQUERQUE	NM	87111-3614	MITCHELL 310	35.12407	-106.52873	5570
957	9775336560	9775336241	Neptune	52714	N	5	CF		NON-AMI DIAL	16	000057	1999		7817 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-5640	SELECT PROPERTIES	35.17142	-106.56916	5310
958	9807046560	9807046506	Badger	17150891	N	6	NMUU		AMI DIAL	NW04	063	2009	5785317	3405 CALLE CUERVO NW	ALBUQUERQUE	NM	87114-9224	RIVER-WALK APTS	35.20734	-106.64665	5015
959	9720436560	9720436644	Badger	09054636	Y	6	CF	LOW	AMI DIAL	12	000049	2009		620 SCHULTE RD NW	ALBUQUERQUE	NM	87107-6241	TAFT MID 455	35.15505	-106.64389	4934

960	9720436560	9720436644	Badger	09054636	Y	6	CF	HIGH	AMI DIAL	12	000049	2009		620 SCHULTE RD NW	ALBUQUERQUE	NM	87107-6241	TAFT MID 455	35.15505	-106.64389	4984
961	9727336560	9727336128	Sensus	49564	N	5	CF		AMI DIAL	16	000052	2004	25451847	2400 WELLESLEY DR NE	ALBUQUERQUE	NM	87107-1812	BERNALILLO COUNTY	35.10818	-106.60706	5114
962	9778336560	9778336997	Sensus	26933	N	6	CF		AMI DIAL	14	000054	2004	56025366	1110 QUINCY ST SE	ALBUQUERQUE	NM	87108-4522	WHITTIER 379	35.06464	-106.58939	5282
963	9755336560	9755336815	Sensus	68372923	N	5	CF		AMI DIAL	14	000054	2008		823 BUENA VISTA DR SE	ALBUQUERQUE	NM	87106-5117	PARK,HEIGHTS	35.07321	-106.62485	5160
964	7401436560	7401436041	Sensus	47801	N	6	CF		AMI DIAL	12	000050	2004	25252277	5901 HARPER DR NE	ALBUQUERQUE	NM	87109-3587	PRESBYTERIAN HEALTHCARE/FACILITIES DIRECTOR	35.15493	-106.58714	5186
965	7435336560	7435336330	Sensus	67136019	N	5	CF		AMI DIAL	21	000060	2007		6101 ILIFF RD NW	ALBUQUERQUE	NM	87121-0913	LAQUINTA C/O ADVANTAGEIQ MS 1085	35.10346	-106.70823	5096
966	7498336560	7498333467	Sensus	63800851	Y	6	CF	LOW	AMI DIAL	14	000054	2008		645 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87108	EXPO NEW MEXICO	35.08637	-106.56912	5310
967	7498336560	7498333467	Sensus	63800851	Y	6	CF	HIGH	AMI DIAL	14	000054	2008		645 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87108	EXPO NEW MEXICO	35.08637	-106.56912	5310
968	7447336560	7447336490	Sensus	54395	N	7	CF		AMI DIAL	14	000051	2004	26704058	4303 SAN PEDRO DR NE	ALBUQUERQUE	NM	87109-2662	ECHO RIDGE HOMES INC	35.13509	-106.57770	5264
969	7474336560	7474336087	Badger	09059832	Y	5	CF	HIGH	AMI DIAL	16	000055	2009		2701 DON FELIPE RD SW	ALBUQUERQUE	NM	87105-6784	PAJARITO ELEM NO 333	35.00154	-106.71334	4920
970	7474336560	7474336087	Badger	09059832	Y	5	CF	LOW	AMI DIAL	16	000055	2009		2701 DON FELIPE RD SW	ALBUQUERQUE	NM	87105-6784	PAJARITO ELEM NO 333	35.00154	-106.71334	4920
971	7475336560	7475336165	Sensus	68230382	N	5	CF		AMI DIAL	14	000054	2007		2321 INTERNATIONAL AVE SE	ALBUQUERQUE	NM	87106-4198	ESA MNGMNT, C/O ADVANTAGEIQ-MS 129	35.06160	-106.61991	5202
972	7440436560	7440436908	Sensus	23543	N	5	CF		AMI DIAL	12	000049	2003		7609 4TH ST NW	ALBUQUERQUE	NM	87107-6631	RANCHOS 336	35.17043	-106.63625	4992
973	7415336560	7415336866	Sensus	02551	N	5	CF		AMI DIAL	21	000060	2004	25964083	7501 LADERA DR NW	ALBUQUERQUE	NM	87120	Owner,Current	35.10654	-106.72447	5168
974	7478336560	7478336940	Badger	09054639	Y	5	CF	LOW	AMI DIAL	12	000049	2009		1505 CANDELARIA RD NW	ALBUQUERQUE	NM	87107-2750	VALLEY HIGH 560	35.12352	-106.65987	4972
975	7478336560	7478336940	Badger	09054639	Y	5	CF	HIGH	AMI DIAL	12	000049	2009		1505 CANDELARIA RD NW	ALBUQUERQUE	NM	87107-2750	VALLEY HIGH 560	35.12352	-106.65987	4972
976	7502436560	7502436514	Badger	71548193 (WEST	N	8	NMUU		AMI DIAL	ALCL		2008	71548193	4100 SARA RD NE	ALBUQUERQUE	NM	87124-1025	INTEL CORP NM C/O SMR			0
977	7502436560	7502436588	Badger	71548196 (EAST)	N	8	NMUU		AMI DIAL	ALCL		2008	71548196	4100 SARA RD NE	ALBUQUERQUE	NM	87124-1025	INTEL CORP NM C/O SMR			0
978	7480436560	7480436669	Sensus	09743	N	6	CF		AMI DIAL	12	000050	2004	25558308	7777 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-4343	ALBUQUERQUE PUBLISHING CO.	35.16868	-106.59214	5142
979	7420436560	7420436609	Sensus	23602	N	8	CF		AMI DIAL	19	000059	2003	24956619	10401 COPPER AVE NE	ALBUQUERQUE	NM	87123-1155	GOLF MGMT DIV	35.08022	-106.53260	5444
980	7455336560	7455336751	Sensus	69360451	N	5	CF		AMI DIAL	15	000053	2009		2414 MESA LINDA DR NE	ALBUQUERQUE	NM	87112-1114	PARK,HOFFMAN	35.11147	-106.54483	5428
981	7393336560	7393336753	Sensus	09251	N	5	CF		AMI DIAL	14	000054	2004	25652343	7220 CENTRAL AVE SE	ALBUQUERQUE	NM	87108-2072	THOMSPON MICHIE & ASSOC. INC.	35.07381	-106.56666	5336
982	7373336560	7373336371	Neptune	44444	N	5	CF		NON-AMI DIAL	21	000061	1997		3708 MACKLAND AVE NE	ALBUQUERQUE	NM	87110-6124	Owner,Current	35.09062	-106.60267	5192
983	7494336560	7494336456	Sensus	75928	N	5	CF		AMI DIAL	14	000054	2004		501 ELIZABETH ST SE	ALBUQUERQUE	NM	87123-2887	Manzano Mesa Multi-Generational Center	35.06532	-106.52867	5484
984	7460436560	7460436270	Sensus	91562	N	5	CF		AMI DIAL	12	000049	1980	24299558	400 TIJERAS AVE NW	ALBUQUERQUE	NM	87102-3234	QWEST	35.08580	-106.65145	4954
985	7495336560	7495336628	Sensus	09250	N	5	CF		AMI DIAL	14	000054	2001	25555448	1600 EUBANK BLVD SE	ALBUQUERQUE	NM	87123-3345	EMCORE	35.05267	-106.53245	5470
986	9910436560	9910436552	Sensus	49536	N	5	CF		AMI DIAL	16	000056	2004	24928212	8500 BLUEWATER RD NW	ALBUQUERQUE	NM	87121-1958	TERRI DONAHUE (SPARTON ELECTRONICS)-(1/40 comp.)	35.08211	-106.72577	5122
987	9883336560	9883336661	Sensus	63643	N	6	CF		AMI DIAL	15	000053	2004	25556864	12801 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87112-4770	RIDGE APTS,HIGH	35.09780	-106.49932	5826
988	9965336560	9965336054	Sensus	68230385	N	6	CF		AMI DIAL	16	000052	2007	26702622	3025 MENAUL BLVD NE	ALBUQUERQUE	NM	87107-1862	INTERCONTINENTALS HOTELS GROUP	35.11076	-106.61102	5112
989	9990436560	9990436967	Sensus	F3605	Y	5	CF		AMI DIAL	16	000057	2003	24956032	10200 2ND ST NW	ALBUQUERQUE	NM	87114-2232	VILLAGE PARK LLC.	35.19846	-106.61087	5003
990	9990436560	9990436967	Sensus	F3605	Y	5	CF	FIRE	AMI DIAL	16	000057	2003	25982978	10200 2ND ST NW	ALBUQUERQUE	NM	87114-2232	VILLAGE PARK LLC.	35.19846	-106.61087	5003
991	9930436560	9930436816	Sensus	61294078	Y	8	CF		AMI DIAL	14	000051	2004	25706257	5300 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-1763	ROGER COX & ASSOC./CANOAN APTS	35.14024	-106.53298	5590
992	9930436560	9930436816	Sensus	61294078	Y	8	CF	FIRE	AMI DIAL	14	000051	2004	23311646	5300 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-1763	ROGER COX & ASSOC./CANOAN APTS	35.14024	-106.53298	5590
993	9896336560	9896336654	Sensus	26915	N	5	CF		AMI DIAL	14	000054	2004	56009981	8501 SAN JOAQUIN AVE SE	ALBUQUERQUE	NM	87108-4207	ROLLING HOME MOBILE PARK	35.06628	-106.55275	5396
994	9917336560	9917336998	Sensus	78979	N	5	CF		AMI DIAL	16	000055	2004	25554792	4401 INDIAN SCHOOL RD NE	ALBUQUERQUE	NM	87110-3914	CONGREATIO B'NAI ISRAEL	35.10205	-106.59492	5192
995	9970436560	9970436593	Sensus	68543054	N	6	CF		AMI DIAL	19	000058	2008		5801 EUBANK BLVD NE	ALBUQUERQUE	NM	87111-6123	SPRING PARK APTS	35.14720	-106.52839	5662
996	9945336560	9945336652	Sensus	66287451	N	5	CF		AMI DIAL	12	000049	2009		3924 SAN ISIDRO ST NW	ALBUQUERQUE	NM	87107-2868	NEIGHBOR PARK,VALLEY	35.12739	-106.66537	4970
997	9911436560	9911436307	Sensus	47056	N	7	CF		AMI DIAL	16	000057	2003	25961651	7300 PASEO DEL NORTE NE	ALBUQUERQUE	NM	87113	SANTA BARBARA HOMEOWNERS ASSOCIATION	35.17145	-106.56326	5366
998	9887336560	9887336377	Sensus	49556	N	5	CF		AMI DIAL	15	000053	2004	26591931	2204 LESTER DR NE	ALBUQUERQUE	NM	87112-2602	JAMBOREE MANAGEMENT	35.10630	-106.54722	5404
999	9950436560	9950436175	Sensus	79001	N	6	CF		AMI DIAL	16	000052	2004	19673319	3299 ADAMS ST NE	ALBUQUERQUE	NM	87110-8052	WELLINGTON PLACE APTS	35.11854	-106.59517	5168
1000	9905336560	9905336758	Badger	09055733	Y	5	CF	HIGH	AMI DIAL	21	000060	2009		1511 GIBSON BLVD SE	ALBUQUERQUE	NM	87106-5041	BAYMONT INN & SUITES	35.05956	-106.63192	5084
1001	9905336560	9905336758	Badger	09055733	Y	5	CF	LOW	AMI DIAL	21	000060	2009		1511 GIBSON BLVD SE	ALBUQUERQUE	NM	87106-5041	BAYMONT INN & SUITES	35.05956	-106.63192	5084
1002	9984336560	9984336357	Sensus	66287511	N	5	CF		AMI DIAL	19	000058	2007		5601 COMANCHE RD NE	ALBUQUERQUE	NM	87110	Owner,Current	35.12410	-106.58257	5224
1003	9909336560	9909336568	Rockwell	57697	N	6	CF		AMI DIAL	15	000053	2004	25558271	3505 PENNSYLVANIA ST NE	ALBUQUERQUE	NM	87110-2310	COMMANCHE 241	35.12472	-106.56095	5352
1004	9925336560	9925336219	Neptune	27060	N	7	CF		AMI DIAL	21	000060	2004	25964479	1850 GEORGE RD SE	ALBUQUERQUE	NM	87106	TWIN MT CONSTRUCTION	35.04943	-106.62510	5254
1005	4851436560	4851436073	Hersey	E2054	Y	6	CF	HIGH	AMI DIAL	14	000051	2004		11800 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111-2766	TERRACE APTS.,DORADO	35.13052	-106.50951	5784
1006	4851436560	4851436073	Hersey	E2054	Y	6	CF	LOW	AMI DIAL	14	000051	2004	25439804	11800 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111-2766	TERRACE APTS.,DORADO	35.13052	-106.50951	5784
1007	4851436560	4851436073	Hersey	E2054	Y	6	CF	FIRE	AMI DIAL	14	000051	2004	25219527	11800 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87111-2766	TERRACE APTS.,DORADO	35.13052	-106.50951	5784
1008	4822425560	4822425579	Sensus	60875939	N	7	CF		AMI DIAL	03	000014	2008	23366893	10596 RIO PUERCO TRL SW	ALBUQUERQUE	NM	87121	PARK MANAGEMENT	35.04739	-106.74843	5222
1009	4914336560	4914336223	Sensus	45450	N	6	CF		AMI DIAL	16	000057	1982	24299555	401 GOLD AVE SW	ALBUQUERQUE	NM	87102-3223	65235425,P0725111,07020807	35.08370	-106.65223	4954
1010	4799336560	4799336147	Sensus	16434	N	7	CF		AMI DIAL	14	000051	2004	25346486	9709 LAYTON AVE NE	ALBUQUERQUE	NM	87111	PARK MANAGEMENT DIVISION	35.14728	-106.53212	5630
1011	4806336560	4806336958	Sensus	66287436	N	7	CF		AMI DIAL	12	000050	2006		4331 THE LANE AT 25 NE	ALBUQUERQUE	NM	87109-5854	Resident,Current	35.14650	-106.59171	5174
1012	4829336560	4829336949	Sensus	47696	N	6	CF		AMI DIAL	16	000056	2004	25558313	2700 VISTA GRANDE DR NW	ALBUQUERQUE	NM	87120-1036	WESTCLIFFE HOA C/O CAROL RICKERT	35.11369	-106.69658	5103
1013	4846336560	4846336671	Sensus	42893	N	8	CF		AMI DIAL	12	000049	2004	56025281	314 1ST ST SW	ALBUQUERQUE	NM	87102-3405	BNSF RAILWAY COMPANY, C/O LPB ENERGY MANAGEMENT	35.07590	-106.64874	4954
1014	4870565560	4870588139	Sensus	65857560	N	5	CF		AMI DIAL	13	000014	2005	23366885	5050 JEFFERSON ST NE	ALBUQUERQUE	NM	87109-2309	HOLIDAY INN HOTEL C/O LEGACY HOSPITALITY	35.14142	-106.59314	5162
1015	4831436560	4831436644	Sensus	89519	N	5	CF		AMI DIAL	16	000056	2005	25345768	3501 ATRISCO DR NW	ALBUQUERQUE	NM	87120-1424	MESA RIDGE APT	35.12157	-106.70500	5116
1016	4857336560	4857336753	Sensus	23541	N	5	CF		AMI DIAL	19	000058	2003	24950660	4215 LOUISIANA BLVD NE	ALBUQUERQUE	NM	87109-1837	BRIDGE ALBUQUERQUE VILLA DEL OSO, LLC	35.13311	-106.56970	5316
1017	4918336560	4918336006	Sensus	69360459	N	5	CF		AMI DIAL	16	000056	2008		6500 SUNSET GARDENS RD SW	ALBUQUERQUE	NM	87121-3245	ALAMOSA 210	35.07234	-106.70587	5014
1018	4849336560	4849336381	Sensus	26921	N	5	CF		AMI DIAL	16	000052	2004	19744867	5404 MONTGOMERY BLVD NE	ALBUQUERQUE	NM	87109-1371	THE TOWERS APARTMENTS	35.12993	-106.58158	5228
1019	4826336560	4826336350	Sensus	66226712	N	5	CF		AMI DIAL	21	000060	2006		1311 COPPER AVE NE	ALBUQUERQUE	NM	87106-4601	MCHENBURK C/O BERGER BRIGGS	35.08394	-106.63147	5106
1020	4866336560	4866336104	Sensus	23554	N	5	CF		AMI DIAL	12	000049	2003	24966157	301 ROMA AVE NW	ALBUQUERQUE	NM	87102	REIT MANAGEMENT LLC	35.08920	-106.64959	4956

Exhibit B
Sensus USA, Inc., Response to RFP2011-002-TC

EXHIBIT

B

Statement of Confidentiality

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SENSUS
The Measure of the Future

September 8, 2010

Office of the City Clerk
City/County Government Center
Basement Level Room 2041
One Civic Plaza N.W.
Albuquerque, NM 87102

Dear Mr. Courtin:

Thank you for the opportunity to work with Albuquerque Bernalillo County Water Utility Authority (ABCWUA) on its Advanced Metering Infrastructure (AMI) initiative. As a leading supplier to the water industry, Sensus is looking forward to a long-term relationship with ABCWUA. In constructing our response, Sensus has been careful to ensure that the proposed solution is consistent with and supportive of ABCWUA's functional and business requirements.

Sensus' proposed solution targets and delivers realistic cost savings that result from new technologies that deliver value added business benefits to its customers. With over 200 FlexNet™ deployments and over six million endpoints deployed across the United States and Canada, ABCWUA can rest assured that Sensus has the financial stability, technology, resources, and capabilities to fully meet and support ABCWUA's AMI requirements. Sensus is one of the largest meter manufacturers in the world with a rich heritage dating back more than 125 years. The company employs over 3,600 exceptional, dedicated people and operates on six continents.

Licensed Spectrum Yields Performance and Reliability, and offers Dramatically Lower Risk

FlexNet is the only AMI system on the market today which operates on primary-use spectrum that is licensed and protected by the FCC. This licensed spectrum guarantees ABCWUA will have a legally protected right-of-way to its critical customer data, and ensures that performance experienced today will not degrade over time. This licensed spectrum also allows the FlexNet network to use much higher power and use more sensitive receivers than other networks. This is especially important with two-way networks. This primary-use spectrum also allows the FlexNet system much greater flexibility in its communication protocols, all of which add up to better, more reliable performance that is time tested and proven across North America.

FlexNet Provides a "Future-Proof" Technology Solution for ABCWUA

FlexNet means certainty of execution and flexibility to meet future needs with operation on FCC-protected spectrum and redundancy at every level to downloadable endpoint code and software based radios. This is all part of Sensus' commitment to continued system development, and will ensure that ABCWUA's AMI investment today will continue to serve the Authority for decades into the future. The FlexNet TGB and SmartPoints use software defined radios, which means that modulation, baud rate, and protocols can be

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enhanced or changed as needed. This approach provides significantly expanded communication capacity and reduced operating and maintenance costs. FlexNet's single-tier network design is inherently more secure and offers much lower latency and better reliability than multi-tier or mesh networks.

FlexNet is the Most Feature Rich AMI Network for Water

In addition to providing the most secure, reliable and proven network architecture, FlexNet also offers the best feature set of any AMI network on the market. True on-demand two-way operation, support for pressure monitoring and other SCADA applications, support for acoustic monitoring devices, IP addressability for all devices on the network, and the optional web portal for ABCWUA customers are just a few of the industry-leading features of the system. The FlexNet software suite provides best-of-breed analytic tools, network diagnostics and reporting capability. Additionally, the FlexNet system adheres to open standards and will readily interface with any number of third party software platforms and applications, which ensures that the network can grow and change with the Authority as needed.

We look forward to ABCWUA's feedback on our response. Thank you in advance for your thoughtful consideration of our proposal. Sensus is excited to build a great partnership with Albuquerque Bernalillo County Water Utility Authority.

Respectfully,

David Hill
Proposal Project Manager Point of Contact
Conservation Solutions
Sensus USA Inc.

William T. Yeates
Executive Vice President
Conservation Solutions
Sensus USA Inc.

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2.0 Description of the Company

Company Overview

Sensus has maintained its position as a global leader in utility measurement and management solutions for over 100 years. From its roots as the leading meter provider in the water industry (Pittsburgh Equitable Meter Company and Rockwell Meter Company), Sensus has evolved into a leading supplier in the gas, and more recently, the electric utility markets as well. Sensus is currently the market leader in water AMI deployments and maintains top-tier status in both electricity and gas AMI deployments.

With operations and service facilities on five continents, Sensus is a global leader in utility infrastructure systems and resource conservation. Our company is rooted in 100 years of experience — yet focused squarely on the future. Sensus' global operations are based in Raleigh, NC, and North American meter production is based in Uniontown, PA - as it has been for more than 50 years. Although Sensus has a rich heritage and successful past, the true character of our company is seen in the development and innovation of products such as the FlexNet AMI network, the OMNI commercial water meter, and the iPERL residential water meter.

Helping utilities and consumers make the most of finite water and energy resources takes more than just innovative technology and know-how. Sensus delivers reliable, flexible, and field-proven products and solutions that provide advanced measurement, data collection, analysis, and control capabilities that help our customers improve operational efficiency while reducing their environmental impact. Furthermore, Sensus can demonstrate the successful implementation of our technology across more than 200 deployed FlexNet (fixed base) AMI networks in North America to date.

Today, Sensus provides real world, proven solutions of high-value metering, Advanced Metering Infrastructure (AMI), and Automated Meter Reading (AMR) system solutions for water, gas, electric, and heat utilities. Sensus continues to be the measure of the future, having one of the largest installed AMI bases in the world. We are a global leader that aggressively pushes the boundaries of utility management with innovative communication systems that enable customers to intelligently utilize their resources with unprecedented efficiency. Sensus annual revenues for fiscal years 2006, 2007, 2008, 2009, and 2010 were $614M, $633M, $726M, $792M, and $866M respectively. Continued growth is expected over the next few years as the number of Sensus deployed endpoints will increase to over 12 million. More than 50% of Sensus' sales revenue in 2010 came from water and wastewater industry sales.

Workforce

The AMI portion of Sensus USA Inc. is called Conservations Solutions. This division has an employee makeup as depicted below.

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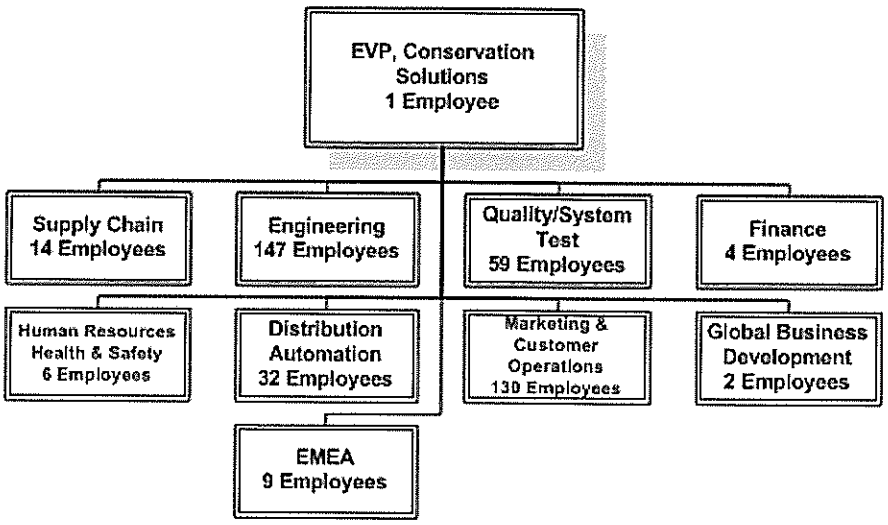

Figure 1: Sensus Conservation Solutions Organizational Chart

Sensus is led by a core group of multi-decade industry experts that function as its management team. These leaders have a personal understanding of the myriad of issues facing utilities today. They know that with smart partnership in project management, Sensus customers are able to push the boundaries of utility management so that they achieve unprecedented efficiency in operations, customer service, conservation, and more.

Changes in Ownership

The original name of our company, Pittsburgh Equitable Meter Company, was born from original owners, the Rockwell family, which established the company's original — and current — base in Uniontown, Pennsylvania. Pittsburgh Equitable Meter Company later became Rockwell Meter Company. Millions of meters and decades of industry leadership later, company diversification led growth into the gas meter and valve operations, which were purchased by a London-based company, BTR. BTR later merged with Siebe, becoming Invensys (1999). The transition saw the name of our company evolve into Invensys Metering Systems.

A few years later, still on the heels of yet more industry advancements, another purchase agreement by the Jordan Company (2003) led to the current name of Sensus USA.

Sensus current ownership structure is:

- 1) The Resolute Fund L.P. (66%)

  Note: The Resolute Fund is controlled by the Jordan Company L.P.
- 2) The Goldman Sachs Group, Inc. (33%)

  3) Executive Officers and Directors (1%)

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Recent Acquisitions

In July 2009, Sensus acquired the assets and business of Telemetric Corporation. With over 10 years of experience in distribution automation technology, Telemetric has a 10 year track record providing hundreds of utilities with intelligent, innovative, reliable and secure end-to-end solutions for distribution automation systems. Telemetric offers a complete line of intelligent communication solutions specific to electric distribution system monitoring and control.

The following table shows potential monitoring and control applications for water utilities using Sensus' Telemetric DA technology.

Application	Monitor	Control	Product
Tank/Reservoir Level Monitor with Control	• Level • Pressure • AC power to pump	• Pump (may be separate or multiple)	T866 MicroRTU
Pump Monitor and Control	• Pressure • Flow • AC Power	• Pump • Motorized valves	T866 MicroRTU
Lift Station Monitoring and Control	• Pressure • Flow • Level or level alarm • AC power	• Pump • Motorized valves	T866 MicroRTU
Meter SCADA			RTU + RTM Modbus
Remote PLC	• Various analog, digital points	• Various control outputs	RTM Modbus

Figure 2: Sensus' Telemetric DA technology offers water utilities many monitoring and control applications.

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Financial Stability

Sensus has had a fiscally sound track record over its 125 year history. Its financial stability ensures that it can support the products and services it delivers to its customers for many years to come—and that it will continue to lead the industry in developing the technology its customers have come to expect from Sensus.

There have been no FlexNet AMI contracts canceled for convenience or cause in the last five years.

AMR and AMI Product Evolution

The Sensus FlexNet water AMI network enjoys a leadership position in the market. With nearly 200 water AMI deployments to date, and more than 1 million FlexNet water AMI endpoints shipped, Sensus has demonstrated industry leading reliability and innovation that our customers have come to expect.

Our success in AMI is in large part a result of our long standing leadership position and strong experience in water AMR networks. Sensus has delivered nearly a million water mobile AMR endpoints to date across more than 2,500 different utilities to date, and has leveraged this experience in the design of the FlexNet system. System features such as the patented TouchCoupler connection and totally sealed endpoint are evidence of the company's experience in the pit set water meter environment.

With FlexNet, Sensus started with a clean-sheet RF design, and developed a system designed specifically with fixed base meter reading in mind. Rather than trying to develop a fixed network around radios originally designed for mobile operation, Sensus focused squarely on Primary Use licensed FCC spectrum, capable of delivering true fixed base meter reading benefits with minimum required collector hardware. The result was the FlexNet system – with double the power of any other AMI network from the meter to the collector, and 35 times the power from the collector to the meter. Coupled with the power and reliability, FlexNet also delivers the best value, with the industry's most flexible, upgradeable, and feature-rich network. Every part of the network is upgradeable; all radios are software defined, which allows them to be totally reprogrammed for additional spectrum and/or different RF modulations in the future. The FlexNet network also features IP addressability for every component on the network.

The FlexNet network is also unique in that it has spectrum set aside for applications such as SCADA, Distribution Automation (DA), Demand Response (DR), Acoustic Leak Detection Devices, and Home Area Networking (HAN). Furthermore, the FlexNet head end is capable of interfacing with any number of third party platforms and applications using industry standard protocols. FlexNet is much more than just a meter reading collection network – FlexNet is an open standards, multi-application network.

After establishing the best and most reliable fixed base AMI network for water, gas, and electricity meters, Sensus added the capability for the FlexNet endpoints to be read by hand-held (walk-by) and mobile (drive-by) collection devices. In addition to this, Sensus has added true on-demand, two-way reading capability over the powerful FlexNet network. Utilities can now poll a meter and receive a reply at any time, in addition to many other benefits afforded by two-way operation, such as over-the-air firmware updates and configuration changes. FlexNet true two-way is unique in that communications travel all the way from the user to the meter and back within moments. The industry leading power of the FlexNet

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network (35 times the power outbound from the collection devices to the meter) ensures that two-way commands are received by the meter with the minimum amount of collector infrastructure.

Sensus also continues to innovate with the release of FlexServer, a customer Web portal that allows utility customers to securely log in to view their own reading and consumption information; receive email, text, and phone alerts when reaching customizable thresholds; and have a system that supports In-Home Display (IHD) modules which can deliver reading and alert information to customers over the FlexNet network without the need for a telephone or Internet connection.

As New Mexico's largest water authority, Sensus plans to partner with ABCWUA to make the Authority the most modern, high technology water utility in the nation.

Some of the benefits offered by the FlexNet solution are:

- Lowest risk solution – proven performance
  - No interference with FCC-protected primary-use spectrum for meter communications.
  - Most reliable RF communications (demonstrated).
  - Highest power MIUs - SmartPoint™ using 2 watts of power, the highest in the industry.
  - 35 times the transmit power outbound from the network to the MIUs (35 watts) – important for reliable two-way operation.
  - All network devices (RCUs, MIUs, head end) upgradeable remotely.
  - Network built on open standards.
- Best water deliverables and feature set
  - Optional customer Web portal.
  - Optional SCADA backhaul and interface via FlexNet network.
  - Support for acoustic monitoring devices (Permalog Plus).
  - Advanced consumption queries and reports.
  - Best network diagnostics software suite.
- FlexNet delivers the lowest cost of ownership via smallest number of Collector locations five (5) using only ABCWUA sites.
- Best battery and RF technology in the industry with 20 year warranty (based on hourly readings delivered six (6) times per day) – delivers lowest reading latency and best performance and reliability.
- Leak and broken pipe detection, and meter tamper reporting.
- On demand reads of water meters.
- Over-the-air remote programming and SmartPoint radio firmware upgrades.
  - All radios are software defined allowing not only remote configuration changes, but also allowing RF modulation and spectrum changes.

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Proven Scalability and Reliability

FlexNet has been selected as the AMI solution for many major projects in North America including; Southern Company (4.3 million electric), Alliant Energy (1 million electric and 400,000 gas), and Portland General Electric (over 800,000 electric). FlexNet has also been selected at many water utilities including Westview Water Authority in the Pittsburgh area (55,000 water), Lawton, OK (36,000 water) and Olathe, KS (39,000 water).

In concert with each of the utilities illustrated, Sensus has worked collaboratively to develop project planning strategies that encompass the essentials of the design objectives. These objectives include project scope development, establishment of teams, network design, end use customer communications, installation, system acceptance regimes, interfacing and integration with various departments (IT, Billing, Customer Service, Operations, Legal), developing standards defining service level agreement contracts, project plans, etc.

Nothing speaks to future potential more than current performance. Sensus leads the market in installed base and current shipments of field deployed, two-way AMI networks in North America. Moreover, Sensus' work with software partners such as Oracle, eMeter, and IBM further illustrates Sensus' practical understanding and experience.

Innovation

Sensus developed its FlexNet system with the flexibility and adaptability to meet the changing business needs utilities face in today's global utility markets. Sensus actively drives its technology plans and procedures to ensure FlexNet remains the best technology available in the AMI industry.

The first and most important point is the philosophy of continual improvement. This philosophy is essential in considering the historic path from drive-by to fixed based networks to AMI networks, and even into future requirements that are not yet defined. Every FlexNet endpoint is equipped to support remote downloads of not only firmware but also fundamental communications protocol and spectrum changes. This capability is also inherent in the RCUs (TGBs).

Optional Customer Web Portal

Sensus is releasing a customer Web portal to allow utility end users to view consumption, set thresholds and receive alerts in their own homes via the FlexServer Web portal.

FlexServer is a Web-based utility management system that enables utilities to develop and deliver simple yet powerful water management and conservation programs for their customers.

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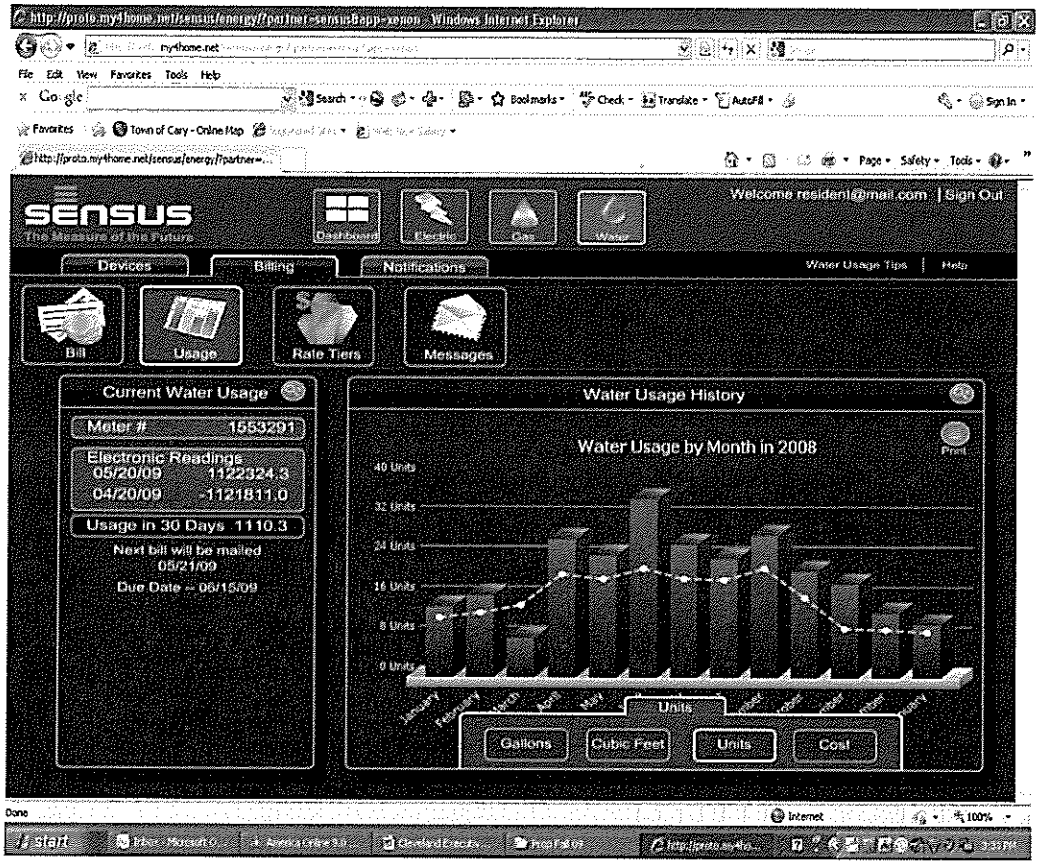

Figure 3: FlexServer Water Usage History Screen

FlexServer provides a comprehensive, real-time analysis of home water usage (utilizing historical and latest meter reads) and presents utility customers with useful information to better understand and manage their water consumption. The system can display hourly, daily, weekly, monthly, and yearly consumption; this allows consumers to make informed choices about water use.

Commitment to the Water and Wastewater Industry

No other AMI vendor has a stronger commitment to the water and wastewater industry. The company's history is based in the water industry, and Sensus continues to lead the market with new and innovative products.

For instance, the recent release of the OMNI™ commercial meter underscores Sensus' commitment to the water industry. The OMNI provides superior performance and reliability with just one moving part – something previously impossible for compound commercial meters.

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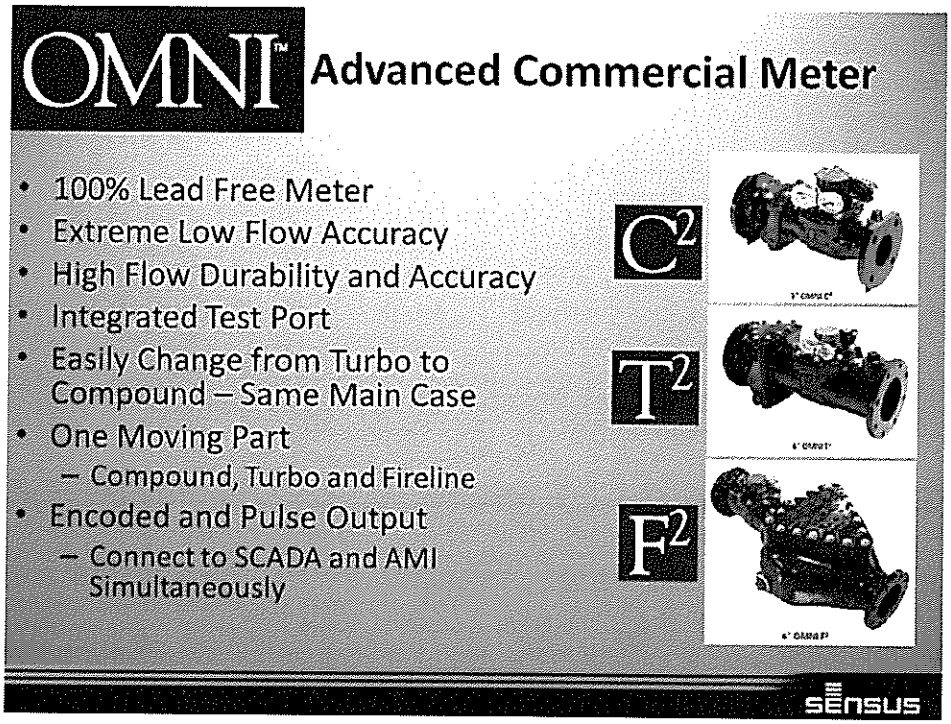

Figure 4: Features and benefits of the OMNI commercial water meter

Sensus has also recently released a revolutionary new residential water meter, the iPERL™, which has no moving parts and features unprecedented low-flow accuracy (0.03 GPM). This meter (and the new Sensus OMNI commercial meter line), utilize a completely solid state encoded technology that features no moving parts in the register. This greatly enhances efficiency and reliability, and extends the life of the meter register.

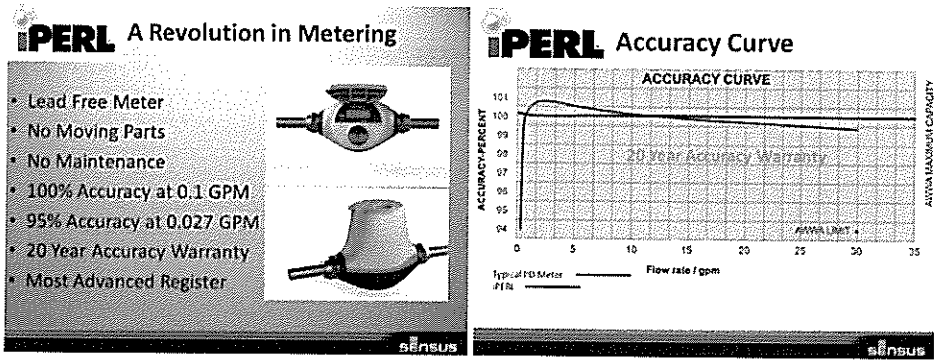

Figure 5: The iPERL water management system offers low flow accuracy with high flow durability—it's100% lead-free and has no moving parts.

Sensus welcomes the opportunity to discuss these exciting new metering technologies with ABCWUA.

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3.0 Project Understanding

With over 200 FlexNet systems currently in deployment across North America, Sensus clearly understands the unique needs of each individual AMI deployment. Sensus is well prepared to fully deliver and support the finest AMI network available.

For the project defined in the RFP, Sensus understands that ABCWUA wishes to deploy a single technology, fixed-base AMI system to cover 850 commercial meter locations spread throughout the service territory. Sensus has taken the data delivery requirements into account (hourly readings delivered at least four times per day) as well as the preference for true two-way operation. The FlexNet system meets or exceeds all of these requirements, and the network design proposed provides superior, overlapping coverage of all 850 meters.

Regional Network Interface (RNI) Installation

The deployment of a Sensus AMI system starts with the RNI. The RNI functions as the central point for network management, data collection, and performance reporting. Installation will require existing or an expansion of server rack space within ABCWUA's datacenter. Sensus would supply specifications for all hardware and software and work directly with the IT department to facilitate the installation and configure the system for operation. Once the RNI is physically installed, Sensus would work with the IT department to connect the RNI into the existing communications infrastructure.

Assumptions:

- ABCWUA desires to own and maintain the RNI within its own facilities.
- IT department will be able to dedicate resources in order to accomplish this task.
- Datacenter space is available for the RNI hardware.

Dependencies:

- IT skills to support database administration functions
- Expertise in SQL and UNIX

Tower Gateway Base Station (TGB) Deployment

Once the RNI is installed within ABCWUA's IT infrastructure, the next focus of the AMI deployment would center on the deployment of the network TGB systems (RCUs). The Sensus AMI solution for ABCWUA requires five TGBs to provide coverage of the 850 commercial meters proposed in this RFP. These five

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TGBs will also provide coverage for the vast majority of the meters in the ABCWUA service territory. The TGBs are deployed before meter and/or meter interface unit (MIU) endpoint deployment begins.

Assumptions:

- Selected ABCWUA RCU facilities will be available for use.
- Each site will support requisite power, construction, and communications.
- ABCWUA assistance by Distribution, Construction, and IT Communications departments
- Utilization of a Sensus approved network installation subcontractor

Dependencies:

- ABCWUA approval of Sensus propagation analysis and deployment plan
- Approval for site access and usage
- Assistance with prioritization
- Completion of construction requirements

Meter and Endpoint Deployment

The deployment of AMI meters and endpoints would be the final step in the system's construction. As ABCWUA specifies, installations would follow a route by route plan, including installation audits and validation that installation data is correctly associated with each premise.

Assumptions:

- ABCWUA will provide guidance on how the deployment will progress.
- ABCWUA meter shop will assist with installer training.
- Route data will be supplied for use as the basis for installation work orders.
- ABCWUA meter shop personnel will participate in the audit process.
- Meter shop will perform lot testing and acceptance of meters.
- ABCWUA will prefer to store and consign meters and endpoints.

Dependencies:

- Approval of shipping schedules
- Approval of meter types and quantities
- Definition of appropriate processes for storage and return of meters, lids, and other materials

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Onsite Space and Network Requirement Example

As stated above, Sensus will supply specifications for all hardware and software required for ABCWUA and will work directly with the IT department to facilitate the installation and configure the system for operation.

However, we are providing the following example based on equipment specifications for one of Sensus' large customer-based designs:

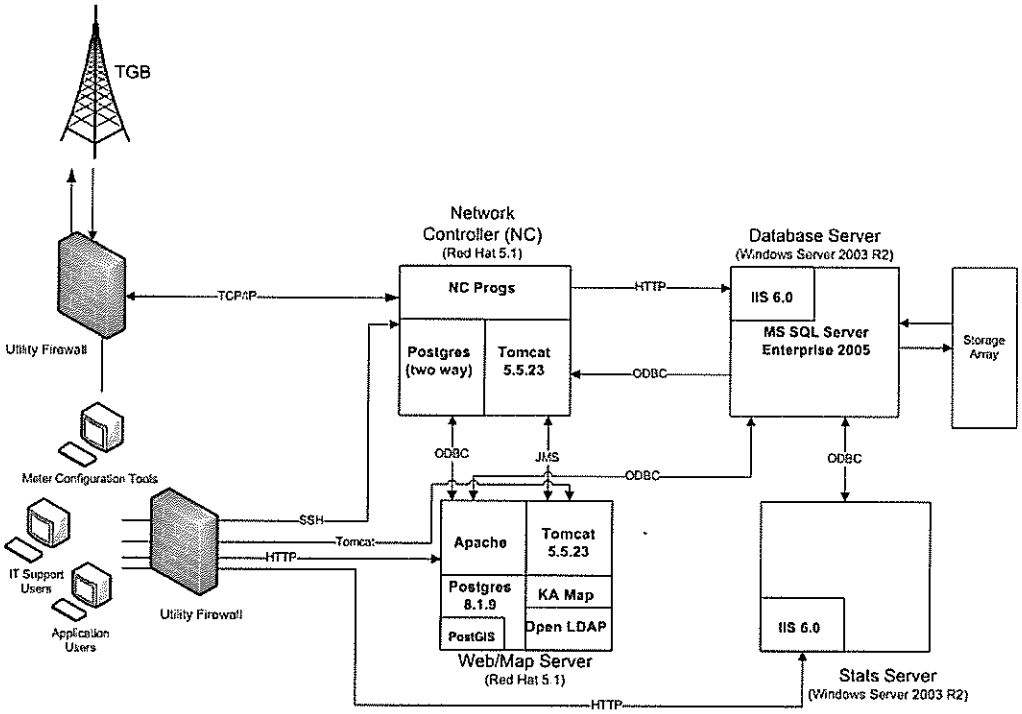

Figure 1: Sample Communication Architecture Block Diagram

Typical RNI Hardware Configuration

For the initial deployment of 850 meters, FlexNet will require only two separate blade servers. All FlexNet applications can be loaded on these two servers. After the deployment grows beyond 35,000 meters, two additional physical servers are recommended to host the mapping and statistics applications separately. The RNI configuration is flexible.

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Servers	Hardware	Software
Network Controllers	PowerEdge R710 with Chassis (224-4845) SIX 73GB 15K RPM Serial-Attach SCSI 2.5"" Hot Plug Hard Drive (341-8714) Red Hat Server 5.2 24GB Memory (3x8GB), 1066MHz Dual Ranked RDIMMs for 1 Processor, Optimized (317-1656) E5520 Xeon Processor, 2.26GHz 8M Cache, 5.86 GT/s QPI, TurboHT (317-1206)	Red Hat Server 5.2 Java v.1.6.0.13 Apache Tomcat v5.5.23 Sensus software
Database	PowerEdge R710 with Chassis (224-4845) SIX 73GB 15K RPM Serial-Attach SCSI 2.5"" Hot Plug Hard Drive (341-8714) Red Hat Server 5.2 24GB Memory (3x8GB), 1066MHz Dual Ranked RDIMMs for 1 Processor, Optimized (317-1656) E5520 Xeon Processor, 2.26GHz 8M Cache, 5.86 GT/s QPI, TurboHT (317-1206)	Windows Server 2003 R2 SQL Server 2005 SP3
Stats Server	(Required only in Full Deployment Scenario and can be added later) PowerEdge R710 with Chassis (224-4845) SIX 73GB 15K RPM Serial-Attach SCSI 2.5"" Hot Plug Hard Drive (341-8714) Red Hat Server 5.2 24GB Memory (3x8GB), 1066MHz Dual Ranked RDIMMs for 1 Processor, Optimized (317-1656) E5520 Xeon Processor, 2.26GHz 8M Cache, 5.86 GT/s QPI, TurboHT (317-1206)	Windows Server 2003 R2 IIS 6.0
Map Server	(Required only in Full Deployment Scenario and can be added later) PowerEdge R710 with Chassis (224-4845) SIX 73GB 15K RPM Serial-Attach SCSI 2.5"" Hot Plug Hard Drive (341-8714) Red Hat Server 5.2 24GB Memory (3x8GB), 1066MHz Dual Ranked RDIMMs for 1 Processor, Optimized (317-1656) E5520 Xeon Processor, 2.26GHz 8M Cache, 5.86 GT/s QPI, TurboHT (317-1206)	Red Hat Server 5.2 Java v.1.6.0.13 Apache Tomcat v5.5.23 Sensus software

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Servers	Hardware	Software
Xiotech SAN	(Required only in Full Deployment Scenario and can be added later) SAN with 2 TB of storage	Datascale Capacity Manager (2TB) DataScale Platform Manager (Level 3) High Availability Bundle for Magnitude 3D 4000 and 3000

Technical and Engineering Specifications

Processor

- 32 bit microcontroller, 12 MHz
- 384K non-volatile Flash memory
- 256K RAM

Communications

- Two Serial Ports
- RS-232 local configuration port, DB-9 female
- Supports MS Windows based local configuration and test program, included
- One RS232 communications port supports DNP, Cooper 2179, or C12.18/19 depending on model
- RS-232 with DB-9, RJ-45 and terminal block connectors

Sensus AMI Network

- Two-way – all commands are acknowledged
- Transmit power: 2 Watts
- Frequency: 900 MHz

Operating Power

- 2VDC, 70mA typical, 0.6A max (< 0.5 sec.)

Environmental Data

- Operating temperature Range: -30° to +70°C
- Transient Immunity per ANSI/IEEE C37.90.1-2002

Weight and Floor Plan for the AMI System

Depending on the size/data requirements of the system, we install up to four servers and one disk array in racks supplied by the customer. The customer supplied rack is located in the customer data center. Sensus requires that a network connection be made available near the servers. The customer is responsible to supply power and grounding for all of the equipment.

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Enclosures

The standard enclosure is painted steel. Features include:

- NEMA 1 rating
- Integrated mounting flanges
- Gray steel construction
- Dimensions: 5.6"H x 4"W x 1.7"D
- Optional NEMA 4X enclosure with 120VAC – 12VDC power supply; 11"H x 8.3"W x 3.3"D; 3 lbs

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4.0 Project Personnel

Sensus Project Management Team

Sensus will assign a lead Project Manager (PM) and support team to manage the deployment of the ABCWUA network. The following diagram, resumes, and job descriptions outline the core project team members:

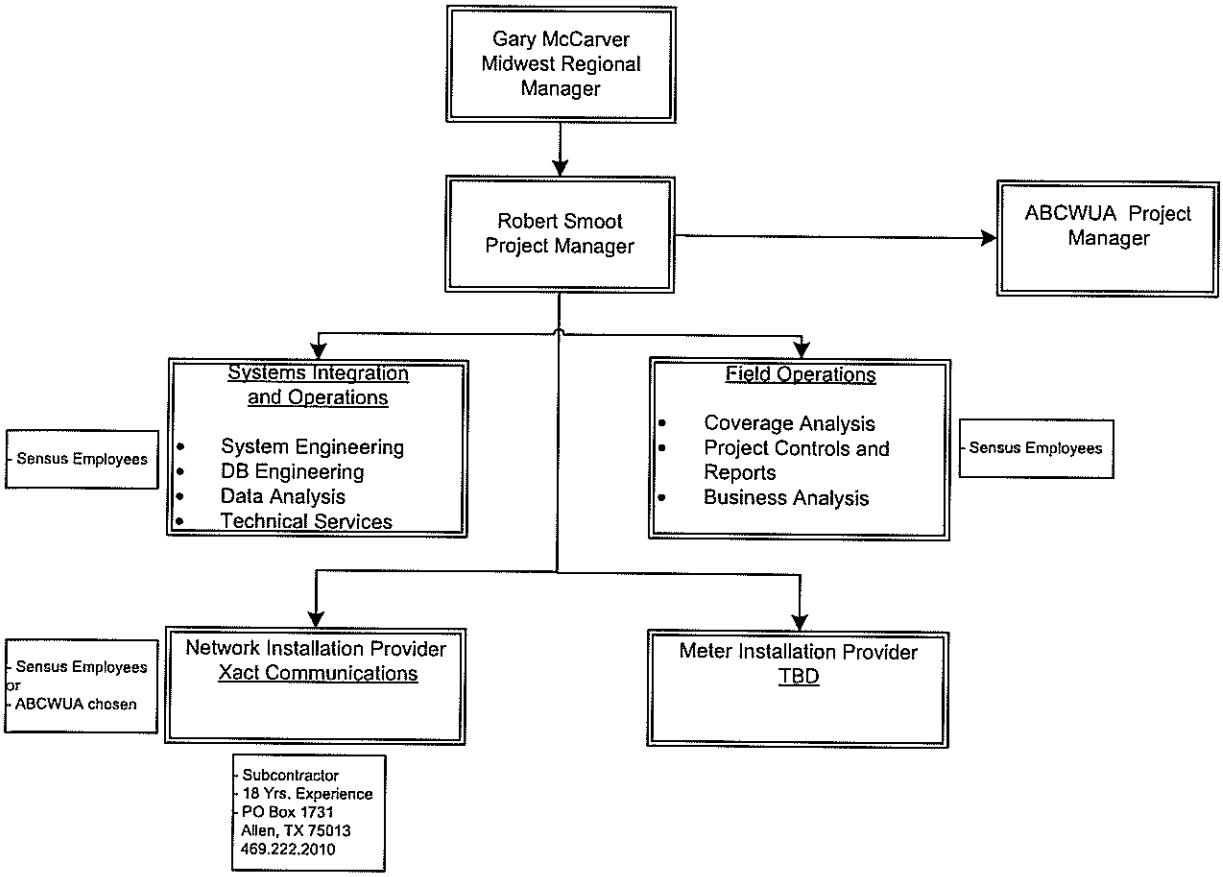

Figure 1: Sensus Project Management Team

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Gary L. McCarver, Midwest Regional Manager

Experience and Background

Gary McCarver is an AMI Regional Manager having the overall responsibility for project management of AMI deployments including AMI field studies, AMI system deployment, AMI system training, and field services across 15 states in the Midwest. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Regional Manager, Gary was a Senior PM at Itron, Inc. In this capacity, Gary was responsible for the overall project management of Itron water, gas, and electric Automated Meter Reading (AMR) technologies. He has an extensive background in large system deployments exclusively in the communications and utility sectors.

Gary has over 20 years of combined project and program management experience with high-technology products at such firms as Sprint and Computer Network Technologies in addition to Itron, Inc. He has held positions in sales support, system engineering, program management, and project management. His program management experience includes successfully managing major AMR programs in excess of $50 million.

Professional Experience

2008 – Present, Sensus USA, AMI Regional Manager Midwest

- Oversees project management efforts for Sensus' AMI, gas, water, and electric businesses within a 15 state region
- Assists with the development and implementation of business processes to allow Sensus to manage AMI project deployments
- Sets up project management positions to align with the Midwest regional gas, water, and electric Sales Managers
- Develops business relationships with installation contractors, acquires project quotes, negotiates contracts, and manages subcontractor activities throughout the planning and execution phases of all projects. These business partnerships expand Sensus' ability to offer complete technology solutions to AMI customers.

Gary McCarver has served as PM for the following Sensus utility accounts: Atmos Energy, Cleco Home Area Networking Pilot, Pensacola Gas, and Olathe Water AMI

- (1995 – 2008) Itron Project Management, Senior PM
- (1990 – 1995) Sprint, PM

Education: University of Phoenix, BSIT (52 hours with a GPA of 3.92)

Additional training includes Project Management Institute (PMP) and the Stanford University Project Management Certification (SCPM)

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Robert Smoot, Project Manager

Experience and Background

Robert Smoot is an AMI Deployment PM for the South-Central region having the overall responsibility for project management of AMI deployments. Responsibilities include AMI field studies, AMI system deployment, AMI system training, and field services. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Deployment PM, Robert was a Senior PM with United Metering. In this capacity, Robert was responsible for the overall project management of AMR installation drive-by systems for water project deployments. Robert also worked with Enron Energy Services where he managed electric AMR projects for accounts in Phoenix, Arizona and throughout the state university system in California.

Robert has in excess of 20 years combined project management experience involving various AMR and AMI products and technologies. His project management experience includes successfully managing major multi-million dollar AMR deployments to include controlling project-related costs and timely deliveries.

Duties and Responsibilities

The PM is responsible for overall planning and execution of the FlexNet pilot and deployment projects employing generally-accepted PMP and Sensus processes. This position will also be responsible for business planning, customer interface, subcontracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor, and customer personnel assigned to the project
- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will develop topics for and conduct routine meetings with customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Business, Construction, Engineering, Computer Science, or equivalent
- Project management experience in large-scale activities managing multi-person teams
- PMP certification a plus

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- Experience managing and tracking project budgets
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high quality solutions to problems
- Must be able to work independently and function well as part of a team
- Must be completely literate with all Microsoft (MS) Office suite applications, general computer skills, able to type efficiently, develop MS PowerPoint presentations, spreadsheets, graphs, and analyses of project-related information

Network Deployment Manager (for ABCWUA, this will be the Project Manager)

Duties and Responsibilities

The Network Deployment Manager is responsible for overall planning, coordination, and support for the installation of FlexNet system components including Tower Gateway Base Stations (TGBs), FlexNet Network Portals (FNPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Also included is the systems optimization for all network and metering components requiring field visits to various locations throughout the service area. This position is also responsible for the deployment planning, customer interface, and coordinating the utilities resources, subcontractors, and Sensus employees for the network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with office and field staff of the customer organization, supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor and customer personnel assigned to the project
- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will provide reports and participate in routine meetings with the customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Electrical Engineering, Business, Construction, Engineering, or equivalent
- Expert use of tools such as MapInfo, Planet EV, and other GIS mapping tools

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- Working knowledge and ability with SQL and database querying and structure
- Experience in large scale activities, managing multi-person teams
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads.
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and other project related information
- Experience in WAN and LAN networking technologies and protocols

Kevin McCullor, Integration Technology Project Manager

Experience and Background

Kevin McCullor is an AMI Integration Technology (IT) PM providing monitoring and management of the Regional Network Interface (RNI) and field-related equipment.

Prior to becoming a member of Sensus, Kevin was employed as a Senior Systems Engineer with a nationwide paging provider. In this capacity, Kevin was responsible for the development and maintenance of a statistics collection and forecasting platform. This platform assisted executives in discussion-making and reducing overall cost of operation of the entire company.

Kevin started as a Field Engineer and, through his vast knowledge of the industry, became one of the most trusted in his department. Kevin brings a solid understanding of RF and IT issues. He has been managing project both large and small for more than ten years.

Duties and Responsibilities

- Monitor and manage the health of the FlexNet system and its components
- Provide performance analysis and direct the optimization of the system using standard tools available in the FlexNet system and as provided for in the customer utility, third party contractors, or Sensus field optimization processes and/or systems
- Compile FlexNet project status reports, coordinate project schedules, manage technical project meetings, and identify and resolve technical problems
- Identify and analyze systems requirements and define project scope, requirements, and deliverables
- Coordinate technical project activities and ensure all project phases are documented appropriately

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- Provide expert judgment and analysis for the design, development, and implementation of technical products and systems
- Resolve highly complex technical issues and conduct advanced research
- Recommend alterations to development and design to improve quality of products and/or procedures
- Develop, implement, and monitor information systems policies and controls to ensure data accuracy, security, and regulatory compliance
- Review reports of computer and hardware equipment production, malfunction, and maintenance to determine and address problems
- Aid in the design and development of hardware equipment and systems and/or redesign of existing systems as needed to fulfill the needs of customers
- Responsibilities also include providing equipment functionality and capability reports to the sales force and acting as technical liaison to the sales team
- Rely on extensive experience and judgment to plan and accomplish goals. Perform a variety of complex tasks. May lead and direct the work of others. A wide degree of creativity and latitude is expected.

Prerequisites

Minimum requirements for this position include:

- A bachelor's or master's degree in area of specialty (Engineering or Computer Sciences)
- Five to eight years of experience in the AMR, AMI, utilities, or related technical field
- Superior communication and interpersonal skills
- Excellent analytical skills
- Entry to mid-level Perl and/or Unix shell scripting
- Mid-level Unix and Windows OS experience
- Mid-level SQL experience (MS SQL, Postgres SQL, Oracle)
- Solid understanding of basic telecommunications concepts (ping, ssh, telnet, ftp, traceroute, etc.)
- Good troubleshooting skills
- Know project management methodology, a PMP certification is a plus
- Be able to deal with multiple projects concurrently
- Ability to communicate with internal and external customers under stressful environments

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RF Engineer/Technician

Duties and Responsibilities

The FlexNet RF Technician is responsible for assisting in the interpretation and implementation of the RF network plan, overseeing and/or certifying network equipment installation work, performing and/or overseeing network equipment maintenance, and ensuring the overall system performance of the FlexNet system components, including TGBs, FNPs, FlexNet Remote Portals (FRPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Inherent in these responsibilities is the overall systems optimization for network and metering components requiring field visits to various locations throughout the service area.

This Technician is responsible for:

- Serving as the interface between and among the Sensus RF Network Planning and Propagation Group, installation contractors, the utility, and tower site owners in implementing the network plan, optimization, systems acceptance testing, and customer acceptance
- Scheduling and conducting periodic reviews and imposing scheduled maintenance and operational tests to ensure system performance
- Performing site visits to network equipment sites to determine feasibility of use and extent of equipment installation requirements
- Providing reports and participating in routine meetings with the utility, contractors, and corporate headquarters for project reviews and special meetings as necessary
- Reviewing system reports for network/meter failures
- Coordinating and taking action to enhance meter read performance
- Recommending or performing over-the-air refinements to meters
- Recommending meter change-outs for customers to improve performance
- Maintaining daily/weekly/monthly maintenance plans and logs and prepare Key Performance Indicators (KPIs)
- Performing preventive maintenance of network components
- Following and enforcing all corporate and safety and professional standards

Prerequisites

- Associates degree preferred. Minimum of a high school diploma. Preferred trade school education in electric, gas, or water industry. Prior utility experience a plus.
- Experience with or ability to learn mapping applications such as Planet EV, MapInfo, and other GIS mapping tools for use in network planning and maintenance as well as systems optimization
- Must possess and maintain a valid driver's license and drive to field sites in a safe manner

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- Must be able to work wearing safety equipment and follow all Sensus, customer, and industry standard safety practices
- Working knowledge and ability with SQL and database querying and structure
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and use other project-related customized computer software and hand-held computing tools
- Experience with WAN and LAN networking technologies and protocols

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5.0 Project Dedication

Please refer to proposal section 7.0 Project Schedule and Work Plan for additional details. NOTE that the items in blue boxes are for future planning purposes only and would not be part of the initial RNI deployment. However, Sensus project management will be available throughout the process to work with the chosen installation vendors.

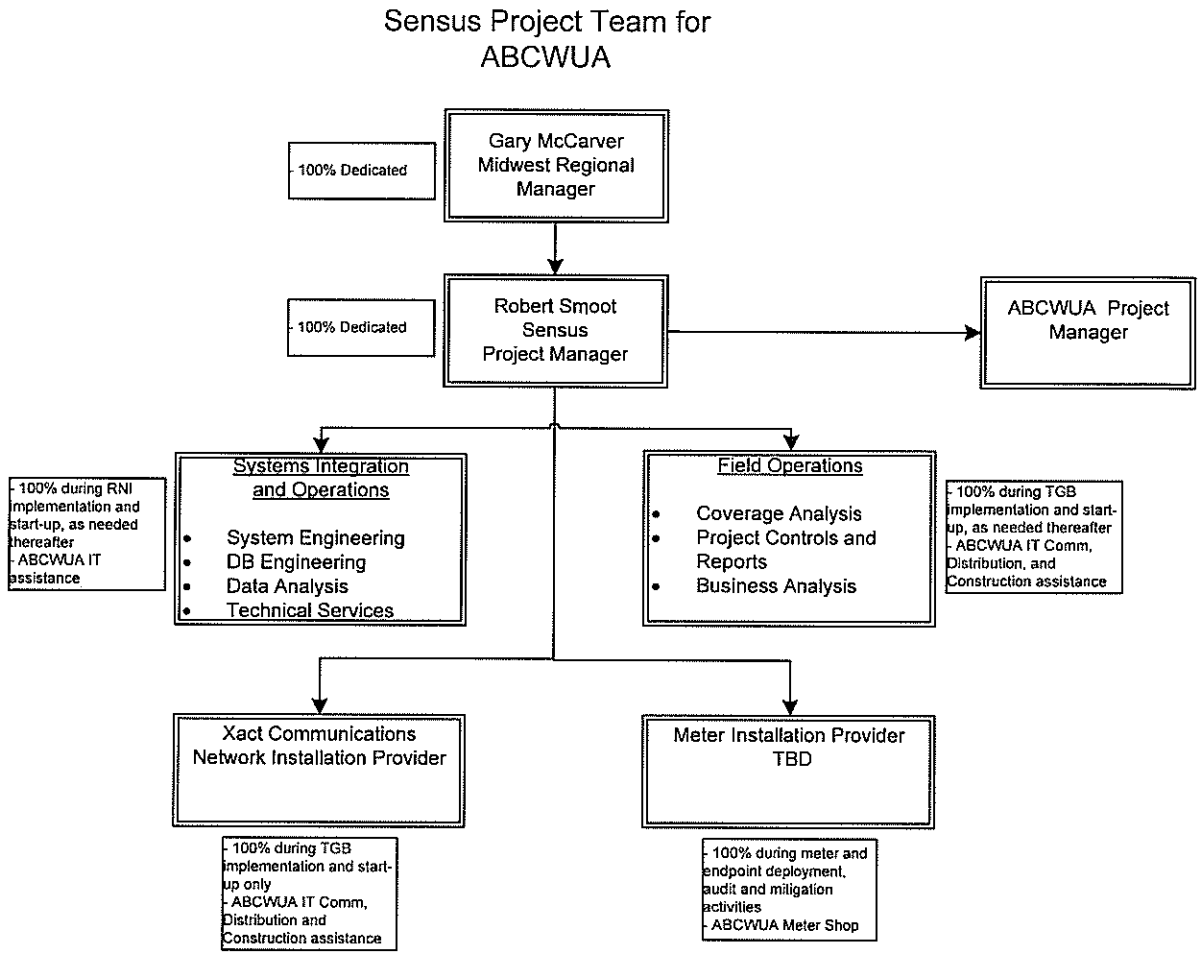

Figure 1: Project Team for ABCWUA

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6.0 Related Experience of Vendor Firm

Utility Name	Village of Los Lunas, NM
Address	416 Main Street NW, Los Lunas, NM 87031
Contact	Theresa Medina
Telephone	(505) 839-3841
Email	medinat@loslunasnm.gov
Year Placed in Service	2007
Number of Water Service Meters	5,200

Utility Name	Portales Public Works Dept.
Address	313 N Avenue B, Portales, NM 88130
Contact	Tom Howell
Telephone	(575)356-6662, x 19
Email	thowell@portalesnm.org
Year Placed in Service	2010
Number of Water Service Meters	3,000

Utility Name	Eastern Municipal Water District, Perris, CA
Address	2270 Trumble Road, Perris, CA 92572
Contact	David Lopez
Telephone	(951) 928-3777 x 4289
Email	lopezd@emwd.org
Year placed in service	2008
Number of Water Service Meters	140,000

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Utility Name	Westview Water Authority
Address	210 Perry Highway, Pittsburgh, PA 15229
Contact	Dan Dannenmueller
Telephone	(412)931-3500
Email	ddannenmueller@wvwauthority.com
Year Placed in Service	2007
Number of Water Service Meters	53,756

Utility Name	City of Lawton, OK
Address	103 SW 4th St., Lawton, OK 73501
Contact	Mark Moore
Telephone	(580) 581-3333
Email	mamoore@cityof.lawton.ok.us
Year Placed in Service	2008
Number of Water Service Meters	36,000

Utility Name	City of Apopka, FL
Address	748 East Cleveland Street, Apopka, FL 32704-1229
Contact	R. John Dufresne
Telephone	(407) 703-1727
Year placed in service	2007
Number of Water Service Meters	22,000

Utility Name	Spanish Fork City, UT
Address	40 Main Street, Spanish Fork, UT 84660
Contact	Paul Taylor, Water Meter Supervisor
Telephone	(801) 921-9855
Email	paultaylor1204@hotmail.com
Year Place in Service	2007
Number of Water Service Meters	18,000

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Utility Name	Nacogdoches, TX
Address	P.O. Box 6305030, Nacogdoches, TX
Contact	Pam Curbow
Telephone	936-559-2526
Email	curbowp@ci.nacogdoches.tx.us
Year placed in service	2008
Number of Water Service Meters	14,000

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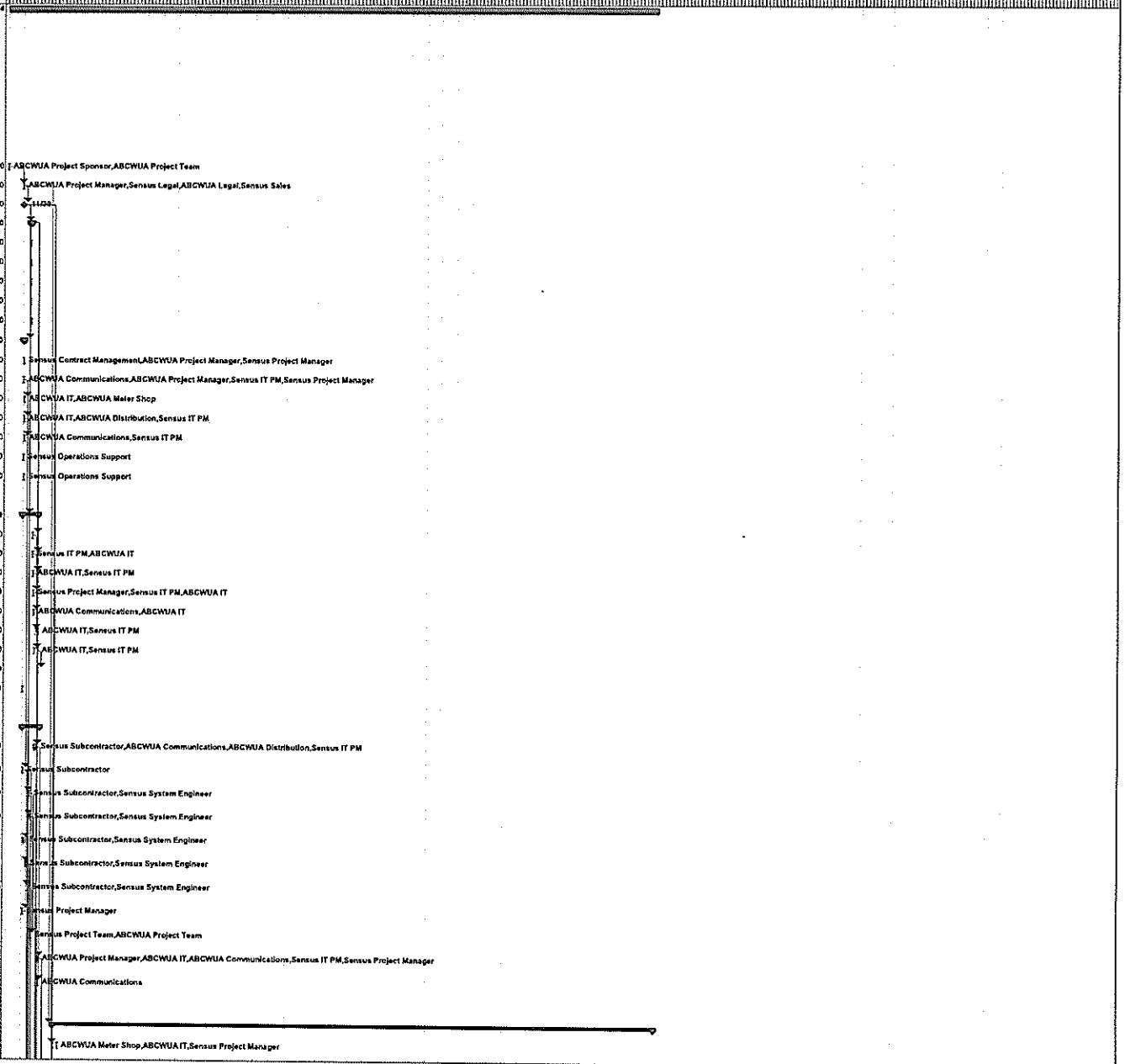
ID	Task Name	Duration	Start	Finish
1	**Albuquerque Water AMI Deployment Project - NOTE that items in blue are for future planning purposes only and would not be part of the initial RNI deployment. However Sensus Project management will be available to work with the chosen installation vendors.**	911 days	Mon 11/1/10	Mon 4/28/14
2				
3	Project Awarded	1 day	Mon 11/1/10	Mon 11/1/10
4	Contract Signed	1 day	Tue 11/30/10	Tue 11/30/10
5	Notice to Proceed	0 days	Tue 11/30/10	Tue 11/30/10
6	**Kick-Off Meeting (On-site)**	**3 days**	**Wed 12/15/10**	**Fri 12/17/10**
7	Resource planning	2 days	Wed 12/15/10	Thu 12/16/10
8	Roles and Responsibilities	2 days	Wed 12/15/10	Thu 12/16/10
9	Change Management	1 day	Wed 12/15/10	Wed 12/15/10
10	Project Communications, Reviews and Re	1 day	Wed 12/15/10	Wed 12/15/10
11	Define Acceptance Test Plan	3 days	Wed 12/15/10	Fri 12/17/10
12	**Project Documents (On-site and Off-site)**	**3 days**	**Wed 12/1/10**	**Fri 12/3/10**
13	Signed Contract	2 days	Wed 12/1/10	Thu 12/2/10
14	ABCWUA Network Propagation Study (AB	1 day	Wed 12/1/10	Wed 12/1/10
15	ABCWUA Route and Cycle Data (installati	2 days	Thu 12/2/10	Fri 12/3/10
16	ABCWUA Tower and Substation location c	1 day	Thu 12/2/10	Thu 12/2/10
17	ABCWUA Network Communications Plan	1 day	Fri 12/3/10	Fri 12/3/10
18	Product and System Configuration Docum	1 day	Wed 12/1/10	Wed 12/1/10
19	Training Manuals	1 day	Thu 12/2/10	Thu 12/2/10
20				
21	**RNI Deployment (On-site and Remote Comm**	**23 days**	**Wed 12/1/10**	**Fri 12/31/10**
22	Review ABCWUA Requirements	1 day	Mon 12/20/10	Mon 12/20/10
23	Review RNI Hardware Requirements	1 day	Mon 12/20/10	Mon 12/20/10
24	Review RNI Software Requirements	1 day	Tue 12/21/10	Tue 12/21/10
25	Order RNI Hardware and Software	1 day	Wed 12/22/10	Wed 12/22/10
26	Define and Allocate IP Addresses (RNI an	2 days	Wed 12/22/10	Thu 12/23/10
27	Define File Format Requirements (Export t	2 days	Mon 12/27/10	Fri 12/31/10
28	Schedule preliminary installation date/s	2 days	Fri 12/24/10	Thu 12/30/10
29	Schedule preliminary training date/s	1 day	Fri 12/31/10	Fri 12/31/10
30	Develop plan for parallel operations	1 day	Wed 12/1/10	Wed 12/1/10
31				
32	**FlexNet Network Deployment Planning (On-s**	**24 days**	**Thu 12/2/10**	**Tue 1/4/11**
33	Perform site survey at target TGB sites	5 days	Thu 12/23/10	Wed 12/29/10
34	Validate TGB Type by location	1 day	Thu 12/2/10	Thu 12/2/10
35	Identify Coax Cabling and Antenna require	2 days	Tue 12/14/10	Thu 12/15/10
36	Grounding	2 days	Wed 12/15/10	Fri 12/17/10
37	TGB Mounting structure (Pad or platform)	3 days	Fri 12/3/10	Tue 12/7/10
38	Power Requirements	3 days	Wed 12/8/10	Fri 12/10/10
39	Additional Construction	1 day	Mon 12/13/10	Mon 12/13/10
40	Order TGBs	1 day	Fri 12/3/10	Fri 12/3/10
41	Define TGB Deployment Plan	1 day	Mon 12/20/10	Mon 12/20/10
42	Define Backhaul Communications Plan	4 days	Thu 12/30/10	Tue 1/4/11
43	Order TGB Communications by location	2 days	Mon 1/3/11	Tue 1/4/11
44				
45	Register Exchanges/Retrofit (850 Meters)	**842 days**	**Wed 2/2/11**	**Thu 4/24/14**
46	Define locations for 850 register retrofit	2 days	Wed 2/2/11	Thu 2/10/11



Project Schedule and Implementation | Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

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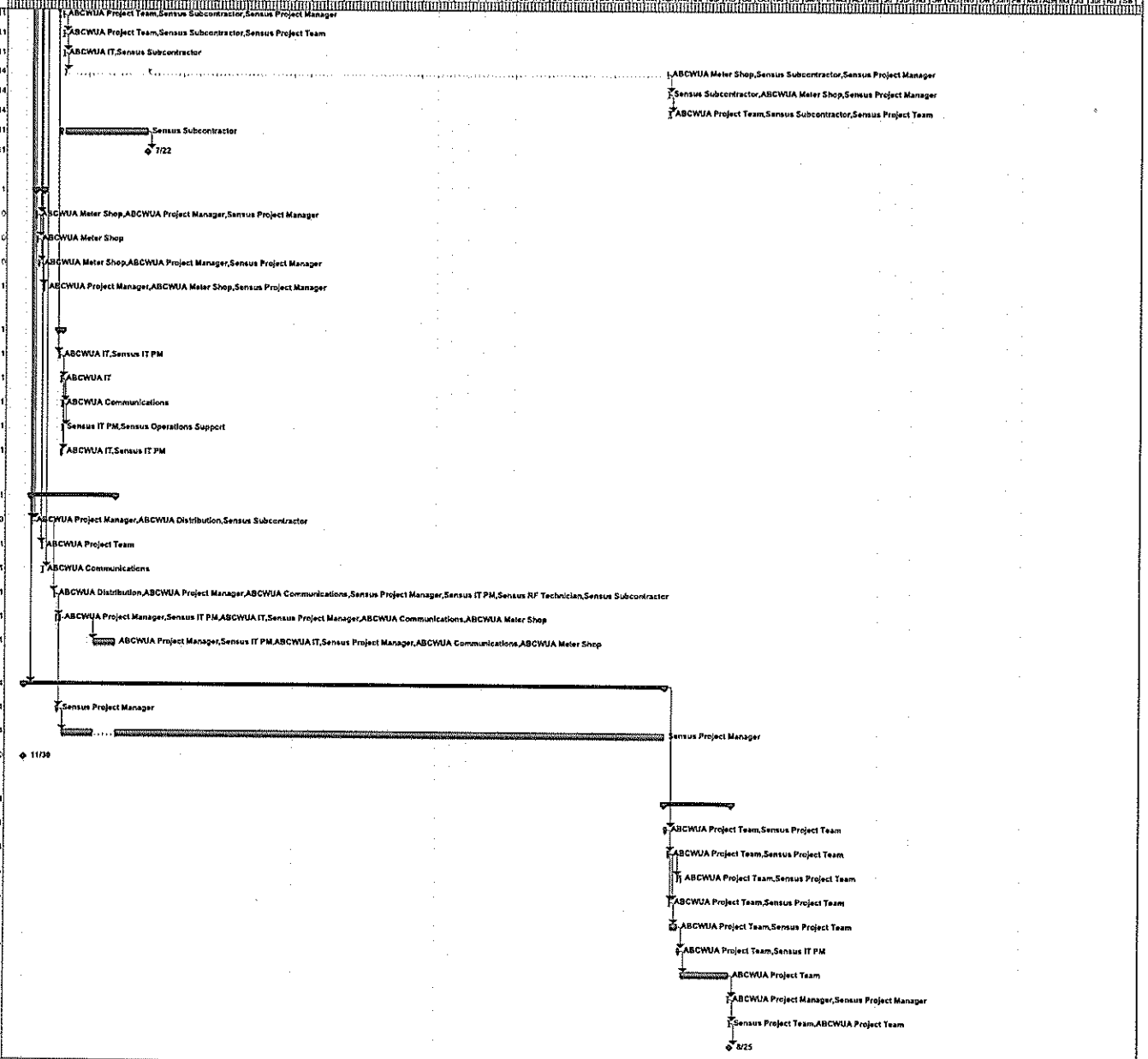
ID	Task Name	Duration	Start	Finish
47	Define Data Correction methods w subcons	2 days	Wed 2/2/11	Wed 2/9/11
48	Define installation Priority	1 day	Thu 2/10/11	Thu 2/10/11
49	Validate data file exchange process w/subs	1 day	Fri 2/11/11	Fri 2/11/11
50	Verify Register Availability	3 days	Mon 2/14/11	Fri 4/18/14
51	Field test installation Process	1 day	Mon 4/21/14	Mon 4/21/14
52	Go/No-Go decision	2 days	Tue 4/22/14	Thu 4/24/14
53	Begin Register Exchanges	120 days	Thu 2/3/11	Fri 7/22/11
54	Register Exchange Rollout Complete	0 days	Fri 7/22/11	Fri 7/22/11
55				
56	Meters and Endpoints (On-site)	13 days	Mon 12/20/10	Wed 1/5/11
57	Define route installation schedule by priorit	2 days	Mon 12/20/10	Tue 12/21/10
58	Identify meter type requirements by route	2 days	Wed 12/22/10	Thu 12/23/10
59	Define shipping schedule	2 days	Fri 12/24/10	Mon 12/27/10
60	Order meters and Endpoints	2 days	Tue 1/4/11	Wed 1/5/11
61				
62	RNI System Deployment - (On-Site and Rem	6 days	Thu 2/3/11	Thu 2/10/11
63	Install RNI Hardware and Software	2 days	Thu 2/3/11	Fri 2/4/11
64	Integrate RNI into ABCWUA infrastructure	2 days	Mon 2/7/11	Tue 2/8/11
65	Connect to WAN access	1 day	Wed 2/9/11	Wed 2/9/11
66	Perform RNI training	1 day	Thu 2/10/11	Thu 2/10/11
67	Test Export file	4 days	Mon 2/7/11	Thu 2/10/11
68				
69	AMI Network Infrastructure (On-site)	116 days	Tue 12/14/10	Tue 5/24/11
70	Begin TGB site construction by location	2 days	Tue 12/14/10	Wed 12/15/10
71	Receive TGB Hardware	1 day	Mon 1/3/11	Mon 1/3/11
72	Verify Availability of TGB back-haul comm	1 day	Wed 1/5/11	Wed 1/5/11
73	Perform 1st TGB Installation	2 days	Thu 1/27/11	Fri 1/28/11
74	Validate 1st TGB to RNI connectivity and c	4 days	Mon 1/31/11	Tue 2/8/11
75	Complete remaining TGB installations with	30 days	Wed 4/13/11	Tue 5/24/11
76				
77	AMI Meter Installation (On-site)	552 days	Tue 11/30/10	Thu 4/17/14
78	Begin 1st Cycle/Route deployment (100 pr	5 days	Mon 1/3/11	Fri 2/4/11
79	Complete meter and endpoint deployment	800 days	Fri 2/11/11	Thu 4/17/14
80	This Schedule segment will be refined at F	0 days	Tue 11/30/10	Tue 11/30/10
81				
82	AMI System Completion (On-site)	91.5 days	Fri 4/18/14	Mon 8/25/14
83	Perform Completion Testing	4 days	Fri 4/18/14	Wed 4/23/14
84	Review System Reports and Test Results	2 days	Fri 4/25/14	Mon 4/28/14
85	Identify System Issues (As needed)	4 days	Thu 5/15/14	Wed 5/21/14
86	Define Remediation Plan (As needed)	2 days	Tue 4/29/14	Wed 4/30/14
87	Execute Remediation Plan (As needed)	10 days	Thu 5/1/14	Wed 5/14/14
88	Assist with "Go Live" Operations	3 days	Thu 5/15/14	Mon 5/19/14
89	90 Day Warranty Period	66 days	Thu 5/22/14	Thu 8/21/14
90	Execute Completion Agreement	1 day	Fri 8/22/14	Fri 8/22/14
91	Transition to Sensus CustomerCare	0.5 days	Mon 8/25/14	Mon 8/25/14
92	Project Close	0 days	Mon 8/25/14	Mon 8/25/14



Project Schedule and Implementation | Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

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8.0 Sensus Response to ABCWUA RFP2011-002-TC Attachment A: Requirements Matrix

Please see the following table for Sensus' response to ABCWUA RFP2011-002-TC Attachment A: Requirements Matrix. The numbering in the following tables corresponds with the requirements as documented with the RFP.

Section A: Vendor

A-1	**Please provide an introduction to the Proposer's company and organization. Include the following: (Note: Respondents must have been in business for at least 5 years and be in continual good financial standing to meet the minimum standard.)**	
	Included PROPOSED AMR/AMI:	Sensus has maintained its position as a global leader in utility measurement and management solutions for over 100 years. From its roots as the leading meter provider in the water industry (Pittsburgh Equitable Meter Company and Rockwell Meter Company), Sensus has evolved into a leading supplier in the gas and in more recently the electric utility markets as well. Sensus is currently the market leader in Water AMI deployments, and maintains top-tier status in both Electricity and Gas AMI deployments. With operations and service facilities on five continents, Sensus is a global leader in utility infrastructure systems and resource conservation. Our company is rooted in 100 years of experience — yet focused squarely on the future. Sensus' Global Operations are based in Raleigh, NC, and North American meter production is based in Uniontown, PA - as it has been for more than 50 years. Although Sensus has a rich heritage and successful past, the true character of our company is seen in the development and innovation of products such as the FlexNet AMI network, the OMNI commercial water meter, and iPERL residential water meter. Helping utilities and consumers make the most of finite water and energy resources takes more than just innovative technology and know-how. Sensus delivers reliable, flexible, and proven products and solutions that provide advanced measurement, data collection, analysis and control capabilities that help our customers improve operational efficiency while reducing their environmental impact. Furthermore, Sensus can demonstrate the successful implementation of our technology across more than 200 deployed FlexNet (fixed base) AMI networks in North America to date.

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A-1a	**All changes of ownership**	
	Included PROPOSED AMR/AMI:	The original name of our company, Pittsburgh Equitable Meter Company, was born from original owners, the Rockwell family, which established the company's original — and current — base in Uniontown, Pennsylvania. Pittsburgh Equitable Meter Company later became Rockwell Meter Company. Millions of meters and decades of industry leadership later, company diversification led growth into the gas meter and valve operations, which were purchased by a London-based company, BTR. BTR later merged with Siebe, becoming Invensys (1999). The transition saw the name of our company evolve into Invensys Metering Systems. A few years later, still on the heels of yet more industry advancements, another purchase agreement by the Jordan Company (2003) led to the current name of Sensus USA. Sensus current ownership structure is: • 1) The Resolute Fund L.P. (66%) o Note: The Resolute Fund is controlled by the Jordan Company L.P. • 2) The Goldman Sachs Group, Inc. (33%) • 3) Executive Officers and Directors (1%)
A-1b	**Years in business**	
	Included PROPOSED AMR/AMI:	Sensus has been in business and has served the water utility market consistently for more than 100 years. Sensus has been a leading provider of water AMR solutions since 1984, and has been the leading provider of water AMI solutions since 2003.
A-1c	**Product evolution**	
	Included PROPOSED AMR/AMI:	The Sensus FlexNet water AMI network enjoys a leadership position in the market. With nearly 200 water AMI deployments to date, and more than one million FlexNet water AMI endpoints shipped, Sensus has demonstrated industry leading reliability and innovation that our customers have come to expect. Our success in AMI is in large part a result of our long standing leadership position and strong experience in water AMR networks. Sensus has delivered nearly a million water mobile AMR endpoints to date across more than 2,500 different utilities to date, and has leveraged this experience in the design of the FlexNet system.

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System features such as the patented TouchCoupler connection and totally sealed endpoint are evidence of the company's experience in the pit set water meter environment.

With FlexNet, Sensus started with a clean-sheet RF design, and developed a system designed specifically with fixed base meter reading in mind. Rather than trying to develop a fixed network around radios originally designed for mobile operation, Sensus focused squarely on primary-use licensed FCC spectrum, capable of delivering true fixed base meter reading benefits with the minimum required collector hardware. The result was the FlexNet system – with double the power of any other AMI network from the meter to the collector, and 35 times the power from the collector to the meter. Coupled with power and reliability, FlexNet also delivers the best value, with the industry's most flexible, upgradeable, and feature-rich network. Every part of the network is upgradeable, and all radios are software defined, which allows them to be totally reprogrammed for additional spectrum and/or different RF modulations in the future. The FlexNet network also features IP addressability for every component on the network.

The FlexNet network is also unique in that it has spectrum set aside for applications such as SCADA, Distribution Automation (DA), Demand Response (DR), Acoustic Leak Detection Devices, and Home Area Network (HAN). Furthermore, the FlexNet head end is capable of interfacing with any number of third party platforms and applications using industry standard protocols. FlexNet is much more than just a meter reading collection network – FlexNet is an open standards, multi-application network.

After establishing the best and most reliable fixed base AMI network for water, gas and electricity meters, Sensus has recently added the capability for the FlexNet endpoints to be read by handheld (walk-by) and mobile (drive-by) collection devices. In addition to this, Sensus has added true on-demand, two-way reading capability over the powerful FlexNet network. Utilities can now poll a meter and receive a reply at any time, in addition to many other benefits afforded by two-way operation, such as firmware updates and configuration changes. FlexNet true two-way is unique in that communications travel all the way from the user to the meter and back within moments. The industry leading power of the FlexNet network (35 times the power outbound from the collection devices to the meter) ensures that two-way commands are received by the meter with the minimum amount of collector infrastructure. As noted above, Sensus continues to add to the functionality of the FlexNet network by adding applications such as SCADA and Home Area Networking (HAN) to the FlexNet platform. Sensus recently acquired Telemetric Corporation, a leader in SCADA applications, and offers RTM modules with FlexNet radios to allow SCADA backhaul via the FlexNet network. Additionally, the support for IP addressability for every component on the network ensures the best interoperability with third party platforms for the future.

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Sensus also continues to innovate with the release of FlexServer, a customer web portal which allows utility customers to securely log in to view their own reading and consumption information, receive email, text and phone alerts when reaching customizable thresholds, and which supports In-Home Display modules which can deliver reading and alert information to customers over the FlexNet network without the need for a telephone or internet connection.

For additional detail, please refer to Section 2.0, Description of the Company.

A-1d **Financial standing (including full disclosure of any bankruptcy or other financial situation)**

Included PROPOSED AMR/AMI:

Sensus currently has a B+ rating from Standard & Poor's. Per the S&P's last rating "The outlook is stable. We expect the company's improved operating performance and enhanced compliance cushion to help Sensus maintain near-term rating stability. We could revise the outlook to positive or raise the ratings if Sensus achieves much better performance from the strides it has made in delivering advanced metering systems and products to utility customers. This would allow the company to continue to generate much better positive free cash flow and reduce leverage beyond our expectations."

Non-GAAP Reconciliation

A reconciliation of each of these Non-GAAP measures to its closely related U.S. GAAP measure follows:

($ in millions)

	FY ended,				
	3/31/2005	3/31/2006	3/31/2007	3/31/2008	3/31/2009
Net sales	$569.8	$613.9	$632.9	$694.2	$670.7
Customer billings from multi-element contracts deferred under SOP 97-2 (net of amortization)	–	–	–	31.4	135.4
Adjusted Net Sales	$569.8	$613.9	$632.9	$725.6	$806.1
Net loss	($5.0)	($3.2)	($9.0)	($10.1)	($48.9)
Depreciation and amortization	39.8	42.4	48.1	47.7	46.6
Interest expense, net	36.7	39.3	42.4	41.8	39.9
Income tax (benefit) provision	8.3	8.2	1.0	(2.6)	(19.9)
Minority interest	0.1	–	0.5	1.9	2.4
(Gain) loss from discontinued operations	0.8	–	(0.1)	–	–
Customer billings less incremental direct costs from multi-element contracts deferred under SOP 97-2 (net of amortization)	–	–	–	5.1	62.4
Restructuring costs	8.1	7.2	8.5	7.0	9.9
Management fees	2.1	2.3	2.6	2.6	3.1
Goodwill impairment	–	–	–	–	14.4
Other non-recurring items	0.9	1.1	0.8	–	3.3
Adjusted EBITDA	$91.8	$97.3	$95.8	$93.4	$112.2

Figure 1: Sensus Financials

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A-1e	**Number of dedicated staff supporting the proposed system**	
	Included PROPOSED AMR/AMI:	There will be three dedicated staff: The Sensus Project Manager, the Sensus IT Project Manager, and the Sensus RF Technician. The Project Manager will be the most visible member with the IT Project Manager and RF Technician involved as needed.
A-1f	**Industry focus**	
	Included PROPOSED AMR/AMI:	Please refer to Section 2.0, Description of the Company, for details on our Industry focus.
A-1g	**Other relevant details as to provide a clear picture of the vendor being proposed.**	
	Included PROPOSED AMR/AMI:	Sensus is the Global leader in water metering, and has provided products to the water industry for well over 100 years. Sensus has deployed nearly 200 individual water FlexNet (fixed base) AMI networks to date. Sensus and FlexNet enjoy a strong leadership position in the water AMI industry, including number of deployments as well as in technology and innovation.
A-2	**Please provide a list and explanation for any contracts cancelled as a result of convenience or cause in the past five years. References for these may be requested at a future time.**	
	Included PROPOSED AMR/AMI:	No contracts have been canceled for convenience or cause in the past five years. FlexNet deployments have grown to more than 200 strong in the past five years.
A-3	**Please provide a statement of commitment to the proposed system and to the water/wastewater industry for a period not less than seven years. Please provide information pertaining to the percentage of vendor sales within the last three (3) years to the water/wastewater community.**	
	Included PROPOSED AMR/AMI:	Sensus has had a long standing position in the water/wastewater industry that goes back to the late 1800's. We have supplied numerous product lines and solutions during this time and continue to be a leader in the water utility industry.

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		Sensus has nearly 200 FlexNet water AMI deployments to date, and has shipped more than one million water FlexNet AMI endpoints, and more than nine million total FlexNet AMI (combined water, gas and electric) endpoints. Our business plan for the next seven (7) years and beyond includes a strong focus in FlexNet product lines and solutions. The upgradeability and expandability of the FlexNet solution, including every piece of hardware on the network - from the head end, to the collection devices, to the meter endpoints themselves, ensures that Sensus will continue to lead the industry for the future as well. More than 50% of Sensus' overall revenue is derived from the water/wastewater industry sales, including water meters, AMR and AMI endpoints, and our clamps and couplings business (Smith-Blair). The balance of company revenue is derived from the electricity and gas industry sales and our Precision Die Casting business.
A-4	**The version of the system proposed must be in production in no fewer than three (3) domestic clients in the water/wastewater industry. Please provide references for a minimum of five (5) client installations. (Note: ABCWUA will request to speak with individuals engaged in both the system implementation and subsequent daily interaction with the system.)**	
	Included PROPOSED AMR/AMI:	The FlexNet water AMI network proposed is deployed in nearly 200 individual utilities across North America, with more than one million water FlexNet AMI endpoints shipped. Sensus has more than nine million combined FlexNet AMI (combined water, gas and electric) endpoints shipped to date. **Sensus – Demonstrated Leadership in AMI Water Deployments** Sensus currently has more than 200 active FlexNet projects with over nine million FlexNet endpoints shipped to date. The vast majority of these projects (170+) are water AMI deployments. This breadth of experience demonstrates Sensus' ability to meet ABCWUA's requirements for a successful AMI deployment in Albuquerque. In the process of deploying over 200 projects, Sensus has gained valuable experience working with a large number of industry partners in a wide variety of deployment scenarios. This experience also underscores Sensus' commitment to open standards and continuous development of the FlexNet communications platform. The list below is just a sample of the industry partners currently engaged with Sensus:

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Home Area Network Partners

- Home Automation, Inc. (HAI)
- Honeywell
- Radio Thermostat
- Comverge
- 4Home
- AzTech Associates

Software Partners

- Microsoft
- Oracle
- eMeter
- Siemens
- Comverge

Distribution Automation Partners

- Aeris
- QEI Inc.
- Cooper Power Systems
- ABB
- G&W Electric Co.
- AT&T
- Lindsey
- Siemens
- Joslyn
- I.C.II M.I

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- S&C Electric
- Power Delivery Products

FlexNet – An Open Standards, Multi-Application AMI Network

Sensus has also had a great deal of experience interfacing with third party software platforms using industry standard protocols and APIs such as MultiSpeak and CMEP, and FlexNet's adherence to Open Standards ensures future compatibility with needs that may yet to be identified by the Authority. Sensus offers ABCWUA a choice of database platforms, including Oracle 11g and Microsoft SQL. FlexNet is the clear choice when considering third party compatibility and ease of integration.

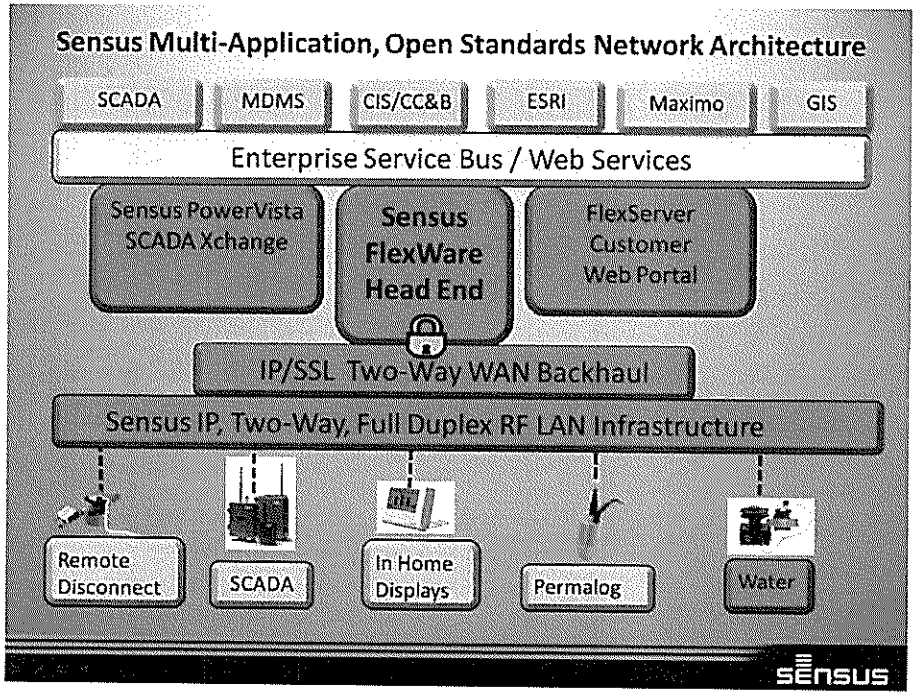

Figure 2: FlexNet is based on open standards

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FlexNet – Proven Scalability and Reliability

FlexNet has also demonstrated its scalability and reliability across a number of very large deployments. The list of major deployments below demonstrates our success:

Customer Name	Project Size	Estimated Completion Date
Georgia Power	2.5 Million meters	12/31/12
NV Energy	1.4 Million meters	12/31/12
Alabama Power	1.4 Million meters	12/31/10
PGE	850,000 meters	08/31/10
Alliant Energy	1.5 Million meters	12/31/13
Nevada Energy	1.2 Million meters	
Gulf Power	470,000 meters	12/31/15
Powerstream	300,000 meters	07/30/10
Jackson EMC	200,000 meters	12/31/10
Sawnee	150,000 meters	12/12/12
Eastern Municipal Water District	140,000 meters	01/15/15
West View Water Authority	55,000 meters	10/01/10
Benton PUD	45,000 meters	06/30/11

Sensus is happy to share more details about other deployed FlexNet networks across North America and the world upon request.

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A-5	**Optional: Please provide a complete list of clients in the water/wastewater industry.**	
	Included PROPOSED AMR/AMI:	Sensus has thousands of water utility customers across North America and worldwide. Sensus is the largest manufacturer of water meters in the world. In North America alone, Sensus has more than 4,000 active AMR and AMI clients. There are currently more than 200 FlexNet AMI (fixed base) systems deployed across North America. Please refer to the response above in section A-4 for additional details.. This list does not include a number of accounts that have recently selected FlexNet but are not yet in deployment.
A-6	**Optional: Please provide a complete list of clients in New Mexico including those outside the water/wastewater industry.**	
	Included PROPOSED AMR/AMI:	Sensus already has three (3) deployed water AMI networks in the State of New Mexico. Sensus has more than 200 FlexNet deployments in North America. Sensus has deployed FlexNet systems in the following New Mexico utilities: • Los Lunas, NM • Lovington, NM • City of Portales, NM
A-7	**A site visit may be required for the top-ranked vendor. Please provide the location and contact information of the preferred site visit location. (Locations in New Mexico are preferred, but not mandatory.)**	
	Included PROPOSED AMR/AMI:	The preferred site visit location is the Village of Los Lunas, New Mexico. Please refer to proposal section 6.0, Related Experience of Vendor Firm for contact information.
A-8	**Please provide evidence of the Proposer's track record with respect to on-time delivery of planned upgrades.**	
	Included PROPOSED AMR/AMI:	With FlexNet, Sensus leads the industry in innovation and product development. The architecture of the FlexNet system allows for ongoing development and improvement without replacing network hardware and typically without requiring site visits to any meter or collector locations.

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Due to the pace of development, Sensus Marketing and Engineering maintain a detailed product roadmap, including a Plan of Record, to ensure on-time delivery of hardware and software upgrades. Sensus Marketing and Engineering adhere closely to the Stage Gate development process, helping to deliver on-time solutions.

Sensus has been very effective in delivering upgrades on schedule throughout the life cycle of the FlexNet system to date. This is impressive given the rate of development that Sensus is pursuing, and the new functionality that is being continually added.

Recently, Sensus was able to double the bandwidth on the FlexNet network at Alabama Power, including over 1 million meters installed on the network, over the air and without rolling a truck. This bandwidth upgrade occurred on schedule and without rolling a truck.

Additionally, Sensus recently released the migratable FlexNet 520M2 SmartPoint for the FlexNet system. This AMI endpoint delivers true on-demand two-way functionality, and even allows a water utility to begin a deployment as a mobile network (using the 2 Watt transmit power and primary-use FCC license of the FlexNet system) and later convert to a Fixed Base AMI network without visiting any of the deployed meters. The 520M2 was delivered on time, and is backward compatible with all existing FlexNet networks.

Furthermore, Sensus has recently released a revolutionary new residential water meter, the iPERL, which has no moving parts and features unprecedented low-flow accuracy (0.03 GPM). This meter was delivered on time and has been very successful to date.

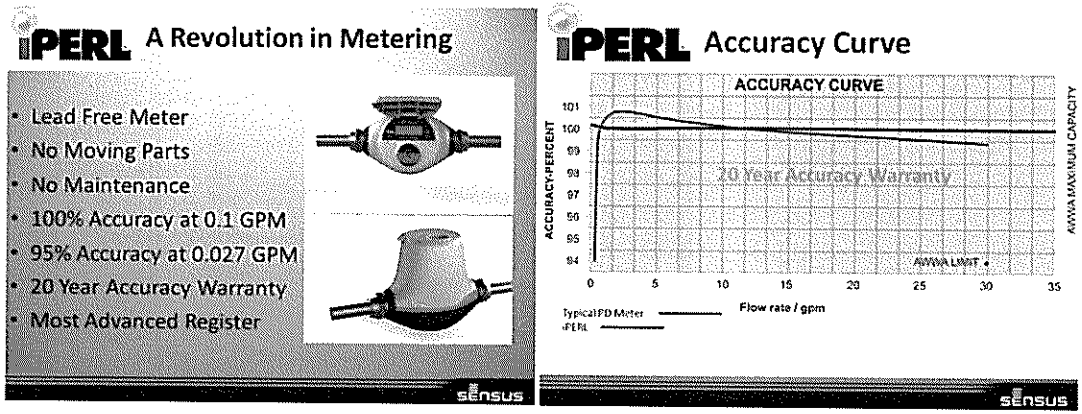

Figure 3: Sensus iPERL and Accuracy Charts

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		Sensus is a company that is constantly innovating and evolving. New product and feature development is part of the company culture at Sensus, and is one of the major reasons the FlexNet system enjoys a leading position in the AMI industry.
A-9	**Elaborate appropriately and succinctly any Product/Company Information not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	While our roots are firmly in the water utility industry and go back more than 100 years, Sensus has grown to be a leading full service product and solution provider to the water, gas and electric industries. Our product depth offers ABCWUA the opportunity to leverage along with Sensus, the vast experience we have gained in working with all different utility commodities (water, gas and electricity). FlexNet is the only AMI network which supports direct communications from water, gas and electricity meters concurrently, and this speaks to the power and capacity of the FlexNet network. Furthermore, the different applications available for these other utility markets often translate into future benefits for water utilities as well (SCADA, Distribution Automation, Remote Shut-off, Acoustic Monitoring, Pressure Monitoring, Home Area Networking, In-Home Displays, etc.). With FlexNet, Sensus offers ABCWUA much more than just a water meter reading network. The FlexNet system is an open standards, multi-application AMI network that will grow and change with ABCWUA as your needs change into the future. This proven performance and upgradeability is demonstrated at more than 200 FlexNet deployments across North America.

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Section B: System Infrastructure

The proposing vendor is expected to provide all necessary information regarding hardware, software, and database licensing subject to this section:

B-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to responses below.
B-2	**The system must operate in the Microsoft (MS) Windows Server 2008 and/or SUN/Netapp environment.**	
	Included PROPOSED AMR/AMI:	Standard AMR and AMI functionality.
B-3	**Provide a server specification including space requirements. Note: The AMI control computer shall be capable of operating in a normal office environment using normal office power supply, require no special installation, and be easily transferable. Components needing to reside in areas other than the Water Authority's office location data center need to be outlined by the Offeror. Indicate whether the system requires a temperature controlled environment. The vendor is NOT required to provide a quote for hardware.**	
	Included PROPOSED AMR/AMI:	For a full deployment at ABCWUA (190,000 services), Sensus would recommend an AMI Control Computer consisting of four (4) individual Dell R710 (or similar) blade servers and two (2) PowerVault MD 1000 RAID hard drive arrays. For the limited deployment specified in this RFP, Sensus would deploy an AMI Control Computer consisting of two (2) individual Dell R710 (or similar) blade servers. A single PowerVault MD 1000 RAID hard drive array (or similar) is optional for the proposed deployment of 850 meters. These servers would typically reside in the utility's data center. These servers are typical rack mounted blade servers. A temperature controlled server room or data center environment is preferred but not mandatory.

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B-4	**The Authority prefers the Oracle database platform. Please specify the preferred database (including versions), and explain the rationale of the database choice.**	
	Included PROPOSED AMR/AMI:	Sensus can provide the FlexNet AMI Control Computer configured with either the Oracle 11g database or the SQL 2005 SP3 at ABCWUA's option. Sensus maintains both options as standard offerings.
B-5	**Describe any experience utilizing server virtualization with the proposed AMR/AMI. Include any problems encountered.**	
	Included PROPOSED AMR/AMI:	Sensus does not typically deploy the AMI Control Computer servers in a virtual environment. The standard model is for Sensus to deliver fully configured hardware servers to the utility. This speeds deployment, simplifies and standardizes support and future updates, and also facilitates server troubleshooting and/or server or hard drive replacement in the event of a hardware problem on the AMI Control Computer. Sensus is willing to discuss server virtualization with ABCWUA if this is of interest. For this proposal, Sensus will provide pricing for the standard AMI Control Computer configuration. Other options can be discussed at the Authority's option.
B-6	**Indicate where event triggering and transaction processing take place (e.g., database level, middleware, etc.).**	
	Included PROPOSED AMR/AMI:	Event triggering and transaction processing take place at several different levels within the AMI Control Computer. The AMI Control Computer specified for this project (850 meters) consists of two (2) physical servers knows as the Network Controller (NC) running Linux Red Hat, and a Database Server (DB) running Microsoft Windows Server 2003. Incoming messages from the MIUs are first received by the NC, and first parsed and placed into the database (Oracle or SQL at utility's option) on the DB server. Processes running on both the DB server and NC server use the data stored in the database to trigger certain events such as alarms, and for transaction processing (such as meter reading delivery or report generation initiated by a user or scheduled process). Outgoing messages from the network to the MIUs may use data stored within the FlexNet database in conjunction with commands initiated by users via Sensus or third party applications. The Sensus FlexNet database contains not only meter reading information, but also a vast array of historical and performance data about each MIU and collection device (TGB) in the field. This information is used to effectively manage

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		incoming and outgoing messages on the network and can support a wide variety of Sensus and third party applications through published and industry standard APIs and interfaces. Other applications in place at ABCWUA may also interface with the FlexNet database, such as the Authority's Oracle CC&B, or Maximo systems using the above mentioned APIs and interfaces.
B-7	**Specify the proposed AMR/AMI architecture configuration by description and drawing (e.g., n-tier client-server, thin-client/web-enabled). No formal requirement is set forth in terms of architecture as long as it best meets the needs of the Authority.**	
	Included PROPOSED AMR/AMI:	The FlexNet software user interface is entirely browser based (no client software necessary on individual user terminals) and can best be described as a thin-client web-enabled environment. Please refer to Appendix C.7_High Level AMI System Description and Architecture for more detailed information.
B-8	**Provide high-level details on the architecture of the proposed configuration, including the availability of API's, web services, and similar open architectures enabling expansion, custom reporting, and interfacing to the AMR/AMI (such description should include a listing and discussion of available web services).**	
	Included PROPOSED AMR/AMI:	FlexNet is an Open Standards, Multi-Application AMI network. Several industry standard and published APIs are available, including MultiSpeak, CMEP, XML and others. The system can take advantage of an Enterprise Service Bus and/or Web Services layer to interface with a wide variety of legacy or future platforms and applications that ABCWUA may wish to integrate with the network, now or into the future. This is one of FlexNet's greatest strengths – the flexibility and expandability to support not only the currently recognized needs of the utility, but also future needs that are not yet identified.

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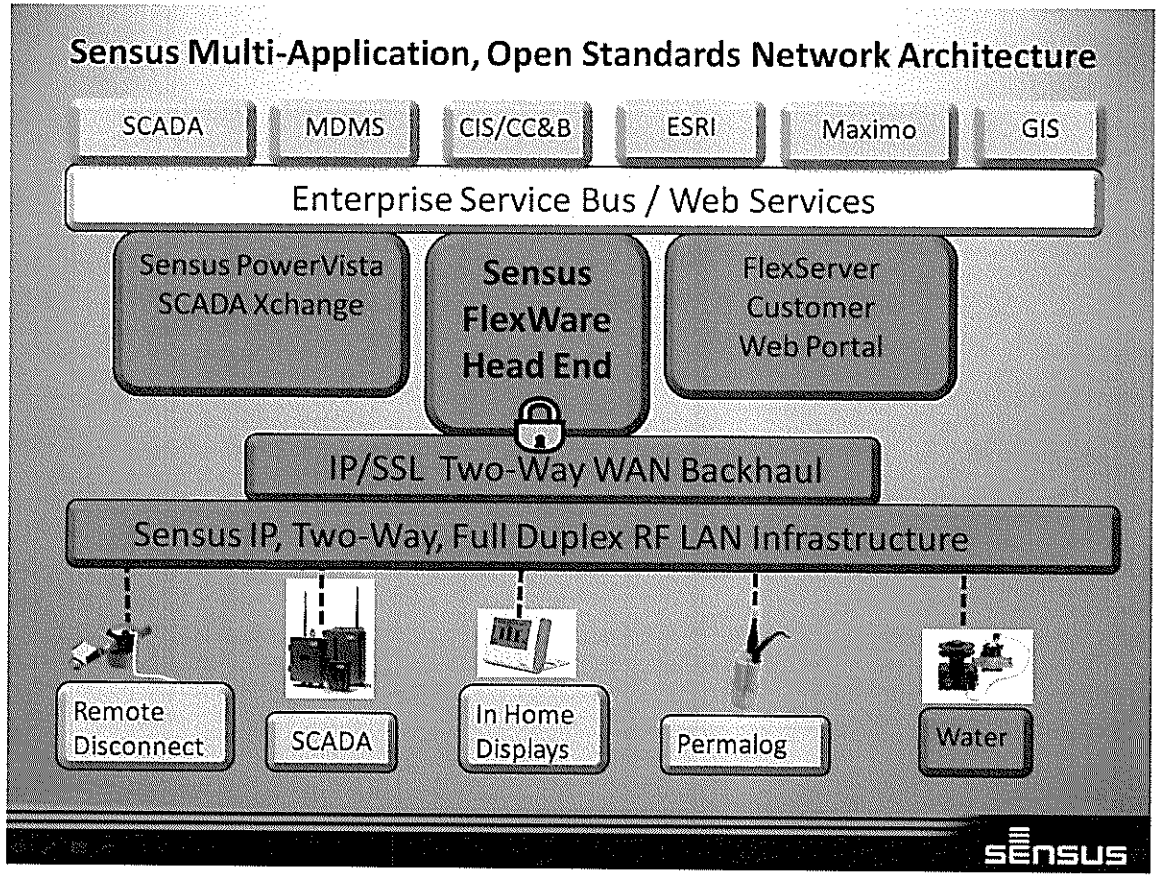

Figure 4: FlexNet is based on open architecture

MultiSpeak is one of the industry standard interfaces supported by FlexNet which provides a programmatic access network to connect to external systems and applications. The MultiSpeak interface is a set of Web Services that can be used in point-to-point integration as well as for Enterprise Service Bus based Service Oriented Architecture (SOA). The FlexNet gateway uses published MultiSpeak WSDLs for Meter Life Cycle, Meter Reading, Connect/Disconnect Web Services as well as for real time notifications.

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B-9	**The AMI system functions, reports, and data on the server shall be securely accessible by properly authorized persons from other workstations on the Water Authority's network. Describe how this capability is provided.**
Included PROPOSED AMR/AMI:	User access is provided via a secure, utility-branded website. User access is via web browser. An LDAP authentication system (with Microsoft Active Directory Support) verifies users and allows appropriate user level access—as defined by the utility FlexNet Administrator or Administrators. FlexNet allows for a many different levels of user access control. Each group can be individually customized to allow/disallow specific access and functionality within the network. The screenshot below shows some of the specific access options: **Figure 5: User role options**

B-10	**The Water Authority has defined the AMR/AMI as being a high priority system. Recovery of the system shall take no longer than twenty-four (24) hours after failure or disaster. Specify the disaster recovery solution to meet the 24 hour recovery including any additional hardware (server & storage), software, telecom and bandwidth requirements. The Water Authority currently has available the ability to replicate files between systems using NetApp solutions as well as other technologies like the inherent data replication within Oracle 10g/11g. The Offeror may recommend an alternative solution. Please indicate what hardware and software is required and whether it is obtainable outside the purchase contract.**	
	Included PROPOSED AMR/AMI:	FlexNet has been deployed and field proven at more than 200 individual utilities across North America, including large Investor Owned utilities such as Atmos Energy (1.4 Million meters), Southern Company (more than 1 Million meters deployed), Portland General Electric (850,000 services), and scores of water utilities including Miami-Dade Water (495,000 services), Eastern Municipal Water District, CA (140,000 services), and Nashville Water (280,000 services). The ability of the Sensus system to not only back up, but also to store and recover information provides industry leading functionality to ensure data integrity and disaster recovery. There are three basic levels of backup available inherently in the system. The first is provided by the native operating system and server infrastructure. The second is provided by the native capabilities of the open standard industry databases (Oracle 11g or SQL), and the third is the backup and restore capability provided as part of the FlexNet system. Any or all three of these systems provide the capability of restoring not only the system data but overall system configurations as well. FlexNet can support a second Regional Network Interface (RNI) as a Disaster Recovery AMI Control Computer and has delivered this configuration at a number of different utilities across North America. Sensus will work with ABCWUA to use existing disaster recovery software and hardware (NetApp for example) whenever possible, or to use the Authority's preferred methods for system backup. If ABCWUA chooses to deploy a second RNI as a disaster recovery AMI Control Computer, the specifications for this unit would mirror those of the primary RNI. Please see AMI Control Computer Specifications in response B-3 above for details on RNI hardware specifications. Data would need to be routed from the primary RNI to the disaster recovery RNI via TCP/IP network connection. Typically this would be accomplished via the utility's existing network, using a router and available TCP/IP connection from the primary RNI to the disaster recovery RNI. An example of such an arrangement is shown below:

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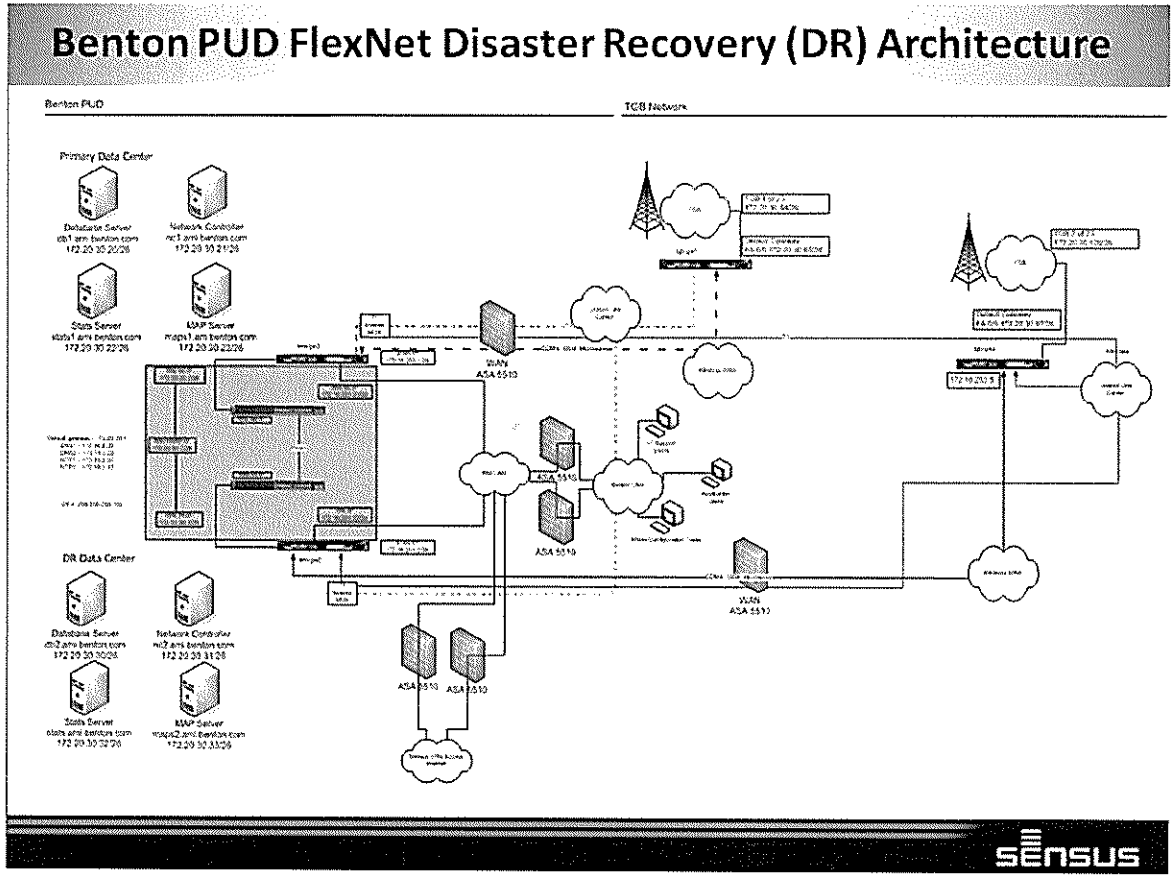

Figure 6: Example of Disaster Recovery with FlexNet

Additionally, FlexNet offers the highest levels of reliability and redundancy at all system levels. From the MIU (SmartPoint module) to the Collector (TGB) to the Regional Network Interface (RNI), all elements of the system are protected.

- FlexNet MIUs store and transmit up to seven (7) days hourly reading history in every transmission.
- FlexNet MIUs transmit six (6) times per day for redundancy and lower reading latency

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- FlexNet Collectors, called Tower Gateway Basestations (TGB) can store up to thirty (30) days of hourly meter readings for all meters served in the event that backhaul connection to the RNI is down or the RNI is unavailable for any reason.
- FlexNet Collectors can support a secondary backhaul solution.
- FlexNet Collectors have a standard battery backup that supports continued operation for at least 8 and up to 20 hours in the event of primary power failure.
- The FlexNet AMI Control Computer (RNI) features multiple blade servers utilizing hot-swappable hard drives and RAID hard drive arrays for redundancy.
- The FlexNet system can support a primary and a disaster recovery RNI (AMI Control Computer) if desired by the utility.
- All system infrastructure components (including collectors) can be accessed remotely and securely via TCP/IP for troubleshooting and updates/upgrades.

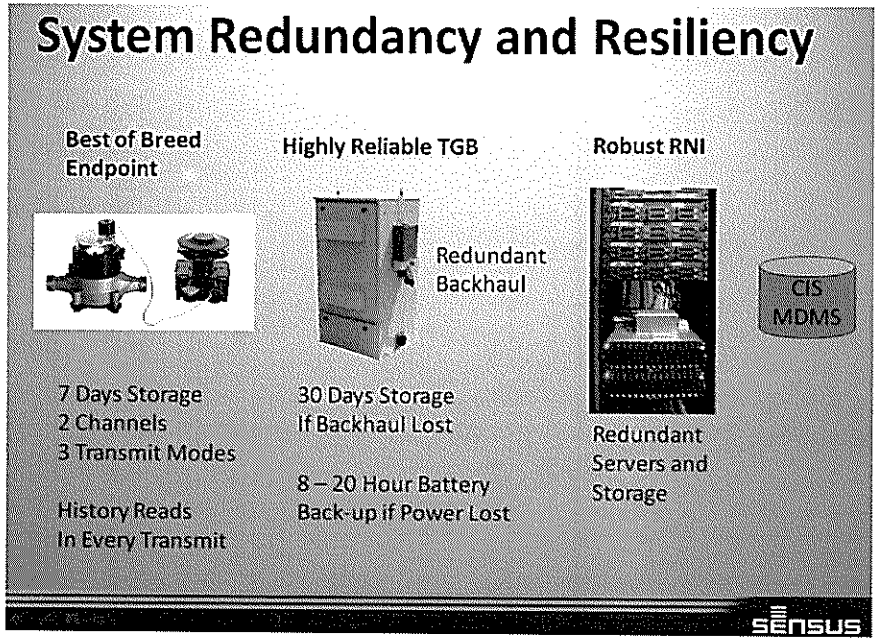

Figure 7: FlexNet is built for high availability

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B-11	**The system must be compatible with MS Exchange Server 2005 and 2007 (for sending automated alerts, etc.) and use SMTP service. The Authority will not allow use of POP3 or IMAP services.**	
	Included PROPOSED AMR/AMI:	Standard AMR and AMI functionality. The FlexNet system can take advantage of SMTP (ONMS) for alerts and other messaging related to system and network health. The FlexNet system does not use POP3 or IMAP.
B-12	**The minimum desktop/laptop/tablet configurations supported by the Authority are: desktop/laptop/tablet workstations with 2GB memory minimum, 75GB HD minimum, and standard peripheral support through USB, 10/100 NIC, and CD/DVD, running Windows XP Professional SP2. Please confirm that these configurations are acceptable along with the intent to support future versions of Windows while maintaining backward compatibility, specifically Windows 7.**	
	Included PROPOSED AMR/AMI:	Standard AMR and AMI functionality. The FlexNet system software and user interfaces are entirely browser based and require minimal specifications on client terminals. Any terminal capable of running a standard Web browser is sufficient.
B-13	**Describe any experience or problems encountered with incompatible hardware, operating systems (specifically MS 7), server configurations, Microsoft Office 2003 or 2007 or similar issues of which the Authority should be aware regarding the related infrastructure.**	
	Included PROPOSED AMR/AMI:	Sensus has not experienced issues with incompatible hardware, operating systems, server configurations, Microsoft Office, or other applications when the FlexNet system is installed and configured according to Sensus recommendations on dedicated AMI Control Computer servers. The user interface is via standard internet browser, so client hardware, software or operating system incompatibilities are not typically an issue. ABCWUA may use any preferred operating system on client computers. Sensus typically delivers all FlexNet system software and server hardware pre-configured for the utility (turnkey). This avoids many potential pitfalls and minimizes support required by utility technical personnel.

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B-14	Describe the software products and/or tools utilized in development of the AMR/AMI.
Included PROPOSED AMR/AMI:	The FlexNet AMI Control Computer, called the Regional Network Interface (RNI), is composed of a number of software applications, operating systems and database platforms to allow for maximum flexibility and scalability.

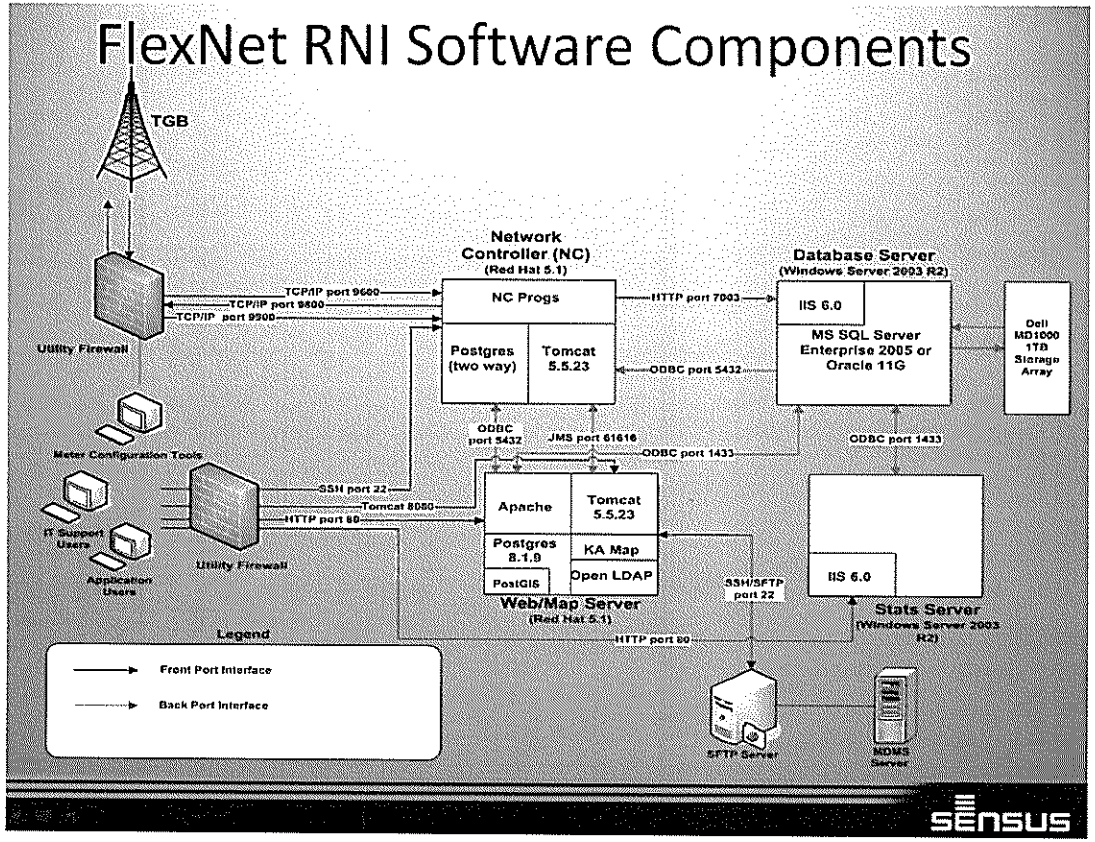

Figure 8: Regional Network Interface Components

The RNI provides reading management, network management, data storage, and customer hand-off functions to the utility. The RNI provides sufficient network capacity for all of the TGBs in one FlexNet network.

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The RNI is comprised of five functional components which typically reside on two to four Dell R-710 servers. Additional servers may be added to scale the system or to provide active / passive clustered SQL server capability.

The major functions of the RNI are:

Network Controller (NC) Server

- NC progs
- Java engine bundle (two-way communications)
- Postgres tools data

Database Server

- Utility meter read data
- Information to manage network
- Web reporting data

Statistics Server

- Network communication stats from meters and TGBs
- Meter and TGB graphs

Web Server

- Website (Head End)
- Site LDAP (Java Open Single Sign On)
- System monitoring scripts (Perl/Shell)
- Auto-generated emails for operations
- File transfers (Total Meters, Demand Resets, MCDA, XML Meter reads)

Maps Server

- Ka Map geospatial data

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Network Controller Server

The Network Controller (NC) with Red Hat Linux based operating system) is the heart of the FlexNet environment. The NC is comprised of two major components of the FlexNet architecture; the two way engine and MDMIF. These components control communication to the RF network, by formatting and parsing FlexNet transmit and receive commands and providing the Meter Data Management Interface (MDMIF).

The two way engine relies on the following Open Source products for its foundation:

- Sun's Java J2SE 1.5 and J2EE 1.4
- Apache Tomcat Servlet Container
- The ActiveMQ JMS (Java Messaging Server) Broker
- PostgreSQL Relational Database Server with JDBC Drivers

These components are loosely coupled, but all pieces must be in place and functioning correctly for reliable two-way messaging.

Core to the operation is an efficient and fast Java Messaging System (JMS) broker. The Broker is responsible for reliably delivering messages between components in the system, and is the only place that commands to be transmitted to Sensus-enabled endpoints can enter the system, and the only way the results from those commands will be delivered back to the requestor.

A pair of in-house Java applications, which run under the Tomcat JVM, are the key elements of the two way capability of the system.

The ***Transmit Agent*** is responsible for authenticating requests, determining the appropriate route that a message must take to reach the desired endpoint, determining the set of responses that should be received, and actually transmit the request as an Andorian Message (Sensus unique message format). These commands are received from user initiated commands from the web interface, batch process, or programmed through the MDMIF and into the Sensus NC via an HTTP POST or JMS message stream.

The ***Receive Agent*** is responsible for monitoring the constant stream of messages received by all TGBs in the network, picking out the messages sent in response to a transmitted command or query, triggering retransmissions in case the meter does not respond in a timely fashion, and finally for notifying the requestor of the success of the command and returning any appropriate data.

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The ***PostgreSQL*** database is the repository for all data used in route determination (TGB- >[Buddy]- >Endpoint) that is most likely to lead to a successful response from dynamic routing. It also contains audit trail information about every request, response, and the transmissions initiated by the Transmit Agent. Finally, the PostgreSQL database contains a list of all possible commands that can be transmitted into the Sensus system, and the expected responses that those commands should generate. This is used to determine if a command has been successfully completed, or if retransmissions are required.

NC Progs – is an abbreviated term for Network Controller Programs, which is a Sensus developed application. NC Progs are a collection of binary executables and scripts that facilitate the reception of data from Tower Gateway Base Stations (TGB) that are passed along to the Internet Information Services (IIS) located on the database server to be loaded into the MS SQL database.

Tomcat 5 – application server that manages the Java two-way engine.

Postgres Database – similar to the Tools1 MS SQL database in that it contains all of the raw message traffic received from the TGBs. These raw messages are retained for 7 days and used by the Java two-way engine for all outbound transmissions to meters on the AMI network. In addition to the raw message data, this database stores details on all outbound transactions for auditing purposes.

MDMIF - this interface provides mechanisms for managing various aspects of meter configuration, meter reporting, meter data, and meter lifecycle state within the Sensus RNI. It may also serve to keep the Sensus RNI synchronized with client legacy systems or Meter Data Management Systems (MDMS).

The primary interface is a Java Message Service (JMS) client that accepts and processes well-defined transaction requests, and issues well-defined responses via persistent JMS Queues. Transaction requests may also be issued to MDMIF via the FlexNet Web User Interface (UI) and through the non-JMS, Flat File Interface. Requests from each interface are processed asynchronously, although priority is given to requests issued to the FlexNet Web UI, followed by the JMS Interface and, lastly, the Flat File Interface.

The processing of an MDMIF request may involve querying the RNI Database, querying a meter, updating the database, and updating a meter. The result of each request is recorded in the central database in the database server.

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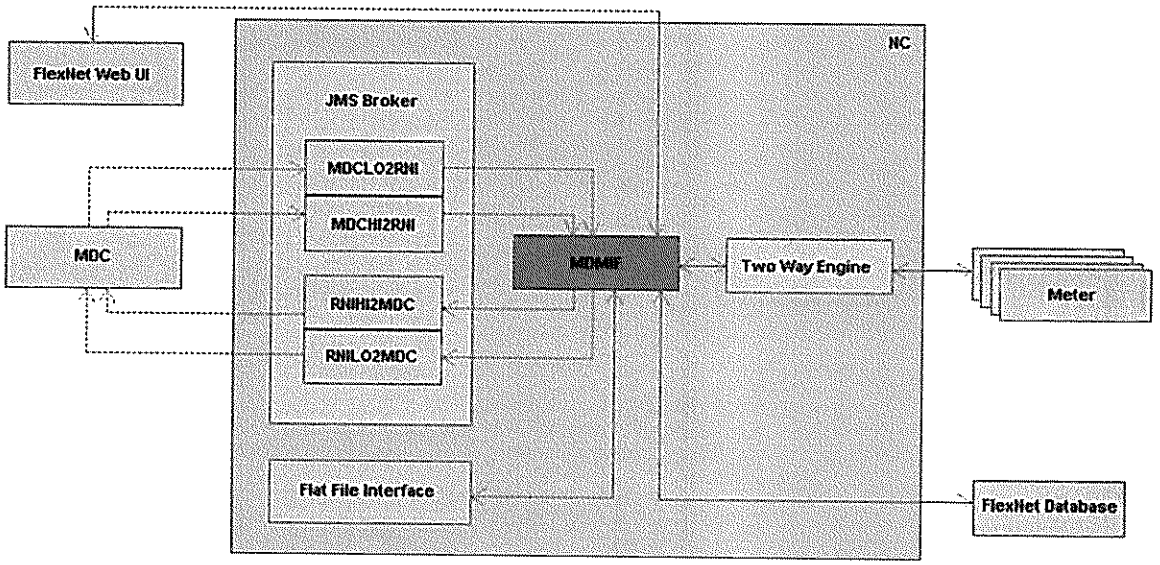

Figure 9: Interfacing through MDMIF

Database Server

MS SQL Database 2005 Enterprise Edition or Oracle 11G (at the utility's option) – The Relational Database Management System (RDMS) contains the Tools1, Utiliity1, and Central databases.

In the *Tools1* database, every message is stored with minimal parsing. No duplicate elimination is done on the Tools1 side so this database provides an audit trail of exactly what was received from the towers. The Tools1 side also contains statistical results about network performance.

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The *Utility1* database contains message data that has been parsed in a much more granular way. Duplicate messages are stripped out where possible. This database is used for all delivery to customers. On the Utility1 side, each message type has its own table structure. Delivery performance statistics are also stored on this side.

On both the Tools1 and Utility1 databases, scheduled stored procedures enforce a retention policy, generally 60 days. Data beyond this window is available via backups.

The *Central* database contains common lookup/setup tables including MDMIF tables and informational tables about the network itself (Towers, Networks), as well as manufacturing information for each meter. Some of this data is loaded by the Sensus Database Builder process while other data is input by the IT PM for each customer. It also contains global statistical information for each meter drawn from both the Tools1 side and the Utility1 side. The Central database receives no live feed of data from the radio network.

Statistics Servers

Statistics Server – commonly referred to as the Stats server, hosts the Statistics application. The purpose of the Stats application is to take the raw message data loaded into the MS SQL Tools1 database and generate diagnostic and statistical information used to analyze and maintain the Advanced Metering Infrastructure (AMI) network. Once the Stats application has calculated the statistical information it will post the statistics back to the Central database within the database server. In addition the Stats application will generate JPEG files for the various statistical and diagnostic graphs that a user can call via the web-based user interface.

IIS – is used to serve the various statistical graphs generated by the Stats application to the web user.

Web/MAP Server

Apache – web server used to serve HTTPS content for the Sensus RNI user web interface.

ka-Map – an interactive web-mapping interface used to display the geographical location of meters and TGBs within the AMI network. Used in conjunction with Google maps provides the ability to draw and zoom quickly, pan smoothly, and can extended to display a wide variety of information. ka-Map is an open source application and works directly with the Map Server. The Map Server prepares the map images, ka-Map serves them to the web browser. ka-Map also caches maps as they are created by the Map Server. When the same area on the map is viewed again, the MapServer sits idle while ka-Map grabs the cached map image tiles.

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		PostGIS - adds support for geographic objects to the Postgres object-relational database. In effect, PostGIS spatially enables the PostgreSQL server, allowing it to be used as a backend spatial database for geographic information systems (GIS). **Postgres Database** – contains the geospatial images used by ka-Map. **Tomcat 5** – used by Java Open Single Sign-On (JOSSO) to authenticate user credentials for the user web interface against the LDAP. **Open LDAP** – contains user and role attributes used to authenticate and determine the level of access for the user web interface.
B-15	**Describe the ability of the system to allow for active directory integration.**	
	Included PROPOSED AMR/AMI:	FlexNet fully supports Microsoft Active Directory integration via LDAP.
B-16	**Elaborate appropriately and succinctly any System Infrastructure considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	***FlexNet – A Field Proven, Highly Scalable, Open Standards, Multi-Application Network*** The FlexNet system is much more than a meter reading system. The network is highly scalable, and has been proven to support deployments larger than four (4) million meters, and capable of supporting water, gas and electricity meters on the same network. **More than Just a Meter Reading System** In addition to meter reading capabilities, the network supports a variety of ancillary operations, such as SCADA, Acoustic Monitoring Devices, communications to Home Area Networking (HAN) such as In-Home Displays and Load Controllers, Remote Disconnect devices, Demand Response (DR) and Distribution Automation (DA). **Easily Scalable and Upgradeable** Central to this capability is the FlexNet RNI (AMI Control Computer), which itself is highly configurable depending on utility size, service type, and different applications required. Sensus has deployed more than 200

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FlexNet water networks, and this breadth of experience has allowed Sensus to develop a very diverse set of capabilities.

The FlexNet TGB (RCU) is also highly scalable and upgradeable. The FlexNet TGB already has a great deal of RF headroom for water AMI networks, but it is possible to easily upgrade the network in the future as well. The TGB unit is rack mounted, and follows communications industry best practices design standards. Sensus has demonstrated the ability to add bandwidth, change RF modulation, and easily upgrade the transceiver via software and firmware, without needing to change hardware. If hardware changes are required in the future, these are easily accomplished based on the design of the unit.

Sensus' Commitment to Innovation

Sensus captured a large portion of the AMI market with FlexNet as Sensus continues to innovate, refine, and add support for third party platforms and applications.

Sensus has recently acquired Telemetric Corporation, a leader in SCADA applications the utility industry. Sensus has integrated FlexNet radios into Telemetric PLCs, RTM, and RTUs to allow the FlexNet network to act as the licensed backhaul solution for any point within the utility's service area. This allows for SCADA functionality without the need for separate licensing, or costly point-to-point radios for each SCADA point. Sensus Telemetric also has SCADA management software, called PowerVista, which allows for complex integration and control of different devices throughout the service area. FlexNet can also integrate with existing utility third party SCADA management software via the Sensus SCADA Xchange software platform, allowing utilities to continue to use their existing SCADA investment in conjunction with the FlexNet platform.

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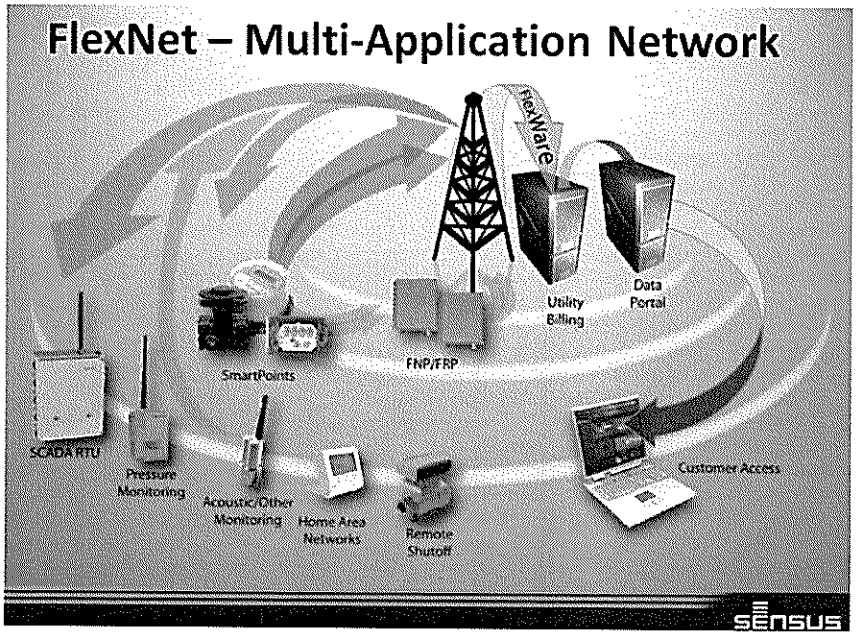

Figure 10: FlexNet Network

FlexServer Customer Web Portal and Home Area Networking (HAN) Devices

Sensus believes that an AMI network should do more than just allow the utility to view interval reading data from meters. An AMI network should also help the utility build stronger relationships with its customers. By bringing the same information available to the utility into the consumers' homes, the FlexNet system can help educate water users on their usage patterns, and deliver critical alerts and other information from the utility to the consumer quickly and effectively.

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Sensus FlexServer Customer Web Portal

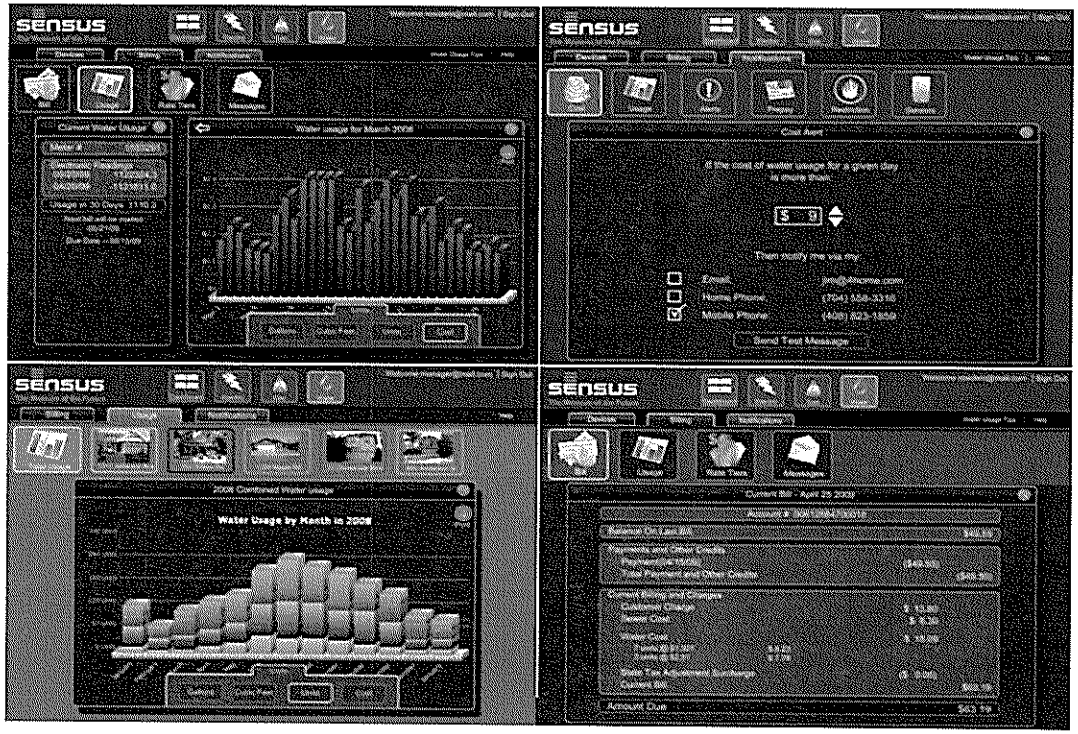

Figure 11: FlexServer Screenshots

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Section C: General System

C-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
C-2	**Provide an overview, introduction, and history of the proposed AMR/AMI as it pertains to general system usage, differentiating features, and other relevant details.**	
	Included PROPOSED AMR/AMI:	Sensus has made an indelible mark on the North American AMI landscape since 2007 with several large projects that underscore its ability to plan, coordinate and execute implementations of the scale and in line with the objectives of Albuquerque. The benefits of primary-use licensed frequency and high power output not only result in nominal infrastructure requirements, but also in a robust system suitably designed to be utilized as a single solution for urban and rural applications in New Mexico. Some of the key differentiating features of the FlexNet system include: ◆ No interference with FCC-protected primary-use frequency for meter communications ◆ FlexNet delivers the lowest cost of ownership by lowering field assets ◆ Very low meter reading latency due to frequent transmissions from MIUs (average reading latency typically less than 4 hours) ◆ Double the power (2 Watts) inbound from the FlexNet SmartPoints (MIUs) ◆ 35 times the power (35 Watts) outbound to FlexNet SmartPoints and other devices – important for effective two-way operation ◆ Best battery warranty in the industry delivers superior capacity, performance and reliability – 24 hourly readings with six meter transmissions per day, every day for 20 years for every meter in the system ◆ Highly scalable network capable of integrating SCADA, Acoustic Monitoring, Remote Disconnect, Home Area Networking (in-home displays)

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		• Time synchronized top-of-hour readings for all meters • True user initiated on-demand reads from water meters One of Sensus' primary goals in developing the FlexNet system was to create a platform that would support innovation and continual improvements without system hardware changes. Sensus has incorporated many enhancements and upgrades into the FlexNet System since the first deployments in 2006. Major improvements to the FlexNet system presented in this response can be found in response C-4.
C-3	**The intended system must be a commercial-off-the-shelf (COTS) system; supply the following information:**	
	Included PROPOSED AMR/AMI:	
C-3a	**Number of installations following a versioning path**	
	Included PROPOSED AMR/AMI:	Sensus has more than 200 FlexNet installations across North America (fixed base), all following a versioning path. These utilities have deployed more than nine million FlexNet endpoints across these 200+ deployments. Sensus defines an installation following a versioning path as one where customers deploy the FlexNet system to realize specific and immediate benefits such as cost reductions in meter reading and water conservation efforts while planning to leverage the system for other revenue based applications enabled through future software releases or hardware products.
C-3b	**Other information indicating a mature COTS system**	
	Included PROPOSED AMR/AMI:	The FlexNet system has been commercially available for more than four (4) years, and Sensus has more than 200 individual FlexNet deployments to date. The vast majority of these FlexNet deployments are water systems. Sensus has continued to improve and expand the functionality and capabilities of the system without making any part of the system obsolete. This is an important part of the FlexNet software and hardware design – future upgradeability and maximum flexibility. Each part of the system follows RF industry best practices design, and allows for future upgrades and enhancements. For example, the FlexNet SmartPoint module and each TGB feature radios that are software defined, which means that not only can they receive firmware updates over the network, they can be completely reconfigured to

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use additional spectrum, different RF modulation, and incorporate new and innovative features, all without a truck roll. This capability is field proven and tested across more than one million deployed meters.

Furthermore, FlexNet follows RF industry best practices design. The TGBs are rack mounted and upgradeable, and can be installed in both indoor environments (RF sheds) or outdoor environments (in a heated and air-conditioned NEMA 4 enclosure that is optional equipment). The TGB features an 8 hour battery backup, and can easily be replaced or repaired at ground level if the need arises. Compared to hundreds of pole-top collectors scattered across the entire service area, this architecture is extremely robust and reliable, and follows the same time-tested and proven basic design principles of other commercial wireless networks.

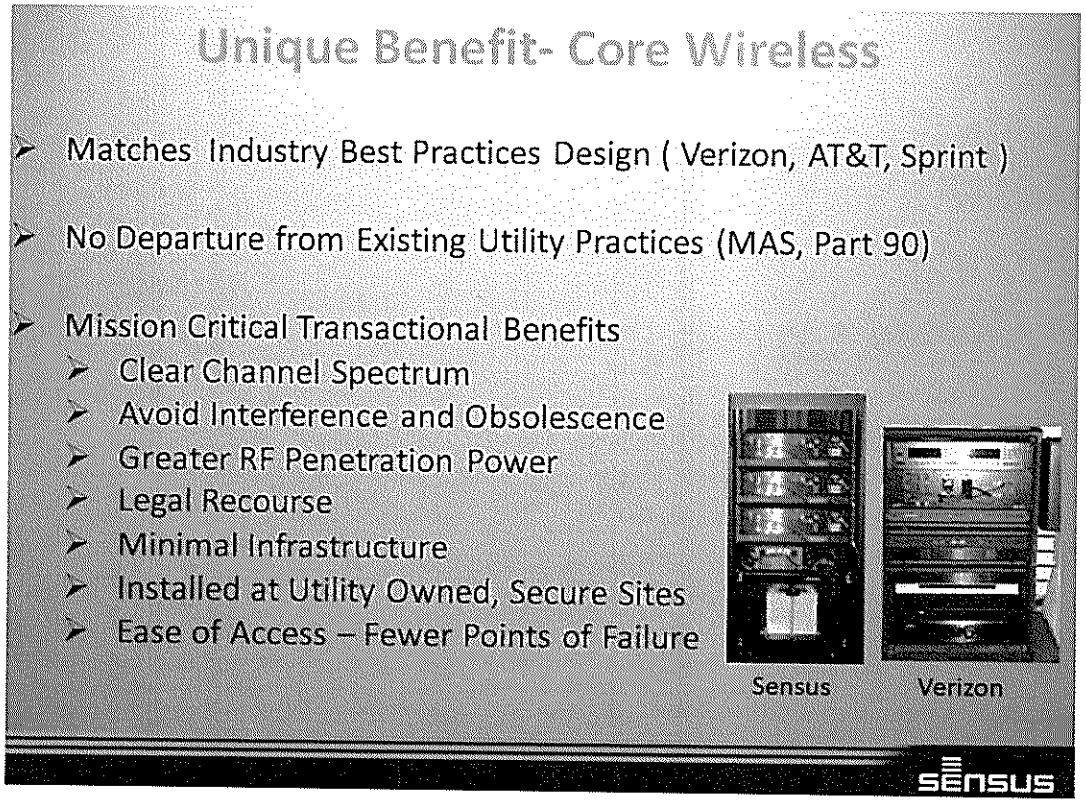

Figure 12: FlexNet is a licensed RF solution

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C-4	**Describe the system development plan and/or commitments to future releases, including a description of known feature, function, and/or architecture enhancements.**
Included PROPOSED AMR/AMI:	Recent system upgrades include: • In November 2008, Sensus announced the availability of upgraded modulation that gives the FlexNet data collection system widely expanded bandwidth. The upgrade doubles the FlexNet data rate by taking its frequency shift keying (FSK) settings from 7 to 13-FSK. All existing endpoints remain compatible. • FlexNet's software defined radios allow for modulation, protocol, operating frequency, and data rate upgrades performed remotely over-the-air or in the field via code download. Sensus utility customers have already benefited from this technology strategy without a single site visit. • FlexNet M2 two-way water SmartPoints released. • FlexNet M2 two-way gas SmartPoints released. • Expansion of operating DBMS operating system environments including Oracle and Solaris. • Smart grid SCADA and DA endpoints from recently acquired Telemetric for enhanced Smart Grid and Distribution Automation applications. Ongoing and future upgrades in Sensus' technology plans include: • Multi-band frequency hopping licensed spectrum implemented in current generation data collectors that enhance data handling and expand bandwidth and throughput. • Optional FlexNet Remote Portals (FRP) for small pockets of meters in remote areas. • 256-AES encryption with PKI. • Encrypted endpoints from the factory and key rotation/storage infrastructure. • New HAN, DR, and DA offerings through technology development and expanded strategic alliances with industry-recognized third party partners. • Migration to an Internet Protocol (IP) based infrastructure.

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C-5	**Describe the upgrade plan (i.e., Are upgrades required to maintain support? What notice is given and what upgrade paths are offered when a version approaches retirement? When is a version no longer supported, etc?). Also include the method of communication to inform the client an upgrade has been sent.**	
	Included PROPOSED AMR/AMI:	Sensus will perform all software updates as part of the FlexNet support agreement. These updates correspond to the Sensus release strategy of a major/minor/patch strategy, where .X is a major release, .Y is a minor release, and .Z is a patch release. A major release is denoted by a first digit (2.X) of a release. The customer is required to maintain a release no later than 2 releases behind the current Sensus release. Major and minor releases are for fee upgrades that provide new and improved functionality. In many cases, major upgrades may make new features and functionality available, due to the highly flexible and upgradeable software and hardware design of the FlexNet system. A utility may not wish to perform certain system upgrades if the new feature or functionality is not of interest to the utility. Patches (with the .Z nomenclature) are provided to the customer as part of the maintenance agreement with Sensus. A patch release targets specific issues with a major or minor release and does not introduce any new functionality. A patch release is administered through the Sensus support organization. Major or minor releases are administered through operations similar to a patch release Some down time may be required, depending upon the extent of the release. While the FlexNet RNI is unavailable, the network continues to operate as normal and stores all received messages locally at the TGBs until the RNI becomes available again. This is a major benefit of the FlexNet system, and is part of its built in redundancy and failover protection. Major upgrades to the database portion of the AMI Control Computer (not common) may require dump and load type processes when modifications to the underlying tables are made. Back out procedures are always possible and always provided in the system release notes. Patches are accomplished with hot fixes through the use of Release Package Managers (RPMs). The patching process would require review of the release notes for a given patch. Application of the RPM and restarting of affected processes is followed by verification of proper operation per the included release notes. Should unexpected results be found, the RPM is backed out, and the effected process again restarted along with any other steps that are noted in the back out procedure that is documented in the release notes. Any update or change to the FlexNet system that results in a change to the software interface would be communicated to Albuquerque well in advance, and would not be applied until a mutually agreed upon time. Sensus will notify ABCWUA in advance of any update or hot fix if this is preferred by the utility. In all cases,

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		Sensus will work within all ABCWUA guidelines for IT and security. Sensus has more than 200 deployed FlexNet networks across North America, (including a number investor owned power utilities serving more than a million customers) and Sensus has always been able to comply with all utility network guidelines and directives.
C-6	**Describe the user interface, focusing on such items as the menu structure, screen layout, etc.**	
	Included PROPOSED AMR/AMI:	The FlexNet user interface consists of a number of key elements: **Meter Data Route Interface** • Provides billing functionality, graphing and reading data analysis tools

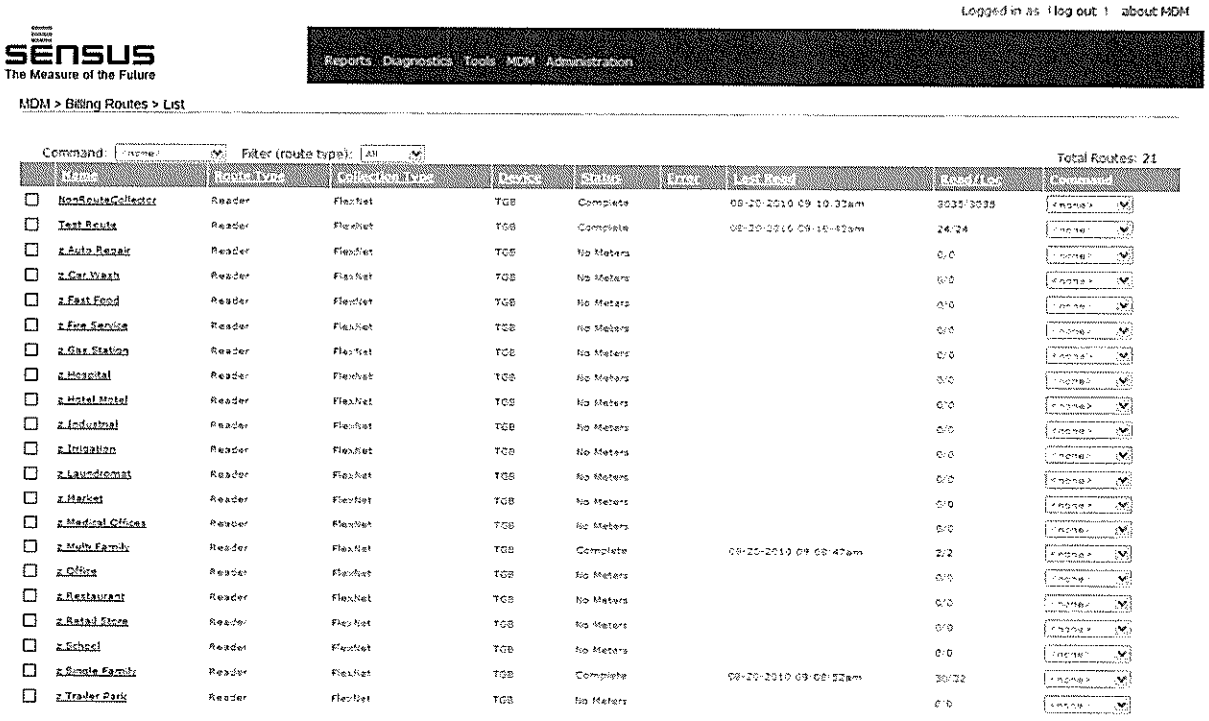

Figure 13: FlexNet Billing Interface

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Meter Data Reporting Interface

- Provides a host of different reports in various output formats

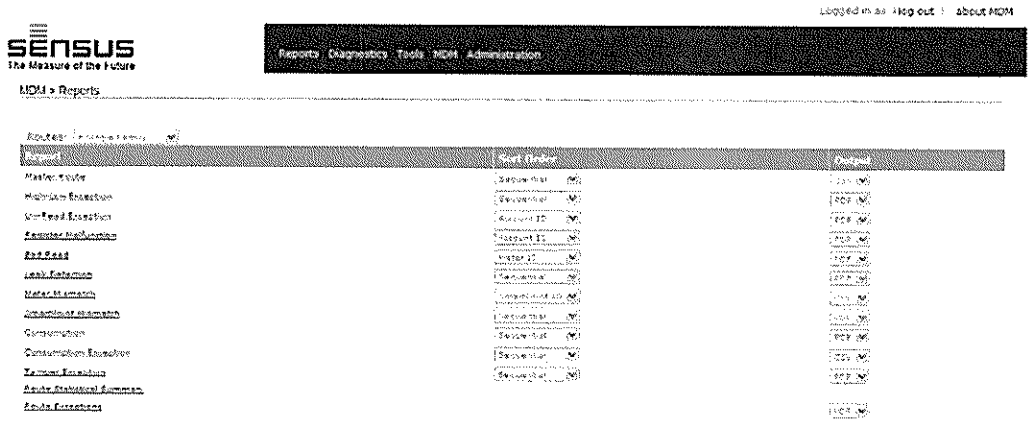

Figure 14: FlexNet Meter Data Reporting

Meter Data Monitor and Query Interface

- Provides raw reading data views and customizable user data queries

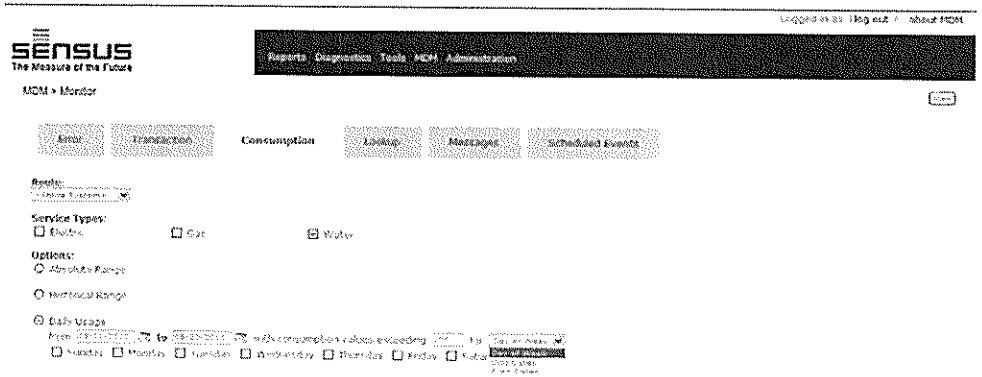

Figure 15: FlexNet Meter Data Monitor and Query

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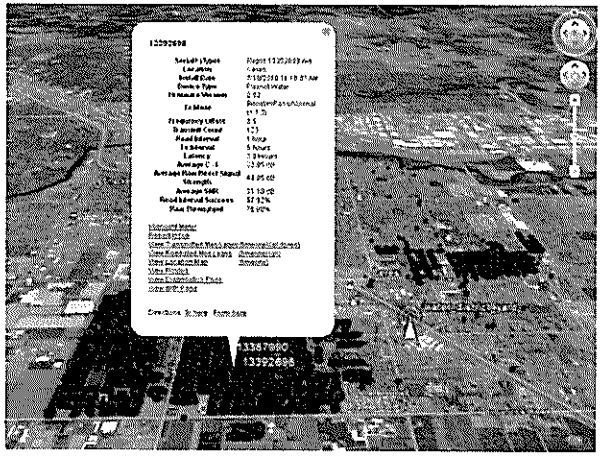
System Diagnostic Interface

- Shows system health in a wide variety of ways, including statistics for every meter and TGB in the system



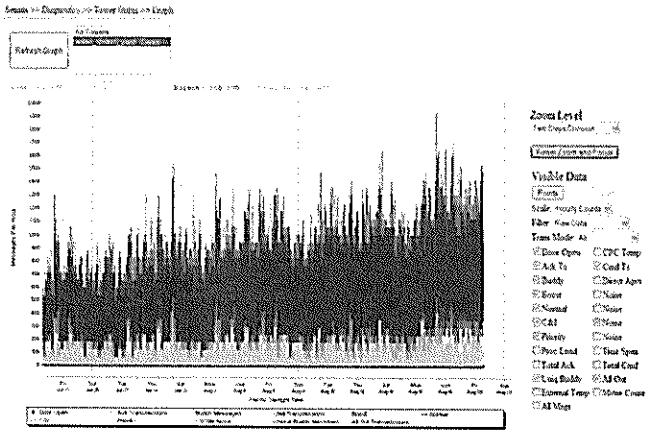


Figure 16: FlexNet System Diagnostics are highly rated

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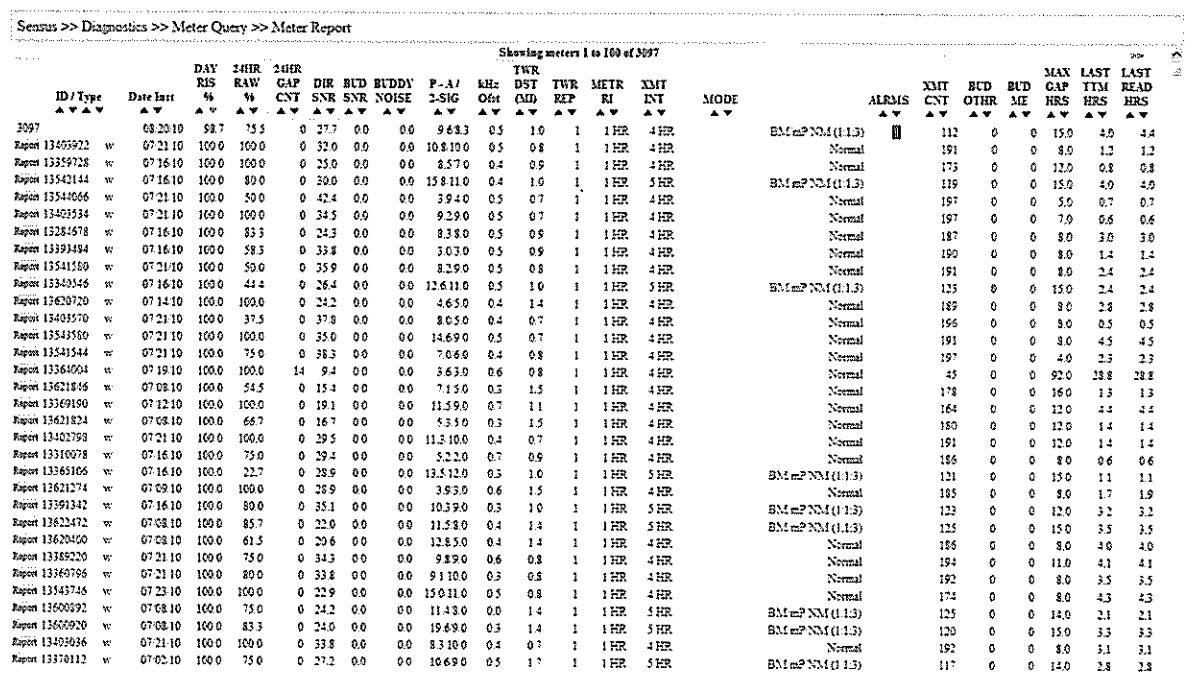

Sensus >> Diagnostics >> Meter Query >> Meter Report

Showing meters 1 to 100 of 3097

ID / Type		Date Inst	DAY RIS %	24HR RAW %	24HR GAP CNT	DIR SNR	BUD SNR	BUDDY NOISE	P-A / 2-SIG	kHz Offst	TWR DST (MI)	TWR REP	METR RI	XMIT INT	MODE	ALRMS	XMIT CNT	BUD OTHR	BUD ME	MAX GAP HRS	LAST TTM HRS	LAST READ HRS
3097		08.20.10	98.7	75.5	0	27.7	0.0	0.0	9.6 8.3	0.5	1.0	1	1 HR	4 HR		BM mP NM (1:1.3)	112	0	0	15.0	4.9	4.4
Report 13403922	w	07.21.10	100.0	100.0	0	32.0	0.0	0.0	10.8 10.0	0.5	0.8	1	1 HR	4 HR		Normal	191	0	0	8.0	1.2	1.2
Report 13359728	w	07.16.10	100.0	100.0	0	25.0	0.0	0.0	8.5 7.0	0.4	0.9	1	1 HR	4 HR		Normal	173	0	0	12.0	0.8	0.8
Report 13542144	w	07.16.10	100.0	80.0	0	30.0	0.0	0.0	15.8 11.0	0.4	1.0	1	1 HR	5 HR		BM mP NM (1:1.3)	119	0	0	15.0	4.9	4.9
Report 13544066	w	07.21.10	100.0	50.0	0	42.4	0.0	0.0	3.9 4.0	0.5	0.7	1	1 HR	4 HR		Normal	197	0	0	5.0	0.7	0.7
Report 13403534	w	07.21.10	100.0	100.0	0	34.5	0.0	0.0	9.2 9.0	0.5	0.7	1	1 HR	4 HR		Normal	197	0	0	7.0	0.6	0.6
Report 13284678	w	07.16.10	100.0	83.3	0	24.3	0.0	0.0	8.3 8.0	0.5	0.9	1	1 HR	4 HR		Normal	187	0	0	8.0	3.0	3.0
Report 13393494	w	07.16.10	100.0	58.3	0	33.8	0.0	0.0	3.0 3.0	0.5	0.9	1	1 HR	4 HR		Normal	190	0	0	8.0	1.4	1.4
Report 13541580	w	07.21.10	100.0	50.0	0	35.9	0.0	0.0	8.2 9.0	0.5	0.8	1	1 HR	4 HR		Normal	191	0	0	8.0	2.4	2.4
Report 13540546	w	07.16.10	100.0	44.4	0	26.4	0.0	0.0	12.6 11.0	0.5	1.0	1	1 HR	5 HR		BM mP NM (1:1.3)	135	0	0	15.0	2.4	2.4
Report 13620720	w	07.14.10	100.0	100.0	0	24.2	0.0	0.0	4.6 5.0	0.4	1.4	1	1 HR	4 HR		Normal	189	0	0	9.0	2.8	2.8
Report 13403570	w	07.21.10	100.0	37.5	0	37.8	0.0	0.0	8.0 5.0	0.4	0.7	1	1 HR	4 HR		Normal	196	0	0	9.0	0.5	0.5
Report 13543580	w	07.21.10	100.0	100.0	0	35.0	0.0	0.0	14.6 9.0	0.5	0.7	1	1 HR	4 HR		Normal	191	0	0	8.0	4.5	4.5
Report 13541544	w	07.21.10	100.0	75.0	0	38.3	0.0	0.0	7.0 6.0	0.4	0.8	1	1 HR	4 HR		Normal	197	0	0	4.0	2.3	2.3
Report 13364004	w	07.19.10	100.0	100.0	14	9.4	0.0	0.0	3.6 3.0	0.6	0.8	1	1 HR	4 HR		Normal	45	0	0	92.0	28.8	28.8
Report 13621846	w	07.08.10	100.0	54.5	0	15.4	0.0	0.0	7.1 5.0	0.5	1.5	1	1 HR	4 HR		Normal	178	0	0	16.0	1.3	1.3
Report 13369190	w	07.12.10	100.0	100.0	0	19.1	0.0	0.0	11.5 9.0	0.7	1.1	1	1 HR	4 HR		Normal	164	0	0	12.0	4.4	4.4
Report 13621824	w	07.08.10	100.0	66.7	0	16.7	0.0	0.0	5.3 5.0	0.3	1.5	1	1 HR	4 HR		Normal	180	0	0	12.0	1.4	1.4
Report 13402798	w	07.21.10	100.0	100.0	0	29.5	0.0	0.0	11.3 10.0	0.4	0.7	1	1 HR	4 HR		Normal	191	0	0	12.0	1.4	1.4
Report 13310078	w	07.16.10	100.0	75.0	0	29.4	0.0	0.0	5.2 2.0	0.7	0.9	1	1 HR	4 HR		Normal	186	0	0	8.0	0.6	0.6
Report 13365106	w	07.16.10	100.0	22.7	0	28.9	0.0	0.0	13.5 12.0	0.5	1.0	1	1 HR	5 HR		BM mP NM (1:1.3)	121	0	0	15.0	1.1	1.1
Report 13621274	w	07.09.10	100.0	100.0	0	28.9	0.0	0.0	3.9 3.0	0.6	1.5	1	1 HR	4 HR		Normal	185	0	0	8.0	1.7	1.9
Report 13393342	w	07.16.10	100.0	80.0	0	35.1	0.0	0.0	10.3 9.0	0.3	1.0	1	1 HR	5 HR		BM mP NM (1:1.3)	122	0	0	12.0	3.2	3.2
Report 13622472	w	07.08.10	100.0	85.7	0	22.0	0.0	0.0	11.5 8.0	0.4	1.4	1	1 HR	5 HR		BM mP NM (1:1.3)	125	0	0	15.0	3.5	3.5
Report 13620460	w	07.08.10	100.0	61.5	0	29.6	0.0	0.0	12.8 5.0	0.4	1.4	1	1 HR	4 HR		Normal	186	0	0	8.0	4.0	4.0
Report 13389220	w	07.21.10	100.0	75.0	0	34.3	0.0	0.0	9.8 9.0	0.6	0.8	1	1 HR	4 HR		Normal	194	0	0	11.0	4.1	4.1
Report 13360796	w	07.21.10	100.0	80.0	0	33.8	0.0	0.0	9.1 10.0	0.3	0.8	1	1 HR	4 HR		Normal	192	0	0	8.0	3.5	3.5
Report 13543746	w	07.23.10	100.0	100.0	0	22.9	0.0	0.0	15.0 11.0	0.5	0.8	1	1 HR	4 HR		Normal	174	0	0	8.0	4.3	4.3
Report 13600892	w	07.08.10	100.0	75.0	0	24.2	0.0	0.0	11.4 8.0	0.0	1.4	1	1 HR	5 HR		BM mP NM (1:1.3)	125	0	0	14.0	2.1	2.1
Report 13600920	w	07.08.10	100.0	83.3	0	24.0	0.0	0.0	19.6 9.0	0.5	1.4	1	1 HR	5 HR		BM mP NM (1:1.3)	120	0	0	15.0	3.3	3.3
Report 13403036	w	07.21.10	100.0	100.0	0	33.8	0.0	0.0	8.3 10.0	0.4	0.7	1	1 HR	4 HR		Normal	192	0	0	8.0	3.1	3.1
Report 13370112	w	07.02.10	100.0	75.0	0	27.2	0.0	0.0	10.6 9.0	0.5	1.3	1	1 HR	5 HR		BM mP NM (1:1.3)	117	0	0	14.0	2.8	2.8

Figure 17: FlexNet Meter Report

C-7 **Explain any nomenclature associated with the proposed system that might be unique to the system (e.g., ERT/MIU, etc.).**

Included PROPOSED AMR/AMI:

FlexNet SmartPoint – The MIU which connects to the meter. Provides true two-way communications including on-demand (poll-respond) meter reading.

Middle of Minute (MOM) Communications is a unique feature of Sensus' FlexNet M2 technology. FlexNet M2 SmartPoints with MOM Communications provide a host of benefits, including true on-demand two-way communications from the RNI to the meter SmartPoint module, as well as highly accurate SmartPoint clock synchronization.

Tower Gateway Base Station (TGB) – The Regional Data Unit or Collection device of the FlexNet network. Can be installed on any City owned structure from water tanks, to buildings or existing communications towers.

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		Regional Network Interface (RNI) – The AMI Control Computer or FlexNet Head End. **FlexNet Network Portal (FNP)** – A repeater device which can be used to boost signal propagation in areas that do not call for an additional TGB. FNPs are rarely used due to the range and reliability of the network, but can be useful in certain areas.
C-8	**Describe any event triggering available in the system and how such events are designated, added, amended, or deleted by a user or system administrator.**	
	Included PROPOSED AMR/AMI:	An event trigger is the capability of delivering a status message or alarm throughout the system based on predefined conditions. These conditions include continual low water flow (leak), continual maximum water flow (broken pipe), tampering, leak detection, endpoint and meter mismatches, etc. The leak detection trigger (alarm) is configurable for threshold amount per hour, as well as the number of continuous hours of consumption exceeding the threshold. The broken pipe trigger is configurable for threshold amount of water per hour. The ability to add, change or delete these alarms is through the web based user interface included as part of the AMI Control Computer Software.
C-9	**Describe the degree of configurability of the proposed system by a trained administrator. Include items such as ability to add/create user defined data fields, changing screen labels, etc.**	
	Included PROPOSED AMR/AMI:	Sensus can configure the FlexNet network to allow utility branding and colors to suit the utility. Minor changes to the screen labels and other similar items are available through the Sensus Software Professional Services group. The FlexNet system supports user-definable fields in the data import/export interface. There is no theoretical limit to the number of user-definable fields that can be added to this interface, and these fields can contain any type of data the utility requires. Sensus does not typically recommend that a utility modify the FlexNet system software code or database due to the complications that can arise during future updates and upgrades of the system software, but Sensus Software Professional Services group can discuss custom modifications to the software if desired by the Authority.

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C-10	Describe any third party software proposed. Include details on products, version, intended usage, and licensing.
Included PROPOSED AMR/AMI:	All software licenses for third party software are perpetual, except for Linux Red Hat Enterprise, which carries a three year license, and can be renewed every three years to allow for patch downloads and updates. Please refer to response B-14 above for a detailed description of how many of the applications below are used in the FlexNet system. The various third party applications used on the FlexNet network (and version) are listed below. Versions are subject to change.

Software	***Version***
Apache Tomcat	Version 5.5.20
Java	Version 1.5.0
JMS/Active MQ	Version 4.0.1
Ntpd	Version 3.9
Open LDAP	Version 2.3.27
Open SSH	Version 4.4
Perl	Version 5.8.8
PostgreSQL	Version 8.1.4
Spring Framework	Version 2.0
Apache HTTP Server	Version 2.2.3
copSSH	Version 1.3.10
cURL	Version 7.15.5
ka-Map	Version 1.O.bl

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Postfix	Version 2.3 Patch 3
PostGIS	Version 1.1.4
Samba	Version 3.0.23c
Sarissa	Version 0.9.7.1
SVN	Version 1.4
UMN Map Server	Version 4.10.0
VNC	Version 3.3.3 R1
MS SQL Server 2003 or 2005	Enterprise Edition
MS Windows Server 2003 R2	Enterprise Edition (64 bit)
RedHat Linux	RedHat Enterprise
Big Brother or HP Open View	Version 3.1 or Version 7.51 or newer
Red-Gate SQL Backup or Veritas Netbackup	Standard Edition or Version 6.0 or newer
Chart Director	Redistribution

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C-11	**Describe the proposed system's document management/attachment capabilities, including the methodology used to attach/assign documents to any record in the database. Include discussion on where documents or files are stored and managed (e.g., within the database or as external references).**
Included PROPOSED AMR/AMI:	Document management functions are typically performed in an enterprise Meter Data Management System (MDMS) or Customer Information System (CIS) system. Sensus is not proposing an MDMS system given the scope of this RFP, and recommends that ABCWUA select an MDMS system based on the specific needs of the Authority. Sensus will interface with the selected MDMS system and will provide document management functions in conjunction with this platform. FlexNet does offer a host of reports both for meter reading (billing) data and also network performance. These reports can be generated in a variety of formats (PDF, CSV, etc), and can be saved to a user's workstation locally or at the RNI for later retrieval. Reports and query results can be quickly generated from the system at any time. The following reports are available from the FlexNet system software: • Master Route Report (readings from selected meters within a selectable date range) • Unread Meters Report (any meters not reporting readings within a selectable date range) • Bad Connection Report (Bad connection between register and SmartPoint) • Register Mismatch Report (shows accounts/meters where Register ID differs from utility records) • Endpoint Mismatch Report (shows accounts/endpoints where Endpoint ID differs from utility records) • Leak Detection Report (shows meters that have sent leak flags – customizable leak parameters) • Tamper Exception Report (shows meter tampers) • Register Malfunction Report (shows registers that produced invalid reading messages) • High/Low Exception (shows readings higher or lower than CIS (billing) system expected) • Route Statistical Summary Report (statistical breakdown of meter types and read success rate)

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City of Redwood City

Master Route

Sorted by Account ID

Total Results: 545

Selected Date Range: 06/01/2009 - 06/30/2009

06-19-2009 09:14:08am

Page: 1

Route : Irrigation Test Route

Account ID	Meter ID	Endpoint ID	Date	Time	Reading	Transaction	Address
101211	60712161	10010440	06-18-2009	12:09:45pm	0000000	Reading	400-BLK SEAPORT CT
101499	60712411	10044254	06-18-2009	01:11:15pm	0252373	Reading	320 BLOMQUIST ST
101570	60712430	10128630	06-18-2009	11:52:45am	0044273	Reading	10 SEAPORT BLVD
102699	62827925	11031310	06-18-2009	03:34:00pm	0027	Reading	1093 CHARTER STREET
102770	60874798	10677510	06-18-2009	01:16:00pm	0117994	Reading	1400 BROADWAY- RC
103459	62962395	10248946	06-18-2009	02:59:30pm	003208	Reading	2745 SPRING STREET
104390	61103506	10249252	06-18-2009	03:15:15pm	042298	Reading	704 WALNUT STREET
104730	60712428	10679964	06-18-2009	04:12:15pm	9999999	Reading	1201 BROADWAY-1154-04730
105168	60712434	10023658	06-18-2009	03:56:45pm	0076627	Reading	1301 BROADWAY- RC
105273	60712433	10045302	06-18-2009	03:39:00pm	0095537	Reading	1501 BROADWAY

Figure 18: Example of Reporting via FlexNet

FlexWare also provides excellent charting and graphing to analyze individual meter usage. 6 Month, 3 Month, 1 Month, 1 Week and Hourly graphs are all available to easily interpret meter usage.

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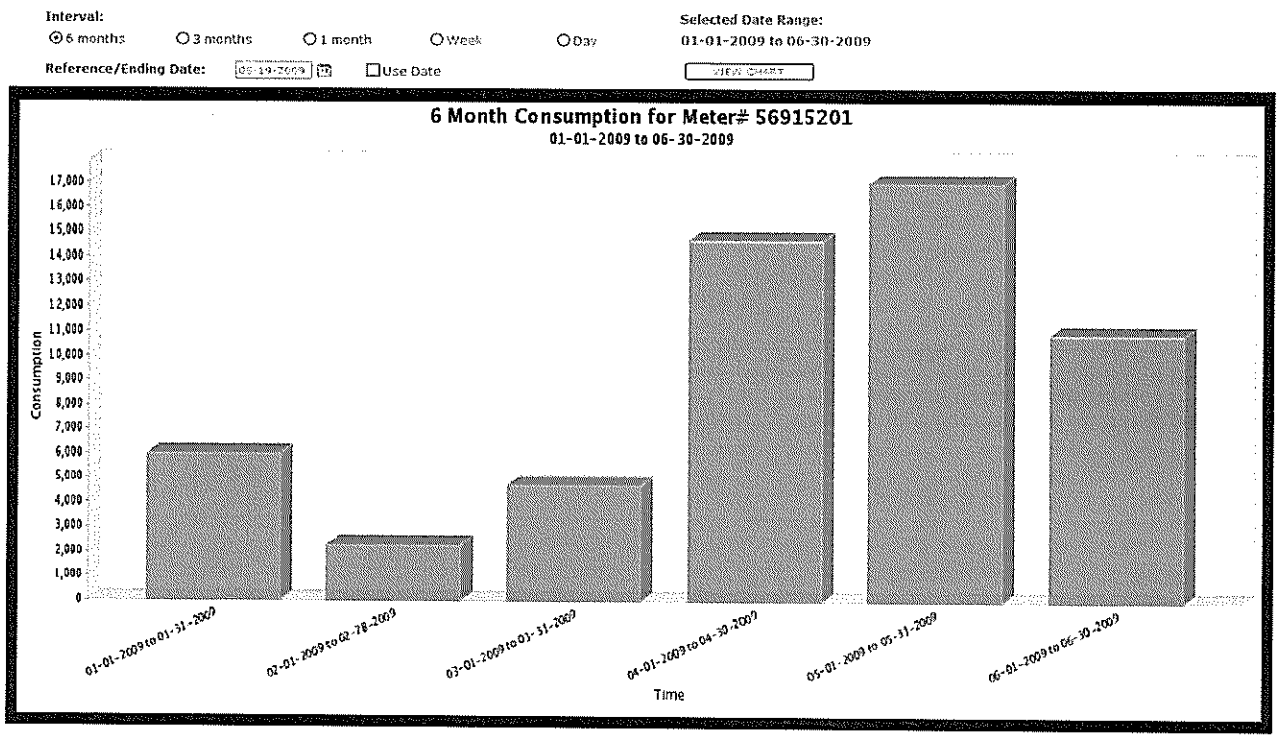

Figure 19: Consumption Report for Individual Meter (6 Month)

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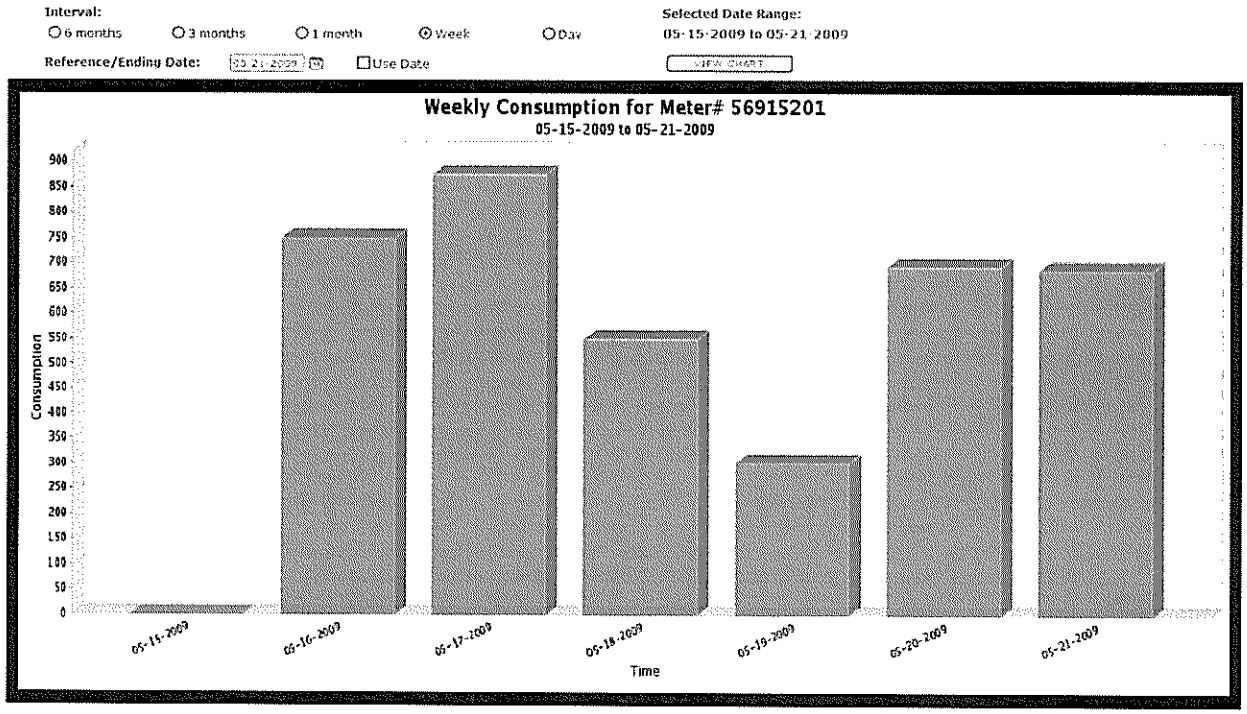

Figure 20: Consumption Report for Individual Meter (Weekly)

FlexWare also provides built-in queries to find high usage or to identify meters that are not in compliance with watering ordinances or other guidelines.

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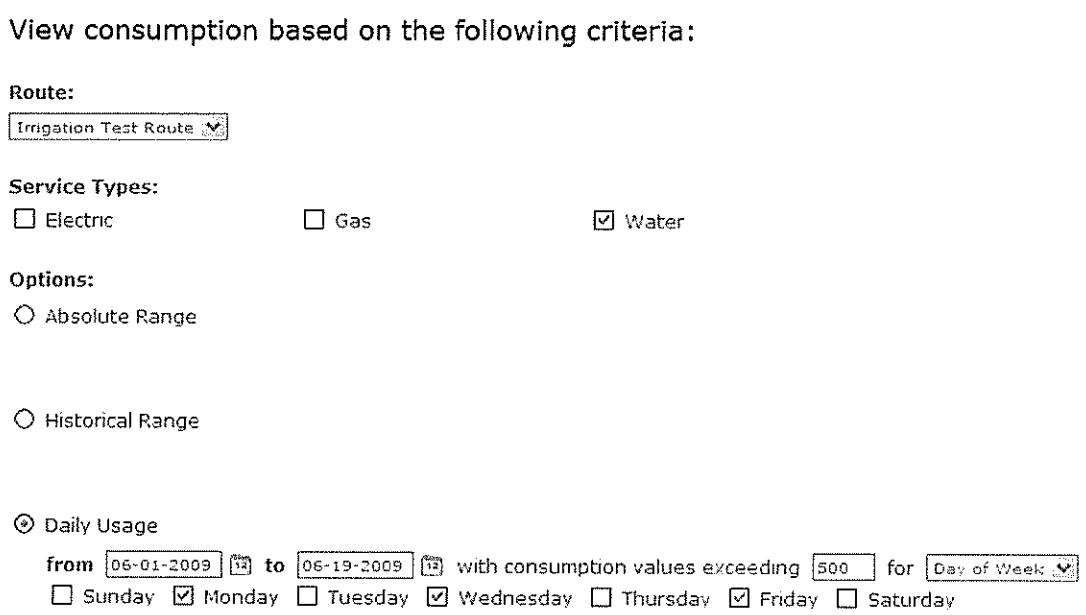

Figure 21: FlexNet Consumption View Options

C-12	**Describe the AMR/AMI ability to allow data entry and review through browse screens (multiple record entry/review on a single screen).**	
	Included PROPOSED AMR/AMI:	Data entry is typically performed through the MDMS or CIS system. Sensus is not proposing an MDMS system given the scope of this RFP, and recommends that ABCWUA select an MDMS system based on the specific needs of the Authority. Sensus will interface with the selected MDMS system and will provide document management functions in conjunction with this platform. The FlexNet system software allows for full review of meter reading, consumption, alarm, and diagnostic data. The FlexNet system allows a user to select the number of records per screen and users can easily review pertinent information via a variety of different web based interfaces.

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C-13	**Describe the number and type of user-definable fields available.**	
	Included PROPOSED AMR/AMI:	The FlexNet system supports user-definable fields in the data import/export interface. There is no theoretical limit to the number of user-definable fields that can be added to this interface, and these fields can contain any type of data the user requires. User defined fields are typically used to import data from a utility's CIS (billing) database into the FlexNet import/export database to match up meter reading data with the appropriate accounts in the Utility's CIS system. Typical standard fields include Account Number, Service Address, Meter ID number, MIU Number, etc. User defined fields may include data such as Meter Size, Billing Route/Cycle, Customer Name, or other specific information about an account.
C-14	**Elaborate appropriately and succinctly any General System considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	The FlexNet system offers a standards based, Service Oriented Architecture (SOA) which allows the integration of any number of third party software applications into the AMI network. FlexNet also supports a number of industry standard Application Programming Interfaces (APIs) which enhance interoperability with other platforms while maximizing functionality. FlexNet can take advantage of an Enterprise Service Bus if one exists, or Sensus can help ABCWUA develop point-to-point integration directly between the FlexNet system and third party applications or platforms. The key take-away from this flexibility is the FlexNet system will support all of ABCWUA's needs now and into the future, including applications not yet conceived.

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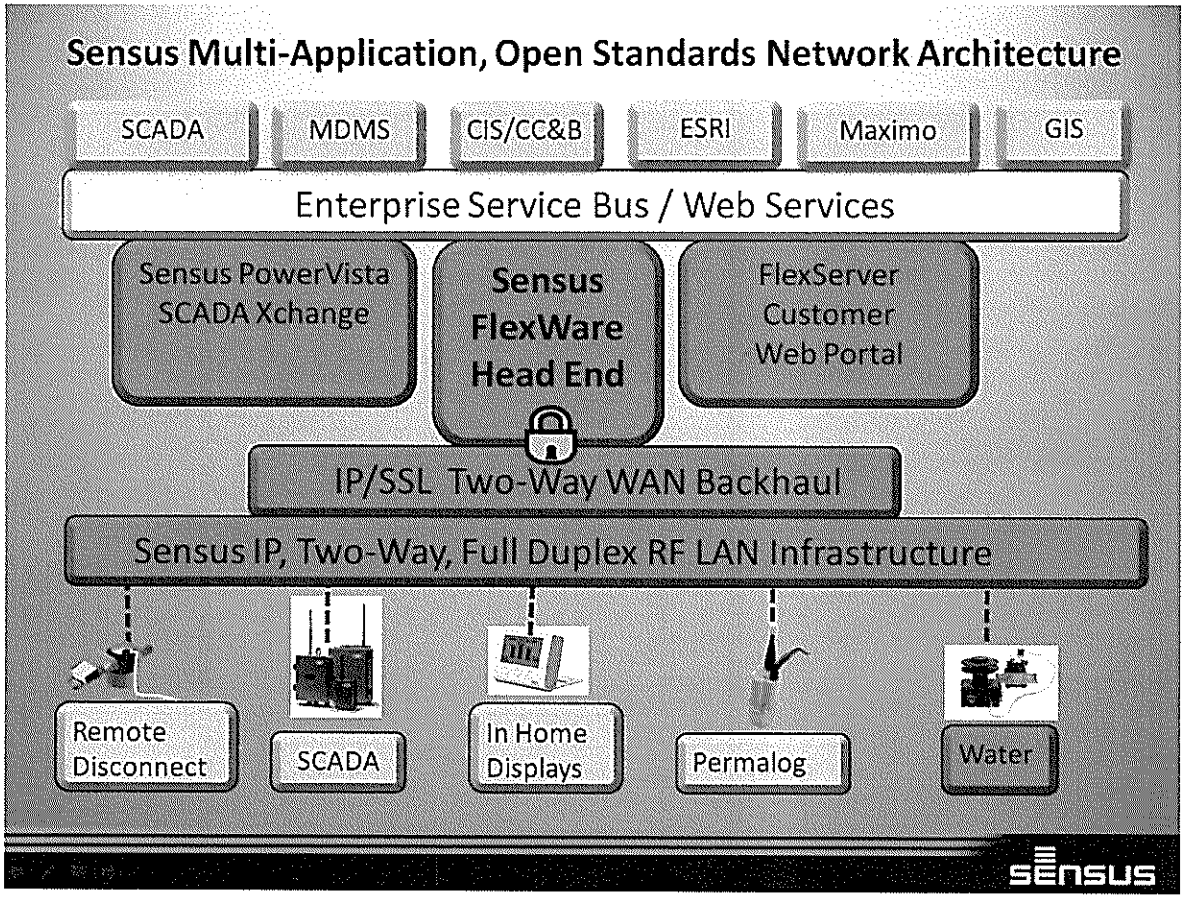

Figure 22: FlexNet is based on open architecture

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Section D: Radio Licenses

D-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below
D-2	**Indicate what FCC or other regulatory agency licenses if, if any, the system will require. Indicate the expected length of time to acquire such licenses. Indicate what problems can occur in the process of obtaining such licenses. Describe how authorization of license use can be renewed. What alternatives are available if FCC licenses are not available in the Water Authority service area? Describe any potential conflicts with City Of Albuquerque service organizations such as Fire and Police departments or other known conflicts.**	
	Included PROPOSED AMR/AMI:	FlexNet is the only AMI system on the market that uses FCC primary-use licenses exclusively. Primary-use means that Sensus is the primary license holder of the spectrum nationwide. All of the other FCC licensed AMI systems on the market use secondary licenses, meaning that another entity besides the AMI vendor is the primary license holder. This means that other systems cannot provide the same benefits or protections to ABCWUA that the FlexNet system offers. The primary-use FCC licenses provided by the FlexNet system offer a number of key benefits: • FlexNet SmartPoints can transmit at double the power (2 Watts) of any other system on the market. • The FlexNet TGBs can transmit outbound to the SmartPoints at 35 times the power (35 Watts) of any other system on the market. • In-band noise on the FlexNet system is much lower, which allows for the use of much more sensitive receivers on the TGBs. This lowers the number of sites required and in turn lowers the long term system costs considerably. • Sensus already holds all necessary FCC licenses nationwide, and also has a large number of regional Primary Use licenses available – Albuquerque will not be required to acquire or maintain any licenses for the FlexNet system.

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		• ABCWUA will enjoy complete FCC protection from interference, which includes stiff fines and even jail time for interlopers on the spectrum. Sensus has passed strict FCC testing and certification for FCC CFR 47: Part 90, Part 24D, Part 101C, and Part 15 Licensed operation. There are no potential conflicts with any City of Albuquerque mission critical (Fire, Police, Medical) operations or system. Sensus holds all licenses for the frequencies used, and therefore no other system can legally operate on the same spectrum.
D-3	**Offeror shall be responsible for obtaining all necessary licenses on behalf of the Water Authority. Licenses must be obtained and assigned radio frequencies verified as suitable for use with the AMR/AMI system(s) before any AMI equipment may be installed. NOTE: If Offeror is unable to obtain the necessary licenses, the Water Authority reserves the right to cancel the contract and orders for all or part of the system, and receive a full refund from Offeror of all amounts paid.**	
	Included PROPOSED AMR/AMI:	Standard AMR and AMI system functionality. Sensus already holds all required licenses for the FlexNet system. ABCWUA will not be required to obtain or manage system FCC licenses.
D-4	**Indicate any provisions offered by the Offeror or its AMR/AMI system to identify and remove interlopers on its licensed frequency (ies).**	
	Included PROPOSED AMR/AMI:	First, FlexNet utilizes frequencies that are licensed, not unlicensed. As such, these channels are protected from interference or interlopers by FCC regulation. Second, the FlexNet system includes a very robust and user-friendly suite of system and network diagnostic applications that can quickly identify and track any interference on the system. Sensus manages all RF spectrum for the utility under the terms of the Service Level Agreement (SLA) for the duration of the AMI contract. Sensus will take any action required to ensure that the spectrum remains clear for authorized users. This protects ABCWUA's investment for the long term, and ensures that performance will not change in the future due to increased interference from outside sources. In instances where interlopers have been identified on deployed systems, Sensus has been successful in quickly and effectively resolving the interference, usually by simply notifying the interloping party. In most cases the interference is unintended, and is due to a transmitter that is not properly tuned. Typically the equipment is retuned, or a filter is applied to eliminate the interference. If the interloper does not resolve the interference

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quickly and effectively, Sensus can report the interlopers directly to the FCC, at which time penalties can be levied against the offending party until resolved.

The FlexNet system includes a very robust and user-friendly suite of system and network diagnostic applications that can quickly identify and track any interference on the system.

The TGBs constantly monitor in-band noise on the network, which is reported in the FlexNet diagnostic suite, and tracked by time and magnitude. This information can be used to verify interlopers operating patterns and even the general location of the interference by triangulating between multiple TGBs.

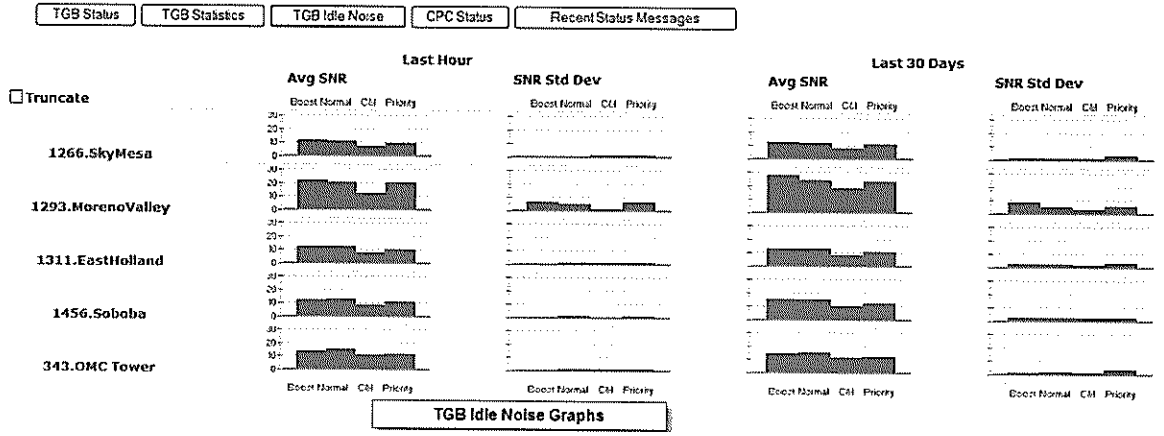

Figure 23: TGB Average SNR Charts

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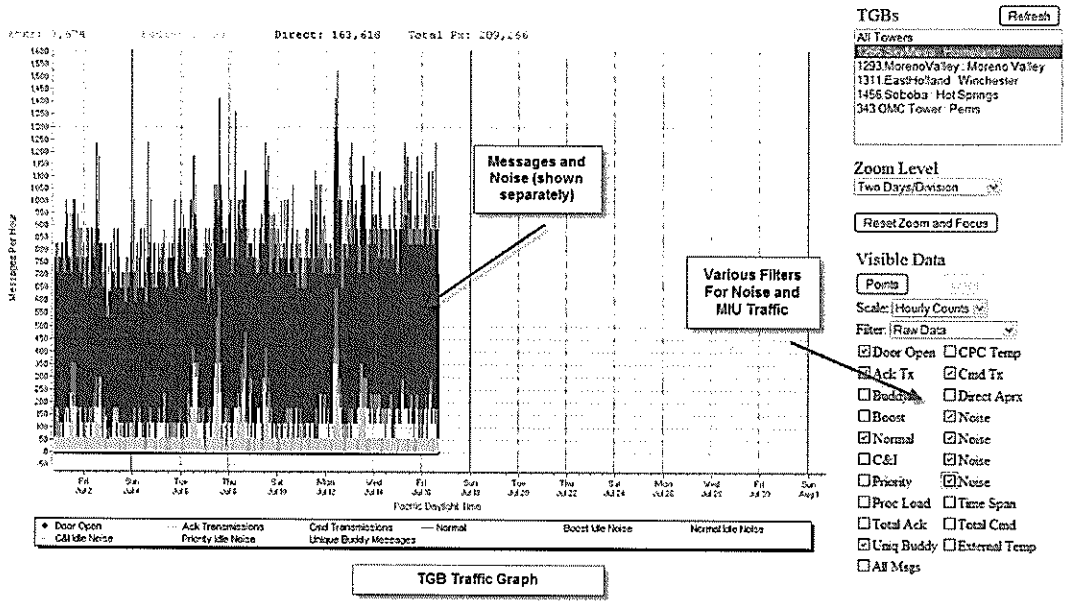

Figure 24: TGB Noise Charts

D-5	**Describe how interference is monitored, identified and remedied and by whom.**	
	Included PROPOSED AMR/AMI:	The FlexNet TGBs constantly monitor interference and the diagnostic software suite provided with the system allows users to quickly and easily identify areas that are experiencing interference, including the day and time the interference is encountered. Sensus will remedy any harmful interference found on the network by notifying the interfering party, and notifying the FCC if necessary. In most cases, the interlopers are not aware of their interference, and will quickly and effectively remedy the situation to avoid FCC penalties, which include stiff fines and even jail time. The FCC has stated repeatedly in recent years that parties that wish to protect their mission critical RF applications should use FCC licensed spectrum. Sensus strongly agrees, and has designed the FlexNet system to eliminate the uncertainty of unlicensed or secondary licensed systems by securing and utilizing FCC primary-use licensed frequencies exclusively.

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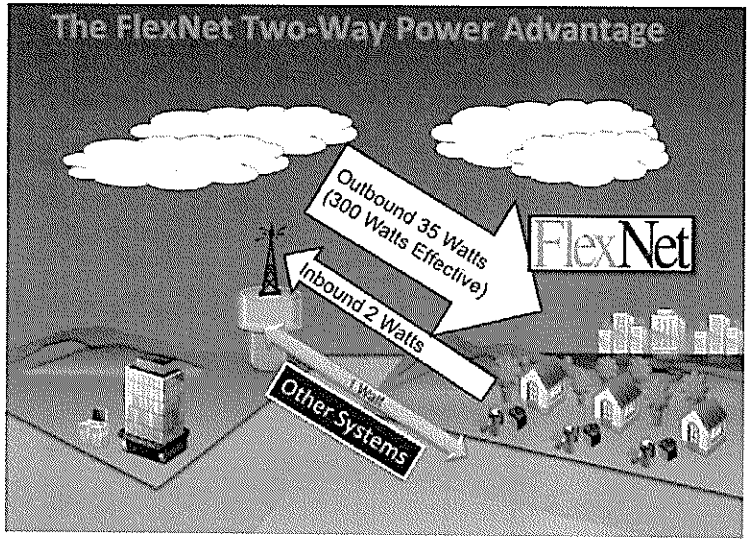
D-6	**Elaborate appropriately and succinctly any Radio Licensing considerations not called out in this section that are deemed important differentiators or essential functionality.**
Included PROPOSED AMR/AMI:	The primary-use FCC licensed spectrum offered by FlexNet has a number of key benefits: • There will be no delay or uncertainty in acquiring licenses for the ABCWUA network. • Sensus will manage all FCC licenses for the duration of the AMI Contract as part of the Service Level Agreement. • Primary Use FCC licensed spectrum offers the best protection from interference. • Primary Use FCC licensed spectrum offers lower noise than other licensed spectrum. • Primary Use FCC licensed spectrum allows double the power (2 Watts) from meter to collector, and 35 times the power (35 Watts) from the collector to the meter than any other AMI network (all other networks can use only 1 Watt in each direction). • Sensus' primary-use spectrum allows the greatest flexibility in network operations, including concurrent multiple channels, modulations and best bandwidth.  **Figure 25: FlexNet Two-Way Power**

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Section E: Meter Compatibility

E-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to Appendix C.6_Sensus Meter/MIU Compatibility for details.
E-2	**The following list of meters are in use by the Water Authority**	
	Included PROPOSED AMR/AMI:	
E-2a	**Badger**	
	Included PROPOSED AMR/AMI:	Sensus MIU is compatible with Badger ADE encoded registers. Please refer to Appendix C.6_Sensus Meter/MIU Compatibility for details.
E-2b	**Sensus**	
	Included PROPOSED AMR/AMI:	Sensus MIU is compatible with Sensus registers. Please refer to Appendix C.6_Sensus Meter/MIU Compatibility for details.
E-2c	**Hersey**	
	Included PROPOSED AMR/AMI:	Hersey meters are technically capable of interfacing to Sensus FlexNet SmartPoints, however at this time they have not been qualified for full compliance with compatibility. Sensus will work with the vendor to qualify the product for compliance.

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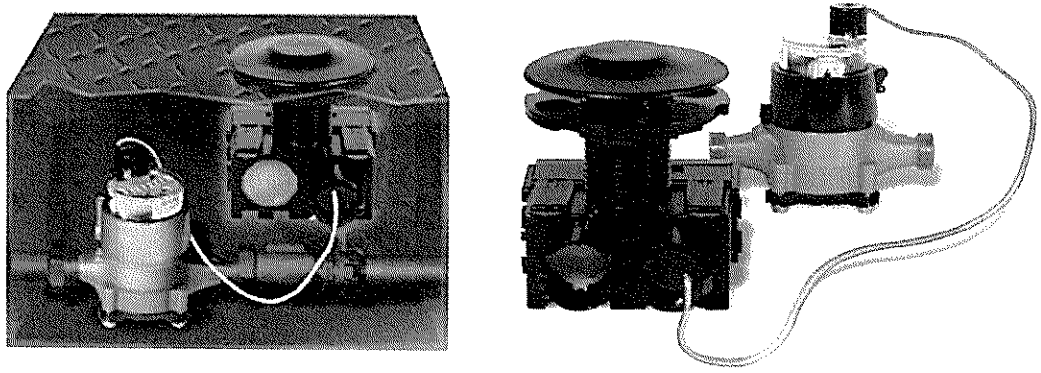
E-2d	**Rockwell**	
	Included PROPOSED AMR/AMI:	Sensus MIU is compatible with Rockwell (Sensus is formerly Rockwell) meters equipped with Sensus ICE or ECR2 encoded registers. Please refer to Appendix C.6_Sensus Meter/MIU Compatibility for details.
E-2e	**Neptune**	
	Included PROPOSED AMR/AMI:	Sensus MIU is compatible with Neptune ARB VI and E-Coder registers. Please refer to Appendix C.6_Sensus Meter/MIU Compatibility for details.
E-3	**Elaborate appropriately and succinctly any Meter Compatibility considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	One of the highlights of the FlexNet Transceiver design is the patented TouchCoupler interface, which offers a completely modular, yet 100% waterproof connection. This allows Sensus registers to be connected and disconnected securely without special tools. No cutting or splicing of wires is required to use the TouchCoupler interface.  **Figure 26: FlexNet 520M Transmitter with Meter**

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Section F: Meter Interface Units (MIU)

F-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to responses below.
F-2	**Describe the physical characteristics of the MIU, including dimensions, weight and any mounting requirements or limitations (orientation, elevation, etc.). Provide pictures or drawings (to scale) when possible. If more than one design/device is offered, the Offeror should describe all models and why they are offered.**	
	Included PROPOSED AMR/AMI:	Two separate SmartPoint configurations are available (pit set and non-pit set). The non-pit set unit is called the 510M2 and features an internal antenna. The pit set unit is called the 520M2 and also features an internal antenna. The 520M2 is designed to be installed through the pit lid. Neither unit requires a separate antenna or booster. Communications are direct from this unit to the Tower Gateway Basestation (TGB) or the hand-held device or vehicle reading device (called the Vehicle Gateway Basestation or "VGB").

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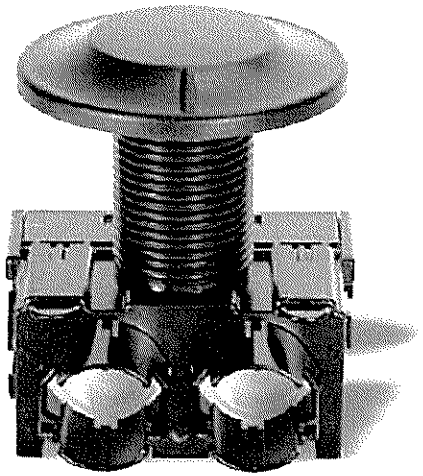

Sensus 520M2 Pit Set SmartPoint

SPECIFICATIONS

SERVICE	Pit set installation interfacing the utility meter to the Sensus FlexNet system. Unit requires 1.75" diameter hole in pit lid; fits pit lid thicknesses up to 1.75"
PHYSICAL CHARACTERISTICS	Width: 4.43" x Height: 5.09" x Depth: 3"
WEIGHT	1.0 lbs/16.0 oz
COLOR	Black
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps
MODULATION	Proprietary Narrow Band
MEMORY	Non-Volatile
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)
APPROVALS	US: FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation Canada: Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	- 22° F to +185° F *- 30° C to + 85° C*
OPTIONS	Dual or single port availability; TouchCoupler only, wired only. (TouchCoupler connection available only with Sensus meters)
INSTALLATION ENVIRONMENT	100% condensing, water submersible
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII and ICE water registers **Wired Version Only:** Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead)
WARRANTY	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.

Figure 27: FlexNet 520M Specifications

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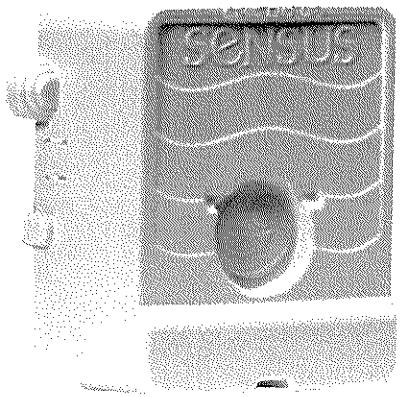

Sensus 510M2 Indoor SmartPoint

SPECIFICATIONS

SERVICE	Wall mounted (non-pit/non-submersible) installation interfacing the utility meter to the Sensus FlexNet system.
PHYSICAL CHARACTERISTICS	Width: 5 9/16" x Height: 5 1/2" x Depth: 3"
WEIGHT	1.13 lbs/18.08 oz
COLOR	Tan
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps
MODULATION	Proprietary Narrow Band
MEMORY	Non-Volatile
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)
APPROVALS	US: FCC CFR 47: Part 90, Part 240, Part 101C, Part 15 Licensed operation Canada: Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	-22° F to +185° F -30° C to + 85° C
OPTIONS	Dual or single port availability; TouchCoupler only, wired only (TouchCoupler connection available only with Sensus meters)
INSTALLATION ENVIRONMENT	The 510M is designed for side-of-home applications where it is not subject to submergence.
COMPATIBILITY	TouchCoupler and Wired Version: Sensus ECRR and ICE water registers Wired Version Only: Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead)
WARRANTY	20 years – Based on six transmissions per day Refer to Sensus G-500 for warranty

Figure 28: FlexNet 510M Specifications

F-3	**The Authority would prefer an MIU capable of supporting at least two meters. Describe how the MIU handles more than one meter register. Describe any degradation to MIU or battery performance if more than one meter is attached.**	
	Included PROPOSED AMR/AMI:	The 510M2 and 520M2 are available in a dual port configuration. This can reduce cost of a full deployment significantly where two (2) separate meters or two (2) separate meter registers can be connected to one SmartPoint. (For example, a compound meter with two registers). On dual port SmartPoints, there is a fully functional second port that supports the second meter or register. The dual port SmartPoint is essentially two separate MIUs in one – a separate MIU ID number is assigned to each port, and there is no loss of functionality or battery warranty for any standard mode of operation when using dual port SmartPoints. All FlexNet MIUs (SmartPoints) carry a nationally published twenty (20) year unit and battery warranty that covers hourly reading (24 readings per day, every day) for twenty (20) years. This warranty remains fully in effect for both single and dual port units.

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F-4	**The MIU must be capable of operating in the environmental conditions found in Albuquerque NM. (Temperatures from 10F - 110F, low humidity, moderate precipitation). Describe the operating parameters the MIU functions in. Describe any degradation to MIU performance or battery life expected due to environmental factors that exist in Albuquerque NM.**	
	Included PROPOSED AMR/AMI:	No degradation of MIU performance or battery life is expected from the environmental factors that exist in Albuquerque NM. Sensus has extensively tested the FlexNet SmartPoints in extremely harsh conditions, and has more than seventeen (17) years experience with pit set water meter radios – dating back to 1993. There are currently more than 1 million FlexNet Water SmartPoints deployed at more than 200 FlexNet deployments in North America, including a number of installations in New Mexico, Arizona, and West Texas. For more information about FlexNet SmartPoint environmental tolerances, please refer to the Appendix A.4 for pit set (AMR-337) and Appendix A.6 for non-pit set (AMR-336) FlexNet M2 SmartPoints.
F-5	**The Authority requires the MIU to deliver a minimum of 24 meter reads per day per meter. Describe how the proposed MIU will deliver the required number of reads. Explain any available options for scheduling the delivery of reads to the AMI Control Computer (AMICC). Thoroughly explain any implications for each option that might affect or degrade the performance of the MIU, especially battery life expectancy.**	
	Included PROPOSED AMR/AMI:	This is a core strength and distinction of the FlexNet system. With over 9 Million FlexNet meters deployed across North America (1 Million+ water) and more than 200 deployed networks, Sensus is delivering an average of better than 99.5% of all hourly meter readings collected by the system. The FlexNet MIU (SmartPoint) reads and stores the meter readings at the top of each hour, and transmits the new reading data and up to seven (7) days of hourly reading history during each transmission. The FlexNet MIU (SmartPoint) transmits to the RCU (TGB) every four (4) to five (5) hours, depending on transmit mode. (Six transmissions per day). In the event that a transmission is missed, the subsequent transmissions will backfill any missed data quickly and seamlessly for up to seven days. This mode of operation greatly increases the probability that each hourly interval will be received by the AMI control computer. Furthermore, since the MIUs transmit very frequently (six times per day), the average latency of the meter readings on the AMI control computer is typically very low (less than four hours in most cases). There is absolutely no degradation of the performance of the battery or MIU when delivering hourly readings every day for twenty (20) years. This is the standard mode of operation for the MIU (SmartPoint) and the system will operate this way without any user input or reprogramming of endpoints.

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		The FlexNet MIUs (SmartPoints) can also be polled directly by users at any time to retrieve a more recent reading within minutes (true two-way communication), and the network can self-schedule meter polling to ensure delivery of on-time readings from 100% of the meters for a specific day or time (for example, billing day). In deployed FlexNet networks nationwide, Sensus has demonstrated the very low average meter reading latency (typically less than four hours), but the additional benefit of true on-demand two-way functionality ensures that ABCWUA will have even more flexibility when retrieving readings over the network.
F-6	**The Authority requires the MIU battery to perform normally and meet the ABCWUA operational requirements for at least seventeen (17) years. Please describe the expected battery life of the MIU, include statistics from existing installations using the same proposed battery. Include a copy of the warranty for the battery and any assumptions made that support the warranty claims.**	
	Included PROPOSED AMR/AMI:	Exceeds. The FlexNet MIU (SmartPoint) carries a nationally published, twenty (20) year battery warranty which includes hourly readings (24 readings per day) for twenty years. There are currently more than 1 million FlexNet Water SmartPoints deployed in North America, all carrying this same twenty year battery warranty. The expected life of the MIU battery is in excess of twenty (20) years for all modes and including dual port units delivering hourly readings constantly over their entire service life. Please refer to Appendix D.2_The Sensus Guarantee for warranty for details.
F-7	**The Authority requires the MIU to connect to existing meters that currently have encoded registers. Describe how MIU's will be connected to existing meters. The connections are required to be made through the use of a waterproof connection. List all available options for the installation of your MIU into new or existing meters.**	
	Included PROPOSED AMR/AMI:	Sensus strongly agrees with the Authority's preference for encoded meter registers. Sensus has a patented TouchCoupler™ connection for use with Sensus/Invensys/Rockwell TouchRead encoded registers in the ABCWUA system. TouchCoupler offers a 100% waterproof connection to the meter register, while also offering a completely modular design. This allows Sensus registers to be connected and disconnected securely without tools. This means that if maintenance is required on the register or transceiver, both units do not need to be removed. No cutting or splicing of wires is required to use the TouchCoupler connection.

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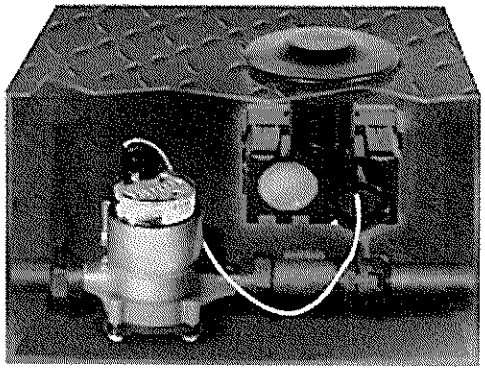

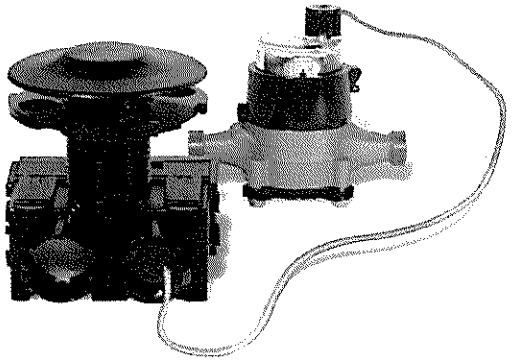

Figure 29: The TouchCoupler Adapter aids with Installation

Sensus will provide an adapter cable for all Sensus or other compatible meter registers that will allow existing meters with Nicor and/or Itron connectors to use the TouchCoupler connection on the FlexNet SmartPoint MIU. This eliminates the need for wire splicing on existing meters.

For other compatible third party registers, the FlexNet MIU can be connected to the meter register using a variety of methods, including a three-wire connection via gelcap connectors or alternately via third party connectors. All methods described above are considered waterproof connections, but the TouchCoupler connection provides a superior waterproof connection while remaining completely modular.

F-8	**Can your MIU distinguish different makes and models of meter registers? Does the MIU have to be programmed or modified to accept different makes or models of meter registers? How and where is this accomplished? Are different MIUs required for different makes and models of registers? If so, how are these distinguished?**	
	Included PROPOSED AMR/AMI:	Yes, the FlexNet M2 SmartPoint MIU will automatically distinguish between the registers if it's connected to a Sensus or other compatible encoder register upon SmartPoint activation. The SmartPoint does not need to be programmed or modified in any way to accept registers from other manufacturers; it is essentially plug-and-play. Sensus register meters may use our TouchCoupler connection. Competitive meters will be connected via a three-wire connection, or alternately may be connected using third party connectors or adapters if preferred.

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F-9	**The MIU is required to utilize an accurate and reliable encoding technology to capture readings. Describe the encoding technology utilized in your MIU.**	
	Included PROPOSED AMR/AMI:	Sensus strongly agrees with the Authority's preference for encoded meter registers to ensure accurate electronic readings. Sensus (formerly Rockwell) was the first water meter manufacturer to develop an encoded water meter register. Most meter manufacturers have since adopted the Sensus (Rockwell) encoded meter data protocol (Neptune, Badger, AMCO, etc.). Sensus (and most other meter manufacturers) still use this Rockwell/Sensus encoded register protocol. Sensus has a number of different encoder technologies available today in its different meter register models. The different technologies employed are magnetic wheel position sensing, optical, and solid state encoded registers. Sensus has recently released a revolutionary new residential water meter called iPERL™ which has no moving parts, and offers extremely low flow performance (0.03 gpm). This meter (and the new Sensus OMNI™ commercial meter line), utilize a completely solid state encoded technology that features no moving parts in the register. This greatly enhances efficiency and reliability, and extends the life of the meter register. If ABCWUA is considering the purchase of new water meters for this project or future projects, Sensus is happy to discuss the various options available to the Authority.
F-10	**The Authority requires the MIU to operate within the existing meter boxes currently in use by the Authority. Existing configurations include: composite/plastic meter boxes with composite/plastic lids; concrete meter boxes with cast iron meter lids. Describe any expected performance degradation due to box/lid material and propose any remedies that may minimize or eliminate the performance degradation. Be sure to include any additional cost (material and/or labor) that might be required to resolve problems caused by meter box construction in the Cost Proposal.**	
	Included PROPOSED AMR/AMI:	The FlexNet SmartPoint MIU, when installed through the meter pit lid per Sensus installation recommendations, will see no performance degradation with respect to meter box or lid construction or composition. This will allow the Authority to use any pit or vault lid composition desired. Sensus has included expected material and labor costs to install FlexNet SmartPoint MIUs through the pit/vault lids per the Sensus installation recommendations.

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F-11	**The Authority requires the MIU to detect tampering to the MIU. Describe how the proposed solution handles tampering. Describe the notification options that are available to alert Authority personnel.**
Included PROPOSED AMR/AMI:	***The FlexNet MIU has a number of different tamper detection features.*** **Tamper Exception Report** This report is generated if the transmitter is tampered with or the wire between the meter and transmitter is tampered with. The SmartPoint will transmit an alarm that advises the utility that the connection between the register and the SmartPoint has been disabled. This allows the utility to investigate a tamper situation that may be present. The alarm is transmitted during the preprogrammed transmit intervals. **Meter and Endpoint Mismatch Detection** The FlexNet SmartPoint transmits both the SmartPoint (MIU) ID and the register ID over-the-air on the network. This means that MIU tampers, cut wire conditions, and mismatched registers/transceivers are detected and reported over the network. The FlexNet system has a number of reports that can alert the utility to mismatched registers, disconnected registers, and non-reporting MIUs. Since the FlexNet MIUs will interface exclusively to encoded meter registers, the FlexNet system will either report the actual reading from the register or no reading at all. The FlexNet system offers both a SmartPoint (MIU) Mismatch report, and a Meter Mismatch Report. The Meter Mismatch Report will alert the utility if the register ID at a premise does not match what is listed in the CIS billing system. The system will also not apply the reading to the account unless the register ID matches what is recorded in the CIS system. This is a fail-safe to prevent incorrectly billing a meter or customer. Other systems which cannot detect the register ID over the network cannot offer this protection. The SmartPoint Mismatch Report will alert the utility if the register ID reporting from the field matches what is recorded in the CIS system, but the SmartPoint does not match. This can indicate that an MIU has been switched and not recorded by utility personnel. This can alert the utility to situations of tampering or incomplete or incorrect paperwork by utility personnel. **Cut Wire Detection** The FlexNet system also reports disconnected registers or cut wires via the "Bad Read" report. Again, the FlexNet system will either report the actual reading from the register at the time of reading, or no reading at all.

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		This prevents the MIU from reporting a different reading than that shown on the register face. **Additional Alerts with Sensus iPERL meter** All tamper alerts above are available with any Sensus or third party encoded registers. Additional tamper alerts are available when the MIU is used in conjunction with the Sensus iPERL residential meter. The iPERL meter adds a number of alerts, including empty pipe (no water in meter), magnetic field (strong magnetic field applied near meter), as well as even finer resolution for backflow alarms.
F-12	**The MIU shall be permanently labeled with manufacturer's name, model number, "ABCWUA", a tamper warning, MIU identification number, required FCC labeling, input/output connections, and date of manufactured. The label should contain a bar code of the MIU identification number. Describe any other labeling options.**	
	Included PROPOSED AMR/AMI:	The FlexNet MIU (SmartPoint) label complies with all requirements in this section, except that it does not carry the "ABCWUA" name. Sensus is willing to discuss custom labeling options with the Authority, but such custom labeling options are not covered in the pricing quoted in this response.
F-13	**The MIU must meet and be approved by all applicable regulatory requirements. Describe all applicable regulatory requirements associated with your MIU and provide proof of applicable approvals for the device.**	
	Included PROPOSED AMR/AMI:	The FlexNet SmartPoint meets FCC CFR 47: Part 90, Part 24D, Part 101C, and Part 15 regulations and is authorized by the FCC for Primary Use licensed operation. Applicable FCC certifications are available on the label of each MIU (SmartPoint), from the FCC, and also on the MIU data sheets attached. Appendix A.4 for pit set (AMR-337) and Appendix A.6 for non-pit set (AMR-336) FlexNet M2 SmartPoints.
F-14	**The Authority requires the MIU to be initialized or programmed during or prior to field installation. Describe all MIU programmability. Can the MIU store an account or meter number? Will this number be transmitted with the meter reading data? Can this number be programmed into the MIU from the field programming unit based on information downloaded from an installation work order database? Indicate capabilities and procedures. Indicate field length of account number.**	
	Included PROPOSED AMR/AMI:	Sensus strongly agrees with the Authority's interest in having an MIU that can transmit both the MIU ID number and the register ID number over the air. This ensures that tampering or incorrect paperwork does not result in readings being delivered to the wrong account due to an incorrectly recorded MIU ID/register ID association. Many other AMI networks transmit only the MIU ID, which does not allow MIU/register mismatches to be

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		identified without a site visit. The FlexNet system will specifically report any MIU/register association that does not match what is in the ABCWUA billing system database, and will not apply a reading to an account when the register ID does not match. The FlexNet MIU is programmed during field installation. This ensures that the proper meter number and latitude/longitude coordinates are programmed into the MIU by the installation field tools. During programming, the MIU detects the register ID and type attached to it, and ***automatically*** stores the register ID in non-volatile memory. The account number is not stored in the MIU. Upon activation, the MIU sends out a series of binding and setup messages containing the meter number and the MIU number, GIS coordinates, meter units of measure, register resolution, and other pertinent data. This information is also re-transmitted regularly over the network, or when a new meter register is connected. When transmissions from the MIU are received at the RCU (TGB), the meter is automatically discovered on the network and the MIU number and meter number are associated in the FlexNet database.
F-15	**The Authority requires the MIU to store, at a minimum, thirty (30) days of meter reads at the frequency detailed in F-5. Describe the MIU's capability to store additional reads and any limitations in meeting this requirement.**	
	Included PROPOSED AMR/AMI:	When in mobile meter reading mode, the FlexNet MIU will store thirty (30) days of hourly meter readings. When operating in fixed base mode, the FlexNet MIU will store up to seven (7) days of hourly meter reading history, and will transmit all of this meter reading history six (6) times per day. Sensus has demonstrated across more than 200 FlexNet deployments across North America and over 9 million total endpoints deployed (1 million + water) an average of better than 99.5% of all hourly meter readings from all meters on the network. This information is available at the AMI control computer, and therefore does not need to be stored for longer periods at the MIU. Additionally, each RCU (TGB) can store up to thirty (30) days of hourly reading history for every meter covered in the event that the AMI control computer is unavailable or network backhaul is down. Since each MIU (SmartPoint) typically reports successfully to more than one RCU (TGB) due to overlapping coverage, the FlexNet system has proven itself to be highly reliable and has delivered this extremely high percentage of hourly meter readings universally across all deployed networks. This is one of the reasons for the high popularity and success of the FlexNet system.

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F-16	**The Authority requires the MIU to return meter reads to an accuracy of .1 ccf (1 cubic foot). Describe how the system meets this requirement.**	
	Included PROPOSED AMR/AMI:	The FlexNet SmartPoint MIU can return meter readings in any resolution or accuracy supported by the encoded register connected. This includes meter resolution down to 0.01 cubic feet for Sensus meters.
F-17	**Describe the skill set required to maintain and service this equipment. Identify and describe all equipment required by the Water Authority to perform on-going maintenance and servicing of the MIUs.**	
	Included PROPOSED AMR/AMI:	The system requires the FlexNet CommandLink with a compatible Windows Mobile 6 hand-held device (available directly from Sensus or from a variety of handheld manufacturers) and the use of the FlexWare software package. The skill set required for the use of FlexWare and the hand-held programming equipment is someone comfortable using a PC and standard Web browser, such as Microsoft Internet Explorer, a typical hand-held meter reading/programming device using Windows Mobile 6, and someone who is comfortable working with groups of data. Field installation and troubleshooting requires a skill set of operating a mobile based hand-held device, understanding of wireless Bluetooth linking procedures, the ability to remove and install MIU devices from meter boxes and connect meters to the MIU devices. No special tools are required for connecting MIUs to Sensus meter registers.
F-18	**Elaborate appropriately and succinctly any Meter Interface Unit (MIU) considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	The MIU transmits at 2 Watts of power for inbound transmissions from the MIU to the network. Outbound transmissions from the network to the MIU are at 35 Watts (35 times the power of any other system). This ensures robust and reliable two-way communications with the minimal amount of infrastructure. This unmatched transmit power is due to the primary use license that Sensus owns. Sensus has demonstrated this industry leading performance at more than 200 FlexNet deployments across North America.

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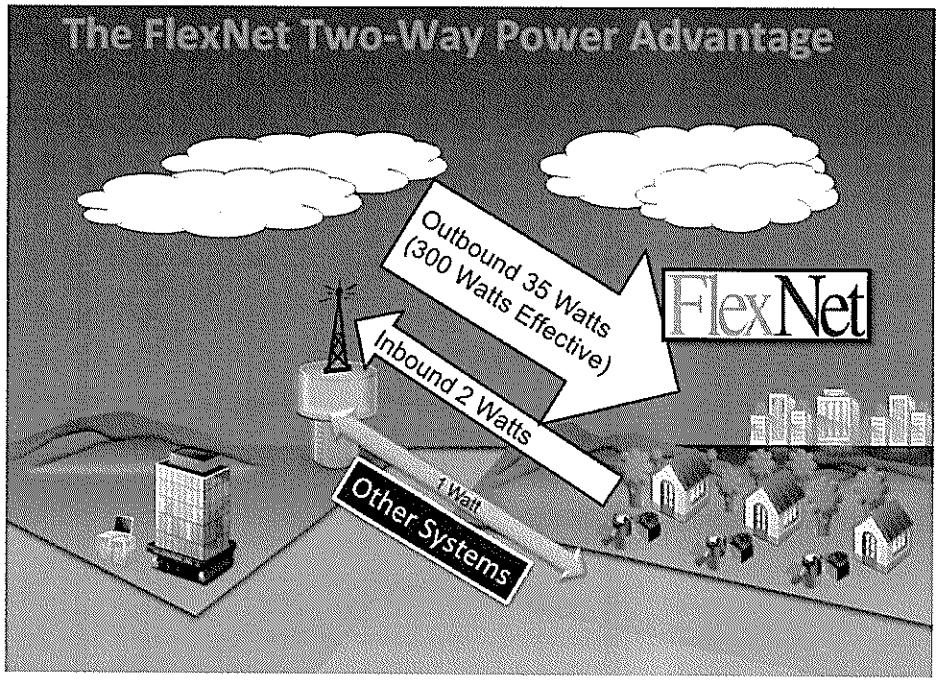

Figure 30: FlexNet Two-Way Power

The Primary Use licensed frequencies used by the FlexNet system also allow the network to use much more sensitive receivers (-121 dB) than other networks, further enhancing range and reliability. This is due to the much lower noise floor on the FlexNet network.

Additionally, FlexNet SmartPoint MIUs can take advantage of three different transmit modes (normal, boost, and Buddy) to improve signal propagation without the installation of other collection equipment. This is a unique feature of the FlexNet system and a tremendous benefit. Transmit modes are set automatically by the MIU installation equipment during MIU installation, and the appropriate mode is set according to real time performance data at the time of installation. Meter transmit modes can also be changed over the network (without a truck roll) in order to "tune" the system to work as effectively as possible in the future with the minimum amount of infrastructure.

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Section G: Regional Collector Unit (RCU)

G-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
G-2	**Describe the physical characteristics of the RCU including dimensions, weight, and any mounting requirements or limitations (orientation, elevation, etc.). Provide pictures or drawings (to scale) when possible. If more than one design/device is offered, the Offeror should describe all models and why they are offered.**	
	Included PROPOSED AMR/AMI:	The Sensus FlexNet Tower Gateway Basestation (TGB) is available in both indoor and outdoor configurations. The outdoor TGB includes a NEMA 4 rated enclosure with heating, air conditioning, and battery backup. The indoor TGB unit is intended for communications sites that have an on-site shelter for communications equipment. The FlexNet Tower Gateway Basestation (TGB) follows RF industry best practices design standards, and features rack mounted and upgradeable hardware to allow for future expansion and upgrades. The TGBs also feature software defined radios which can be updated remotely to add or change spectrum, modulation, and feature set. This is a core distinction of the FlexNet system, and ensures there are no stranded assets.

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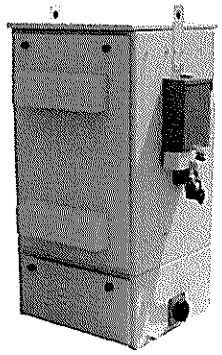
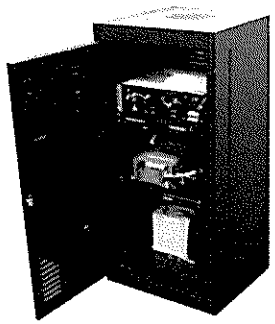


Sensus FlexNet Outdoor TGB



Sensus FlexNet Indoor TGB

SPECIFICATIONS

DIMENSIONS	22" W x 25-1/2" D x 48" H (indoor unit) 30" W x 28" D x 58" H (outdoor unit)
WEIGHT	240 lbs (indoor unit) 660 lbs (outdoor unit)
RF DATA RATE	8 KBps Normal Mode
FREQUENCY RANGE	Input 901 – 902 MHz
MODULATION	7 Level FSK, 13 Level FSK
NETWORK CONTROL CENTER COMMUNICATIONS	TCP/IP
SENSITIVITY	-121 dBm Normal Mode
COMPLIANCE	FCC CFR 47: Parts 15, 24, 90, 101 Compliant Licensed Operation Industry Canada (IC) RSS-119,RSS-134
POWER SUPPLY	120 V grounded line at 10' Maximum (indoor unit) 120/240 V grounded line (outdoor unit)
TRANSCEIVER OPERATING TEMPERATURE	-40° C to +85° C -40° F to +185° F
ANTENNA REQUIREMENTS	External Omni Directional

Figure 31: Tower Gateway Basestation Specifications

G-3 **The Authority requires that RCUs be located at locations listed in file RCU Locations.xlsx included in the RFP CD. Describe any limitations these locations place on the overall system's ability to operate to meet the Authority's requirements. It is preferred that all RCUs be located first on Water Authority infrastructure. If, in some instances, that is not possible, other public sector infrastructure should be considered followed by private sector infrastructure.**

Included PROPOSED AMR/AMI:

This is one of the core benefits of the FlexNet system. The industry leading range and reliability of the FlexNet network allows maximum flexibility in network collector placement. All five (5) of the FlexNet RCUs (TGBs) proposed for ABCWUA are located at sites specified by the Authority. These five (5) sites provide excellent overlapping coverage for all of the 850 commercial meters covered in the scope of the RFP.

As an added benefit, these five (5) sites will also cover the vast majority of the remaining 190,000 meters within the ABCWUA service area. Each individual FlexNet RCU (TGB) has a capacity of up to 70,000 individual meters. As shown in the propagation study plot below, the system design proposed covers nearly all of the ABCWUA service territory.

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		The five (5) sites chosen to cover the 850 pilot meters (and most of the meters in a full deployment scenario) are: 1. Metro Detention Center Reservoir 2 2. Gonzales Reservoir 3. Yale 1 Resevoir 4. Coronado Reservoir 5. Thomas Reservoir **Important Note:** Sensus has specified the RCU (TGB) at the Metro Detention Center Reservoir 2 site to cover a single meter located near that location. If this meter is not considered, Sensus can cover the remaining 849 locations with four (4) RCUs (TGBs).

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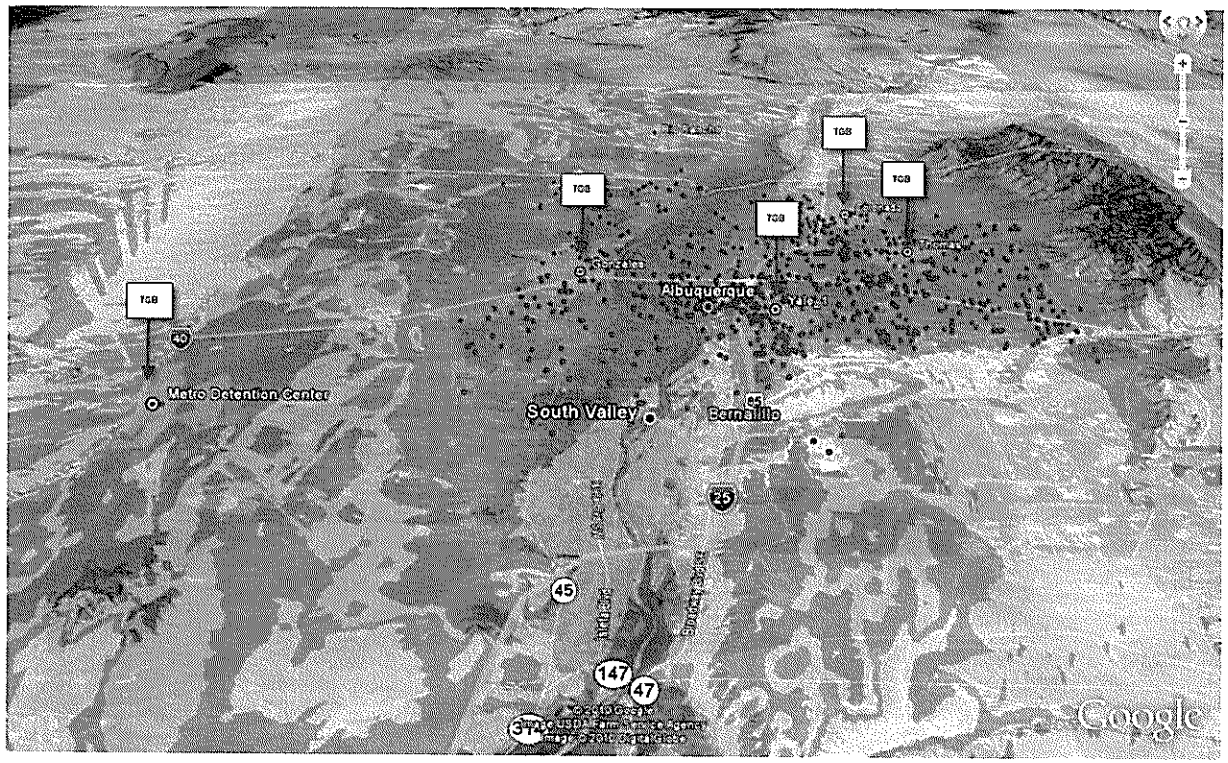

Figure 32: Meter and Tower Gateway Basestation locations

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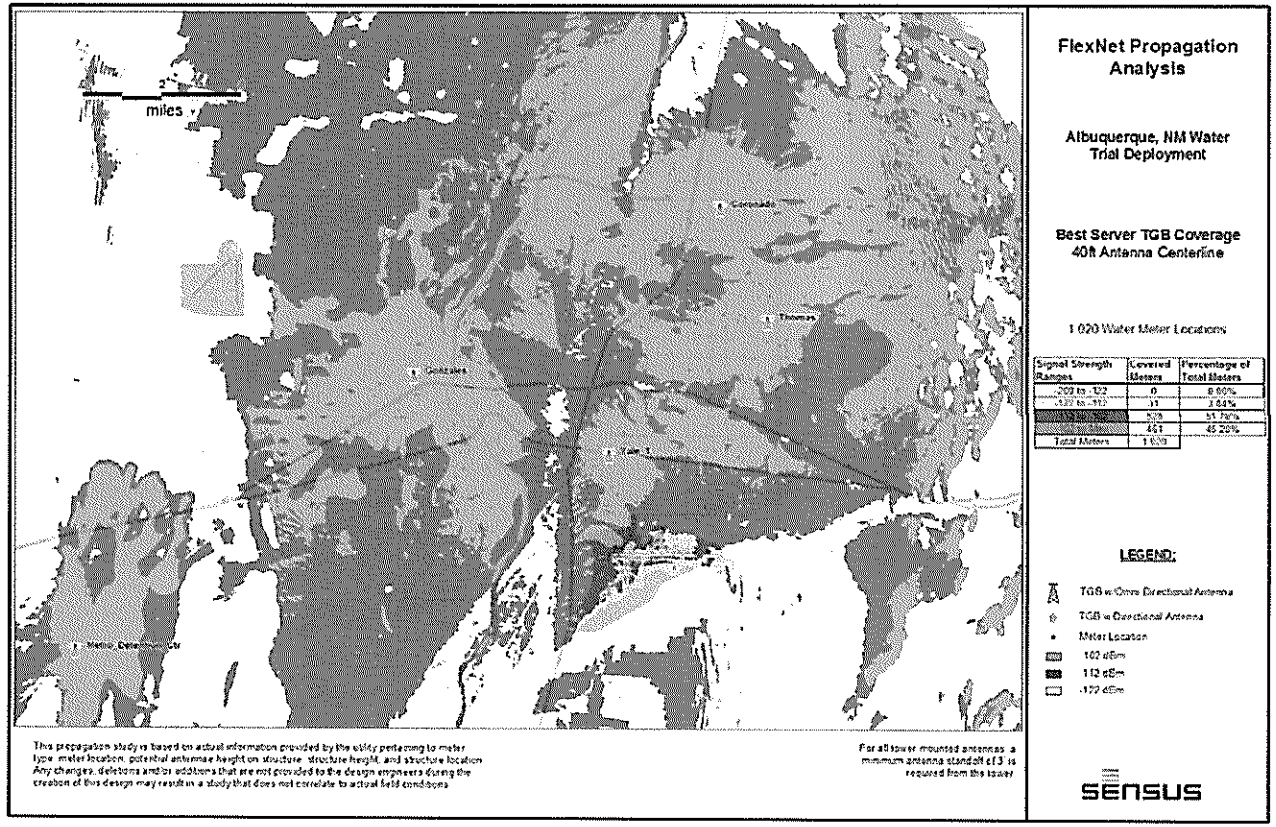

Figure 33: Best Coverage Locations for TGBs

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G-4	**Provide all information necessary on the required skill sets needed to locate and then set up the RCUs during the installation phase. The Offeror shall also offer options/recommendations as to where and how Water Authority staff would assist in the installations of the RCUs, the ability of the Offeror to perform this functions and if Water Authority staff can be trained or should assist in the initial deployment of these units. The Offeror shall confirm the types of mounting locations, determine arrangements, and include the estimated cost of mounting and any continuing infrastructure rental cost necessary for mounting RCUs in the appropriate locations in order to acquire reads as per the ABCWUA requirements.**	
	Included PROPOSED AMR/AMI:	Sensus typically delivers all FlexNet networks in a turnkey fashion. This includes installing the RCUs at the five (5) locations specified in the FlexNet network proposed for this project. Sensus will install, configure, and test the entire FlexNet network as part of this proposal. Sensus encourages any and all involvement by ABCWUA staff in the network deployment process, and will supply detailed documentation and training on RCU (TGB) installation and configuration if desired. The Authority will not be required to install or configure FlexNet RCUs (TGBs) unless this is preferred by ABCWUA. Under a typical FlexNet deployment scenario, the utility will prepare the RCU (TGB) sites for TGB installation. This includes providing the utility's preferred network backhaul solution at each site, providing AC power at each TGB location, providing a mounting structure for the TGB antenna (water tank, monopole, building, etc.), and constructing a small concrete pad for the TGB cabinet. Sensus can discuss RCU (TGB) site preparation duties with ABCWUA during the deployment planning process to determine the Authority's preferred site preparation strategy. As shown in the FlexNet propagation study attached, only five (5) RCU sites are required to provide excellent overlapping coverage of the meters covered in the scope of this proposal. Additionally, these five (5) sites also provide coverage for a vast majority of the overall ABCWUA service territory. This means that the Authority will have much lower long term system operating and maintenance costs than with other networks that may require dozens or even hundreds of pole-top collectors. Please refer to Appendix B.2_TGB Installation Manual for additional details on RCU (TGB) installation procedures.

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G-5	**Describe the power requirements for the RCU. Delineate who is responsible for obtaining power service if required. What are the estimated one-time and continuing costs for power? What are the consequences for the RCU when power is lost? Describe any battery backup capabilities and the purpose it serves. Describe the lifespan of the battery and any on-going maintenance required. Describe how the system preserves and delivers data during and after a power loss.**	
	Included PROPOSED AMR/AMI:	Outdoor TGBs require 240VAC service, indoor TGBs require 120VAC. The FlexNet TGBs are protected from transient and complete power loss by 24VDC backup battery banks. Under the most commonly used FlexNet network ownership model (where the utility owns and operates the network) the utility is typically responsible for obtaining and maintaining power service at RCU locations. All five (5) of the FlexNet RCUs (TGBs) proposed for the FlexNet system design are located on ABCWUA facilities, and any future RCUs (TGBs) can be mounted on ABCWUA facilities. Each TGB contains multiple 12-volt, group 22 batteries connected in series to power the data collectors. A single battery bank provides between eight to 20 hours of backup power in the event of primary power failure. Battery replacement is suggested every seven to 10 years depending upon system characteristics; however, the on-board diagnostics will notify the user when replacement is required. Sensus covers all backup battery parts and labor in the FlexNet support agreement proposed. The FlexNet RCUs (TGBs) feature on-board Linux computers and solid state hard disks which can store at least thirty (30) days of hourly reading information from all meters served in the event that the AMI control computer is unavailable or network backhaul between the RCU and AMI control computer is down. This stored data is seamlessly passed to the AMI control computer when the backhaul is restored. Additionally, as described in the previous section, the FlexNet MIUs (SmartPoints) automatically send up to seven (7) day of hourly reading history with each transmission. At more than 200 FlexNet deployments across North America, FlexNet has proven that it is the most reliable AMI network available.

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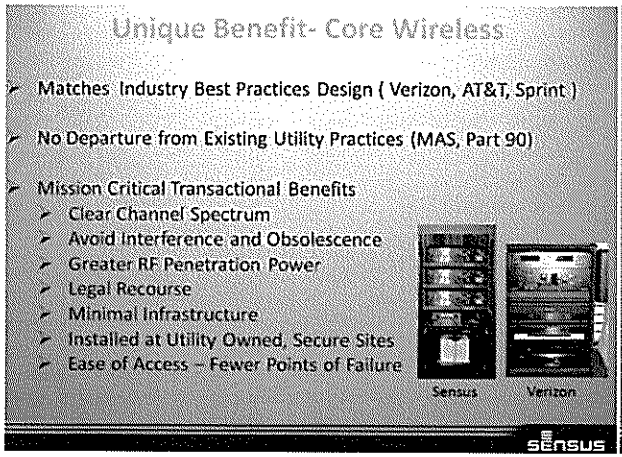

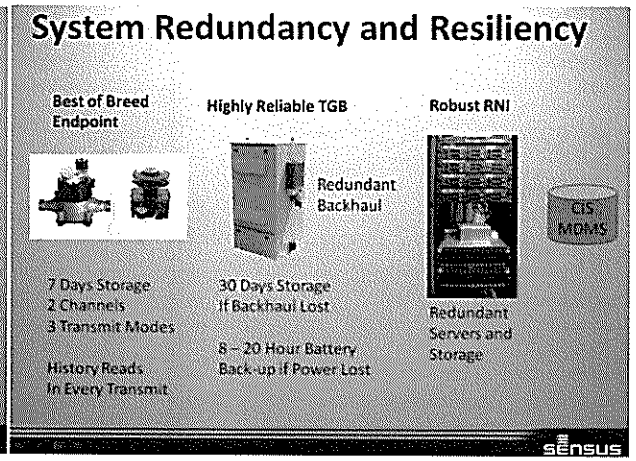

Figure 34: FlexNet is Designed for High Reliability

G-6	**The RCU must be capable of operating in the environmental conditions found in Albuquerque NM. (Temperatures from 10F - 110F, low humidity, moderate precipitation). Describe the operating parameters the RCU functions in. Describe any degradation to RCU performance or battery life expected due to environmental factors that exist in Albuquerque NM.**	
	Included PROPOSED AMR/AMI:	The FlexNet RCU is available in an outdoor configuration which features a NEMA 4 enclosure with on-board heating and air conditioning that is designed to operate in conditions found in Albuquerque, NM. Sensus is specifying our outdoor TGB cabinets for each of the five (5) TGB locations proposed. Sensus has more than 200 FlexNet networks currently operating in North America. A number of these networks are located in the Southwest (New Mexico, Colorado, Utah, Oklahoma, and Texas), with environmental conditions very similar to those found in Albuquerque. Sensus has demonstrated that the FlexNet TGBs can easily withstand these environmental conditions.

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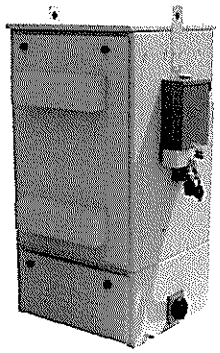
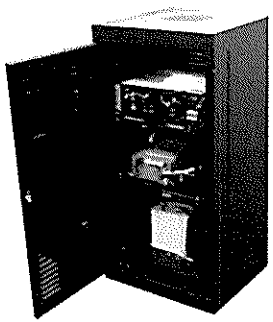


Sensus FlexNet Outdoor TGB



Sensus FlexNet Indoor TGB

SPECIFICATIONS

DIMENSIONS	22" W x 25-1/2" D x 48" H (indoor unit) 30" W x 28" D x 58" H (outdoor unit)
WEIGHT	240 lbs (indoor unit) 660 lbs (outdoor unit)
RF DATA RATE	8 KBps Normal Mode
FREQUENCY RANGE	Input 901 – 902 MHz
MODULATION	7 Level FSK, 13 Level FSK
NETWORK CONTROL CENTER COMMUNICATIONS	TCP/IP
SENSITIVITY	-121 dBm Normal Mode
COMPLIANCE	FCC CFR 47: Parts 15, 24, 90, 101 Compliant Licensed Operation Industry Canada (IC) RSS-119,RSS-134
POWER SUPPLY	120 V grounded line at 10' Maximum (indoor unit) 120/240 V grounded line (outdoor unit)
TRANSCEIVER OPERATING TEMPERATURE	-40° C to +85° C -40° F to +185° F
ANTENNA REQUIREMENTS	External Omni Directional

Figure 35: Tower Gateway Basestation Specifications

G-7	**Describe any additional network components (i.e., repeaters, signal boosters, etc.) that may be required by the system to meet ABCWUA system requirements. Provide details about each device and why they are required.**
Included PROPOSED AMR/AMI:	The network design specified for ABCWUA in this proposal does not call for any additional network components (repeaters, signal booster, etc.) to meet system requirements outlined. A total of five (5) Tower Gateway Basestations (TGBs) are required to cover the 850 commercial meters included in this proposal. As an added benefit, this network design also provides coverage and capacity for the vast majority of the remaining meters in the ABCWUA system. FlexNet SmartPoints can take advantage of three different transmit modes (normal, boost, and Buddy) to improve signal propagation without the installation of other collection equipment. This is a unique feature of the FlexNet system and a tremendous benefit. Meter transmit modes can be changed automatically by the network (without a truck roll) in order to "tune" the system to work as effectively as possible.

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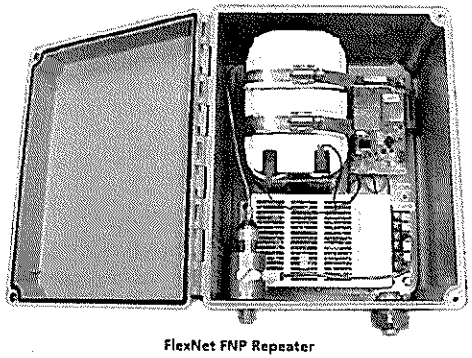
Sensus can provide repeaters (called FlexNet Network Portals – FNPs) if there are small areas where additional signal propagation is required, but these devices are not required for the system proposed for ABCWUA. The information below is given for informational purposes only.

FlexNet Fixed Network Portal (FNP) Repeater

The FNP device can be mounted to a variety of different structures on utility property. The FNP consists of a small cabinet and external antenna connected by coaxial RF cable.



FlexNet FNP Repeater

SPECIFICATIONS

INSTALLATION:	Utility pole, light standard, or any standing structure with an AC power source.
PHYSICAL CHARACTERISTICS:	10" x 8" x 4"
WEIGHT	23lbs (10.43 kg)
ENCLOSURE:	Single Door Steel Enclosure – NEMA Standards 4, 12, 13
COLOR:	Grey
FREQUENCY RANGE:	900 – 950 MHz
MODULATION:	Proprietary Narrow Band
APPROVALS:	Auto-Switching Universal 90 – 240VAC
US:	FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation
CANADA:	Industry Canada (IC) RSS-134, RSS-119, RSS-2
POWER:	110/240 VAC
OPERATING TEMPERATURE	-35° F to +165° F *-37° C to +74° C*
BATTERY:	8V 2.5AHr SLA (sealed lead-acid)
WARRANTY:	Refer to Sensus G-500 for warranty information

Figure 36: FlexNet Network Portal Specifications

G-8	**Provide the number and location of RCUs (and other necessary equipment) needed for this project. RCU number and location shall be based on propagation studies completed by the Offeror.**
Included PROPOSED AMR/AMI:	Based on the propagation study provided for ABCWUA, Sensus has determined that five (5) RCUs (TGBs) will be required to provide coverage for all of the 850 meters specified for this project. In fact, the fifth TGB proposed at the Metro Detention Center is proposed only to cover one (1) meter located in this area. If this meter is removed from consideration, Sensus can cover the remaining 849 meters with only four (4) TGBs.

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The five (5) RCU (TGB) sites proposed for this project are:

1. Metro Detention Center Reservoir 2
2. Gonzales Reservoir
3. Yale 1 Reservoir
4. Coronado Reservoir
5. Thomas Reservoir

These sites and their combined coverage are shown in the propgation study plot below. This proposed network design provides excellent overlapping coverage for all meters considered in this RFP, as well as the vast majority of the overall ABCWUA service territory.

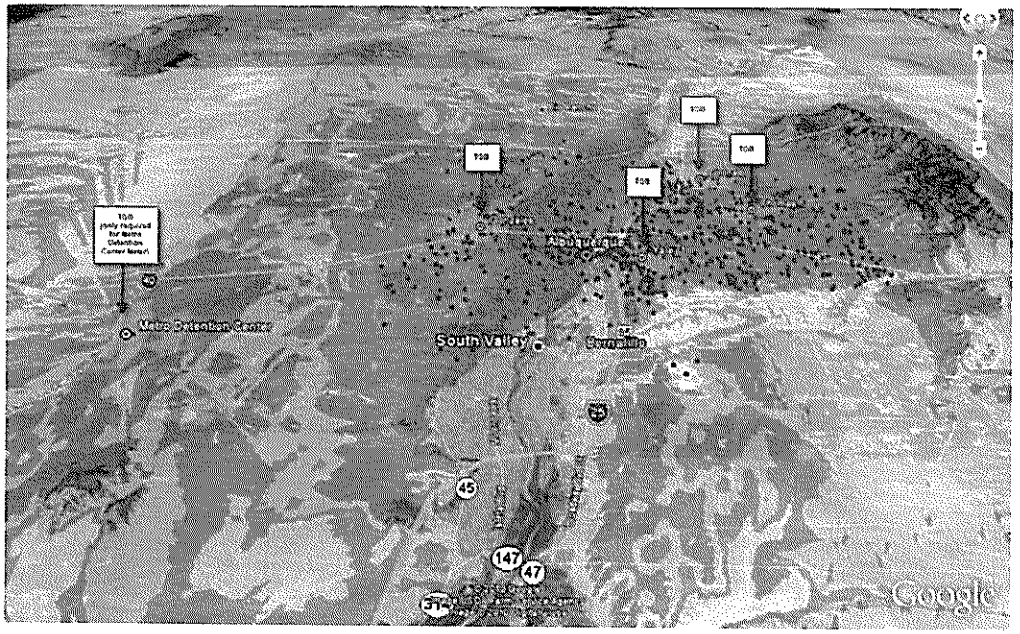

Figure 37: Meter and Tower Gateway Basestation locations

Please refer to proposal section 10.0 Attachment C: Propagation Study for additional details.

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G-9	**Describe how the RCU is protected against electrical surges such as lightning strikes.**	
	Included PROPOSED AMR/AMI:	The FlexNet RCU (TGB) is a very robust piece of RF communication equipment which follows RF industry best practices design standards. The FlexNet TGBs are the most robust and well protected AMI network collectors available on the market. These standards include protection from lightning strikes and power surges. The coaxial RF cable that connects the TGB to the TGB antenna is grounded at multiple locations. The TGB also utilizes a polyphase surge suppressor between the coaxial cable and the TGB transceiver. Additionally, the TGB cabinet is grounded at the mounting location. The power supply to the TGB is also properly grounded according to local, state, and electrical code. The battery backup on each TGB also acts as an "uninterruptible power supply" on the TGB, protecting it and isolating it from power surges. Please refer to Appendix C.5_TGB Installation Manual for additional details on lightning protection and power surges.
G-10	**Describe the skill set required to maintain and service this equipment. Identify and describe all equipment required by the Water Authority to perform on-going maintenance and servicing of the RCU's.**	
	Included PROPOSED AMR/AMI:	This is a core benefit of the FlexNet system. The FlexNet system design proposed consists of just four (4) RCU devices, while providing superior overlapping coverage for most meters on the network. These four (4) RCUs will provide coverage and capacity for not only the 850 commercial meters in this proposal, but also for the vast majority of the total meters in the ABCWUA system. This will result in much lower overall network operating costs, and will greatly reduce the amount of maintenance required to maintain the system. Additionally, all TGB cabinets are installed at ground level on ABCWUA property, which greatly facilitates access and maintenance of the network components. Each TGB can also be accessed remotely over the network to perform troubleshooting and updates. The recommended FlexNet TGB maintenance is detailed in Appendix C.6_TGB Maintenance and Upgrade Manual. No special skill set of specialized tools are required to perform routine maintenance on the RCUs. Sensus will provide all updates and hardware replacement under the terms of the Service Level Agreement (SLA) proposed.

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G-11	**The Authority prefers the RCU to store, at a minimum, thirty (30) days of meter reads for all collected meters at the frequency detailed in F-5. Describe the RCU's capability to store additional reads and any limitations in meeting this requirement. If the vendor system is designed to move data from the MIU directly to the AMI database the vendor should provide documentation on how this requirement can be met with this methodology.**	
	Included PROPOSED AMR/AMI:	This is standard with all FlexNet TGBs. FlexNet TGBs store at least thirty (30) days of hourly reading intervals from every meter served on non-volatile solid state hard disks in the event that the backhaul connection to the AMI control computer (RNI) is lost. Sensus has demonstrated this functionality across a number of deployed networks, and this is just one of the many facets of the industry-leading failover protection offered by the FlexNet system.
G-12	**The RCU must meet and be approved by all applicable regulatory requirements. Describe all applicable regulatory requirements associated with your RCU and provide proof of applicable approvals for the device.**	
	Included PROPOSED AMR/AMI:	TGBs meet and are type-approved by regulatory requirements. FCC CFR 47: Parts 15, 24, 90, 101 Compliant Licensed Operation, Industry Canada (IC) RSS-119,RSS-134
G-13	**Define any applicable warranties associated with the RCU**	
	Included PROPOSED AMR/AMI:	The standard RCU (TGB) hardware warranty is one year, but all parts required for TGB repair are included in the Network Operations Support program listed in Cost Proposal 3. All TGB replacement parts are included in this Network Operations Support program. Labor is not included.
G-14	**Elaborate appropriately and succinctly any Regional Collector Unit (RCU) considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	Sensus has a patented technology that takes advantage of an alternative method of establishing broadband networks for utilities called "parallel piping". Accessing blocks of 901/940 MHz narrowband PCS spectrum and allocating each to a separate "pipe", data is coded, compressed, and very efficiently modulated. Each "pipe" can be assigned to a specific activity such as meter reading, demand automation, home automation networking, and more. When aggregated, the "pipes" can provide a broadband-level throughput. Since each spectrum block is dedicated to a separate exciter stage and channel width remains relatively narrow, range is greatly increased over comparable wideband technologies.

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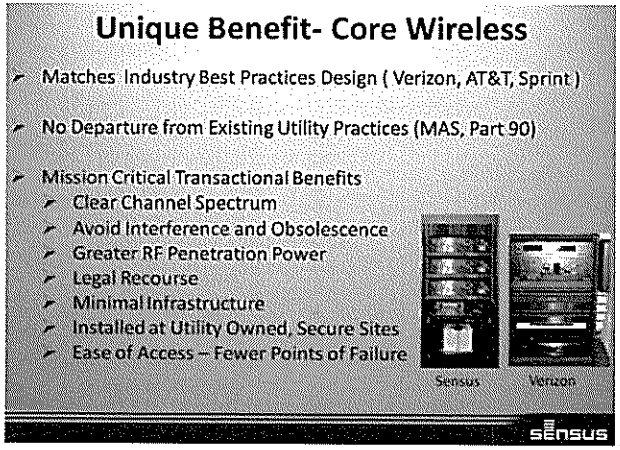
Our system is full duplex, meaning that there is a high level of efficiency as compared to competitors' half-duplex systems. Both halves of a communications link can talk and listen at the same time, improving data throughput and reducing latency based on similar data speeds.

Sensus is also a high powered, long range radio system. With the potential of operational radii of 15 miles from a single RCU. This reduces the amount of infrastructure needed to have installed and maintained. Using 35 watts from the base station, the system can reliably access otherwise hard-to-reach meter locations.



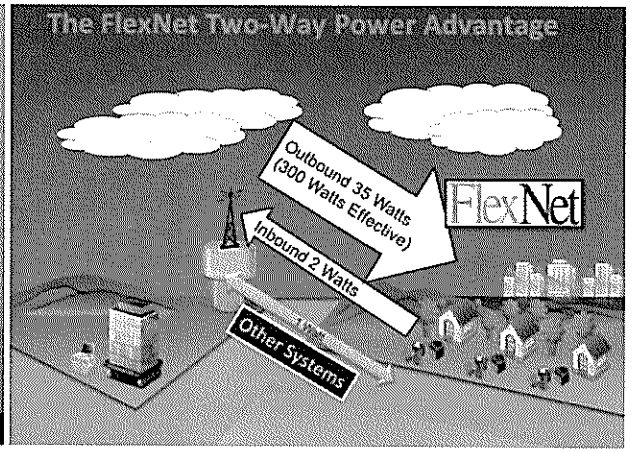


Figure 38: The FlexNet Two-Way Power Advantage

Sensus uses licensed spectrum, mitigating the risk of interference from others. No unlicensed competitor can mitigate interference, while Sensus can protect its customers with the protection of the Federal Communications Commission.

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Section H: Overall Network Performance

H-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
H-2	**The Water Authority requires guaranteed reliability to ensure reads are received from each endpoint under the network on a daily basis. Describe the mechanisms in place in your solution to ensure a minimum 98.5% probability of daily read?**	
	Included PROPOSED AMR/AMI:	The FlexNet network design proposed for ABCWUA will return at least a 98.5% or better daily reading success. In more than 200 FlexNet deployments across North America, the FlexNet system is delivering an average of better than 99.5% of all hourly readings from every meter in the system. This performance is tracked and is measurable by the comprehensive diagnostics suite provided with the system. The FlexNet system has a number of mechanisms to ensure a high probability of reading success and low reading latency. • The FlexNet MIUs (SmartPoints) transmit every four (4) to five (5) hours, which means there are up to six (6) transmissions per day from each SmartPoint. Each transmission contains up to seven (7) days hourly reading history. Therefore, any single successful transmission can backfill up to a week's worth of hourly reading data. • The FlexNet system design features overlapping coverage from RCUs (TGBs) to ensure that each transmission has multiple paths to a receiver. The FlexNet network diagnostics suite tracks and can display this overlapping coverage. • FlexNet MIUs (SmartPoints) can use three (3) different transmit modes to improve signal reliability without adding additional collection infrastructure. (normal mode, Buddy mode, and boost mode). This is unique to the FlexNet system. • The FlexNet system operates on clear channel, Primary Use licensed FCC spectrum, and is the only AMI system to offer this. No other systems or users are authorized to use this spectrum. Lower in-band noise allows the use of more sensitive receivers which greatly improves range and signal reliability.

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- FlexNet MIUs (SmartPoints) can transmit at double the power (2 Watts) of any other MIUs on the market. This is due to the Primary Use licensed frequencies used by the system. Higher transmit power coupled with the lower in-band noise allows for much more reliable and predictable transmission success.
- FlexNet RCUs (TGBs) can transmit outbound to the MIUs (SmartPoints) at thirty-five (35) times the power of any other AMI system (35 Watts versus 1 Watt) which vastly improves the FlexNet system's ability to perform successful on-demand meter readings.
- The FlexNet system can automatically "ping" meters that may not have reported at any given time to ensure a complete set of reading data from each meter.
- The FlexNet system offers full-duplex, true two-way operation. "Full duplex" means that incoming and outgoing transmissions use totally separate channels, and can operate simultaneously. This improves signal reliability and RCU (TGB) capacity, and also reduces reading latency.
- FlexNet MIUs (SmartPoints) are installed through the meter box lid to ensure consistent and predictable RF performance.

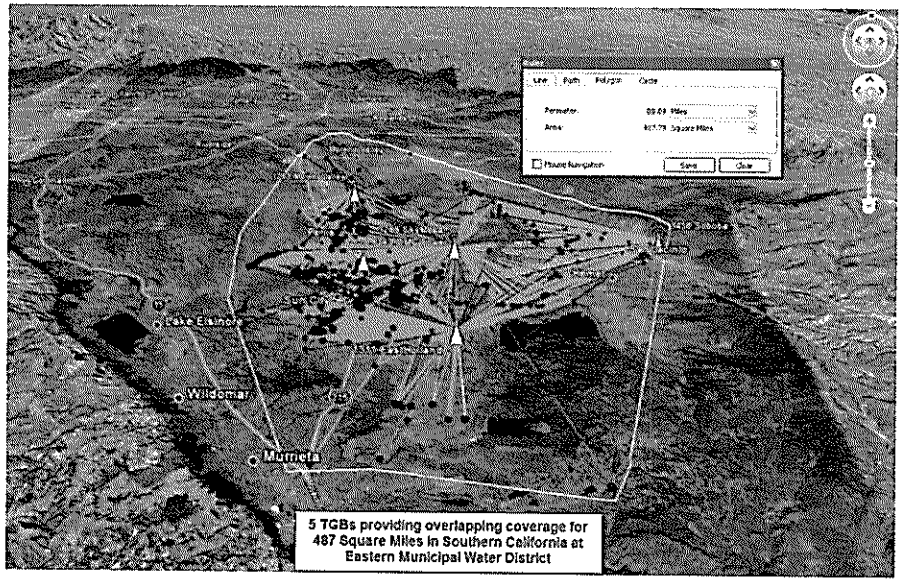

Figure 39: 5 TGBs will still provide overlapping coverage

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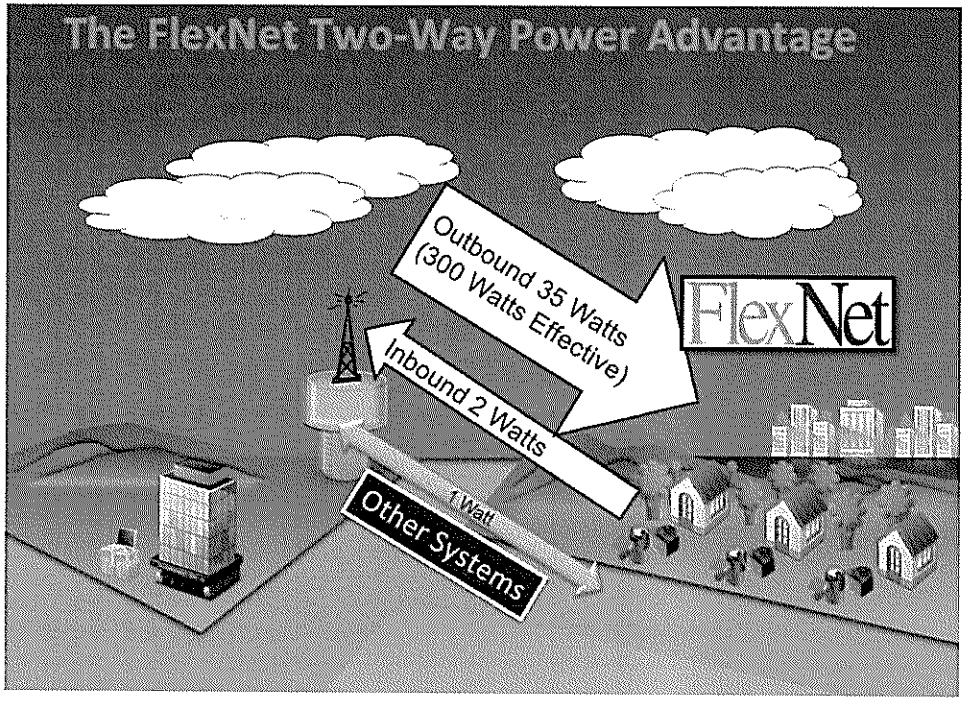
H-3	The Authority requires the capability for unscheduled (on-demand) reads. Describe how the system meets this requirement.
Included PROPOSED AMR/AMI:	The FlexNet system offers full-duplex, true two-way operation using clear channel, FCC licensed Primary Use RF spectrum exclusively. The FlexNet system is the only system to offer Primary Use FCC licensed spectrum. Primary Use licensed spectrum is important because it means that the FlexNet system can use much higher transmit power than any other system on the market. The MIUs can use double the power of any other MIU on the market (2 Watts) and the RCRs (TGBs) can transmit outbound at thirty-five (35) times the power of any other RCUs on the market (35 Watts). Radically higher outbound transmit power means that commands initiated by users (such as on-demand readings) have a much higher probability of success. This is important when transmitting to water MIUs which are typically located in the meter pit.  **Figure 40: The FlexNet Two-Way Power Advantage**

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		Additionally, the FlexNet system offers true on-demand meter reading via "middle of minute" (MOM) communications ™. With MOM communications, the FlexNet MIUs (SmartPoints) modules wake up to listen for a transmission from the TGB once every minute in a prescribed time slot. If a module does not hear from the TGB, it goes back to sleep until it is time to wake up again in the following minute. If the MIU hears from the TGB, it receives the message and then performs the appropriate action – in this case, transmitting the most recent meter reading immediately. Once the MIU transmits the reading message, it is received by one or more RCUs, and immediately sent to the AMI control computer. There is no delay due to "store and forward" communications that are common with other AMI systems. This method of operation can be contrasted with other systems which use "one and one-half way" communications. "One and one-half way" means that the MIU will only "listen" for a message from the RCU after the normal transmission. With many systems, this transmission may only occur once per day, so true "on-demand" two-way communications are not possible. Other systems may provide two-way communications to the RCU (FlexNet offers this also), but not two-way communications to the MIU itself. FlexNet provides true full duplex, two-way communications all the way from the AMI Control Computer to the MIU at any time. It is also important to note that the overall reading latency offered by the FlexNet system (usually less than three hours average meter reading latency), means that ABCWUA may not need to take advantage of the true on-demand two-way capability of the FlexNet system. However, if the Authority should ever wish to perform on-demand readings, FlexNet offers the best and most reliable network infrastructure to provide this feature.
H-4	**The Authority requires that a field tester must be able to locate and diagnose problems with system components (meter register, MIU or RCU) unless the system incorporates an alternate way to make such diagnoses. The field tester should be able to ascertain the condition or remaining life of the battery in the MIU. Describe how the system meets this requirement.**	
	Included PROPOSED AMR/AMI:	Both diagnostics and reading data retrieval can be accomplished at the meter using a Hand-Held Device (HHD) with a CommandLink via an audit feature on the hand-held. The audit feature will display all configurations on the MIU, any problems that exist, as well as the Register ID(s) and current readings on the meters connected to the MIU. To perform the audit function, the CommandLink device is placed near the MIU and an audit command is issued by the field personnel.

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FlexNet System Diagnostics Suite

The FlexNet system diagnostic suite offers the most extensive and user-friendly tools available for analyzing system performance. The FlexNet system tracks a wealth of statistics for each TGB receiver and meter endpoint, and these statistics are available for review in both a Google Earth mapping format as well as a tabular format. These tools make it extremely easy to track system performance.

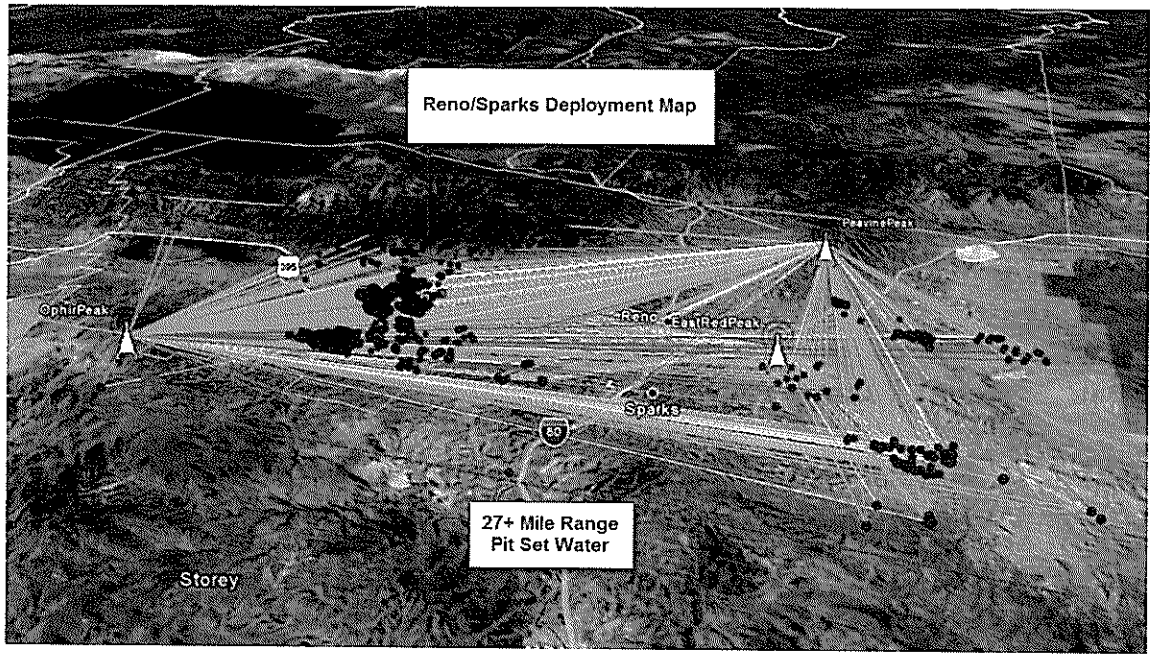

Figure 41: TGB to Meter Strength

The FlexWare diagnostics track the following statistics for every endpoint and for the overall network: GIS Coordinates, Signal-To-Noise (signal strength), distance to closest TGB, raw transmit success rate, hourly read interval success rate, transmit mode(s), reading and transmit frequency, frequency offset, TGB current capacity and load, idle noise in-band, TGB status, TGB traffic – all messages are plotted on graph, and a host of other diagnostic information.

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Showing meters 1 to 100 of 2414 >>

ID / Type	Date Inst	READ RIS %	30DY RAW %	24HR GAP CNT	DIR SNR	BUD SNR	BUDDY NOISE	P - A / 2-SIG	kHz Ofst	TWR DST (MI)	TWR REP	METR RI	XMIT INT	MODE	ALRMS	XMIT CNT	BUD OTHR	BUD ME	MAX GAP HRS	LAST TTM HRS	LAST READ HRS
2414		04:17:09	100.0	78.7	0	30.3	6.2	0.0	12.7/10.2	0.1	0.8	1	1 HR	4.5 HR	BM mP NM (1:1:3)	129	0	0	17.0	3.6	3.8
Report 10959528	w	12:04:08	100.0	76.9	0	24.3	9.3	0.0	12.8/11.0	0.0	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	120	0	1	15.0	1.4	1.4
Report 10966784	w	12:04:08	100.0	79.7	0	31.7	12.5	0.0	10.6/11.0	0.2	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	122	0	1	15.0	3.4	3.4
Report 10960936	w	12:04:08	100.0	84.5	0	25.4	20.0	0.0	18.7/11.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	131	0	1	14.0	1.9	1.9
Report 10958984	w	12:03:08	100.0	93.5	0	32.9	35.8	0.0	15.4/13.0	0.0	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	145	0	1	11.0	5.1	5.1
Report 10967344	w	12:02:08	100.0	64.7	0	15.9	18.6	0.0	16.1/11.0	0.2	1.6	1	1 HR	5 HR	BM mP NM (1:1:3)	99	0	1	20.0	11.0	11.0
Report 10967576	w	12:04:08	100.0	93.6	0	23.1	29.7	0.0	21.0/12.0	0.1	1.1	1	1 HR	5 HR	BM mP NM (1:1:3)	146	0	1	10.0	0.1	0.1
Report 10954106	w	12:04:08	100.0	87.0	0	22.0	20.8	0.0	11.7/11.0	-0.3	1.1	1	1 HR	5 HR	BM mP NM (1:1:3)	134	0	1	15.0	1.1	1.1
Report 10966938	w	12:04:08	100.0	91.6	0	30.4	27.1	0.0	13.1/11.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	142	0	1	10.0	4.1	4.1
Report 10967640	w	12:04:08	100.0	96.1	0	32.8	28.4	0.0	14.2/13.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	147	0	1	10.0	0.1	0.1
Report 10960640	w	12:04:08	100.0	88.3	0	37.8	21.3	0.0	10.6/8.0	0.3	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	136	0	1	11.0	0.8	0.8
Report 10956956	w	12:04:08	100.0	74.4	0	25.2	14.0	0.0	15.8/13.0	-0.1	1.0	1	1 HR	5 HR	BM mP NM (1:1:3)	116	0	1	17.0	10.4	10.4
Report 10965842	w	12:02:08	100.0	94.2	0	29.8	27.7	0.0	11.9/9.0	0.1	1.7	1	1 HR	5 HR	BM mP NM (1:1:3)	145	0	1	10.0	3.3	3.3
Report 10959270	w	12:04:08	100.0	79.5	0	30.0	14.8	0.0	10.4/10.0	0.3	1.1	1	1 HR	5 HR	BM mP NM (1:1:3)	120	0	1	15.0	1.3	1.3
Report 10960152	w	12:04:08	100.0	90.9	0	38.3	20.2	0.0	13.4/12.0	0.1	1.1	1	1 HR	5 HR	BM mP NM (1:1:3)	140	0	1	10.0	4.3	4.3
Report 10962314	w	12:04:08	100.0	82.6	0	25.4	15.9	0.0	15.0/12.0	0.0	1.1	1	1 HR	5 HR	BM mP NM (1:1:3)	128	0	1	15.0	2.7	2.7
Report 10961080	w	12:04:08	100.0	81.6	0	28.3	16.6	0.0	15.2/15.0	0.1	1.2	1	1 HR	5 HR	BM mP NM (1:1:3)	124	0	2	15.0	4.4	4.4
Report 10966784	w	12:02:08	100.0	69.6	0	16.5	0.0	0.0	13.1/10.0	0.2	1.6	1	1 HR	5 HR	Normal	133	0	0	20.0	11.1	11.1

Figure 42: Meter Statistics

Overall System Graphs

The overall system graphs provide a picture of the entire system performance at a glance. The default graph type is average SNR vs. overall throughput for all deployed meters and towers. To display information for a specific meter or tower, click on the "For TGB" drop-down menu and select either a location or a specific TGB.

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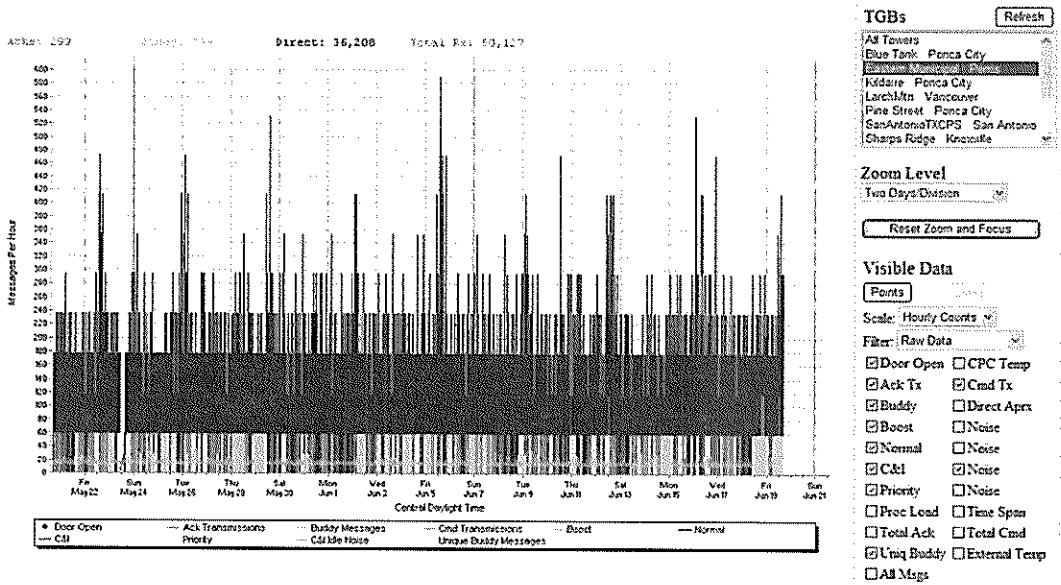

Figure 43: TGB Noise Statistics

Overall System Profile

On a continuous basis, the collected data is analyzed against performance thresholds defined in FlexWare. The sum of all defined thresholds creates an overall performance profile. These profiles define acceptable performance characteristics on a given element type. Profiles can specify performance characteristics across multiple collection periods to catch intermittent problems that are not typically severe enough to cause a major performance problem.

When thresholds defined in FlexWare are exceeded, an alert in the GUI is raised. Thresholds may be defined for any performance parameters available for analysis within FlexWare. Profiles are defined using distinct parameters for electricity, gas, and water. The FlexWare diagnostics system raises and presents alerts to allow network operators to take meaningful and informed action when required. When alert conditions change or abate, FlexWare diagnostics modifies or clears the alert.

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FlexNet Meter Performance Tracking

The FlexNet system tracks the following parameters for every meter in the system:

- Read Interval Success (RIS): A measure of read interval success. RIS is a percentage that is calculated by taking the "number of read intervals received" divided by "number of read intervals expected" over a given time period, multiplied by 100 to arrive at a percentage. A read interval is based on the sample rate of a FlexNet radio. If a FlexNet radio is configured to sample the meter reading every hour, then the number of intervals expected is 24. RIS is typically calculated using the past 30 days of message traffic to give an overall picture of interval success
- Raw Transmit Success (RAW): Tracks raw signal transmit success (percent). With FlexNet, the read sample rate and transmit rates are typically decoupled. Sample rate may be hourly, while transmit rate may be six times per day. Each transmission contains up to seven (7) days of hourly reading history. Raw transmit success is a measure of transmit success divided by transmit attempts, multiplied by 100 to arrive at a percentage. It is possible for a meter to have a very low RAW percentage and still maintain a 100% read interval success. This is due to the reading history included with every transmission.
- Signal to Noise Ratio (SNR): Compares the level of a desired signal (in this case the transmission of read data) to the level of background noise. Meters with a higher SNR to the tower will provide meter reads more reliably than meters with weaker SNR values. An extremely week SNR is considered 8 db or lower, a weak SNR will range from 8 to 10 db, a moderate SNR will be 10 to 12 db, and a good SNR will be above 12 db.

GIS Meter Data

A report can be generated which includes the specific GIS coordinates for every installed meter.

- Latitude: The latitude as reported by the meter. (The meter is programmed with this information during installation and setup and re-transmits it regularly to ensure that it is maintained in the database)
- Longitude: The longitude as reported by the meter. (The meter is programmed with this information during installation and setup and re-transmits it regularly to ensure that it is maintained in the database).

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		Other Monitoring & Health Reports FlexWare includes many additional monitoring and health reports, including: • Statistics Reports • SNR Histograms • Time Between TX Histograms • Signal Metrics History Graphs • Missed Message/Throughput History Graphs • SNR Time Plots • Time Plots • TGB Status • Overall System Statistics • Message Counts
H-5	**The Authority requires that meter reads be synchronized to a clock in order to provide accurate time of day readings. Clock accuracy must be +/- 1 minute. Describe how the system meets this requirement.**	
	Included PROPOSED AMR/AMI:	The FlexNet exclusive "middle of minute" (MOM) communications keeps the module clock synchronized to within one minute of network time. This continuous time synchronization enables two-way FlexNet M2 water modules to deliver meter data based on true top-of-the-hour meter reads. Network time is synchronized by on-board GPS receivers on each RCU (TGB) and/or also by a NIST server via the AMI Control Computer (RNI).
H-6	**The Authority requires that reads from all meters for the previous calendar day be delivered to the AMI Control Computer by 6:00AM MST on the next calendar day. Describe how the system meets this requirement.**	
	Included PROPOSED AMR/AMI:	The FlexNet MIUs (SmartPoints) transmit up to seven (7) days hourly meter reading history every four (4) hours – six (6) times per day. This ensures a very high probability of success on reading delivery by 6 AM the next calendar day.

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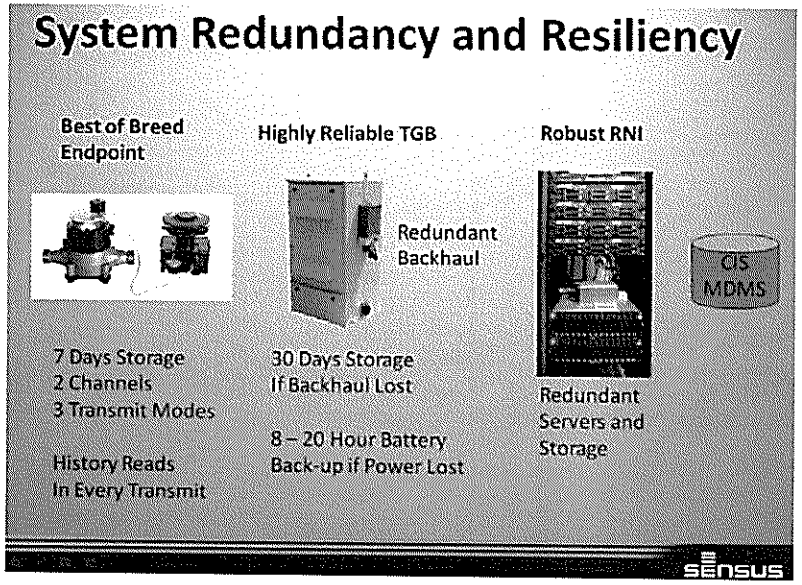
		Additionally, the network can automatically initiate on-demand readings from meters that have not reported by a given time. This process can be performed automatically by the network or manually by a user at any time. Sensus has demonstrated very low average meter reading latency across more than 7 million meters and 200 FlexNet deployments in North America. This performance is field proven and measurable by the standard diagnostics suite provided with each system.
H-7	**The Authority requires that following an abnormal or delayed reading cycle (i.e., power outage) reads from all meters up to, and including the interrupted reads, shall be delivered to the AMI Control Computer within 3 calendar days. Describe how the system meets this requirement.**	
	Included PROPOSED AMR/AMI:	FlexNet is the most reliable AMI network (field proven across more than 200 deployments) on the market today, and has performed remarkably well in deployed systems under conditions such as those described above. The FlexNet network follows communications industry best practices design standards. There is redundancy at every system level, from the MIU (SmartPoint), to the RCU (TGB), to the AMI Control Computer (RNI).  **Figure 44: FlexNet is Designed for High Reliability**

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		Each FlexNet MIU (SmartPoint) transmits up to seven (7) days hourly reading history in each transmission. This means that the entire TGB network can be down for up to seven (7) days without any loss of data. Both single and dual port SmartPoints send up to seven (7) days hourly reading history for all meters with each transmission as part of standard operation. The FlexNet MIUs (SmartPoints) transmit this data very frequently - every four (4) to five (5) hours. This means that upon power restoral, all readings will be updated in the AMI control computer within a few hours. Additionally, each RCU (TGB) features an eight (8) hour battery backup in the event of primary power failure. This is in contrast with many other AMI systems which do not offer a battery backup on the RCU. If there is a problem with the AMI control computer or TCP/IP backhaul connection between the RCU (TGB) and AMI control computer, each TGB can store at least thirty (30) days of hourly reading history on non-volatile solid state hard disks. When the AMI control computer (RNI) becomes available again (or backhaul is restored) this stored data is immediately and seamlessly transferred to the AMI control computer via the TCP/IP backhaul. No other system provides the level of performance or reliability offered by the Sensus FlexNet system.
H-8	**The Authority requires that the system provide a mechanism to alert and notify Authority personnel of possible leaks at a residence (Leak Detection). Describe how the system identifies, alerts and notifies leaks. Explain any options available for other methods of leak detection.**	
	Included PROPOSED AMR/AMI:	FlexNet provides a number of different leak detection mechanisms to alert the Authority personnel (and even the consumer directly) of possible leaks at the residence or business. **Configurable Leak Detection on Every MIU** First, the FlexNet MIUs have on board, configurable leak detection parameters that can be set upon installation, and later modified over-the-air or during a site visit to the meter. This leak detection on the MIU is effective with any compatible meter make or model – Sensus or third party. The leak detection is configurable for both amount of water in any given interval, and also for the number of continuous intervals. For example, the MIU can send a leak alert with 1 cubic foot of water per hour has flowed through the meter for 24 hours in a row. Both the amount of water and number of hours are configurable. Any amount that can be detected and reported by the meter (for example, with Sensus meters down to 0.01 cubic feet per hour, 0.1 cubic feet per hour, 1 cubic foot, 10 cubic feet, etc.) can be set for the leak threshold. A number of different settings for duration are also available (24 hours, 48 hours, 72 hours, etc.).

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Due to this configurable leak detection, the FlexNet system returns very few false alarms. Meters that have valid usage each hour can be set with thresholds to prevent false alarms. False leak alarms can completely eliminate the usefulness of leak detection yet many systems do not offer configurable leak detection.

Broken Pipe Alarm

The FlexNet MIUs also feature a "broken pipe" alarm which can be set to send an alarm whenever a certain high amount of water goes through the meter in any given interval. The threshold is configurable and can be set by meter size (or any value) to flag usage that is higher than normal for that metered service.

Extremely Fine Low Flow Leak Detection with Sensus iPERL meters

Additionally, when using the Sensus iPERL residential meter, ABCWUA can also receive leak (and other) alarms originating in the meter itself via the FlexNet network. Since the Sensus iPERL meter has radically better low flow performance than any other meter available on the market, the leak detection potential of the meter is better than that of other meters commercially available today.

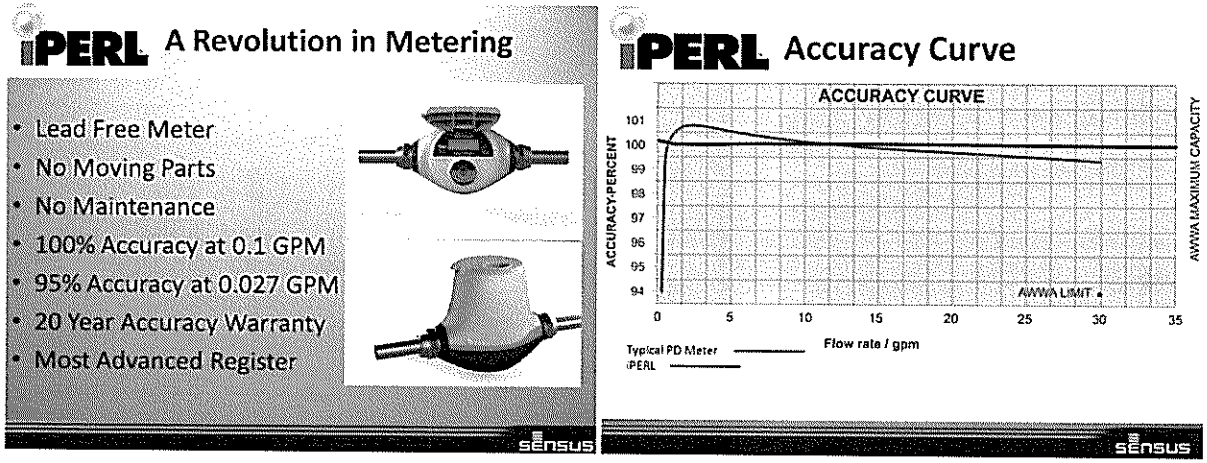

Figure 45 Sensus iPERL and Accuracy Charts

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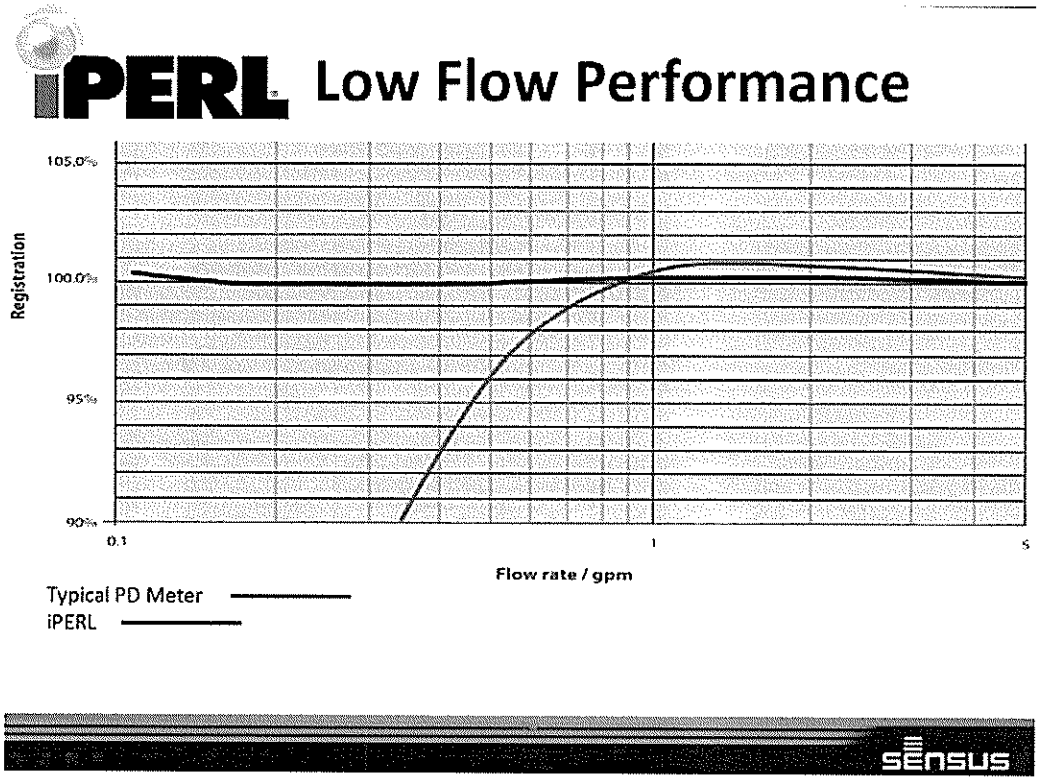

Figure 46: iPERL Low Flow Superiority

H-9	**The Authority requires that the frequency of reads for a single meter (or group of meters) be adjustable through the AMI Control Computer to provide meter reads in frequencies up to 1 minute. Describe how the system meets this requirement and any implications this option might have on (or degrade the performance of) any system component, especially battery life expectancy. The Authority requires two-way communication.**	
	NOT Included PROPOSED AMR/AMI:	The FlexNet system allows for single meter or group of meters to be adjustable through the AMI Control Computer (RNI) to provide meter readings down to 15 minute intervals, but does not support one (1) minute intervals.

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		The FlexNet MIUs (SmartPoints) are available in an "unlocked" version which allows for the Authority to change the reading and transmit frequency over-the-air. These units do not carry the same nationally published twenty (20) year battery warranty of the standard FlexNet MIUs which deliver hourly intervals constantly for twenty (20) years or longer. Using any more frequent reading and transmit intervals will reduce battery life on any MIU, and the FlexNet system is no exception. The FlexNet MIUs are designed to provide at least twenty (20) years of life while delivering one (1) hour reading intervals and transmitting every four (4) hours for their entire service life of twenty (20) plus years. One (1) minute reading intervals are typically associated with SCADA type devices. The FlexNet system supports SCADA communications, and there is dedicated spectrum reserved on the network for SCADA transmissions. Sensus offers RTUs, RTMs and PLCs that can provide readings and other information (such as pressure monitoring devices) down to one (1) minute (or smaller) intervals. The benefit to ABCWUA is that FlexNet supports SCADA backhaul over the same FlexNet RF network that is used for the AMI system using the same data collector (TGB).

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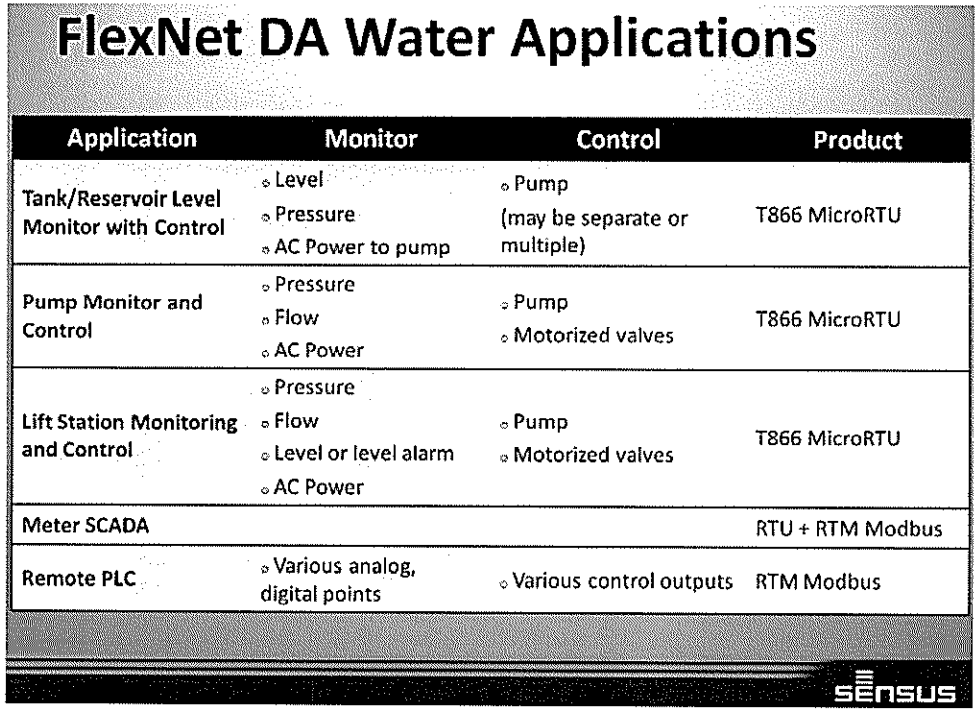

FlexNet DA Water Applications

Application	Monitor	Control	Product
Tank/Reservoir Level Monitor with Control	◦ Level ◦ Pressure ◦ AC Power to pump	◦ Pump (may be separate or multiple)	T866 MicroRTU
Pump Monitor and Control	◦ Pressure ◦ Flow ◦ AC Power	◦ Pump ◦ Motorized valves	T866 MicroRTU
Lift Station Monitoring and Control	◦ Pressure ◦ Flow ◦ Level or level alarm ◦ AC Power	◦ Pump ◦ Motorized valves	T866 MicroRTU
Meter SCADA			RTU + RTM Modbus
Remote PLC	◦ Various analog, digital points	◦ Various control outputs	RTM Modbus

SENSUS

Figure 47: FlexNet and Distribution Automation

The FlexNet OMNI commercial meters have two separate outputs. They have both a pulse (SCADA) output and an encoded output (AMI) and can connect to both SCADA and AMI systems simultaneously. The Sensus OMNI commercial meters also have a host of other benefits including 100% lead free meter, extreme low flow performance, excellent high flow durability, unprecedented meter register intelligence, easy testing and recalibration, all in standard lay lengths.

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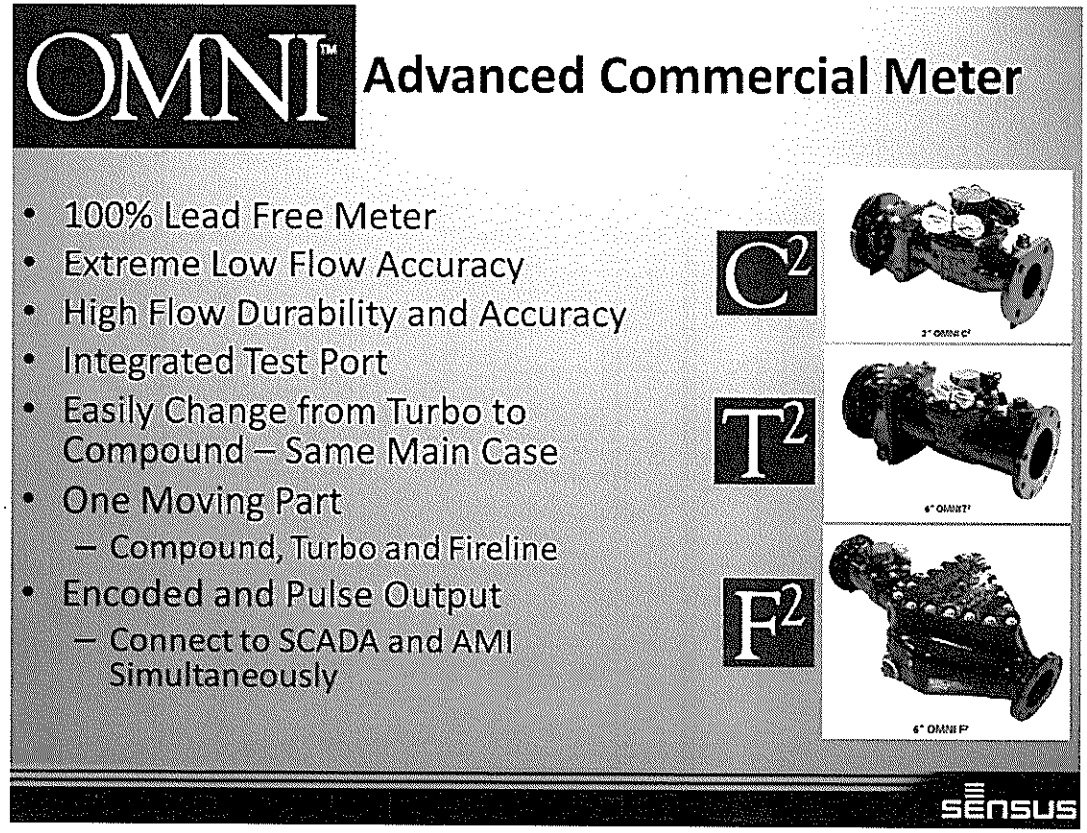

Figure 48: The OMNI Line of Meters

H-10	**Elaborate appropriately and succinctly any Overall Network Performance considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	The FlexNet network is much more than just an advanced meter reading data collection system. The FlexNet system is **a *high performance, open standards, multi-application AMI network.*** This means that the system supports much more than just meter reading. This is evident in the fact that the FlexNet system is the industry leading AMI solution for not only water applications, but also for electricity and gas AMI applications.

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In addition to meter reading, the FlexNet system supports distribution automation with SCADA devices, collection of information from acoustic monitoring (Permalog) devices, IP addressability of all endpoints on the network to enhance future interoperability with other systems, in-home customer displays, customer Web portal applications, and many other features that have yet to be conceived and developed.

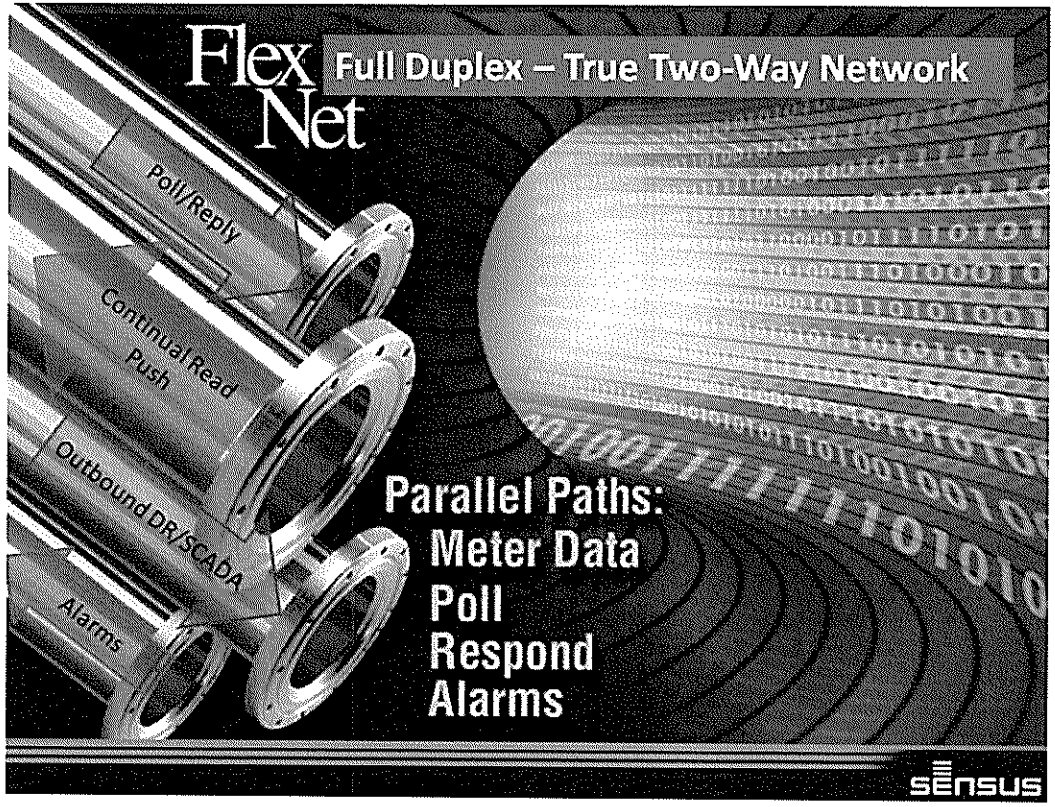

Figure 49: FlexNet is Full Duplex

The reason that the FlexNet system supports these features and other yet to be developed applications is due to its basic system design principles, which allow for expandability and upgradeability of spectrum, performance, modulation, and bandwidth.

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		Sensus has already demonstrated this flexibility across a number of deployed systems today. The network features software defined radios in both the RCUs and MIUs, making it possible to upgrade not only the firmware on the endpoint and endpoint settings over-the-air, but also the fundamental way the radios operate. For example, the RF modulation or even the RF spectrum used for the radios can be changed in the future without a site visit to any equipment. In addition to this, the RCU (TGB) devices themselves are extremely robust and reliable, and have far more capacity than any AMI network devices. The TGBs can be easily upgraded, and follow communications industry best practices design. Rather than having hundreds of RCU devices on pole tops spread through the ABCWUA service territory on third party sites, the FlexNet system gives ABCWUA the flexibility to place all FlexNet RCUs on secure ABCWUA sites.

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Section I: Installation Requirements

I-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
I-2	**Prior to the start of the installation, the Water Authority's Project Manager will provide the Offeror with an electronic file containing the information necessary to create work orders for meter/AMI installations. The Water Authority will provide the Offeror with weekly updates to this file for routes where the AMI system has not yet been installed. For each meter, the data file will indicate the: Service Point ID, Time of Use (High, Low, Fire register) Meter Serial number (in most cases last 5 digits), meter billing size, meter location (if known), service address, Customer name and phone number that may be listed on the account. Describe any additional information required prior to installation.**	
	Included PROPOSED AMR/AMI:	Existing MIU serial number (if any) Last meter reading
I-3	**The Authority may require that the Offeror notify the owner of a building of its intent to install the AMI system at a particular customer's premises. Prior to scheduling and commencing installation the Offeror shall submit detailed scheduling and installations procedures to the Water Authority for approval.**	
	Included PROPOSED AMR/AMI:	If the Authority provides UPA with the customer phone number and contact name for each account to be serviced, UPA will conduct a preliminary phone survey of the Authority customers to determine the meter locations and need for appointments.

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I-4	**Prior to the commencement of full-scale installation, but after Offeror has installed the AMI system control computer and a sufficient quantity of RCUs, the Offeror shall install meter reading equipment on one of the Water Authority's routes (comprised of approximately 150 meters) following the Offeror's proposed installation procedures. During this test period (not longer than twenty (20) business days), the Water Authority and the Offeror shall evaluate the procedures for public notification, scheduling installations, MIU installation, data transfer to the Water Authority's billing system or MSDS, meter reading over the system, to ensure all components are working and effective. The Water Authority may require Offeror to modify any procedures that it deems are deficient or ineffective. No work will be started on other routes until the AMI system equipment is determined to be working to performance requirements on the test route, the project control procedures and systems are determined to be performing accurately, and the installation procedures have been approved by the Water Authority.**	
	Included PROPOSED AMR/AMI:	UPA's pricing assumes that there will not be any down time (i.e., no production) between the test period and the rest of the work. In the event that UPA personnel are on-site without available work orders during the test period, UPA will charge the appropriate daily or hourly rate provided as a stand-by charge.
I-5	**The Authority requires that the Offeror shall capture GPS positioning data (with accuracy of 1 foot or better), for each MIU installed on a meter (3" and larger) installed in an outdoor pit, box or vault.**	
	Included PROPOSED AMR/AMI:	Where physically possible, UPA collects coordinates of each MIU with one foot accuracy. For MIUs that are located indoors, the GPS coordinates will be taken at the nearest outside wall or as specified by the Authority. UPA assumes that GPS coordinates may be collected separately from the installation, at UPA's discretion. Completed work order files returned to the utility will contain merged GPS and meter account info together.

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I-6	**Offeror shall be responsible for removing and properly disposing of any amount of dirt needed to access components of the system in a meter pit or vault. Dirt shall be removed such that there is a minimum of 2" clearance below the meter. All waste resulting from cleaning the meter pit as well as replacing the plate and lid must be cleaned up hauled off by the Offeror. The existing ring and lid, if replaced, shall be disposed of by the Offeror. If grass or shrubbery is damaged by the installation process, the Offeror must repair the damage to original condition to the satisfaction of the consumer by replanting, or residing. The Water Authority reserves the right to inspect any installation and clean-up work before payment is made to the Offeror. Offeror shall be responsible for claims resulting from damage caused by the installation**	
	Included PROPOSED AMR/AMI:	Comply
I-7	**The Offeror shall be responsible for repairing any service lines it damages at its sole cost and expense, unless the Installation Manager has reported (prior to commencement of installation) a condition of antiquated or inferior plumbing to the Project Manager and the Project Manager has authorized the contractor to proceed with the work. In the event a service line fails during or after the installation procedure on the inferior plumbing has been authorized by the Project Manager, the Contractor's licensed plumber will oversee the necessary repair work to the water service line and be entitled additional negotiated compensation. The Water Authority also reserves the right to repair/replace the service lines with Water Authority crews**	
	Included PROPOSED AMR/AMI:	Comply
I-8	**Offeror shall describe in detail its proposed system for ensuring that all data pertaining to installation is correctly recorded during installation, and that all data transferred to the AMI Control Computer system is accurate. Offeror shall describe procedures for eliminating any opportunities for a meter or MIU to be associated in the AMI Control Computer or the Authority's CC&B system with the wrong address or account number.**	
	Included PROPOSED AMR/AMI:	UPA will capture all data at the time of installation using its DAS work order management system and Motorola hand-held. The hand-helds are capable of barcode scanning for accurate entry of serial numbers, and before and after photographs for photo audit purposes.

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I-9	**Should the Offeror receive a call or complaint from a customer or the Water Authority regarding installation, the Offertory shall immediately log the call, including caller's name, address, account number if available, date and time of call, nature of problem, and the action taken. Copies of all call logs shall be forwarded to the Water Authority's Project Manager not less than once per day.**	
	Included PROPOSED AMR/AMI:	Comply
I-10	**The Offeror shall be responsible for replacing any supplied system component improperly installed by its Installer.**	
	Included PROPOSED AMR/AMI:	UPA will provide labor to replace any improperly installed component under its warranty.
I-11	**The Authority requires that each installation will be accepted by the Water Authority conditioned upon (1) electronic submission of a list of completed installations containing for that installation the Service Point identification number, address, MIU identification number, location of meter, installer's name, Offeror's inspector's name, and all other information relevant to the installation; (2) satisfactory inspection by meter readings from the meter and MIU by the Water Authority operating the AMI system in a normal way; and (3) confirmation that MIU identification numbers, meter register numbers and other information have been correctly captured in the AMI control system database and/or the Water Authority's MSDS for each customer's premises.**	
	Included PROPOSED AMR/AMI:	Comply
I-12	**Offeror shall propose normal work hours, which must be approved by the Water Authority. Installers must be available for evening and Saturday installations, as well as for installations that must be conducted at other times because of special needs**	
	Included PROPOSED AMR/AMI:	Comply. UPA technicians will typically work a standard business day, from 7:30am to 4:30pm. Technicians will be available after hours and Saturdays as needed to meet customer needs.

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I-13	**Offeror shall conduct installations by route, or group of routes. Route groups shall be based on geographic proximity and logistics, and neighborhoods to be determined by the Water Authority in discussion with Offeror. Unless approved in writing by the Water Authority, Offeror shall complete at least 90% of the installations in one route or group of routes before commencing installation on the next route.**	
	Included PROPOSED AMR/AMI:	Due to the small work order count size, potential for many appointments, and short deployment timeframe, UPA requests that this requirement be waived. UPA will strive to perform work orders in route order whenever possible.
I-14	**Elaborate appropriately and succinctly any Installation Requirements considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	See UPA proposal assumptions.

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Section J: Reporting and Data Export

J-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
J-2	**Describe any inherent system ad-hoc reporting functionality including the ability to export query results to third party software (i.e., Excel, Access, etc.). Description should include discussion on ability to save and share reports and to establish filters (e.g., saving the report template but allowing users to select specific criteria).**	
	Included PROPOSED AMR/AMI:	The following reports are available from the FlexNet system software: • Master Route Report (readings from selected meters within a selectable date range) • Unread Meters Report (any meters not reporting readings within a selectable date range) • Bad Connection Report (bad connection between register and SmartPoint) • Register Mismatch Report (shows accounts/meters where register ID differs from utility records) • Endpoint Mismatch Report (shows accounts/endpoints where endpoint ID differs from utility records) • Leak Detection Report (shows meters that have sent leak flags – customizable leak parameters) • Tamper Exception Report (shows meter tampers) • Register Malfunction Report (shows registers that produced invalid reading messages) • High/Low Exception (shows readings higher or lower than CIS (billing) system expected) • Route Statistical Summary Report (statistical breakdown of meter types and read success rate) Most reports and query results can be saved to .CSV format for import into Microsoft Excel, Access, or other applications.

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City of Redwood City
Master Route
Sorted by Account ID
Total Results: 545
Selected Date Range: 06/01/2009 - 06/30/2009
06-19-2009 09:14:09am
Page: 1

Route : Irrigation Test Route

Account ID	Meter ID	Endpoint ID	Date	Time	Reading	Transaction	Address
101211	60712161	10010440	06-18-2009	12:09:45pm	0000000	Reading	400-BLK SEAPORT CT
101499	60712411	10044254	06-18-2009	01:11:15pm	0252373	Reading	320 BLOMQUIST ST
101570	60712430	10128630	06-18-2009	11:52:45am	0044273	Reading	10 SEAPORT BLVD
102699	62827925	11031310	06-18-2009	03:34:00pm	0027	Reading	1093 CHARTER STREET
102770	60874798	10677510	06-18-2009	01:16:00pm	0117994	Reading	1400 BROADWAY- RC
103459	62902395	10248946	06-18-2009	02:59:30pm	003208	Reading	2745 SPRING STREET
104390	61103506	10249252	06-18-2009	03:15:15pm	042298	Reading	704 WALNUT STREET
104730	60712428	10679964	06-18-2009	04:12:15pm	9999999	Reading	1201 BROADWAY-1154-04730
105168	60712434	10023658	06-18-2009	03:56:45pm	0076627	Reading	1301 BROADWAY- RC
105273	60712433	10045302	06-18-2009	03:39:00pm	0005537	Reading	1501 BROADWAY

Figure 50: Example of Reporting via FlexNet

FlexWare also provides excellent charting and graphing to analyze individual meter usage. Six month, three month, one month, one week and hourly graphs are all available to easily interpret meter usage. Results can be exported in tabular format (for example, hourly consumption) to a .CSV format for import into third party applications.

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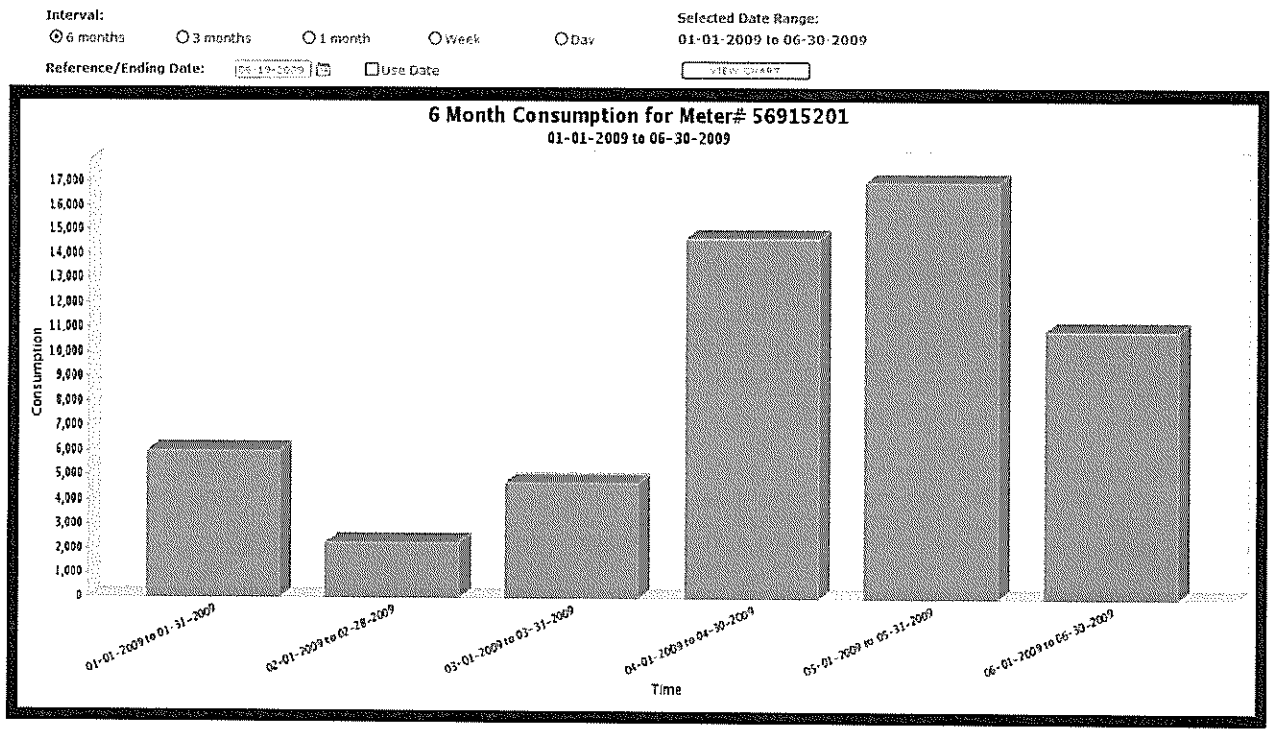

Figure 51: Meter Consumption (6 Month)

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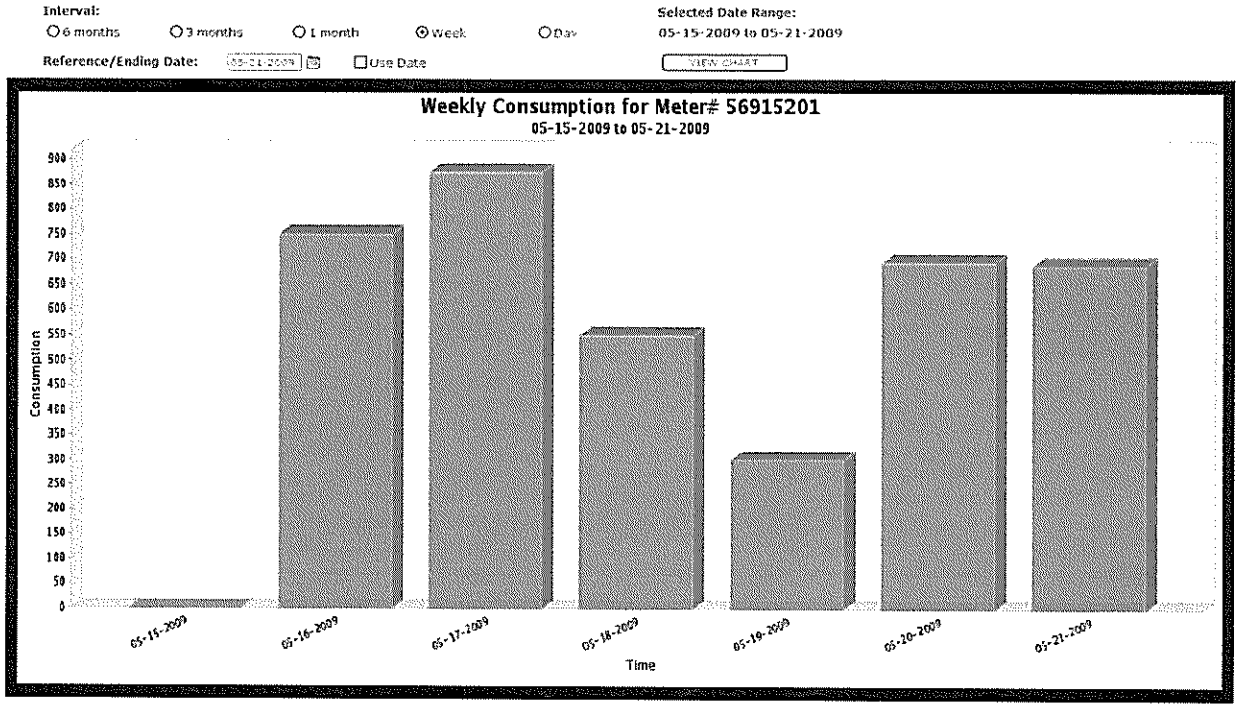

Figure 52: Meter Consumption (Weekly)

FlexWare also provides built-in queries to find high usage or to identify meters that are not in compliance with watering ordinances or other guidelines. Query results can be exported into .CSV format for import into third party applications and reporting software.

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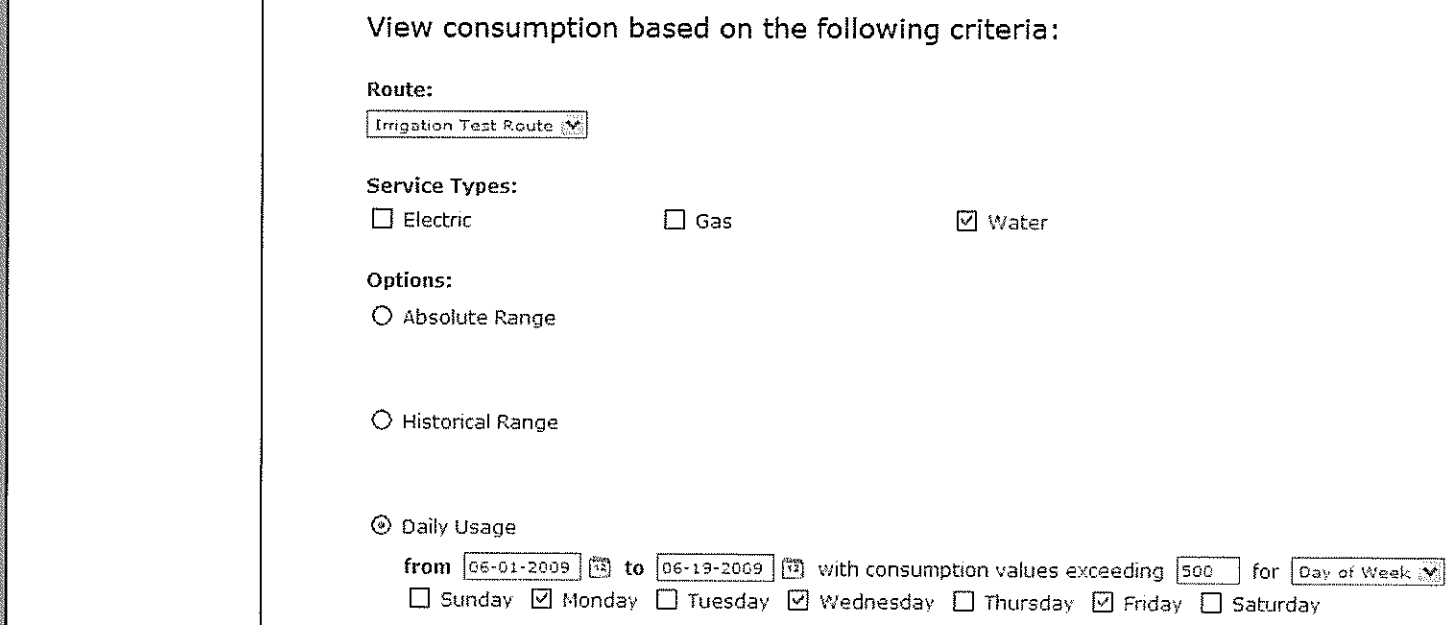

Figure 53: Consumption View Options

Users can also set up automated notifications for definable conditions such as leak alerts, high usage, and zero usage, among others.

There are standard report templates for many different types of data analysis, and these templates are saved to allow all users to access them. Users can set unique date ranges and other criteria such as consumption limits and specific days of the week to allow for the desired query and report results.

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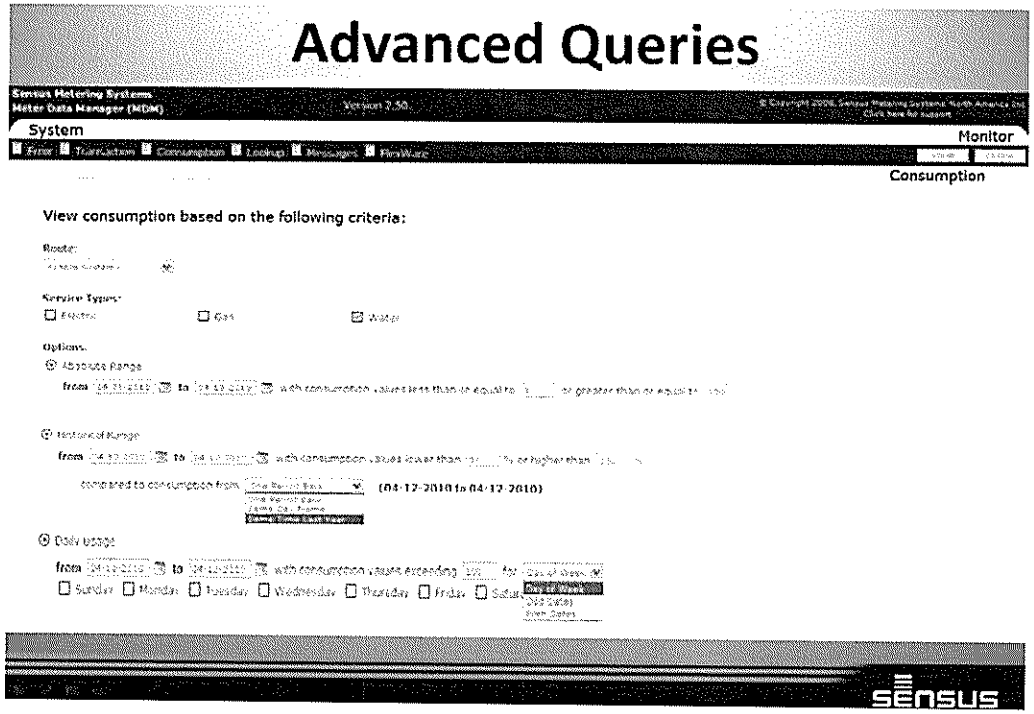
J-3	**Describe any inherent system functionality which enables/facilitates cross-source reporting (e.g., comparative analyses on different meter locations).**
Included PROPOSED AMR/AMI:	The FlexNet system provides user-defined queries that show meters that used significantly more or less water than other meters in a specific group or more or less than other meters in the entire system. The system also allows for queries to find meters that used in excess of a certain amount of water on any given date or day of the week. The FlexNet system software also allows users to compare usage of a certain account with past usage for that account (for example, last month, last year, etc).  **Figure 54: FlexNet Advanced Queries**

J-4	Describe any inherent system graphing functionality.
Included PROPOSED AMR/AMI:	FlexWare also provides excellent charting and graphing to analyze individual meter usage. Six month, three month, one month, one week and hourly graphs are all available to easily interpret meter usage. Users can easily switch between different date ranges and between charts and table views, raw data view, and other options.

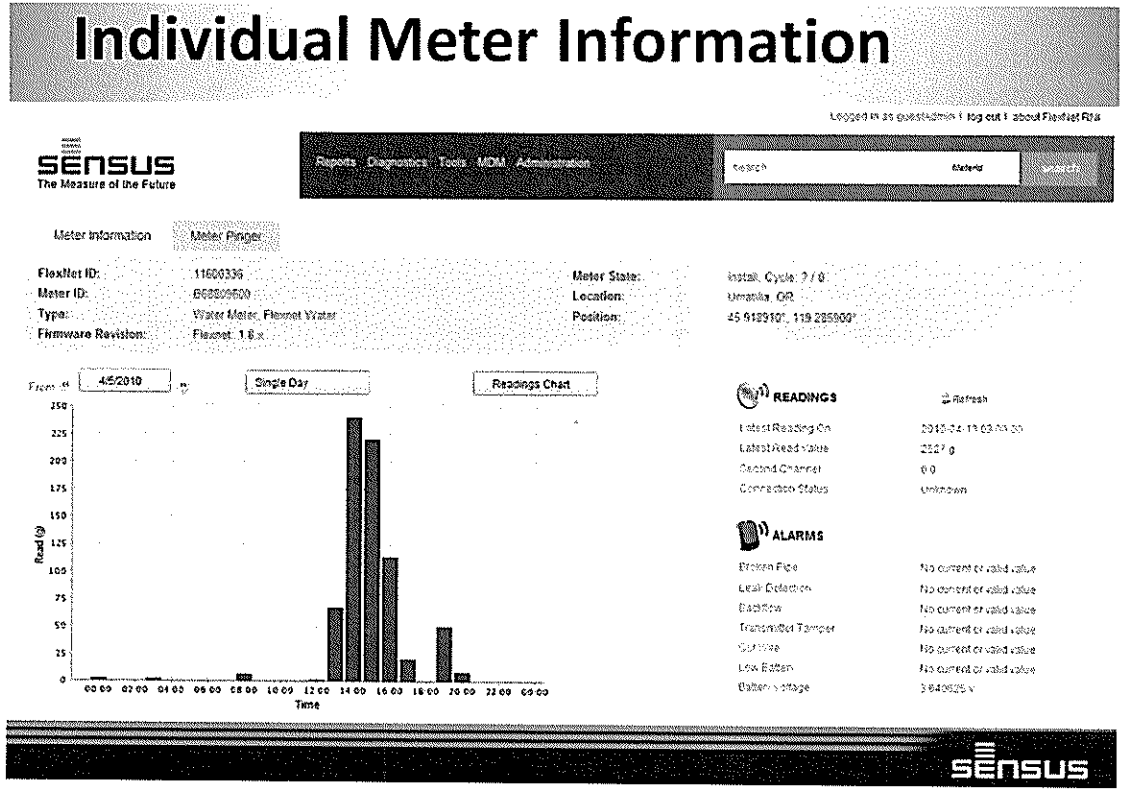


Figure 55: Individual Meter Reporting

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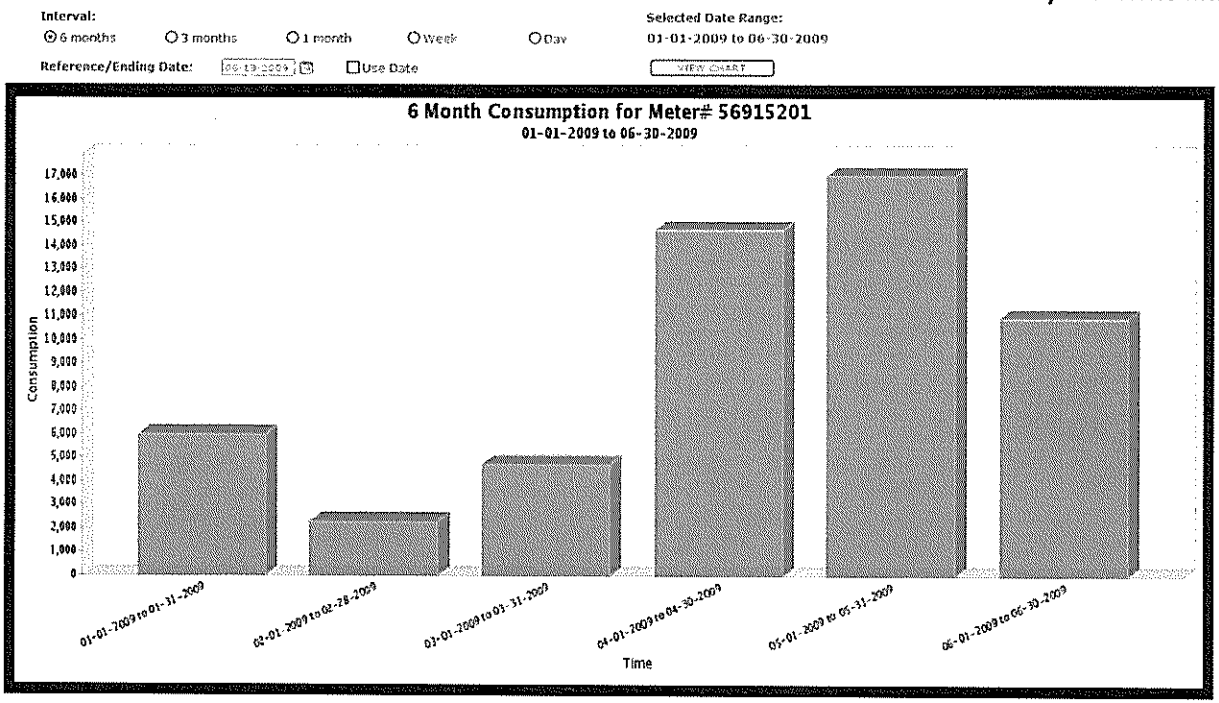

Figure 56: Meter Consumption (6 Month)

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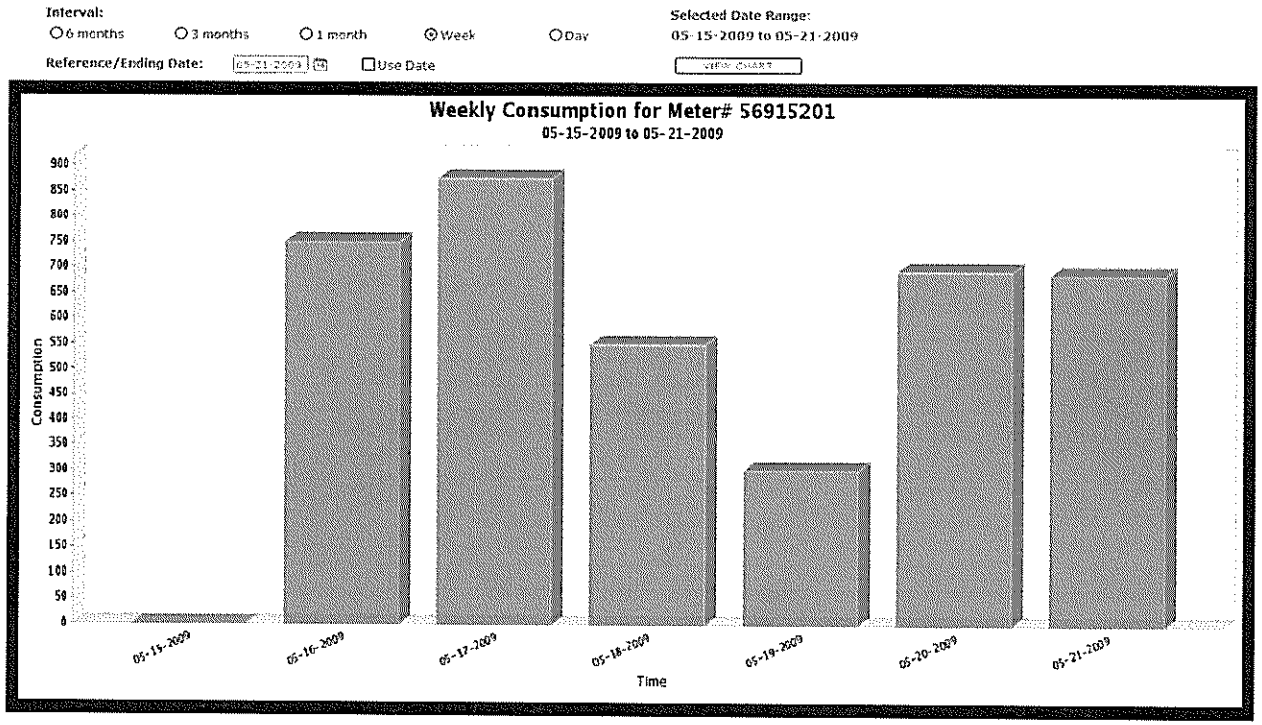

Figure 57: Meter Consumption (Weekly)

J-5	**Describe the trending and statistical analysis capabilities of the proposed AMR/AMI.**
Included PROPOSED AMR/AMI:	**FlexNet System Diagnostics Suite** The FlexNet System diagnostics suite offers the most extensive and user-friendly tools available for analyzing system performance. The FlexNet system tracks a wealth of statistics for each TGB receiver and meter endpoint, and these statistics are available for review in both a Google Earth mapping format as well as a tabular format. These tools make it extremely easy to track system performance.

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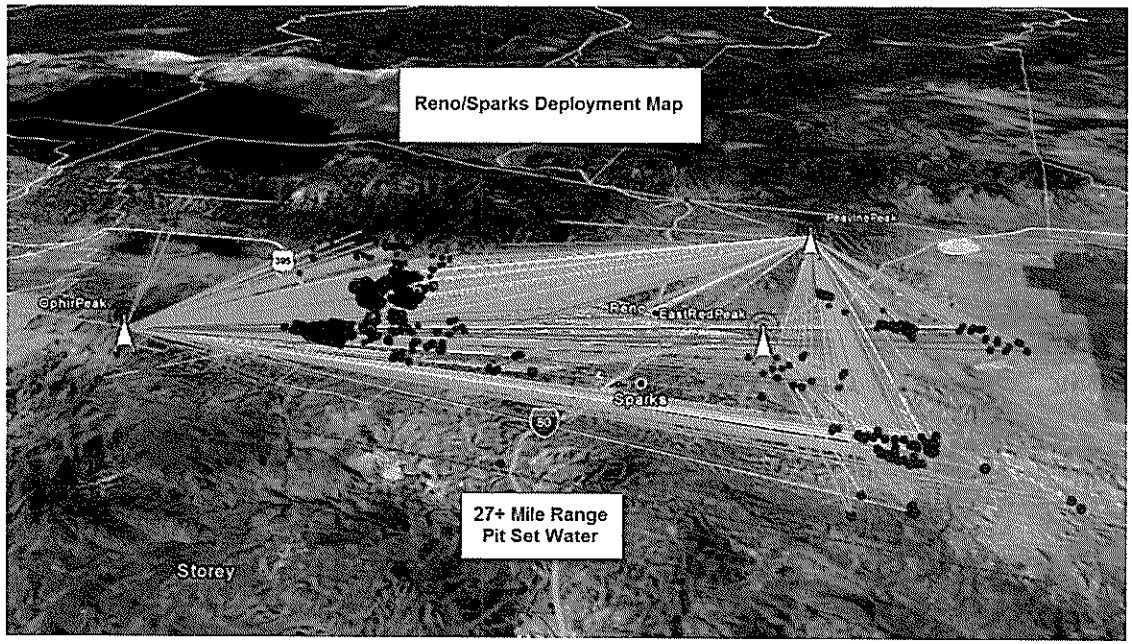

Figure 58: TGB to Meter Strength Reporting

The FlexWare diagnostics track the following statistics for every endpoint and for the overall network:

GIS Coordinates, Signal-To-Noise (signal strength), distance to closest TGB, raw transmit success rate, hourly read interval success rate, transmit mode(s), reading and transmit frequency, frequency offset, TGB current capacity and load, idle noise in-band, TGB status, and TGB traffic. All messages are plotted on graph, as well as a host of other diagnostic information.

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Showing meters 1 to 100 of 2414 >>

ID / Type	Date Inst	READ RIS %	30DY RAW %	24HR GAP CNT	DIR SNR	BUD SNR	BUDDY NOISE	P - A / 2-SIG	kHz Ofst	TWR DST (MI)	TWR REP	METR RI	XMIT INT	MODE	ALRMS	XMIT CNT	BUD OTHR	BUD ME	MAX GAP HRS	LAST TTM HRS	LAST READ HRS
2414		04.17.09	100.0	78.7	0	30.3	6.2	0.0	12.7	10.2	0.1	0.8	1	1 HR	4.5 HR	BM mP NM (1 1.3)		129	0	0	17.0	3.6	3.8
Report 10959528	w	12.04.08	100.0	76.9	0	24.3	9.3	0.0	12.8	11.0	0.0	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		120	0	1	15.0	1.4	1.4
Report 10966784	w	12.04.08	100.0	79.7	0	31.7	12.5	0.0	10.6	11.0	0.2	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		122	0	1	15.0	3.4	3.4
Report 10960926	w	12.04.08	100.0	84.5	0	25.4	20.0	0.0	18.7	11.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		131	0	1	14.0	1.9	1.9
Report 10958084	w	12.03.08	100.0	93.5	0	32.9	35.8	0.0	15.4	13.0	0.0	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		145	0	1	11.0	5.1	5.1
Report 10967344	w	12.02.08	100.0	63.7	0	15.9	18.6	0.0	16.1	11.0	0.2	1.6	1	1 HR	5 HR	BM mP NM (1 1.3)		59	0	1	20.0	11.0	11.0
Report 10967576	w	12.04.08	100.0	93.6	0	23.1	29.7	0.0	21.0	12.0	0.1	1.1	1	1 HR	5 HR	BM mP NM (1 1.3)		146	0	1	10.0	0.1	0.1
Report 10954106	w	12.04.08	100.0	97.0	0	22.0	30.8	0.0	11.7	11.0	-0.5	1.1	1	1 HR	5 HR	BM mP NM (1 1.3)		134	0	1	15.0	1.1	1.1
Report 10966938	w	12.04.08	100.0	91.6	0	30.4	27.1	0.0	13.1	11.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		142	0	1	10.0	4.1	4.1
Report 10967640	w	12.04.08	100.0	96.1	0	32.8	28.4	0.0	14.2	13.0	0.1	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		147	0	1	10.0	0.1	0.1
Report 10960640	w	12.04.08	100.0	88.3	0	37.8	21.3	0.0	10.6	8.0	0.3	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		136	0	1	11.0	0.8	0.8
Report 10956916	w	12.04.08	100.0	74.4	0	25.2	14.0	0.0	15.8	13.0	-0.1	1.0	1	1 HR	5 HR	BM mP NM (1 1.3)		116	0	1	17.0	10.4	10.4
Report 10965842	w	12.02.08	100.0	94.2	0	29.8	27.7	0.0	11.9	9.0	0.1	1.7	1	1 HR	5 HR	BM mP NM (1 1.3)		145	0	1	10.0	3.3	3.3
Report 10959270	w	12.04.08	100.0	79.5	0	30.0	14.8	0.0	10.4	10.0	0.3	1.1	1	1 HR	5 HR	BM mP NM (1 1.3)		120	0	1	15.0	1.3	1.3
Report 10960152	w	12.04.08	100.0	90.9	0	38.3	20.2	0.0	13.4	12.0	0.1	1.1	1	1 HR	5 HR	BM mP NM (1 1.3)		140	0	1	10.0	4.3	4.3
Report 10962314	w	12.04.08	100.0	82.6	0	25.4	15.9	0.0	15.0	12.0	0.0	1.1	1	1 HR	5 HR	BM mP NM (1 1.3)		128	0	1	15.0	2.7	2.7
Report 10961089	w	12.04.08	100.0	81.6	0	29.3	16.6	0.0	15.2	15.0	0.1	1.2	1	1 HR	5 HR	BM mP NM (1 1.3)		124	0	2	15.0	4.4	4.4
Report 10966784	w	12.03.08	100.0	69.6	0	16.4	0.0	0.0	13.1	10.0	0.2	1.6	1	1 HR	4 HR	Normal		155	0	0	20.0	11.1	11.1

Figure 59: Meter Reporting Data

Overall System Graphs

The overall system graphs provide a picture of the entire system performance at a glance. The default graph type is Average SNR vs. Overall Throughput for all deployed meters and towers. To display information for a specific meter or tower, click on the "For TGB" drop-down menu, and select either a location or a specific TGB.

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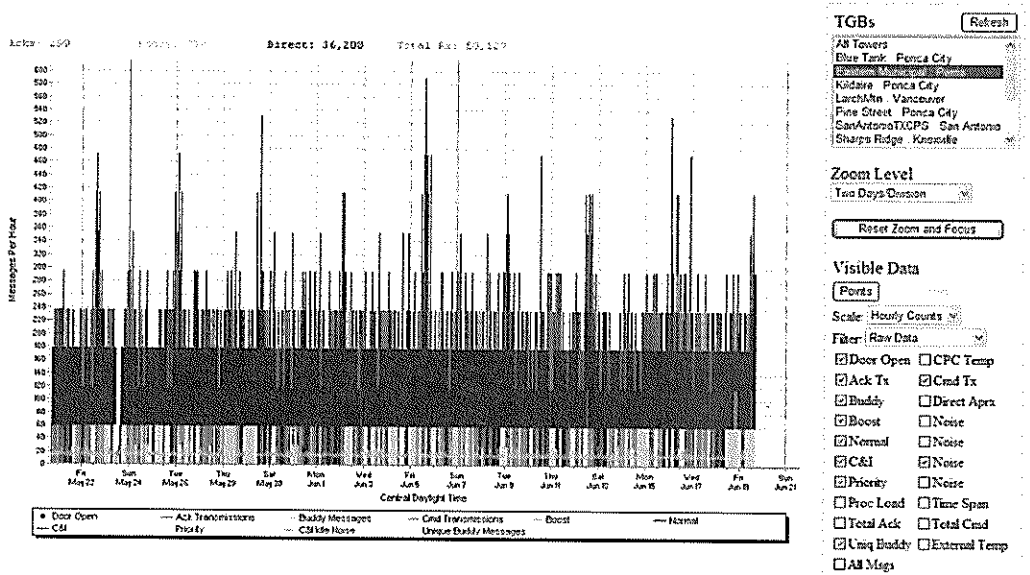

Figure 60: Tower Gateway Basestation Noise Reporting

Overall System Profile

On a continuous basis, the collected data is analyzed against performance thresholds defined in FlexWare. The sum of all defined thresholds creates an overall performance profile. These profiles define acceptable performance characteristics on a given element type. Profiles can specify performance characteristics across multiple collection periods to catch intermittent problems that are not typically severe enough to cause a major performance problem.

When thresholds defined in FlexWare are exceeded, an alert in the GUI is raised. Thresholds may be defined for any performance parameters available for analysis within FlexWare. Profiles are defined using distinct parameters for electricity, gas, and water. The FlexWare diagnostics system raises and presents alerts to allow network operators to take meaningful and informed action when required. When alert conditions change or abate, FlexWare diagnostics modifies or clears the alert.

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FlexNet Meter Performance Tracking

The FlexNet system tracks the following parameters for every meter in the system:

- Read Interval Success (RIS)is a measure of read interval success. RIS is a percentage that is calculated by taking the "Number of Read Intervals Received" divided by "Number of Read Intervals Expected" over a given time period, multiplied by 100 to arrive at a percentage. A read interval is based on the sample rate of a FlexNet radio. If a FlexNet radio is configured to sample the meter reading every hour, then the number of intervals expected is 24. RIS is typically calculated using the past 30 days of message traffic to give an overall picture of interval success.
- Raw Transmit Success (RAW)tracks raw signal transmit success (percent). With FlexNet, the read sample rate and transmit rates are typically decoupled. Sample rate may be hourly, while transmit rate may be six times per day. Each transmission contains up to seven (7) days of hourly reading history. Raw transmit success is a measure of transmit success divided by transmit attempts, multiplied by 100 to arrive at a percentage. It is possible for a meter to have a very low RAW percentage and still maintain a 100% read interval success. This is due to the reading history included with every transmission.
- Signal to Noise Ratio (SNR) compares the level of a desired signal (in this case the transmission of read data) to the level of background noise. Meters with a higher SNR to the tower will provide meter reads more reliably than meters with weaker SNR values. An extremely weak SNR is considered 8 dB or lower, a weak SNR will range from 8 to 10 dB, a moderate SNR will be 10 to 12 db, and a good SNR will be above 12 dB.

GIS Meter Data

A report can be generated that includes the specific GIS coordinates for every installed meter.

- Latitude: The latitude as reported by the meter. (The meter is programmed with this information during installation and setup and re-transmits it regularly to ensure that it is maintained in the database).
- Longitude: The longitude as reported by the meter. (The meter is programmed with this information during installation and setup and re-transmits it regularly to ensure that it is maintained in the database).

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		Other Monitoring & Health Reports FlexWare includes many additional monitoring and health reports, including: • Statistics Reports • SNR Histograms • Time Between TX Histograms • Signal Metrics History Graphs • Missed Message/Throughput History Graphs • SNR Time Plots • Time Plots • TGB Status • Overall System Statistics • Message Counts
J-6	**Describe the use or reliance on any third party ad-hoc reporting tools (e.g., Crystal Reports) for standard or non-standard reporting.**	
	Included PROPOSED AMR/AMI:	FlexWare does not use any third party reporting tools. FlexWare features a Sensus designed report generator that outputs reports to PDF or .CSV formats. The FlexNet database options (SQL or Oracle) are ODBC compliant and do support the use of third party reporting tools, if desired. Detailed reporting is typically performed within an Enterprise-level Meter Data Management System (MDMS). Sensus is not proposing an MDMS in conjunction with FlexNet at this time due to the scope of the RFP. Sensus recommends that ABCWUA select the best MDMS system based on the specific needs and preferences of ABCWUA. Sensus will interface with any MDMS of ABCWUA's choice. This gives ABCWUA the flexibility to choose an MDMS independently of the AMI network and will allow ABCWUA to have all desired features and reporting capability.

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J-7	**The vendor must provide a minimum 5 days of report development *in addition* to the time necessary to customize any "standard" reports.**	
	Included PROPOSED AMR/AMI:	Sensus can customize many of the reports within the FlexWare system to include utility branding and adding fields to reports. Sensus can provide custom report development through the use of a third party reporting tool such as Crystal Reports, if desired. Sensus has included the cost for this development in this proposal. The cost of the desired third party reporting tool is not included in this proposal, and can be selected according to ABCWUA's preferences. Highly customized reporting is typically performed within an Enterprise-level MDMS or as part of a custom report generator using a third party reporting tool. Sensus is not proposing an MDMS in conjunction with FlexNet at this time due to the scope of the RFP. Sensus recommends that ABCWUA select the best MDMS system and AMI network independently, based on the specific needs and preferences of ABCWUA. Sensus will interface with any MDMS of ABCWUA's choice. This gives ABCWUA the flexibility to choose an MDMS independently of the AMI network, and will allow ABCWUA to have all desired features and reporting capability.
J-8	**Provide a list of any "standard" reports to be supplied with the system. These reports may include those of an operational (e.g., meter listing), management (e.g., QA reporting, non-reporting meter), transactional (e.g., audit trail) and/or general system nature. Please indicate if the report and/or function is electronic, print, or both.**	
	Included PROPOSED AMR/AMI:	The following reports are available from the FlexNet system software: • Master Route Report (readings from selected meters within a selectable date range) • Unread Meters Report (any meters not reporting readings within a selectable date range) • Bad Connection Report (bad connection between register and SmartPoint) • Register Mismatch Report (shows accounts/meters where register ID differs from utility records) • Endpoint Mismatch Report (shows accounts/endpoints where endpoint ID differs from utility records) • Leak Detection Report (shows meters that have sent leak flags – customizable leak parameters) • Tamper Exception Report (shows meter tampers) • Register Malfunction Report (shows registers that produced invalid reading messages)

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		• High/Low Exception (shows readings higher or lower than CIS (billing) system expected) • Route Statistical Summary Report (statistical breakdown of meter types and read success rate) **FlexNet Diagnostics Suite** Sensus also provides the best and most comprehensive system network diagnostics suite available in the industry. Please refer to response J-5 above for a detailed description of the FlexWare Diagnostics suite.
J-9	**Describe the method and process, if any, for affixing electronic signature to records, reports, and documents.**	
	Included PROPOSED AMR/AMI:	All FlexWare reports will carry the utility's name in the header and can incorporate the utility's logo, if desired. This is accomplished in the system configuration phase by Sensus support personnel. Sensus can train ABCWUA administrators on how to modify this electronic branding, if desired. Affixing electronic signatures to records, reports, and documents is typically performed within an Enterprise-level MDMS. Sensus is not proposing an MDMS in conjunction with FlexNet at this time due to the scope of the RFP. Sensus recommends that ABCWUA select the best MDMS system and AMI network independently, based on the specific needs and preferences of ABCWUA. Sensus will interface with any MDMS of ABCWUA's choice. This gives ABCWUA the flexibility to choose an MDMS independently of the AMI network, and will allow ABCWUA to have all desired features, including electronic signatures for reports, records and documents.
J-10	**Describe the method external customers would utilize to view reports, reads, etc. Include the file format(s) available for upload for these reports (the Authority might like to allow customers to view/print reports themselves in a format that does not allow changes by the client).**	
	Included PROPOSED AMR/AMI:	Sensus offers an optional home area networking platform called FlexServer, which allows utility end users to view readings, consumption patterns, and estimated bill; print reports; get alerts from the utility; and set different notification parameters for themselves on various criteria. Sensus has not included pricing for the FlexServer portal in this proposal but can provide it at ABCWUA's request. In addition to providing a web portal for end users, the FlexServer platform supports the use of in-home display (IHD) devices, which allow customers that do not have internet connections to view data collected by the FlexNet system and also to receive messages and alerts from the utility. The data for the IHDs can be delivered directly to the IHD devices from the FlexNet TGBs, without the need for an internet connection or a telephone line.

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Sensus FlexServer Customer Web Portal

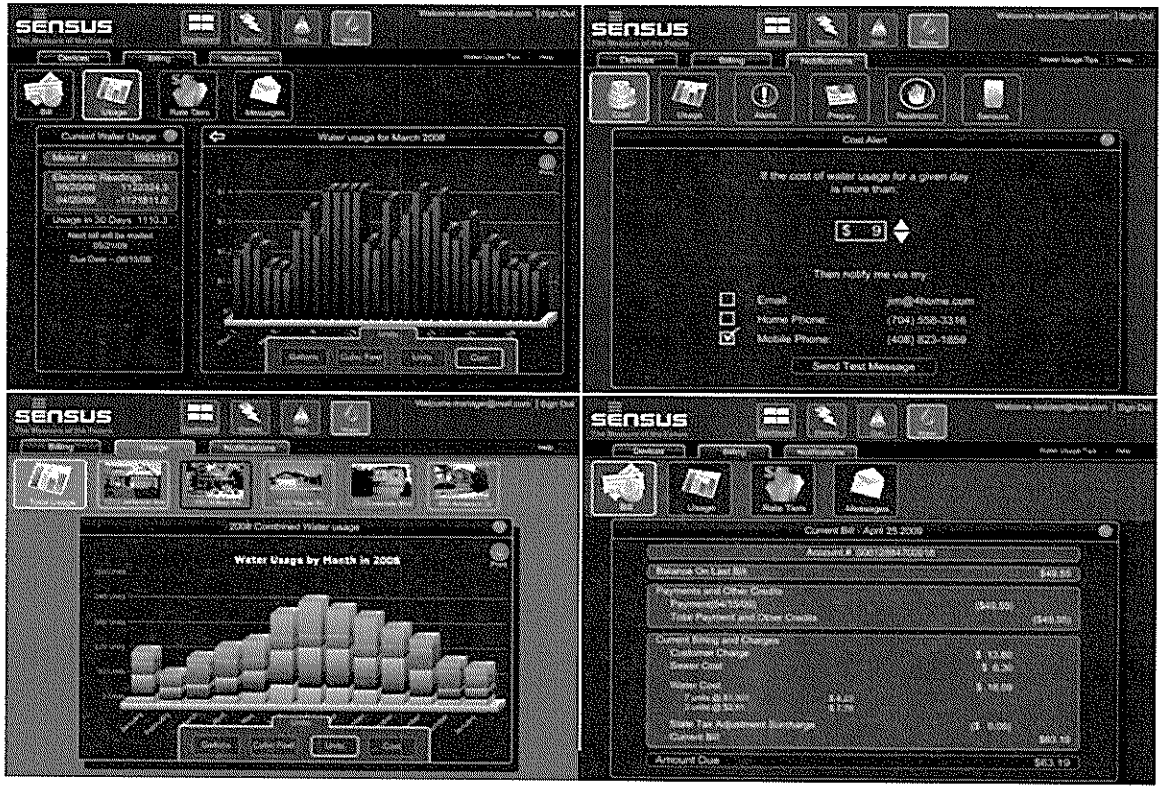

Figure 61: FlexServer Screen Shots

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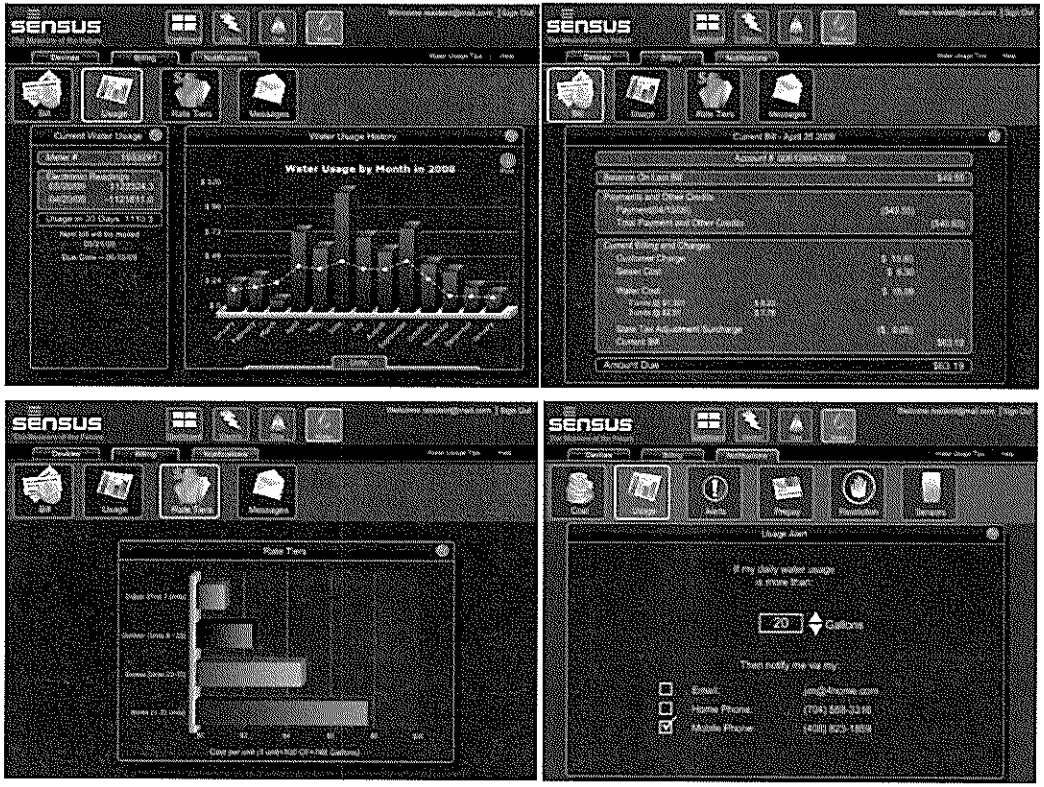

Figure 62: FlexServer Screen Shots

J-11	**Any report sent by the Authority must have the ABCWUA logo. Please describe the ability of the AMR/AMI to allow for logo insertion.**	
	Included PROPOSED AMR/AMI:	All FlexWare reports will carry the utility's name in the header and can incorporate the utility's logo, if desired. This is accomplished in the system configuration phase by Sensus support personnel. Sensus can train ABCWUA administrators on how to modify this electronic branding, if desired. Affixing electronic signatures to records, reports and documents is typically performed within an Enterprise-level MDMS. Sensus is not proposing an MDMS in conjunction with FlexNet at this time due to the scope of the RFP.

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		Sensus recommends that ABCWUA select the best MDMS system and AMI network independently, based on the specific needs and preferences of ABCWUA. Sensus will interface with any MDMS of ABCWUA's choice. This gives ABCWUA the flexibility to choose an MDMS independently of the AMI network, and will allow ABCWUA to have all desired features, including electronic signatures for reports, records, and documents.
J-12	**Elaborate appropriately and succinctly any Reporting and Data Export considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	Sensus has already developed and deployed Sensus system interfaces to a variety of interfaces including flat files, CMEP, Itron EE 5.0 XML, MV90 bin and HHF, and MVRS. Additionally, the Sensus system offers a JMS and Web services interfaces for providing a continuous stream of data of all the incoming messages received from the Sensus FlexNet network.
J-12	**The Authority will require the following interfaces. The vendor should describe and cost out the level of effort to complete interfaces: 1) Oracle's Customer Care and Billing system Version 2.2 is utilized as the CIS, 2) ESRI with ARCGIS Version 9.3 with an upgrade to Version 10 late August 2010. Data will need to be made available via ODBC connection or similar.**	
	Included PROPOSED AMR/AMI:	For the pilot project and beyond, Sensus can provide a flat file interface with Oracle Customer Care and Billing 2.2. Sensus also offers industry standard APIs such as MultiSpeak and CMEP, which are supported by Oracle CC&B 2.2. Although these interfaces are industry standard, there is configuration required that is unique to each utility's specific needs. It is Sensus' understanding that ABCWUA has removed the ESRI ARCGIS interface requirement in Addendum 6.

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Section K: Future Considerations

K-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
K-2	**The Authority desires to extend the AMI to include pressure monitoring of the Authority's service system. Describe how the proposed system could accommodate approximately 1,000 pressure (or other transducers) monitors.**	
	Included PROPOSED AMR/AMI:	The FlexNet system can accommodate pressure monitoring and other SCADA type applications on the same primary-use FCC licensed network used for meter reading. This is one of the key strengths of the FlexNet system, and Sensus is happy to discuss the many potential applications that FlexNet can be used to support throughout the utility. In 2009, Sensus acquired Telemetric Corporation, a company specializing in SCADA applications for the utility industry. Sensus currently has available a host of RTUs, RTMs, and PLCs with on-board FlexNet radios. The FlexNet system has the bandwidth available to accommodate these devices, and Sensus is actively and continually developing applications to take advantage of this. ABCWUA can connect pressure monitoring devices (transducers) to the Sensus T646 or T866 MicroRTU, which has an on board FlexNet radio. These RTUs can communicate with the pressure transducer and report this back securely over the FlexNet network. The FlexNet head end then sends the data to the Sensus PowerVista™ application to allow ABCWUA staff to view, monitor, and control these devices. If preferred, Sensus can deliver the data from the pressure transducers (and other SCADA devices) to ABCWUA's existing SCADA backend software via the Sensus SCADA Xchange™ software.

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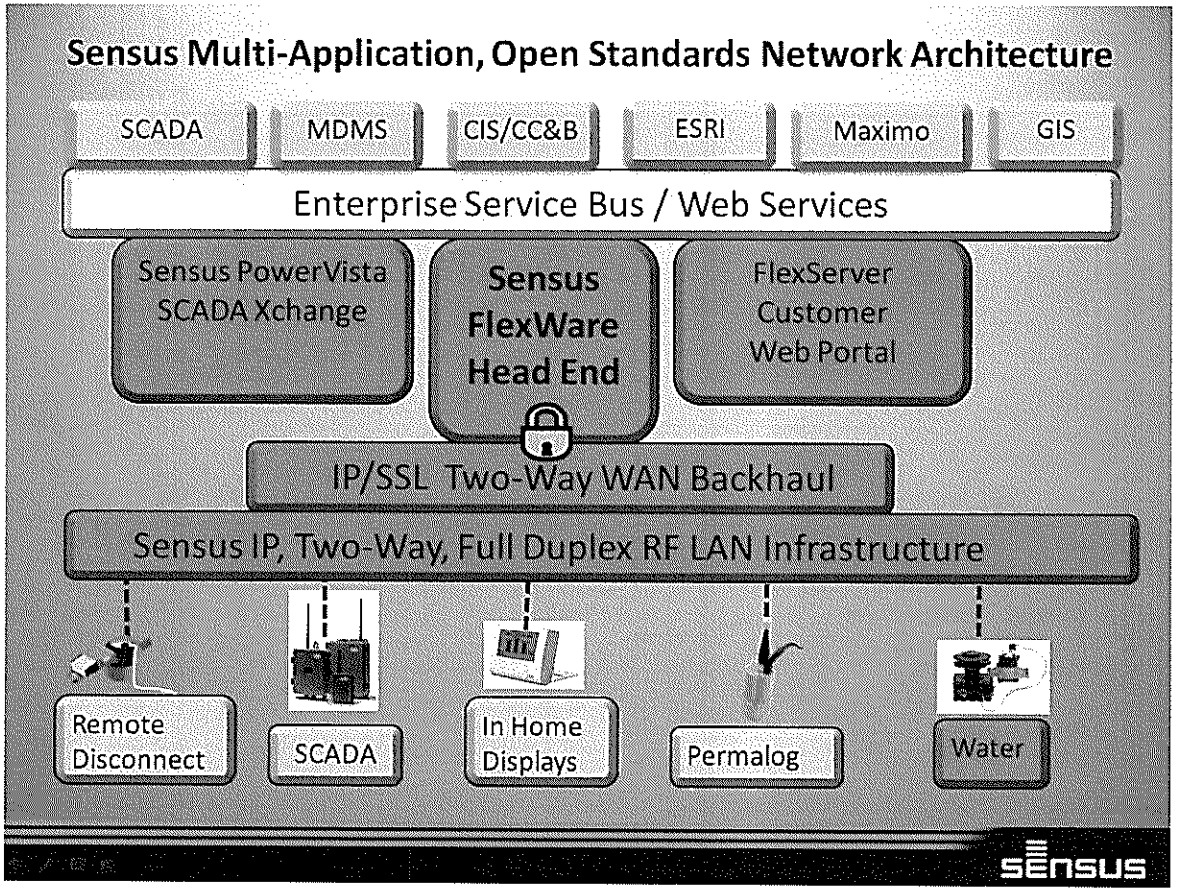

Figure 63: FlexNet is based on open standards

Sensus offers a host of different SCADA devices that can connect to existing SCADA hardware in the field and deliver information from these devices back via the licensed FlexNet network. This can eliminate the need for costly and difficult to maintain point-to-point radios that may otherwise need to be deployed at each SCADA site. Some of the other possible applications that can be served by the FlexNet system are shown below.

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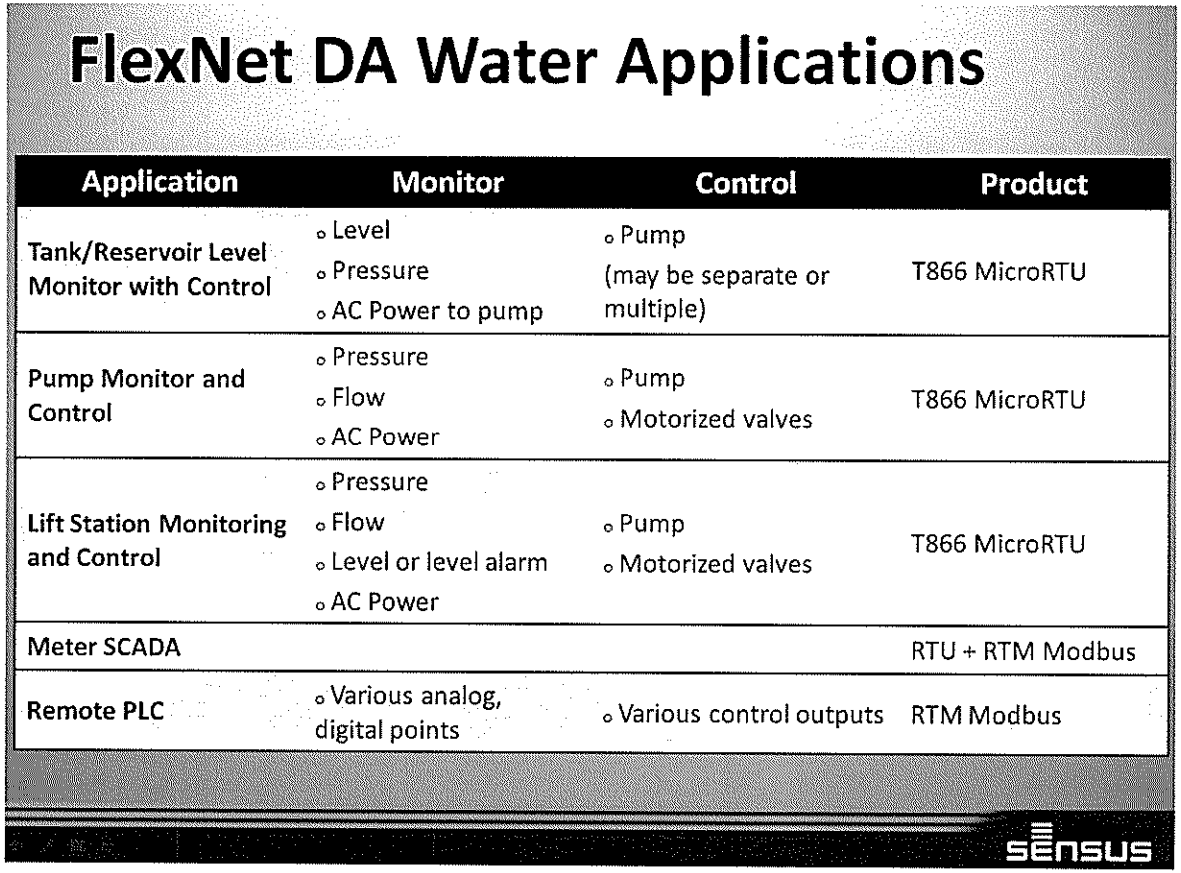

Figure 64: FlexNet Distribution Automation

K-3	**The Authority desires to extend the AMI to include detection of fire hydrant use through the use of wet barrel sensors. Describe how the proposed system could accommodate fire hydrant use detection.**
Included PROPOSED AMR/AMI:	Please refer to the response in K-2 for additional detail. Sensus can extend the FlexNet AMI system to accommodate fire hydrant use via wet barrel sensors that use industry standard SCADA protocols. Sensus would connect these sensors to one of the various Sensus RTU

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		modules available and deliver this information back to the Sensus PowerVista software application and/or to ABCWUA's existing SCADA backend software application via the Sensus SCADA Xchange product.
K-4	**Elaborate appropriately and succinctly any Future considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	The flexibility, expandability, and power of the FlexNet system cannot be understated. **Proven Bandwidth and System Upgradeability** As evidenced by the FlexNet system's ability to support water, gas, and electricity systems simultaneously on the same network (unique in the industry and field proven at a number of current deployments), the system has the bandwidth and power to not only deliver meter readings for all three metered services, but also to support ancillary functionality such as demand response (DR), distribution automation (DA), home area networking, SCADA, acoustic monitoring devices, and remote meter disconnect modules, to name just a few. The FlexNet system has been designed with the key goal of future expandability (no stranded assets), as evidenced by the software defined MIU and RCU radios, upgradeable and expandable bandwidth on the RCUs (proven and field demonstrated), existing bandwidth headroom, and the wide variety of applications already in development by Sensus and other industry vendors. **FlexNet's Adherence to Open Standards** The FlexNet system also adheres to open standards, featuring IP addressability for every component on the network, including meter MIUs. This facilitates future integration of third party applications and devices on the FlexNet network. **FlexNet's Multi-Channel, Multi-Application Full-Duplex Network Architecture** All of this is made possible by Sensus' investment in primary-use, licensed FCC spectrum, which allows much higher power levels, clear channel spectrum, and much more flexibility than any other network on the market. Different applications operating on the FlexNet system all use different communications channels, which allow full-duplex communications, lower latency, and much higher reliability than other systems that must use one communication channel for incoming and outgoing messages.

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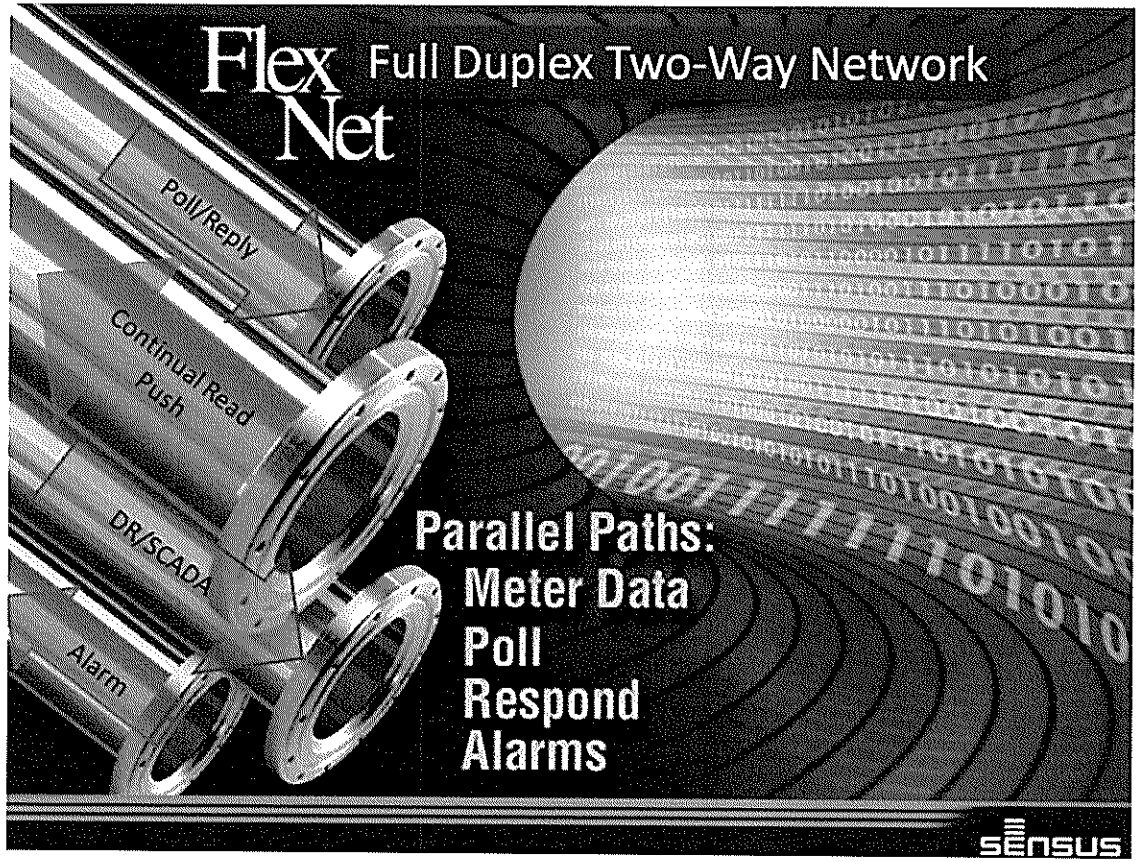

Figure 65: FlexNet is a Full Duplex System

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Section L: External Interfaces

L-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
L-2	**The Authority requires the proposed AMR/AMI to export AMR/AMI data for import into the Authority's (internally or third party) developed Oracle-based AMI Historian (MSDS) system via a direct database interface. Describe any limitations in meeting this requirement.**	
	Included PROPOSED AMR/AMI:	Standard AMR/AMI functionality for the FlexNet system. Sensus can deliver the FlexNet AMI Control Computer (RNI) with either the Oracle 11g Database or a SQL 2005 Enterprise Database platform. Both platforms are ODBC compliant and either will allow data integration with any AMI Historian (MSDS) of ABCWUA's choice (Oracle or other). Sensus does not market an AMI Historian, MSDS, Enterprise MDMS, or CIS billing application, and this leaves the choice completely up to ABCWUA to find the best fit. Sensus is happy to interface with any software platform that ABCWUA wishes to implement now or into the future. Additionally, the FlexNet system offers an array of industry standard Application Programming Interfaces (APIs) as standard, which can facilitate the integration if different third party applications. Again, this speaks to the flexibility of the FlexNet solution.
L-3	**The Authority may desire to interface AMR/AMI with the Authority's Oracle Customer Care and Billing (CC&B). Describe any experience interfacing with Oracle's system.**	
	Included PROPOSED AMR/AMI:	Standard AMR/AMI functionality with the FlexNet system. Sensus can deliver the FlexNet AMI Control Computer (RNI) with either an Oracle 11g Database or a SQL 2005 Enterprise Database. Both database options are ODBC compliant and will easily allow interface with ABCWUA's Oracle CC&B system.

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		Sensus has partnered with Oracle on a number of deployments across North America, and this integration is easily accomplished. Sensus does not market an AMI Historian, MSDS, Enterprise MDMS, or CC&B billing application, and this leaves the choice completely up to ABCWUA to find the best fit. Sensus is happy to interface with any software platform that ABCWUA wishes to implement now or into the future. Additionally, the FlexNet system offers an array of industry standard APIs as standard, which can facilitate the integration if different third party applications. Again, this speaks to the flexibility of the FlexNet solution.
L-4	**The Authority may desire to interface AMR/AMI with the Authority's Maximo Asset Management / Maintenance System. Describe any experience interfacing with Maximo.**	
	Included PROPOSED AMR/AMI:	The FlexNet system offers ODBC compliant databases, which can interface easily with the Maximo asset management/maintenance system. Additionally, the FlexNet system offers an array of industry standard APIs as standard, which can facilitate the integration if different third party applications. ABCWUA can choose to integrate these different platforms through the use of an Enterprise Service Bus, industry standard APIs, or via direct database integration. Again, this speaks to the flexibility of the FlexNet solution.

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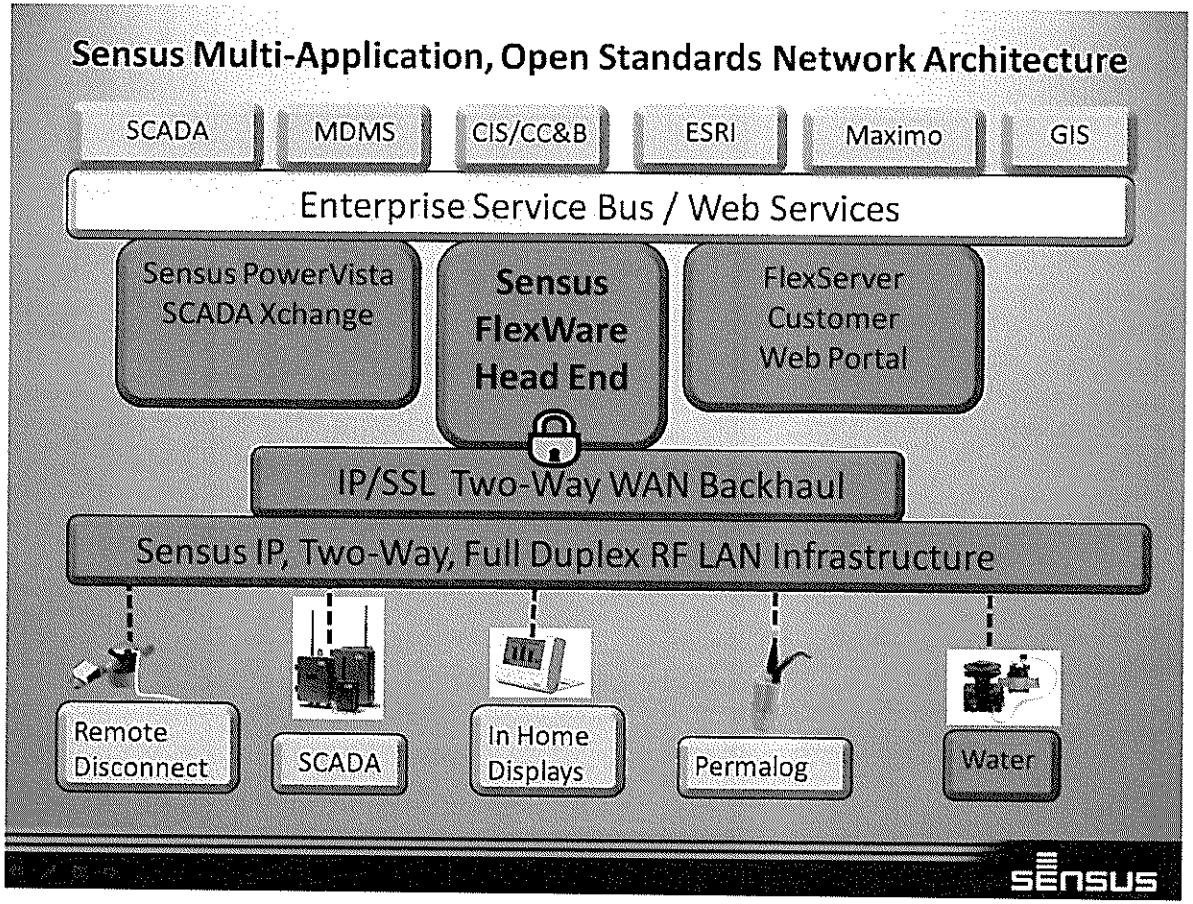

Figure 66: FlexNet is based on Open Architecture

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L-5	Elaborate appropriately and succinctly any External Interface considerations not called out in this section that are deemed important differentiators or essential functionality.	
	Included PROPOSED AMR/AMI:	Sensus is a manufacturer of water, gas, electricity, and heat meters, AMI Networks, and a host of different devices to integrate with these meters, devices, and networks. Sensus has more than 100 years in the utility industry and is the recognized leader in innovative products for the water industry. This includes our extremely successful OMNI commercial line, our revolutionary iPERL residential meter, and our best-in-class and industry-leading FlexNet AMI platform. Sensus does not market Enterprise MDMS, CIS, CC&B, or asset management software. However, Sensus does strongly believe in the interoperability of our products and solutions to any third party platforms through the adherence to open standards in the network design principles. This commitment to interoperability and open standards gives Sensus utility partners ultimate flexibility when choosing different software applications, based on the best fit for the utility.

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Section M: External Interfaces

M-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
M-2	**Provide a specification for handheld or other mobile devices that may be used in AMR/AMI device interrogation, programming or data gathering. Such specification(s) should be based on the Proposer's experience in delivering the same in a working environment. The Authority would use handheld devices for device configuration and data retrieval. Note: Recommended handheld devices should be quoted in Attachment C "Cost Proposal".**	
	Included PROPOSED AMR/AMI:	Please refer to Appendix B.8_AutoRead Handheld Device Programmer, and B.7_FlexNet CommandLink Overview for details.
M-3	**Describe the Proposer's experience with mobile data collection. Provide details on processes (e.g., synchronization, online availability, failure recovery, off-line capabilities, etc.) used in hand-held utilization.**	
	Included PROPOSED AMR/AMI:	Sensus has vast experience in mobile data collection. Sensus first released one of the utility industry's first mobile reading platforms in 1993 with Sensus RadioRead. Sensus has more than five (5) million mobile AMR radios deployed across more than 2,500 individual deployments across North America. ABCWUA can use any compatible Windows Mobile 6 hand-held device (including the AR5500, Trimble Nomad, and others) for programming of FlexNet SmartPoints in conjunction with the CommandLink device. Many of these compatible handhelds have GPRS/Cellular/Wi-Fi, etc. These hand-held devices can be used with a variety of different applications beyond the programming and meter reading software provided with the FlexNet system. Sensus feels it is important to give the utility a choice of hand-held devices to use when programming FlexNet SmartPoints and has, therefore, developed the FlexNet CommandLink device that can interface with any Windows Mobile 6 hand-held on the market that has GPS and Bluetooth. This gives ABCWUA total flexibility and the ability to maximize value when selecting the preferred handheld for its field personnel.

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Figure 67: FlexNet Hand-Held Devices

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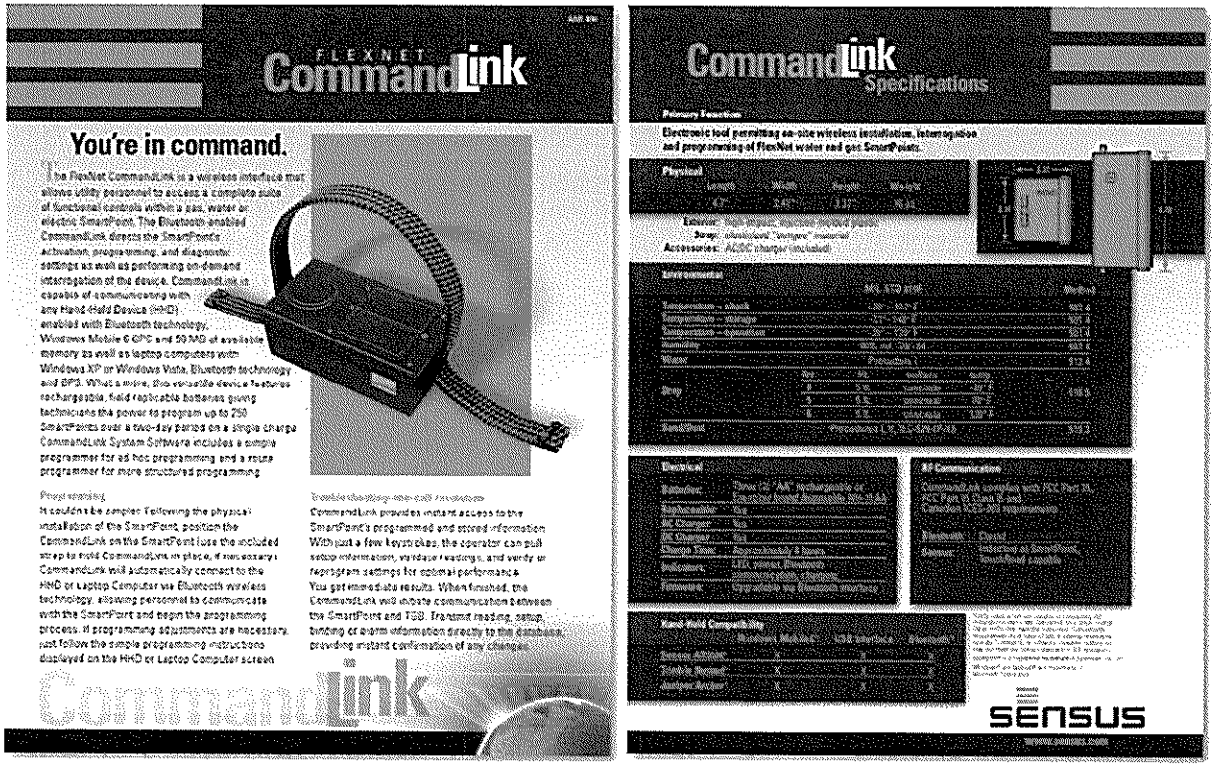

Figure 68: CommandLink is a powerful installation tool

M-4	**For mobile devices, the AMR/AMI should provide a configurable data entry form and offer a bi-directional interface for such items as configuration and automated upload of collected data. Please explain the proposed system's method of achieving this result.**	
	Included PROPOSED AMR/AMI:	The Sensus hand-held devices and software are designed to capture reading, alarm, location, and programming data from the MIU (SmartPoint) and meter during and/or after installation. The FlexNet handheld programming tools and software allow the use of an installation route (work order application), which allows the utility to import location data for each of the installation sites. With this information

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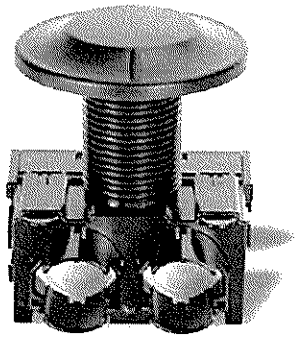
		loaded on the handheld, the installer can collect notes, readings, and programming data from the MIU location and download via a wired connection to the host PC. The programming application files allow synchronization of account information with installed meter information. Please refer to Appendix C.1_FlexPro User Guide_v2.4 for additional details.
M-5	**Elaborate appropriately and succinctly any Handheld Devices considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	Sensus recently added mobile AMR functionality to our industry-leading FlexNet MIUs (SmartPoints), giving them the ability to report to either mobile or fixed networks. Unlike most other vendors that offer low-power MIUs, which were originally developed for mobile AMR collection for their AMI (fixed-base) networks, Sensus started with the best and most powerful licensed fixed-base MIU on the market (Sensus FlexNet 520X) and added mobile capability to create the new FlexNet SmartPoint, the 520M2. Sensus did this without sacrificing the industry-leading transmit power (2 Watts) or primary-use, FCC licensed RF operation. The FlexNet SmartPoint M2 offers the best range and reliability for both mobile and fixed-base applications and allows the utility to begin with mobile data collection and later switch to fixed-base collection without visiting the SmartPoint. For those utilities that wish to begin with mobile data collection and migrate to fixed-base, the FlexNet SmartPoint M2 offers a unique solution that truly delivers with no compromises.  Sensus FlexNet SmartPoint M2 **Figure 69: The FlexNet 520M Transmitter**

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Section N: Training and Documentation

N-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
N-2	**The Authority has facilities to accommodate training up to 10 people at a time. Describe the approach and curriculum for each of the classes listed below, including number of days, necessary skills of attendees, etc. (those identified should be considered the minimum requirement), and any others you recommend.**	
	Included PROPOSED AMR/AMI:	Sensus offers a number of different classes to train utility personnel on the software interface as well as network operations and maintenance training. Below is a sample of some of the courses available to ABCWUA both on-site at the utility premises and available also at Sensus University in Raleigh, NC. • FlexWare Software • Data Retrieval and Monitoring System (DRMS) — User • Data Retrieval and Monitoring System (DRMS) — Administrator • FlexNet Network Operations • TGB Operations and Maintenance • Basic RF Principles • SmartPoint and Metering • SmartPoint — Water • FlexWare User Interface • FlexWare Administration

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N-2a	End-user training classes (The Authority will have approximately 12 participants for this session)	
	Included PROPOSED AMR/AMI:	**RNI Head End System General User Training – One Day** This course is recommended for personnel from the following departments: Customer Service, Billing, Meter Technician, FlexNet Operator, and all other users that will need to look up and control meters. The course is designed to provide project and technical staff with hands-on training regarding the day-to-day operations of the FlexNet system. The one-day course includes the following general topics: • FlexNet overview • Operation and monitoring of the FlexNet system from within the RNI • User interface Training attendees will obtain a working knowledge of: • Basic meter lookup and analysis • Understanding meter statistics • Interpreting FlexNet reports • Identifying meter alarms • Understanding the individual meter information page (IMIP) • Understanding the communications statistics and diagnostics pages • Interpreting diagnostics reports • Meter data analysis fundamentals • 2-way commands • Types of meter reads • Sensus database fundamentals Please refer to Appendix C.4_SensusCare FlexNet Training Outline for additional details.

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N-2b	**Separate System Administrator training classes for IT Administrator and Power Users (The Authority will have approximately 12 participants for this session)**	
	Included PROPOSED AMR/AMI:	**RNI Head End System Administrative Users – One Day** Recommended for IT Administrators, Power Users, and FlexNet Administrators. The course will cover: • Over-the-air messages • System architecture overview • Adding users to DRMS • Network optimization • Using the Web interfaces to manage the system Hands-on case studies and training: • RNI configuration information • LDAP configuration • Adding users to the DRMS and LDAP servers • Microsoft Active Directory • Administrative collection • Changing user permissions • Changing user roles Please refer to Appendix C.4_SensusCare FlexNet Training Outline for additional details.
N-2c	**Separate report training depending on the method of reporting proposed: How to write reports within the AMR/AMI--from data to report.**	
	Included PROPOSED AMR/AMI:	**RNI Head End System Advanced Users – One Day** Recommended for Advanced Administrators, Data/Business Analysts, System /IT Engineers, and ABCWUA AMI Project Manager(s).

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This training curriculum will depend on whether ABCWUA chooses to implement an Enterprise-level MDMS system immediately as part of this project or chooses to use the standard tools, software, and reporting capabilities of the FlexNet system in conjunction with other third party software ABCWUA may have available (such as Crystal Reports). The FlexNet system offers a basic MDM platform as standard that is capable of supporting up to 50,000 meters. For full deployment, Sensus recommends that ABCWUA implement an Enterprise-level MDM system.

Rather than propose a specific Enterprise MDMS system for ABCWUA as part of this proposal, Sensus recommends that ABCWUA select an Enterprise MDMS system independently of the AMI network, based on the best fit for ABCWUA. Sensus can and will interface with most MDMS systems available on the market (Oracle, E-Meter, etc.).

General topics included in this course are:

- MSSQL or Oracle 11g database overview
- Dataflow from meter to XML or CMEP
- Other industry standard interfaces (such as MultiSpeak)
- MDMS file generation and delivery
- Reports, queries and database views

Participants will learn, view, and have the opportunity to work hands-on with:

- Attaching to SQL database query tables
- Storage and retrieval of on-air message data
- Decoding the on-air message data
- Event logs
- Monitoring and maintenance scripts
- Resolving quarantine reads

Please refer to Appendix C.4_SensusCare FlexNet Training Outline for additional details.

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N-2d	Follow-up training onsite within 30-90 days; explain how system proficiency is ensured after the follow-up training.
Included PROPOSED AMR/AMI:	At Sensus, we believe good service is something you should expect – and get before, during, and after the sale. The entire Sensus manufacturing, engineering, sales, and service team is committed to bringing you the very finest products and service in the industry. **Ongoing Training and Support** Sensus AMR/AMI Technical Services is staffed to provide technical support and follow-up training for the system through the warranty period and beyond. Sensus' Customer Services staff acts as a single point-of-contact for ABCWUA, and support staff are available for additional training by phone or in person during the system lifetime. Support is available via a toll-free number, and on-site support is available as required. For customers who require additional support, we can provide custom support services under an extended service contract. **Customer Training: Sensus University** Sensus is committed to providing the best possible customer service to ABCWUA and all of its more than 200 FlexNet networks deployed across North America. Part of this commitment is provided via the Sensus University. Sensus University is a dedicated AMI training facility located in our headquarters in Raleigh, NC. The center includes a 20-person training room and has an operational FlexNet network for live and interactive training. FlexNet training sessions are held on a regularly scheduled basis. **Sensus Users Conference** The Sensus National User's Conference is typically held in the Fall at various locations across the country. It is an opportunity to see new and existing products, maximize efficiency of current operations through maintenance and troubleshooting classes, and gather valuable information and contacts from other Sensus users. Sensus typically schedules a number of different technical training sessions and can even schedule one-on-one training with technical staff at these conferences, if desired.

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		Sensus FlexNet User's Group There are currently more than 200 FlexNet deployments in North America. Many of the utilities currently using the FlexNet system have established an independent organization to share ideas and best practices with each other to help maximize the value of their FlexNet networks. This group also provides valuable feedback to Sensus for future enhancements, products, and services. This group is operated and run by Sensus users. The last Sensus FlexNet User's Group meeting was in May 2010 at the Wynn Hotel in Las Vegas, NV. The next meeting is scheduled for the Spring of 2011.Sensus is happy to provide on-site follow-up training for ABCWUA at any point after the initial training on a scheduled basis.
N-3	**Describe the proposed system's training materials (e.g., video, online/CD training, workbooks) to enable future end users to learn the system without need of formal classroom based training. Note: Offering a "train-the-trainer" curriculum is not sufficient for meeting this requirement.**	
	Included PROPOSED AMR/AMI:	Sensus has deployed more than 200 FlexNet networks across North America, and each network has been highly successful and reliable due to Sensus' commitment to complete and personalized support and training. Sensus FlexNet AMI solution provides a comprehensive customer service delivery and support program to ensure we meet all of our customers' objectives and exceed expectations. Upon award of a contract, Sensus will supply the AMI system architectural documentation and all program, customer, and training documentation. This documentation can be delivered in both hard copy and CD-ROM in the format of Microsoft Office and Acrobat Reader PDF. It will be kept up-to-date during the program lifecycle. Prior to initial AMI acceptance, Sensus will supply ABCWUA with the FlexNet solution's hardware, software, and network data sheets and technical manuals used for installation, testing, troubleshooting, and operation of the solution. In addition, Sensus will provide an annual software maintenance program with a release schedule and upgrades. On-site training for new releases and products will be provided if required. Documentation will cover these general topics: • Network deployment • AMI Control Computer (RNI) deployment

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		• Meter/SmartPoint installation training • FlexNet system optimization • FlexNet software user interface
N-4	**Describe any third party training necessary for use of the proposed system (e.g., Crystal Reports).**	
	Included PROPOSED AMR/AMI:	There is no thirty party training required for the use of the proposed system unless ABCWUA wishes to implement an Enterprise MDMS system as part of this project. An enterprise MDMS system is not required for the project proposed, and Sensus recommends that ABCWUA select an Enterprise MDMS separately from the AMI Network to ensure a good fit for ABCWUA. Sensus will work with ABCWUA and the selected MDMS provider when ABCWUA decides it is time to implement an MDMS solution.
N-5	**All training must be provided at Authority facilities. Designate any costs not covered in this proposal (e.g., travel by the Authority, and/or any assumptions on available facilities and equipment.)**	
	Included PROPOSED AMR/AMI:	All training will be provided at ABCWUA facilities. All costs are included in this proposal. Sensus assumes that ABCWUA will have a facility suitable for a training group sized according to ABCWUA expectations, with a projector screen available.
N-6	**Describe the proposed AMR/AMI documentation, including all system administration guides, technical reference guides, training materials, end-user manuals, and report development guides.**	
	Included PROPOSED AMR/AMI:	Sensus has an extensive array of technical documentation that covers all aspects of system installation, operation, maintenance, and system use. Below are just a few of the available guides and manuals that can be provided at any time to ABCWUA. **Head End System** 1. RNI Users Guide 2. FlexWare MDM Training Guide, Revision 3 3. FlexWare MDM User Manual 4. RNI Installation Sheet Revision 08

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		FlexNet RCU (TGB) 1. TGB Installation Manual 2. TGB Verification Manual 3. FlexNet Solution Specification User Guide 4. FlexNet Remote Configuration Manual 5. TGB Verification and Certification 6. TGB Verification and Troubleshooting **Handheld Installation and Auditing Tools** 1. FlexNet SmartPoint Module Installation Guide 2. FlexNet CommandLink User's Guide 3. Sensus FlexPro Software User's Guide
N-7	**Describe all online help and documentation, including search capabilities, context sensitive searching, etc.**	
	Included PROPOSED AMR/AMI:	The SensusCare customer web portal also offers access to technical and user documentation and a built-in knowledge database in which users may find answers to common deployment, commissioning, operations, and maintenance issues.
N-8	**Describe database documentation available, including entity relationship diagrams, table structures and definitions, and other associated elements.**	
	Included PROPOSED AMR/AMI:	A database schema (database dictionary) detailing the database table names and associated fields is available. Sensus also provides a number of industry standard interfaces and APIs to allow ABCWUA to interface with a wide variety of third party applications. Sensus adheres to open standards and can take advantage of an Enterprise Service Bus to interface third party applications, if desired.

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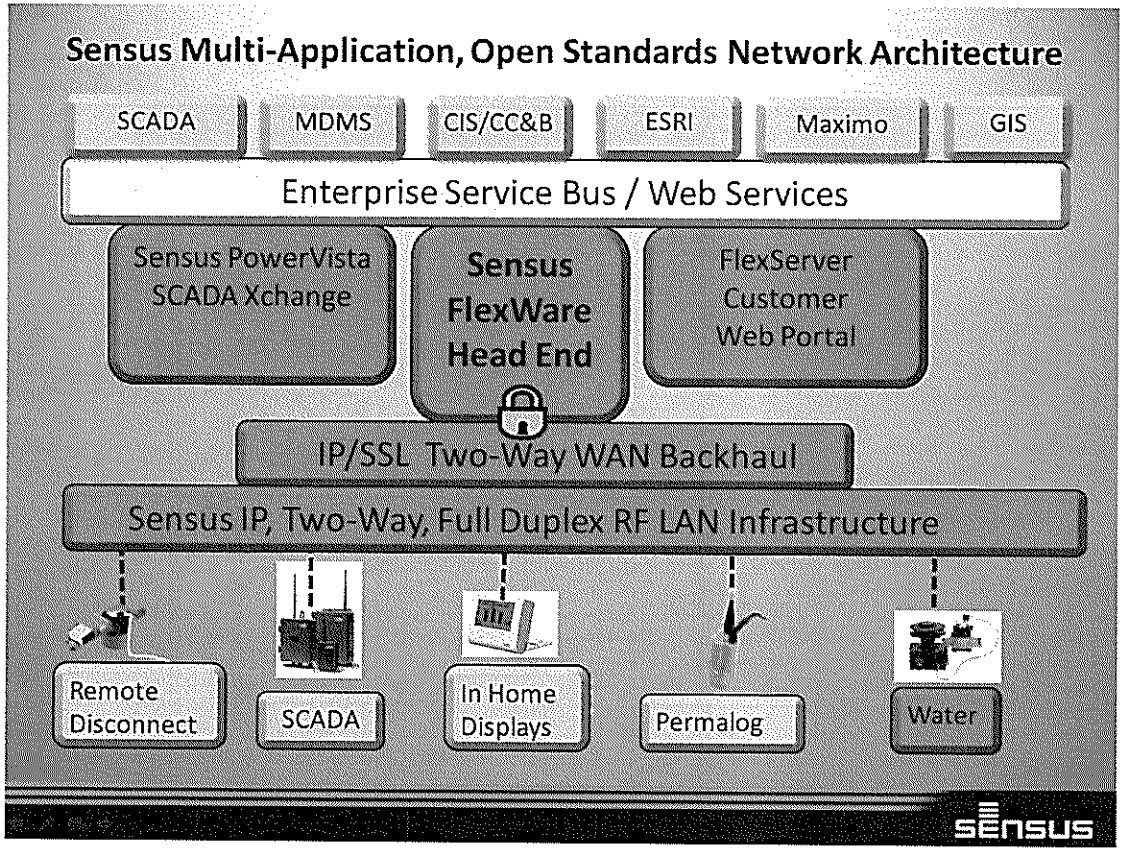

Figure 70: FlexNet is based on Open Standards

N-9	**List any third party documentation to be delivered (e.g., Crystal Reports, hardware manuals, etc.)**	
	Included PROPOSED AMR/AMI:	Sensus does not typically supply third party software documentation, unless such documentation is not available online or the implementation necessitate the creation of information beyond what is covered in the standard third party documentation. There are no third party software applications that will require direct interface by utility personnel.

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		All operating system information is provided on Windows or Red Hat websites. Vendors no longer send out any documentation, and licenses are downloaded and registered online. This includes Dell Server hardware.
N-10	**Describe any regular user conferences or user group seminars sponsored by the vendor.**	
	Included PROPOSED AMR/AMI:	There are two separate user group conferences sponsored by Sensus. **Sensus National Users Conference** The Sensus National User's Conference is typically held in the Fall at various locations across the country. It is an opportunity to see new and existing products, maximize efficiency of current operations through maintenance and troubleshooting classes, and gather valuable information and contacts from other Sensus users. A wide variety of classes are typically offered, and Sensus can offer specific classes or even one-on-one training by Sensus technical personnel at these conferences. **Sensus FlexNet User's Group** There are currently more than 200 FlexNet deployments in North America. Many of the utilities currently using the FlexNet system have established an independent organization to share ideas and best practices with each other to help maximize the value of their FlexNet networks. This group also provides valuable feedback to Sensus for future enhancements, products and services. This group is operated and run by Sensus users. The last Sensus FlexNet User's Group meeting was in May 2010 at the Wynn Hotel in Las Vegas, NV. The next meeting is scheduled for the Spring of 2011.
N-11	**Elaborate appropriately and succinctly any Training and Documentation considerations not called out in this section that are deemed important differentiators or essential methodologies.**	
	Included PROPOSED AMR/AMI:	Sensus recognizes that every utility has unique needs and will often implement the FlexNet system in different ways. Not every utility plans to install the network at the same pace; some start with commercial meters that may be scattered throughout the utility service area, and some may choose to implement by geographic area or route. The power of the FlexNet system allows for the utility to choose the best implementation strategy that is the best fit.

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		Therefore, Sensus FlexNet training courses are customized to take into account the scope of responsibilities of the customer and curriculum is developed accordingly. Courses can include topics on installation, software administration, troubleshooting and maintenance, reporting, and more. Courses are offered either onsite at our Raleigh headquarters at our Sensus University facility or on customer premises, depending upon customer requirements. Sensus will work closely with ABCWUA during the contract negotiation phase to ensure that the training goals of ABCWUA are fully met, and that the training given addresses the specific needs of ABCWUA in any given phase. Sensus has tremendous experience in deploying the FlexNet AMI solution at more than 200 different utilities of various sizes across North America, including utilities with fewer than 1,000 meters, and utilities with more than four (4) million services, and, therefore, recognizes that a "one-size-fits-all" approach is not the best solution in terms of training or support.

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Section O: System Support

O-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
O-2	**The system must be maintained to be current with any future O/S or database upgrades such that support for these systems has not expired. Describe the process utilized to ensure compatibility with future versions of the installed platform and the infrastructure environment.**	
	Included PROPOSED AMR/AMI:	Sensus policy is to expose roadmaps for a 24-month horizon. Future enhancement will maintain backward compatibility and upgradeability for two major/minor releases based on the current release. The Sensus strategy is to continue to benefit utility clients by building on our leadership position in open standards, multi-application, high-performance utility software and solutions. Sensus will continue to support utility customers with software maintenance for the current release and the previous two production releases. This is to give utility clients ample opportunity and time for orderly and planned transitions and resources. If the utility chooses not to transition per this plan, then additional and higher support costs may apply. Sensus developed its FlexNet system with the flexibility and adaptability to meet the changing business needs utilities face in current and in future utility markets. Future enhancement will maintain backwards compatibility and upgradability to the greatest extent possible with any AMI network. Every FlexNet endpoint is equipped with the ability to accept revised code remotely. This capability is also inherent in the data collectors (TGBs). In addition to metrology and communications processors being downloadable, the actual communications core is software defined. This means that modulations, protocols, frequency of operation, and even data rate are defined in digital signal processing firmware, which means that the endpoints can be fully upgradeable as future requirements and features are developed. The O/S and database software platforms utilized by the FlexNet system are industry standard and are upgraded and maintained to ensure the integrity of the FlexNet system as well as to conform to the specifications outlined the supplying software vendors. Sensus is a part of all of the vendor support

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		organizations and is made aware of upcoming releases of third party software suppliers to ensure the FlexNet system adheres to the current vendor software standards.
O-3	**Describe the ability to provide the following minimum support items:**	
	Included PROPOSED AMR/AMI:	
O-3a	**The system should be provided with telephone and online support during standard business hours (8:00 a.m. to 5:00 p.m. MST). If the vendor's standard support hours fall outside of this time frame, describe the process that will used to support Authority.**	
	Included PROPOSED AMR/AMI:	Sensus AMI Technical Services is staffed to provide 24/7/365 technical support for the system through the warranty period and on an annual maintenance contract basis. Upon contacting customer support, notifications are sent to appropriate individuals for problem resolution. Communication back to the originator of an issue is then logged through customer support to track progress and ensure final resolution. Sensus' Customer Services staff acts as a single point of contact and provides standard service support from 6:00 a.m. MST to 4:00 p.m. MST. 24x7 support is included in the standard support pricing proposed for any critical system issues that require immediate response. Examples of critical system issues covered under 24x7 support are listed below. • **Severity 1 -** Customer's production system is down. The system is unusable, resulting in total disruption of work. No work-around is available and requiring immediate attention. o (Example: Network mass outage, all reading collection devices inoperable, inoperable head end software (e.g., FlexWare, MDM). • **Severity 2 -** Major system feature/function failure. Operations are severely restricted; there is a major disruption of work, no acceptable work-around is available, and failure requires immediate attention. Please refer to C.2_Technical Services Process and Procedures_Rev1 for additional details.

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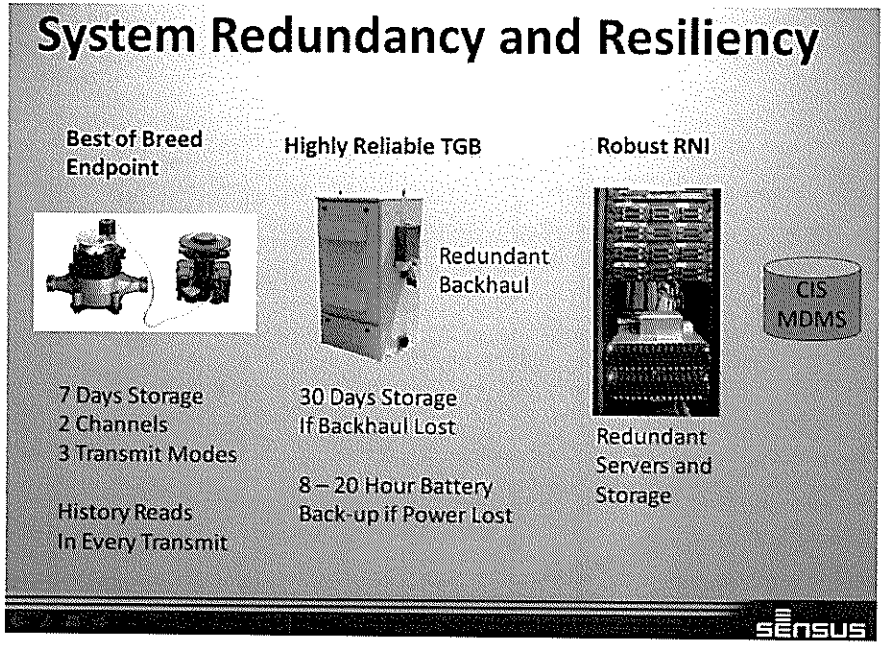
O-3b	Response time of issues should be within 4 business hours.
Included PROPOSED AMR/AMI:	Response time for issues is typically much shorter than four (4) business hours for remote support and troubleshooting. On-site support and troubleshooting is also available if remote support is unsuccessful in correcting the issue(s) at hand. All parts and labor are typically included when the utility maintains a FlexNet support agreement. On-site response can be within 48-72 hours if necessary. Due to the extensive redundancy offered throughout the Sensus system, storage in the SmartPoint, the RCU (TGB), and head end system, network outages typically only result in delayed readings rather than lost readings. This is a unique benefit of the system, and one that is proven and measurable across more than 200 existing FlexNet networks.  **Figure 71: FlexNet is Designed for High Reliability**

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O-3c	**The system should be provided with annual upgrades and "bug" fixes as required.**	
	Included PROPOSED AMR/AMI:	Software releases and patches are provided on a semi-annual and/or annual basis, with the exception of critical patches, which are typically provided immediately by Sensus support staff via secure remote (VPN) connection.
O-3d	**All upgrades or system patches must be provided with full documentation concerning the nature of the change and the process for its installation.**	
	Included PROPOSED AMR/AMI:	Standard AMR/AMI functionality. Sensus typically performs all patches and updates remotely for the utility as part of the Service Level Agreement (SLA). All release notes for the update or patch will be made available to ABCWUA. ABCWUA will be notified in advance of any updates or patches being applied, and Sensus and ABCWUA can mutually agree on an update schedule for each.
O-3e	**Phone support must be available during the installation of any issued upgrade/patch.**	
	Included PROPOSED AMR/AMI:	Comply. Phone support will be available at all times. Sensus typically performs all patches and updates remotely for the utility as part of the SLA. All release notes for the update or patch will be made available to ABCWUA. ABCWUA will be notified in advance of any updates or patches being applied, and Sensus and ABCWUA can mutually agree on an update schedule for each.
O-4	**Describe support procedures for incidents occurring outside normal business hours and/or emergency/critical situations.**	
	Included PROPOSED AMR/AMI:	24x7 support is included in the standard support pricing proposed for any critical system issues that require immediate response. Examples of critical system issues covered under 24x7 support are listed below. • **Severity 1** - Customer's production system is down. The system is unusable, resulting in total disruption of work. No work-around is available and requiring immediate attention. o (Example: Network mass outage, all reading collection devices inoperable, inoperable head end software (e.g., FlexWare, MDM).

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		• **Severity 2 -** Major system feature/function failure. Operations are severely restricted; there is a major disruption of work, no acceptable work-around is available, and failure requires immediate attention. Please refer to C.2_Technical Services Process and Procedures_Rev1 for additional details.
O-5	**Describe the process for system updates such that no content, links, configuration settings, files, etc. are abandoned.**	
	Included PROPOSED AMR/AMI:	The FlexNet system and FlexWare software provides for backup of all system data and configurations to an external location as part of a configuration backup file. The FlexWare software is web-based, and no client software is required to be installed on individual terminals. The FlexWare software (GUI) receives all content from the FlexNet database (SQL or Oracle 11g at utility's option), so upgrades to the software interface platform (GUI) do not alter or delete collected data. All system and software upgrades will retain configuration settings, links, files, and content through the use of the configuration backup file utility and other native backup processes.
O-6	**Provide a statement guaranteeing future compatibility and "seamless" upgrade assuming an annual support agreement is maintained.**	
	Included PROPOSED AMR/AMI:	Future enhancement will maintain backward compatibility and upgradeability for two major/minor releases based on the current release. The Sensus strategy is to continue to benefit utility clients by building on our leadership position in open standards, multi-application, high-performance utility software and solutions. Sensus will continue to support utility customers with software maintenance for the current release and the previous two production releases. This is to give utility clients ample opportunity and time for orderly and planned transitions and resources. If the utility chooses not to transition per this plan, then additional and higher support costs may apply.
O-7	**Describe any additional support functions offered as part of the proposed system (e.g., off-hours support availability).**	
	Included PROPOSED AMR/AMI:	Premium support is available to ABCWUA which offers 24/7/365 support with an average two (2) hour response time after hours for priority 1 issues and four (4) hour response time for lesser priority issues. Online access to the SensusCare trouble management system is available 24/7 to create and monitor the progress of open tickets.

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O-8	**Describe, with examples, the prioritization of support calls and the intended response time for resolution of each level of priority.**	
	Included PROPOSED AMR/AMI:	Please refer to Appendix C.2_Technical Services Process and Procedures_Rev1 for details.
O-9	**Fully describe the path for support issue escalation.**	
	Included PROPOSED AMR/AMI:	Please refer to Appendix C.2_Technical Services Process and Procedures_Rev1 for details.
O-10	**Indicate the duration of continued maintenance and support for superseded releases.**	
	Included PROPOSED AMR/AMI:	The Sensus strategy is to continue to benefit utility clients by building on our leadership position in open standards, multi-application, high-performance utility software and solutions. Sensus will continue to support utility customers with software maintenance for the current release and the previous two production releases. This is to give utility clients ample opportunity and time for orderly and planned transitions and resources. If the utility chooses not to transition per this plan, then additional and higher support costs may apply.
O-11	**Describe any annual roadmap sessions available to communicate near-term functionality upgrades to clients.**	
	Included PROPOSED AMR/AMI:	Sensus has two separate meetings that are available to communicate near-term functionality to clients. **Sensus National User's Conference** The Sensus National User's Conference is typically held in the Fall at various locations across the country. It is an opportunity to see new and existing products, maximize efficiency of current operations through maintenance and troubleshooting classes, and gather valuable information and contacts from other Sensus users. A wide variety of classes are typically offered, and Sensus can offer specific classes or even one-on-one training by Sensus technical personnel at these conferences.

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		Sensus FlexNet User's Group There are currently more than 200 FlexNet deployments in North America. Many of the utilities currently using the FlexNet system have established an independent organization to share ideas and best practices with each other to help maximize the value of their FlexNet networks. This group also provides valuable feedback to Sensus for future enhancements, products and services. This group is operated and run by Sensus users. The last Sensus FlexNet User's Group meeting was in May 2010 at the Wynn Hotel in Las Vegas, NV. The next meeting is scheduled for the Spring of 2011.
O-12	**Provide the cost difference between standard business hour support and 24x7 support, if available.**	
	Included PROPOSED AMR/AMI:	24x7 Support is included in the standard support pricing proposed for any critical system issues that require immediate response. Examples of critical system issues covered under 24x7 support are listed below. ◆ **Severity 1 -** Customer's production system is down. The system is unusable, resulting in total disruption of work. No work-around is available and requiring immediate attention. o (Example: Network mass outage, all reading collection devices inoperable, inoperable head end software (e.g., FlexWare, MDM). ◆ **Severity 2 -** Major system feature/function failure. Operations are severely restricted; there is a major disruption of work, no acceptable work-around is available, and failure requires immediate attention. Please refer to Appendix C.2_Technical Services Process and Procedures_Rev1 for details.
O-13	**Describe any activities offered to ease the transition from implementation to support.**	
	Included PROPOSED AMR/AMI:	The following activities are offered to ease the transition from implementation to support. ◆ In-depth system training ◆ Field evaluations to help diagnose typical problems ◆ Introduction to the Technical Support team and online tools such as the eRMA and SensusCare trouble ticketing system. ◆ Follow up visits by PM and other Sensus team members

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		It should be noted that a transition is not limited to the just the list above. Sensus will do whatever is needed to ensure ABCWUA experiences a smooth operational turnover and does not intend to end our relationship simply because an installation has been completed.
O-14	**Elaborate appropriately and succinctly any System Support considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	Sensus has qualified third party contractors across the country to provide local TGB installation, maintenance, and operational support. In the rare event that on-site support is needed, Sensus has the option to call upon these contractors, or Sensus can also dispatch one of its Western FlexNet Support Engineers to resolve field issues if necessary.

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Section P: Data Archival and Backup

P-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
P-2	**Describe any data archival utility feature including timing and frequency of archival, record selection and retention (e.g., by date, meter ID, etc.), restore options, etc.**	
	Included PROPOSED AMR/AMI:	For the pilot (phase 1) proposed in this RFP, Sensus will supply its standard FlexWare MDM software platform, which will archive 13 months of hourly reading data for each meter on the network. The standard Sensus FlexWare MDM platform provided with the FlexNet network has basic querying, alarm, reporting, and CIS interface functionality and is designed to provide capacity for up to 50,000 meters. For the long term, Sensus understands that ABCWUA intends to implement an Enterprise MDM system for the full AMI system deployment. After ABCWUA implements an Enterprise MDM system, the FlexNet system will pass all reading and alarm information to the MDM system upon reception and will also retain the data for a minimum of 60 days. Additional data retention can be discussed at ABCWUA's option. Record selection by individual meter or by all meters is available on the FlexNet system for all retained data. Built on standard database infrastructure, the FlexNet database, as well as the server architecture it is built upon, provides the ability to back up the system externally, if desired. In addition, inherent backup capabilities that are native within the database (Oracle 11g or SQL 2005 at ABCWUA's option) and the server hardware (which employ RAID hard drive arrays) provides a great deal of failover protection, as well.
P-3	**Is the AMR/AMI provided with an inherent (or included) backup utility or does the system rely on the backup systems and processes of the operating environment (i.e., server and operating system)? Describe the functionality and/or the vendor's recommendation with respect to other tools/options for backup and/or archival.**	
	Included PROPOSED AMR/AMI:	An external backup solution is not provided standard with any FlexNet system but can be specified as part of the requested configuration. As previously stated, the industry standard nature of the head end system enables any number of backup capabilities. Additionally, the inherent backup capabilities that are native within the database

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		(Oracle 11g or SQL 2005 at ABCWUA's option) and the server hardware (which employ RAID hard drive arrays) provides a great deal of failover protection, as well. Sensus may recommend a specific backup methodology based on the database system selected and/or the preferred or available backup capabilities available at ABCWUA.
P-4	**Describe the proposed systems ability to retrieve archived data for inclusion in reports, and how report data may be used to obviate the need for voluminous long-term data storage. Include any 'restore' functionality and/or any limitations on the querability of such data.**	
	Included PROPOSED AMR/AMI:	The FlexNet system typically archives hourly reading intervals for 13 months (or 60 days when used in conjunction with an Enterprise MDM software platform). Long term data storage and archival beyond 13 months (or 60 days with MDMS) is a function typically performed by an MDMS and/or data warehouse platform. Sensus is not proposing an MDMS or data warehouse platform in this RFP response. Data retention within the FlexNet system is configurable, and there is considerable flexibility in the amount of data retention. Sensus will work with ABCWUA to configure the FlexNet system data retention to meet ABCWUA's needs for both the short term and the long term.
P-5	**Describe the ability to purge data from the system after a specified amount of time.**	
	Included PROPOSED AMR/AMI:	The system will purge data older than 13 months (for systems not employing an Enterprise MDMS) or older than 60 days (with Enterprise MDMS in place). This data purge is an automatic process that is run on the database server and is transparent to the utility. There is flexibility in the amount of data retention, but 13 months (or 60 days with Enterprise MDMS) is the standard configuration. In both cases, data is purged on a first-in, first-out basis.
P-6	**Elaborate appropriately and succinctly any Data Archival and Backup considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	The ability of the Sensus system to not only back up but also to store and recover information provides industry leading functionality to ensure data integrity and disaster recovery. There are three basic levels of backup available inherently in the system. The first is provided by the native operating system and server infrastructure, the second is provided by the open standard industry databases (Oracle 11g or SQL), and the third is the

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		backup and restore capability provided as part of the FlexNet system. Any or all three of these systems provide the capability of restoring not only the system data but the system configurations as well.

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Section Q: Security

Q-1	**GENERAL RESPONSE / DESCRIPTION for this section as noted on line 2.**	
	Included PROPOSED AMR/AMI:	Please refer to the responses below.
Q-2	**The AMR/AMI system shall provide security features to ensure that only authorized individuals enter, view and modify data. Access levels shall be definable to restrict use of system level functions (such as user authorization), and to provide data access levels to restrict the use of data entry, data approval, data retrieval, data modification, database structure creation or modification functions. Describe the security features of the proposed system, covering items such as system login, user validation (username/password), user groups, establishing privileges, etc.**	
	Included PROPOSED AMR/AMI:	Accounts and group access is controlled within LDAP or Active Directory and is integrated into the AMI system access control. The AMI system can be integrated into a customer's identity and access management solution or two-factor authentication. There are a number of different user level groups that can be established within the system to allow for highly customizable user level control. This includes specific functions related to system operation. The screenshot below shows just a few of the different user level permissions that can be set:

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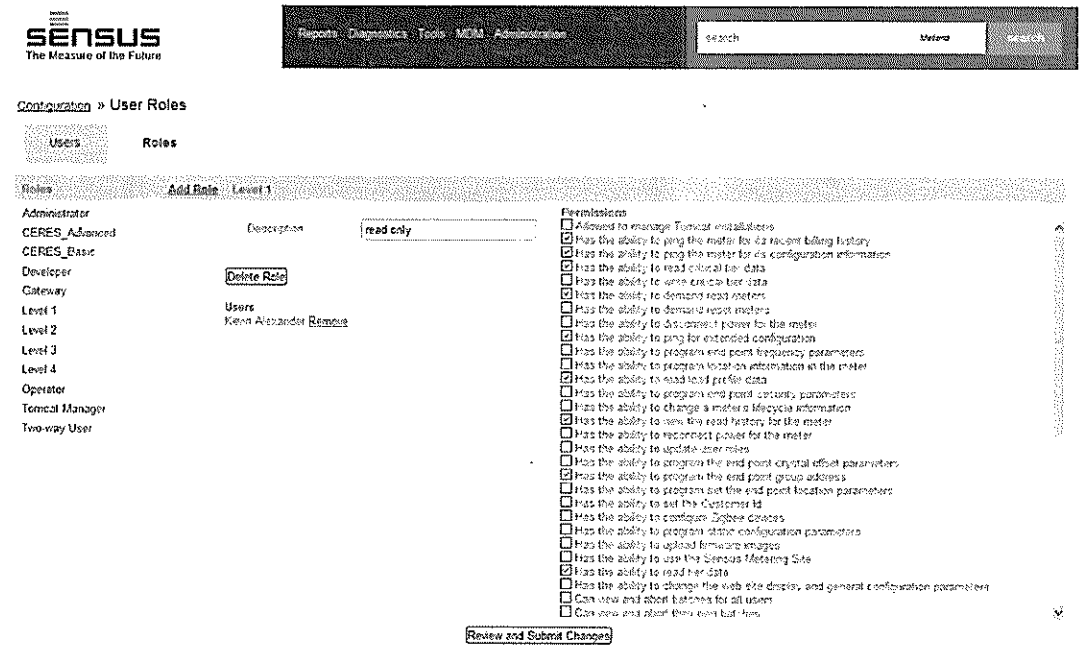

Figure 72: FlexNet allows for many different user roles and access

Q-3	**Describe the ability of the system to allow for complex passwords and forced expiration of passwords.**	
	Included PROPOSED AMR/AMI:	The internal LDAP server may be configured to enforce the password standards as outlined or as required. The password policy on the systems can be configured to match the customer security policy or standard.
Q-4	**Describe the ability for the AMR/AMI to allow restriction for:**	
	Included PROPOSED AMR/AMI:	

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Q-4a	**Individual screens**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.
Q-4b	**Menus**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.
Q-4c	**Tables**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.
Q-4d	**Reports**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.
Q-4e	**Quality control functions**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.
Q-4f	**Other (please specify)**	
	Included PROPOSED AMR/AMI:	Please refer to the response in Q-2.

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Q-5	**Describe the auditing information (e.g., last user, last updated) stored with each database record (e.g., meter read) including any user definable options for the same.**	
	Included PROPOSED AMR/AMI:	LDAP and Active Directory are utilized to authenticate both users and system accessing the FlexNet system. The operating system and application logs the access and monitoring/reporting are used to audit unauthenticated access attempts. If ABCWUA chooses to implement an Enterprise MDMS system as part of this phase or at a later date, this question speaks more to that type of functionality.
Q-6	**Elaborate appropriately and succinctly any Security considerations not called out in this section that are deemed important differentiators or essential functionality.**	
	Included PROPOSED AMR/AMI:	Sensus provides a solution for secure communications from end to end. Sensus is a trusted partner to more than 200 utilities, including a number of investor-owned utilities that are currently using the FlexNet system. ***FlexNet Defense In Depth Strategy*** Sensus is committed to a defense in depth strategy. Sensus provide support for a variety of network and host-based security controls including, but not limited to, stateful firewalls, intrusion detection/prevention, host integrity software, and security event management. Sensus provides security documentation on recommended controls and configurations. These can be tailored to the individual customer environment or security policy. ***FlexNet Software Security*** Sensus provides strong authentication mechanisms through a local LDAP authentication store included in the RNI. The ability to integrate into an organization's existing LDAP authentication store is also an option. This provides a robust authentication solution for a broad range of deployment options. The RNI also provides role-based access to ensure separation of duty and restriction of access to critical functions. This provides a granular level of access control for the various roles required by complex organizations.

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		FlexNet Network Infrastructure Physical Security Also, the fact that all FlexNet infrastructure devices are placed only on ABCWUA property adds to the physical security of the network. All RCUs (TGBs) are to be sited at ABCWUA property exclusively and can be placed behind locked gates and/or fences. Additionally, the TGB cabinets themselves are NEMA 4 enclosures that are extremely strong and secure. ***FlexNet RF Network Security – The Importance of Primary Use Licensed Spectrum*** Lastly, the primary-use licensed spectrum and RF communications protocols used by the FlexNet system add to the security of the FlexNet network. Unlike other systems that operate on shared-- use spectrum or secondary-use licensed spectrum, FlexNet operates on primary-use licensed spectrum exclusively. Additionally, the FlexNet RF modulation cannot be decoded by commercially available receiver devices, making the wireless communications on the FlexNet system the most secure available in the industry.

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Section R: Other Requirements

R-1	Elaborate appropriately and succinctly any other requirements not called out in this document and are deemed important differentiators, essential functionality, or contributing methodologies.	
	Included PROPOSED AMR/AMI:	FlexNet offers the following benefits to ABCWUA: • Lowest Risk Solution o Proven performance in more than 200 FlexNet deployments in North America, including three (3) in the State of New Mexico o Primary-use FCC licensed spectrum o Highest power endpoints (2 Watts inbound – 35 Watts outbound) o Multiple transmit modes and channels • Most Feature Rich Network o Open standards, multi-application AMI network o Full duplex, on-demand two-way communications o SCADA backhaul and applications for water o Permalog Plus acoustic monitoring support o Every component on the network is upgradeable o FlexServer customer web portal (optional) • Most Experience in Water AMI - Sensus o More than 100 years in the water utility industry o More than 4,000 AMR/AMI customers in North America o More than 175 water FlexNet networks deployed o Revolutionary new metering products (OMNI, iPERL, AccuMag)

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9.0 Response to Attachment B: Resumes of Proposed Implementation Team

Gary L. McCarver, Midwest Regional Manager

Experience & Background

Gary McCarver is an AMI Regional Manager having the overall responsibility for project management of AMI deployments including AMI field studies, AMI system deployment, AMI system training, and field services across 15 states in the Midwest. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Regional Manager, Gary was a Senior PM at Itron, Inc. In this capacity, Gary was responsible for the overall project management of Itron water, gas, and electric Automated Meter Reading (AMR) technologies. He has an extensive background in large system deployments exclusively in the communications and utility sectors.

Gary has over 20 years of combined project and program management experience with high-technology products at such firms as Sprint and Computer Network Technologies in addition to Itron, Inc. He has held positions in sales support, system engineering, program management, and project management. His program management experience includes successfully managing major AMR programs in excess of $50 million.

Professional Experience

2008 – Present, Sensus USA, AMI Regional Manager Midwest

- Oversees project management efforts for Sensus' AMI, gas, water, and electric businesses within a 15 state region
- Assists with the development and implementation of business processes to allow Sensus to manage AMI project deployments
- Sets up project management positions to align with the Midwest regional gas, water, and electric Sales Managers
- Develops business relationships with installation contractors, acquires project quotes, negotiates contracts, and manages subcontractor activities throughout the planning and execution phases of all projects. These business partnerships expand Sensus' ability to offer complete technology solutions to AMI customers.

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Gary McCarver has served as PM for the following Sensus utility accounts: Atmos Energy, Cleco Home Area Networking Pilot, Pensacola Gas, and Olathe Water AMI

- (1995 – 2008) Itron Project Management, Senior PM
- (1990 – 1995) Sprint, PM

Education: University of Phoenix, BSIT (52 hours with a GPA of 3.92)

Additional training includes Project Management Institute (PMP) and the Stanford University Project Management Certification (SCPM)

Robert Smoot, Project Manager

Experience and Background

Robert Smoot is an AMI Deployment PM for the South-Central region having the overall responsibility for project management of AMI deployments. Responsibilities include AMI field studies, AMI system deployment, AMI system training, and field services. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Deployment PM, Robert was a Senior PM with United Metering. In this capacity, Robert was responsible for the overall project management of AMR installation drive-by systems for water project deployments. Robert also worked with Enron Energy Services where he managed electric AMR projects for accounts in Phoenix, Arizona and throughout the state university system in California.

Robert has in excess of 20 years combined project management experience involving various AMR and AMI products and technologies. His project management experience includes successfully managing major multi-million dollar AMR deployments to include controlling project-related costs and timely deliveries.

Duties and Responsibilities

The PM is responsible for overall planning and execution of the FlexNet pilot and deployment projects employing generally-accepted PMP and Sensus processes. This position will also be responsible for business planning, customer interface, subcontracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor, and customer personnel assigned to the project

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- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will develop topics for and conduct routine meetings with customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Business, Construction, Engineering, Computer Science, or equivalent
- Project management experience in large-scale activities managing multi-person teams
- PMP certification a plus
- Experience managing and tracking project budgets
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high quality solutions to problems
- Must be able to work independently and function well as part of a team
- Must be completely literate with all Microsoft (MS) Office suite applications, general computer skills, able to type efficiently, develop MS PowerPoint presentations, spreadsheets, graphs, and analyses of project-related information

Network Deployment Manager (for ABCWUA, this will be the Project Manager)

Duties and Responsibilities

The Network Deployment Manager is responsible for overall planning, coordination, and support for the installation of FlexNet system components including Tower Gateway Base Stations (TGBs), FlexNet Network Portals (FNPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Also included is the systems optimization for all network and metering components requiring field visits to various locations throughout the service area. This position is also responsible for the deployment planning, customer interface, and coordinating the utilities resources, subcontractors, and Sensus employees for the network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with office and field staff of the customer organization, supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor and customer personnel assigned to the project

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- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will provide reports and participate in routine meetings with the customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Electrical Engineering, Business, Construction, Engineering, or equivalent
- Expert use of tools such as MapInfo, Planet EV, and other GIS mapping tools
- Working knowledge and ability with SQL and database querying and structure
- Experience in large scale activities, managing multi-person teams
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads.
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and other project related information
- Experience in WAN and LAN networking technologies and protocols

Kevin McCullor, Integration Technology Project Manager

Experience and Background

Kevin McCullor is an AMI Integration Technology (IT) PM providing monitoring and management of the Regional Network Interface (RNI) and field-related equipment.

Prior to becoming a member of Sensus, Kevin was employed as a Senior Systems Engineer with a nationwide paging provider. In this capacity, Kevin was responsible for the development and maintenance of a statistics collection and forecasting platform. This platform assisted executives in discussion-making and reducing overall cost of operation of the entire company.

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Kevin started as a Field Engineer and, through his vast knowledge of the industry, became one of the most trusted in his department. Kevin brings a solid understanding of RF and IT issues. He has been managing project both large and small for more than ten years.

Duties and Responsibilities

- Monitor and manage the health of the FlexNet system and its components
- Provide performance analysis and direct the optimization of the system using standard tools available in the FlexNet system and as provided for in the customer utility, third party contractors, or Sensus field optimization processes and/or systems
- Compile FlexNet project status reports, coordinate project schedules, manage technical project meetings, and identify and resolve technical problems
- Identify and analyze systems requirements and define project scope, requirements, and deliverables
- Coordinate technical project activities and ensure all project phases are documented appropriately
- Provide expert judgment and analysis for the design, development, and implementation of technical products and systems
- Resolve highly complex technical issues and conduct advanced research
- Recommend alterations to development and design to improve quality of products and/or procedures
- Develop, implement, and monitor information systems policies and controls to ensure data accuracy, security, and regulatory compliance
- Review reports of computer and hardware equipment production, malfunction, and maintenance to determine and address problems
- Aid in the design and development of hardware equipment and systems and/or redesign of existing systems as needed to fulfill the needs of customers
- Responsibilities also include providing equipment functionality and capability reports to the sales force and acting as technical liaison to the sales team
- Rely on extensive experience and judgment to plan and accomplish goals. Perform a variety of complex tasks. May lead and direct the work of others. A wide degree of creativity and latitude is expected.

Prerequisites

Minimum requirements for this position include:

- A bachelor's or master's degree in area of specialty (Engineering or Computer Sciences)
- Five to eight years of experience in the AMR, AMI, utilities, or related technical field
- Superior communication and interpersonal skills

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- Excellent analytical skills
- Entry to mid-level Perl and/or Unix shell scripting
- Mid-level Unix and Windows OS experience
- Mid-level SQL experience (MS SQL, Postgres SQL, Oracle)
- Solid understanding of basic telecommunications concepts (ping, ssh, telnet, ftp, traceroute, etc.)
- Good troubleshooting skills
- Know project management methodology, a PMP certification is a plus
- Be able to deal with multiple projects concurrently
- Ability to communicate with internal and external customers under stressful environments

RF Engineer/Technician

Duties and Responsibilities

The FlexNet RF Technician is responsible for assisting in the interpretation and implementation of the RF network plan, overseeing and/or certifying network equipment installation work, performing and/or overseeing network equipment maintenance, and ensuring the overall system performance of the FlexNet system components, including TGBs, FNPs, FlexNet Remote Portals (FRPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Inherent in these responsibilities is the overall systems optimization for network and metering components requiring field visits to various locations throughout the service area.

This Technician is responsible for:

- Serving as the interface between and among the Sensus RF Network Planning and Propagation Group, installation contractors, the utility, and tower site owners in implementing the network plan, optimization, systems acceptance testing, and customer acceptance
- Scheduling and conducting periodic reviews and imposing scheduled maintenance and operational tests to ensure system performance
- Performing site visits to network equipment sites to determine feasibility of use and extent of equipment installation requirements
- Providing reports and participating in routine meetings with the utility, contractors, and corporate headquarters for project reviews and special meetings as necessary
- Reviewing system reports for network/meter failures
- Coordinating and taking action to enhance meter read performance

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- Recommending or performing over-the-air refinements to meters
- Recommending meter change-outs for customers to improve performance
- Maintaining daily/weekly/monthly maintenance plans and logs and prepare Key Performance Indicators (KPIs)
- Performing preventive maintenance of network components
- Following and enforcing all corporate and safety and professional standards

Prerequisites

- Associates degree preferred. Minimum of a high school diploma. Preferred trade school education in electric, gas, or water industry. Prior utility experience a plus.
- Experience with or ability to learn mapping applications such as Planet EV, MapInfo, and other GIS mapping tools for use in network planning and maintenance as well as systems optimization
- Must possess and maintain a valid driver's license and drive to field sites in a safe manner
- Must be able to work wearing safety equipment and follow all Sensus, customer, and industry standard safety practices
- Working knowledge and ability with SQL and database querying and structure
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and use other project-related customized computer software and hand-held computing tools
- Experience with WAN and LAN networking technologies and protocols

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10.0 Attachment C: Propagation Study

Sensus has performed a very detailed propagation study for the ABCWUA AMI project. This study has taken into account not only the 850 meters that are considered in this RFP, but also a future full deployment scenario. All five (5) selected RCU (TGB) sites were selected to ensure excellent performance for this first phase, but also to provide excellent coverage and capacity for any later phases the Authority may wish to deploy.

Sensus has a tremendous amount of experience in Radio Frequency (RF) propagation modeling. Sensus has run literally hundreds of propagation studies for utilities across North America, and has been able to then validate the propagation study results against real-world performance data collected from more than 170 deployed water networks. Sensus has tuned the FlexNet propagation model over several years, and currently has a very accurate model that is both field validated and guaranteed.

Sensus uses leading RF Industry software applications (Planet EV) to perform propagation study analysis. FlexNet propagation study results take into account the following factors, among others:

- RCU (TGB) antenna height
- Detailed topography information
- Detailed RF clutter information (RF industry term for different signal absorption caused by buildings, trees, shrubbery, etc.)
- Known and validated RF signal strength and propagation qualities of the FlexNet MIU endpoints
- Known and validated RF receiver sensitivity of FlexNet RCUs (TGBs)
- Location of the FlexNet MIU SmartPoints (in this case, Pit Set water meter boxes).

The Sensus FlexNet Propagation Study performed for ABCWUA included analysis of all available sites provided by the Authority at various heights. Sensus has determined that five (5) sites at the locations listed below will provide excellent coverage of the 850 meters in Phase 1, as well as the vast majority of remaining meters in the ABCWUA service territory. All sites were run at both 40 feet and 80 feet for comparison purposes. While 80 feet does provide additional range for these sites, it has been determined that 40 feet for all sites will provide excellent overlapping coverage that will also allow these sites to remain in place under a full deployment scenario. This height is flexible, and can be higher or lower, depending on requirements or available heights at each site. The sites themselves are also flexible, as the range of the FlexNet system allows RCUs (TGBs) to be moved if a particular site listed below is not available, or is later determined by ABCWUA not to be suitable as an RCU (TGB) location.

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The five (5) sites selected in the FlexNet propagation study are:

1. Metro Detention Center Reservoir 2 (currently needed only for one meter at the Detention Center)
2. Gonzales Reservoir
3. Yale 1 Reservoir
4. Coronado Reservoir
5. Thomas Reservoir

The different colors on the propagation study maps below depict areas of different signal strength from the combined coverage of the five (5) individual RCUs (TGBs). Green and blue coverage is considered "excellent and good" coverage respectively, and yellow coverage is defined as "acceptable" coverage. More than 170 deployed Water FlexNet networks have demonstrated that meters in the yellow areas of the study are typically well covered when multiple TGBs are deployed in the surrounding area (such as the design proposed). If required, repeater devices can be installed in any areas where coverage is not sufficient, but Sensus does not expect to require any other equipment apart from the five (5) TGBs specified in our proposal to cover all of the 850 meters in Phase 1. The signal strength ranges for each color are related to the excellent sensitivity of the FlexNet TGB receivers (-122 dB).

As stated in the site list above, the RCU (TGB) at Metro Detention Center Reservoir 2 is currently only required to cover the single meter located near that facility. It would be possible to eliminate this RCU (TGB) from the RF design and use either a repeater or FlexNet Remote Portal (FRP) for this meter (an FRP is essentially a very small collector used for small remote areas such as this). Using either a repeater or FRP device at this location would reduce system costs, but Sensus has chosen to propose in this RFP a TGB device at this location to simplify the network design and provide identical coverage for all 850 meters considered in this RFP. However, ABCWUA will have the option to select a TGB, repeater or FRP for the Metro Detention Center location.

Plots showing coverage for both 40 feet and 80 feet antenna heights are shown below:

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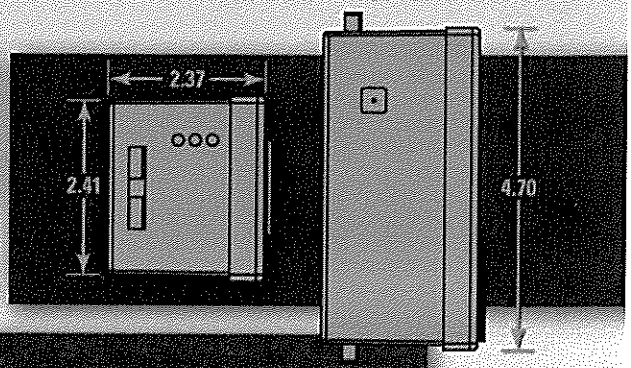
CommandLink Specifications

Primary Function

Electronic tool permitting on-site wireless installation, interrogation and programming of FlexNet water and gas SmartPoints.

Physical

Length	Width	Height	Weight
4.7"	2.41"	2.37"	16 oz.



Exterior: high-impact, injection-molded plastic
Strap: elasticized "bungee" material
Accessories: AC/DC charger (included)

Environmental

	MIL-STD 810F			Method
Temperature – shock	-20° – 103° F			503.4
Temperature – storage	-31° – 140° F			501.4
Temperature – operation	-20° – 130° F			501.4
Humidity	90% rel. -29/+54			507.4
Water	Procedure I			512.4
Drop	No.	Ht.	surface	temp.
	6	5 ft.	concrete	-20° F
	5	5 ft.	concrete	70° F
	6	5 ft.	concrete	130° F
				516.5
Sand/Dust	Procedures I, II; IEC-529-IP-X6			510.3

Electrical

Batteries:	Three (3) "AA" rechargeable or Energizer brand disposable NH-15AA
Replaceable:	Yes
AC Charger:	Yes
DC Charger	Yes
Charge Time:	Approximately 4 hours
Indicators:	LED; power, Bluetooth communication, charging
Firmware:	Upgradable via Bluetooth interface

RF Communication

CommandLink complies with FCC Part 15, FCC Part 15 Class B and Canadian ICES-003 requirements.

Bluetooth:	Class 2
Sensus:	Inductive at SmartPoint, TouchRead capable

Hand-Held Compatibility

	Windows Mobile6®	USB Interface	Bluetooth®
Sensus AR5500[1]	X	X	X
Trimble Nomad[1]	X	X	X
Juniper Archer[1]	X	X	X

[1]HHDs listed at left are capable of completing 250 installations over a two day period on a single charge. Other HHDs that meet the Hand-Held Compatibility requirements must have 50 MB of internal memory to operate CommandLink software; however, battery life may not meet the Sensus standard of 250 intallations.

Bluetooth® is a registered trademark of Bluetooth SIG, Inc.

Windows® and Mobile6® are trademarks of Microsoft Corporation.

SENSUS

AutoRead® Handheld Device / Programmer

Standard Model - AR 5501
RadioRead™ Model - AR 5502

APPLICATION — METER READING:

The Sensus AutoRead® Hand-Held Device [HHD] is primarily designed to collect and store utility meter readings with built-in capability for expanded uses. The HHD interfaces to a personal computer [PC] through a communications/charging stand used for uploading pre-programmed meter reading route information. The computer must be equipped with Sensus AutoRead® System software.

The Model AR-5501 accepts meter reading data entered manually on a built-in keypad, or electronically, through TouchRead® System reading guns used for interrogating encoders. Reading gun options include cable-connected and RF (no cable required) styles.

The Model AR-5502 includes all features of the Model AR-5501, plus it can read Sensus RadioRead® Meter Transceiver Units [MXUs].

PROGRAMMING:

The AR5500 series HHDs are designed for collecting meter readings as well as programming RadioRead MXUs, FlexNet SmartPoints, and ICE registers.

CONSTRUCTION:

The HHD is housed in a weather-resistant, high impact, UV-stabilized plastic. Surface-mounted circuitry in the specially designed, watertight case allows the HHD to be used in rugged field conditions over a wide range of temperatures.

ERGONOMIC DESIGN:

The HHD's ergonomic-minded design offers a well-balanced, easy-to-handle unit. It includes a graphical liquid crystal display [LCD] for ease of viewing during operation. The contrast value of the LCD automatically adjusts based on the ambient temperature, but can also be easily field adjusted to compensate for use in varying lighting conditions. The HHD can be manually carried during operation, or function in the optional HHD carrier harness.

BACKLIGHTING:

A backlight feature provides illumination to the LCD for convenience in data entry and ease of reading data in areas with insufficient lighting.

SPECIFICATIONS

PRIMARY	Hand-held electronic meter reading collection and data storage device for manual, TouchRead System, and RadioRead meter reading.
OPTIONAL	Programmer for Sensus SmartPoints and ICE registers
PHYSICAL CHARACTERISTICS	Case material molded of high impact, UV-stabilized plastic. Orange color standard. Reading device/ programmer connection built in. Carrying harness included.
DIMENSIONS	10" [254 mm] (H) x 5.25" [133.35 mm] (W) at display and 3.1" [78.74 mm] (W) at its narrowest point x 2.75" [69.85 mm] deep and 1.5" [38.1 mm] at its shallowest
WEIGHT	29.5 oz (836 grams)
OPERATING SYSTEM	Microsoft Windows Mobile 6 Microprocessor: Intel XScale® processor, 624 MHz Operating Memory: 128 MB SDRAM Data Storage Memory: 1GB
KEYPAD	Alpha and numeric. Large keys can be operated while wearing gloves
DISPLAY	Backlit color LED screen. Will display meter reading information, route information from hand-held, and any additional system information.
POWER SUPPLY	Lithium Ion batteries, field replaceable battery packs maintain functionality of up to 1,500 touch type or RadioReads (AR5002 only) readings for at least 12 hours
OPERATING TEMPERATURE	-22° F to 130° F (-30° to 54° C)
HOUSING	Tested to withstand being dropped on any surface from a 4 foot height without damage. Tested to MIL-STD 810F and IP67 for waterproof, dustproof, and shockproof (drop) standards.
READING COMPATIBILITY	Able to read Sensus encoders, Sensus MultiRead Modules, Badger ADE and Neptune Proread (ARB VI).
COMMUNICATIONS/ CHARGING STAND	Holds one HHD per stand. Microprocessor controlled. Load/Unload speed: 115k Baud Communications Interface: Serial RS 232C Bluetooth® Class I approved Certifications: FCC Class B, CE, Rotts Compliant, EN60950

FLEXIBLE DATA ENTRY:

When used with a Sensus TouchRead AutoGun, the HHD automates the reading process. Reading data from Sensus and compatible absolute encoder equipped meters is obtained and stored in the HHD. Manual entries can also be made using the keypad, which features elastomeric, tactile response keys. Preprogrammed "high" and "low" range imits, calculated and passed from the utility billing software, can be sent to alert the user of possible reading errors. In addition, the Model AR 5502 provides expanded features for reading and programming Sensus RadioRead MXUs.

CORDLESS AUTOGUN:

Used in conjunction with the AutoRead HHD, the cordless AutoGun provides the ability to perform TouchRead readings without the need for cables from the AutoGun to the AutoRead HHD. Information is stored in the AutoRead HHD through a bi-directional, low-power RF link.

AUTOMATIC, ERROR-FREE DATA COLLECTION:

When used with a TouchRead AutoGun, the HHD collects and stores readings automatically from Sensus or compatible absolute encoders. Regardless of the route sequence programmed into memory, the HHD software identifies each meter encoder using the encoder's internal identification number. The software then searches the route program and automatically stores the meter reading in the correct customer account. When the utility's meter readers hear an audible alert tone from the HHD, it is alerting them to a special condition or hazard. They need only refer to instructions on the HHD screen on how to proceed. This process eliminates errors and increases meter reading speed.

AUDIBLE VERIFICATION/WARNING:

The audible tone confirms completed TouchRead and RadioRead System readings or alerts the user to faulty or out-of-limit readings. Tones can also be programmed with notes to alert the meter reader to hazardous situations or to respond to field survey questions.

COMMENTS/NOTES:

The HHD uses preprogrammed, utility-defined note codes, or free form notes [using the alpha and numeric keypad].

Meter readers can identify accounts requiring special attention, or they can note unusual conditions and account survey information.

REPLACEABLE BATTERY:

The rechargeable, self-contained Lithium Ion battery pack is field-replaceable to minimize downtime. The HHD is also equipped with a lithium battery backup to maintain date and time.

PRODUCTIVITY MONITORING:

The HHD's built-in clock can record the time and day of each meter reading. The software can note and store the type of reading made: manual, automatic, and/or multiple data entry. These reads provide an overview of time spent reading the route and special problems related to readings or equipment use.

SERVICE AND WARRANTY:

No service should be necessary if reasonable care is given during normal use. Sensus offers the Sensus Equipment Maintenance Program [SEMP] to extend the protection of HHDs and related equipment beyond the one [1] year warranty covering materials and workmanship. Warranty and service policy details are available from Sensus representatives and authorized AMR distributors.

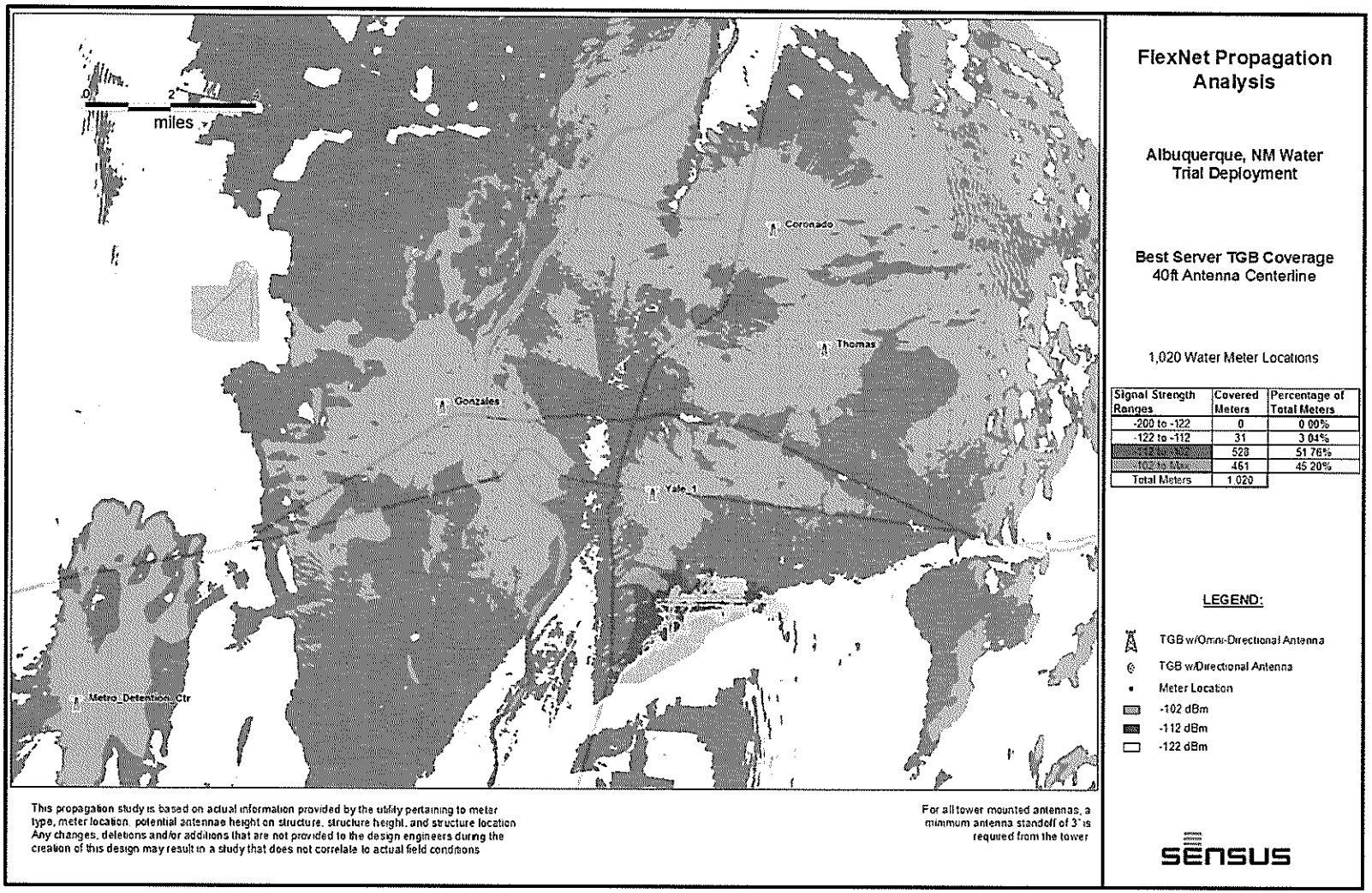
TouchRead AutoGun or AutoGun PitProbe can be used with the HHD for electronic reading of meters equipped with TouchRead System encoders: AutoGun reading gun and PitProbe extension can be used without a connecting cord.

The Sensus 5500 Series HHD provides flexibility for utilities needing a reliable electronic hand-held meter reading and programming device. In addition to accepting meter readings via its keypad, the HHD also accepts readings from TouchRead® System and RadioRead® System equipped meters where those systems are used.

AUTHORIZED SENSUS DISTRIBUTOR

SENSUS

P.O. Box 487 | 450 North Gallatin Avenue
Uniontown, PA 15401 USA
T: 1-800-638-3748
F: 1-800-888-2403
www.sensus.com/water
h2oinfo@sensus.com



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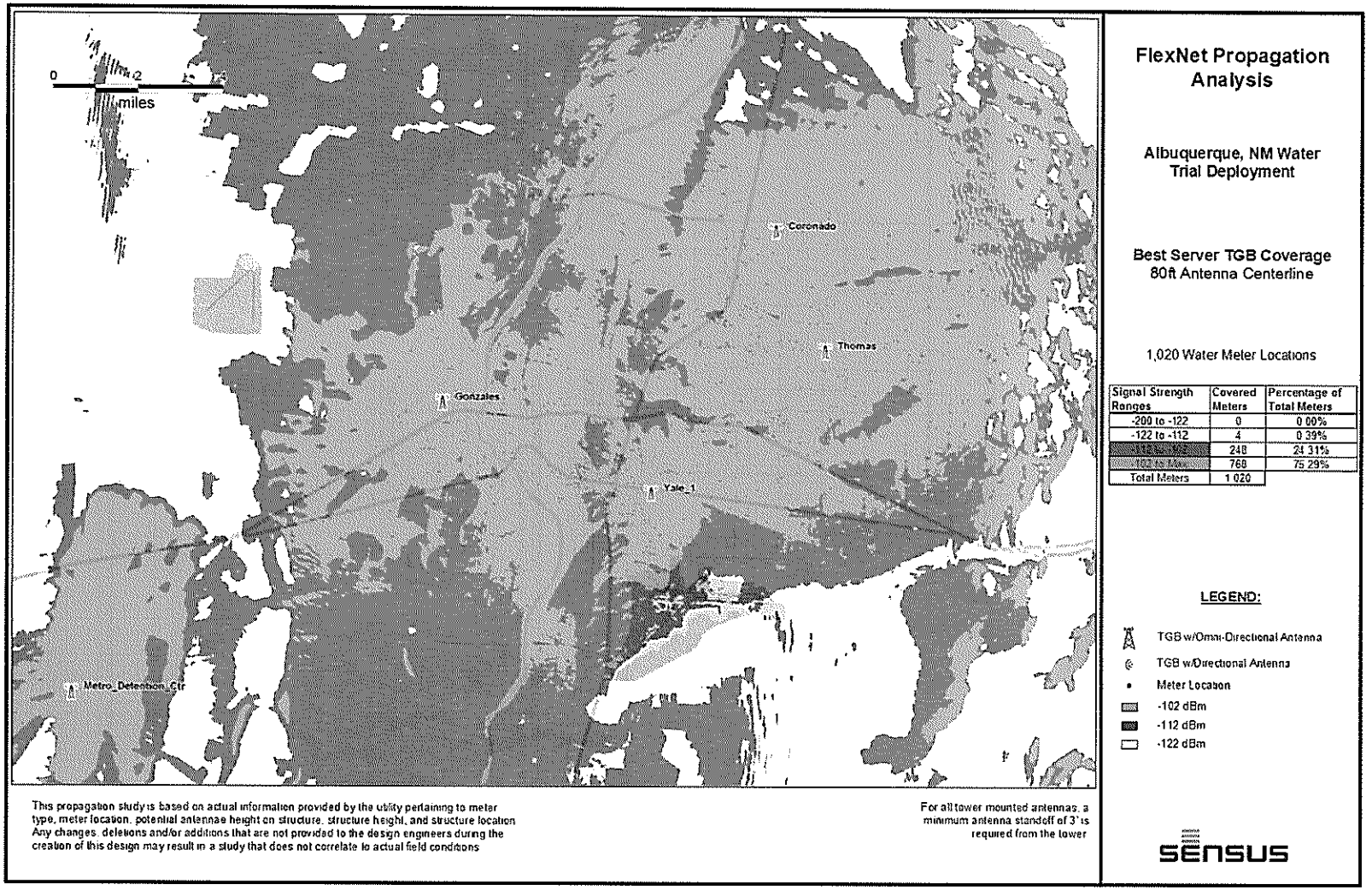

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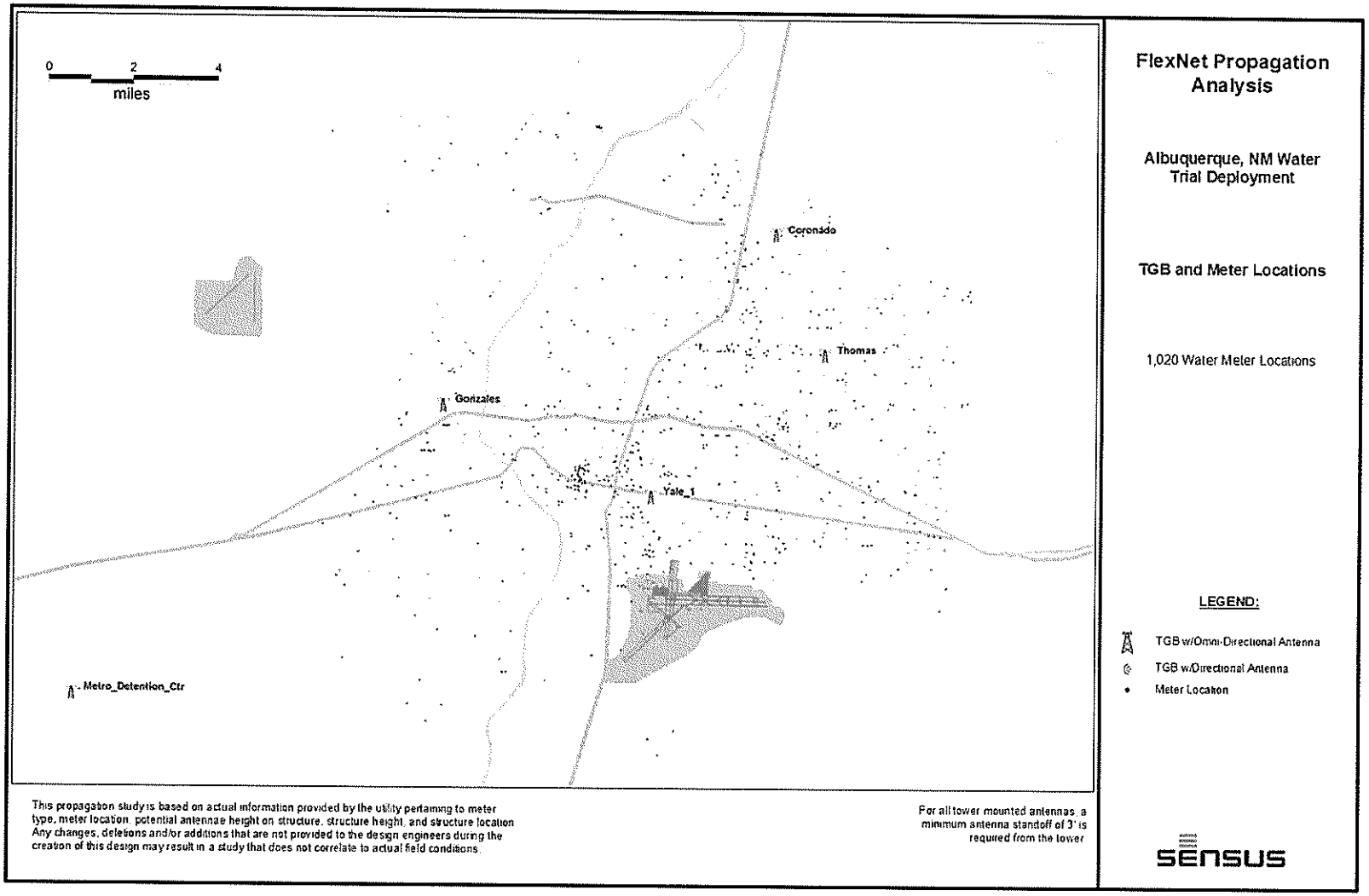

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Albuquerque, NM Water Pilot
1,020 Pit-Set Water Meter Locations

Date Completed: 8/23/2010
RF Engineer: Ray Dugger

TGB Name	Latitude	Longitude	Site Address	Proposed Antenna Centerline (ft)	Base Antenna Type	Base Antenna 3dB Beamwidth (deg)	Base Antenna Azimuth (deg)	Total Meter Location Levels >-92dBm	-102 to -112	Total Covered Meter Locations (>-112dBm)	-112 to -122	<-122
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	160	362	522	269	229
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	105	295	400	284	336
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	126	769	895	91	34
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	61	670	731	230	59
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	1	15	16	347	657
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	1	6	7	220	793
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	296	421	717	191	112
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	159	469	628	242	150
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	357	591	948	59	13
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	152	637	789	199	32
Best Server 80'								767	247	1,014	5	1
Best Server 40'								461	528	989	31	0

The meter counts indicated for the individual sites are cumulative in nature, and coverage overlap is involved.

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ATTACHMENT D – COST PROPOSAL

Submitted proposals should include but are not limited to the following information. The Water Authority seeks firm prices for the products and services outlined in Section 2.1.10 (Implementation Work Plan items) and Part 3 (Scope of Services) of Proposals. As part of Attachment D, the Proposer shall include a proposed Payment Schedule. The Cost of Services and Payment Schedule shall also be included in electronic format on the submittal CD.

Further granularity within the sections below is encouraged to indicate **EXACTLY** what is included in the quoted price. The Proposer assumes all liabilities with respect to any ambiguity in presentation of cost. Note: The Water Authority does *not* wish for the Proposer to include its own quotation format.

The vendor shall submit the following cost proposals in the format shown on the following pages: All cost proposals are on a not to exceed basis for each cost item below. Specify terms and conditions for site licenses, delivery, payment, and other applicable goods and services. Prices must be in effect for three (3) years after the Notice to Proceed date, including freight charges, applicable taxes, any other delivery costs incurred, and installation.

1. Cost Proposal 1:	System Costs Explain any necessary customization for mandatory Authority requirements and cost them out separately
2. Cost Proposal 2:	Summary Cost by Activity
3. Cost Proposal 3:	Annual Maintenance Support Costs
4. Cost Proposal 4:	Other Contract Costs

COST PROPOSAL 1 - SYSTEM COST

List all software cost being proposed including one-time cost. Indicate product number when applicable for product line.

SOFTWARE NAME AND DESCRIPTION (list software name, description, version no. and purpose)	**PRODUCT NUMBER**	**QTY**	**UNIT COST**	**TOTAL COST**	**WARRANTY PERIOD**
Licenses for AMR/AMI. Please note version and any limitation or restrictions. Please base pricing on either 100 named users or 25 concurrent users. Please note the Water Authority prefers concurrent licensing if available.		QTY 1 For 850 units only	$25,000	$25,000	Perpetual as long as software maintenance contract is maintained
		QTY 1 Note : *For 190,000 Meter Full Deployment*	*$200,000*	*TBD*	Perpetual as long as software maintenance contract is maintained
Additional Licensing required for establishment of an AMR/AMI test environment.		Any additional sites for Albuquerque included no charge	Included	Included	Perpetual as long as software maintenance contract is maintained
Any third party software/hardware required to meet the stated functionality. Please note licensing registrations (number and type).		Multiple unbundled software elements require direct license by utility	See Exhibit C	See Exhibit C	Per third party license. No warranty from Sensus.
Licenses for Interfaces to third party systems. Please provide a cost for each system listed in the requirements matrix.		No licenses required for interfaces to third party systems, but integration fees apply. See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	Perpetual as long as software maintenance contract is maintained

Network hardware (MIUs, RCUs, etc.) as required in the equirements Matrix.		QTY 658 MIU SmartPoint transmitter (Single Port)	$98	$83,300	10 year full/10 year prorated. See attached standard warranty document G-500.
		QTY 96 MIU SmartPoint transmitter (Dual Port)	$104	$9884	10 year full/10 year prorated. See attached standard warranty document G-500.
		Adapter Cable for MIU to Itron connector	$15 Each *Not required for Sensus registers with TR/PL connectors*	TBD	20 Years
		QTY 5 RCU/TGB collector - hardware only. Outdoor version.	$59,000	$295,000	Lifetime warranty on parts paid through Annual Network Operations Fee on Cost Proposal 3.
Other products required to meet the RFP requirements. Please list and explain. Please price each product separately.		QTY 9 Site Prep for RCU locations	Responsibility of Utility	Responsibility of Utility	None
		QTY 850 Lid Machining for MIU Endpoint Radios	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	None
Modifications proposed including any third-party software/hardware to meet the requirements.		Users require PC standard web browser with Network/Internet Access.	Responsibility of Utility (typically standard on Windows PC)	Responsibility of Utility (typically standard on Windows PC)	None
COST PROPOSAL 1 TOTAL				**$413,184**	

COST PROPOSAL 2 - SUMMARY COST BY ACTIVITY

ACTIVITY	VENDOR HOURS	VENDOR PERSONNEL COST	VENDOR EXPENSES	TOTAL COST
Project management, quality assurance, or other administrative services.	2 months PM	$15K per month	See "Travel and Related Expenses" Below	$30,000
	2 months IT lead *Assumes utility permits deployment of all 5 RCU sites and endpoints in 60 day period from project start.*	$15K per month *Longer project timelines will require PM and IT lead resources to match.*	See "Travel and Related Expenses" Below	$30,000
Implementation services as described in proposal. Include all elements of delivery such as installation, configuration, acceptance testing, etc., with the following five items separate:	Third party endpoint subcontractor including travel expense. *Endpoint Installation*	850 Meters @ $65 each *(See below for register replacement or confined space)*	Included	$55,250
	Register Replacement *(if required – does not include Confined Space)*	$9 per register	Included	TBD
	Confined Space Entry Adder *(if required to access wires or replace register)*	$85 per meter	Included	TBD
	QTY 5 Sensus RCU collector installation *(excluding site prep.)*	$6,000 each	Included	$30,000
• Report Development. Indicate number of reports proposed. (Minimum of those named reports in requirements matrix, plus 10 additional days).	10 days *Includes branding and minor modifications of standard reports.*	$1750/day	$17,500	$17,500
• Data Migration (if any)	Assuming the use of standard file types - this is included.	Incl.	Incl.	$0

• System Interfaces	Up to 5 days – Flat file interface recommended during the pilot period.	Oracle CIS Flat File or Interface – up to 5 days @ $1750/day	$8,750	$8,750
	Assumes MultiSpeak interface – up to 20 days, depending on level of complexity	Oracle CIS Web Services Interface – up to 20 days @ $1750/day	TBD	$0
	Detailed specifications on ESRI interfaces are required for an accurate response.	$1750/day	TBD	$0
• Documentation		Incl	Incl	$0
• Training. Indicate number of days per class and number of hours per day below:	Note: Ongoing training is also provided during deployment and turn up by Sensus PM and IT lead personnel			
System Administrator/Technical	2 Days	$1750/day	$3,500	$3,500
End-User	2 Days	$1750/day	$3,500	$3,500
Optional: Other, please specify_____ Meter/MIU Installation and Troubleshooting Training	1 Day	$1750/day	$1,750	$1,750
Modifications necessary to meet the stated functionality.		Incl	Incl	$0
Other services required to meet the RFP requirements. Please explain.		Incl	Incl	$0
COST PROPOSAL 2 SUBTOTAL				**$180,250**
Travel and Related Expenses • A not-to-exceed estimate should be provided. The Water Authority will not accept "as incurred" or similar response. (Note: Vendor should indicate the total number of trips and days onsite proposed).	24 Trips for PM and IT lead 3 Trips for Trainers 8 trips for other subject matter experts		Not to Exceed $35,000	$35,000

COST PROPOSAL 2 TOTAL				**$215,250**

COST PROPOSAL 3 - ANNUAL MAINTENANCE SUPPORT CONTRACT COST

The vendor shall submit an itemized listing of each component in the maintenance support contract. Specify proposed terms of the maintenance cost. The vendor shall also describe in detail the annual percentage charged for maintenance based upon each cost item. The cost item shall also be defined.

Provide cost figured for annual maintenance and future releases. Maintenance costs shall not exceed a five percent (5%) increase over the previous year's amount. Specify costs for future releases as the lower of, a state percentage off of the then current list price, or today's current price. Describe when the maintenance will become effective.

MAINTENANCE SUPPORT AND DESCRIPTION	ANNUAL MAINTENANCE COST
Annual support for one year; support to commence after 90-day warranty period following formal system acceptance. Also include, if available, the cost for 24x7 support. 24 x 7 support via pager included with 4 hour response time.	20% of RNI head end license fee to support 850 units or $9,000 annually for year one.
	20% of $200,000 or $40,000 annually for mass deployment scenario (subject to annual CPI escalation)
Pricing for any additional support services as per the requirements matrix (Attachment A). Please list by line item. All items in Section O included.	Annual Network Operations Fee of $12,000 for 850 endpoint pilot.
	Annual Network Operations Fee of $80,000 for 200,000 unit mass deployment scenario.(subject to annual CPI escalation)
COST PROPOSAL 3 TOTAL	**$21,000 for 850 Unit Pilot year one.**

COST PROPOSAL 4 – OTHER CONTRACT COSTS

The following items will need to be specified for future use by the Water Authority and may be incorporated as part of the final contract.

COST ACTIVITY	COST
Per hour cost for custom programming and/or requested enhancements	$1750 per day. Or $225 per hour.
Per day cost of on-site, non-maintenance related activity. Include all expenses	$1750 per day.
Cost of additional user/seat licenses. Also include options for enterprise licensing.	None from Sensus. Utility responsible for third party seat licenses.
Please note any cost incurred for an addition database instance to be used for testing/development.	No charge from Sensus for db seat license. Utility responsible for any third party seat licenses.
Future annual support. Please note any escalators.	All hardware items are fixed price. All software maintenance, project management, and annual network operations are subject to CPI escalation.
COST PROPOSAL 4 TOTAL	Total Cost is dependent on options selected by ABCWUA in items 1 and 2 above.

The undersigned certifies that the proposed AMR/AMI will satisfy all elements and requirements of the related RFP.

Proposer Name: William T. Yeates, Sensus USA Inc.

Signature: William T. Yeates

Title: Executive Vice President, Conservation Solutions

Date: September 8, 2010

11.2 Price Escalation Clause

Contractor agrees that prices are firm for all meters and modules ordered by the Utilities for three years after the date the contract is effective ("Effective Date"). Starting on the third anniversary of the Effective Date of the contract, and annually thereafter, the pricing for all meters and modules shall increase automatically to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding twelve-month period (which product shall not be less than zero, such that the pricing for meters and modules cannot decrease under this section). "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All Items Less Food and Energy" for the U.S. City Average for All Items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index. Any CPI increases called forth in this Agreement shall be calculated to the third decimal point (e.g. 2.576%). All prices stated shall be FOB to ABCWUA.

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PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

RFP NO: RFP2011-002-TC

Business Name: Sensus USA, Inc.

Principal Office:

8601 Six Forks Rd, Suite 700	NC	27615
Street Address	State	Zip code

Place of Business:

8601 Six Forks Rd, Suite 300	NC	27615
Street Address	State	Zip code

☞ *If your Principal Office and Place of Business are in the Greater Albuquerque Metropolitan Area (see definitions in Instructions attached), please provide the following information:*

Average Number of Full-time Employees over the Prior Calendar Year: SELECT ONE

☐ 0 – 19 employees.

☐ 20 employees or more.

☞ *If applicable, insert State of New Mexico Resident Business or Resident Manufacturer Certification Number:* _____

CERTIFICATION

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the Water Authority, will provide, within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: _____

Printed Name: William T. Yeates

Title: EVP, Conservation Solutions **Date:** July 29, 2010

YOU MUST RETURN THIS FORM WITH YOUR OFFER

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, NMSA 1978 Sections 13-1-28, et seq., as amended, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars ($250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

"**Applicable public official**" means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

"**Campaign Contribution**" means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals

who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

"**Family member**" means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

"**Pendency of the procurement process**" means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

"**Prospective contractor**" means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

"**Representative of a prospective contractor**" means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Names of Applicable Public Officials (completed by State Agency or Local Public Body)**:**

Mayor Richard J. Berry	Rey Garduno
Alan B. Armijo	Debbie O'Malley
Art de la Cruz	Maggie Hart Stebbins
Trudy Jones	Pablo R. Rael

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(Attach extra pages if necessary)

Contractor Firm Name

Signature

Date

Title (position)

--OR—

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS ($250) WERE MADE to an applicable public official by me, a family member or representative.

Sensus USA, Inc.

Contractor Firm Name

Signature

August 2, 2010

Date

Executive Vice President, Conservation Solutions

Title (Position)

PART 1
INSTRUCTIONS TO OFFERORS

1.1 RFP Number and Title: RFP2011-002-TC, Advanced Meter Infrastructure System

1.2 Proposal Due Date: August 6, 2010 - NLT 4:00 PM (Local Time)
The time and date proposals are due shall be strictly observed.

1.2.1 Instructions regarding Pre-Proposal Conference: The Water Authority will conduct a Pre-Proposal Conference on June 30, 2010 at 8:30am. Conference will be held at 400 Marquette NW, 7th Floor, Room 7096, CIP Conference Room.

1.2.2 Non-Mandatory: This is not a mandatory pre-proposal conference, but highly recommended. Those vendors who choose not to attend shall be solely responsible for obtaining any additional information, clarification or addenda resulting from this meeting.

1.2.3 Questions: The Water Authority shall have in attendance key personnel to answer questions or discuss issues that may arise. Questions should be prepared prior to the conference and both hard and soft copy of such questions submitted to the purchasing representative on the **day of the conference. Verbal answers, oral explanations, or instructions given before the award of the contract or at any time will not be binding on the Water Authority.**

1.3 Purchasing Office: This RFP is issued on behalf of the Albuquerque Bernalillo County Water Utility Authority by the City of Albuquerque Purchasing Office, which is the sole point of contact during the entire procurement process.

1.4 Authority: The Albuquerque Bernalillo County Water Utility Authority, pursuant to Section 72-1-10, NMSA 1978, is granted all powers to carry out and effectuate its public and corporate purposes. To this end, the Water Authority has adopted the City of Albuquerque Public Purchases Ordinance. It is intended that this ordinance shall govern the purchasing transactions of the Water Authority.

1.5 Acceptance of Offer: Acceptance of Offer is contingent upon Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the following:

1.5.1 City Public Purchases Ordinance

1.5.2 City Purchasing Rules and Regulations: City of Albuquerque Purchasing Rules and Regulations: These Rules and Regulations (the "Regulations") are written to clarify and implement the provisions of the Public Purchases Ordinance (the "Ordinance"). These Regulations establish policies, procedures, and guidelines relating

to the procurement, management, control, and disposal of goods, services, and construction, as applicable, under the authority of the Ordinance.

1.5.3 Civil Rights Compliance: Acceptance of offer is contingent upon the Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the Albuquerque Human Rights Ordinance, the New Mexico Human Rights Act, Title VII of the U.S. Civil Rights Act of 1964, as amended, and all federal statutes and executive orders, New Mexico statutes and City of Albuquerque ordinances and resolutions relating to the enforcement of civil rights and affirmative action. Questions regarding civil rights or affirmative action compliance requirements should be directed to the City of Albuquerque Human Rights Division, Family and Community Services Department.

1.5.4 Americans with Disabilities Act Compliance: Offeror certifies and agrees, by submittal of its offer, to comply and act in accordance with all applicable provisions of the Americans With Disabilities Act of 1990 and federal regulations promulgated there under.

1.5.5 Insurance and Bonding Compliance: Acceptance of offer is contingent upon Offeror's ability to comply with the insurance requirements as stated herein. Please include a certificate or statement of compliance in your proposal and bonds as required.

1.5.6 Ethics:

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

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

1.5.7 Participation/Offeror Preparation: Offeror may not use the consultation or assistance of any person, firm company who has participated in whole or in part in the writing of these specifications or the Scope of Services, for the preparation of its offer or in the management of its business if awarded the contract resulting from this RFP.

1.5.8 Debarment or Ineligibility Compliance: By submitting its offer in response to this RFP, the Offeror certifies that (i) it has not been debarred or otherwise found ineligible to receive funds by any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States; and (ii) should any notice of debarment, suspension, ineligibility or exclusion be received by the Offeror, the Offeror will notify the Water Authority immediately.

1.5.9 Goods Produced Under Decent Working Conditions: It is the policy of the Water Authority not to purchase, lease, or rent goods for use or for resale at Water Authority owned enterprises that were produced under sweatshop conditions. The Offeror certifies, by submittal of its offer in response to this solicitation, that the goods offered to the Water Authority were produced under decent working conditions. The Water Authority defines "under decent working conditions" as production in a factory in which child labor and forced labor are not employed; in which adequate wages and benefits are paid to workers; in which workers are not required to work more than 48 hours per week (or less if a shorter workweek applies); in which employees are free from physical, sexual or verbal harassment; and in which employees can speak freely about working conditions and can participate in and form unions. [*Council Bill No. M-8, Enactment No. 9-1998*]

1.5.10 Graffiti Free: When required, the Contractor will be required to furnish equipment, facilities, or other items required to complete these services, that are graffitifree. Failure of Contractor to comply with this requirement may result in cancellation of the contract resulting from this RFP.

1.6 City Contact: The sole point of contact for this Request for Proposals is the City of Albuquerque Purchasing Division. Contact the following individual(s) regarding this RFP:

- Thomas Courtin, Senior Buyer, Department of Finance and Administrative Services, Purchasing Division,
- Phone: (505) 768-3504 or E-Mail: tkcourtin@abcwua.org
- Post Office Box 1293, Albuquerque, New Mexico 87103

1.7 Contract Management: The contract resulting from this RFP will be managed by the Albuquerque Bernalillo County Water Utility Authority.

1.8 Clarification: Any explanation desired by an Offeror regarding the meaning or interpretation of this Request For Proposals must be requested in writing not less than ten (10) working days prior to the hour and date specified for the receipt of offers to allow sufficient time for a reply to reach Offerors before the submission of their offers. All inquiries must be directed to the Purchasing Office as stated herein. Oral explanations or instructions given before the award of the contract or at any time will not be binding. Any information given to a prospective Offeror concerning this Request For Proposals, will be furnished to all prospective Offerors as an amendment to this Request for Proposals, if such information is necessary to Offerors in

submitting offers on this Request For Proposals or if the lack of such information would be prejudicial to uninformed Offerors.

1.9 Submission of Offers: The Offeror's sealed proposal must be in the format outlined in Part 2 of this Request for Proposals and mailed or delivered pursuant to the following requirements:

1.9.1 Envelope preparation. Offers and modifications thereof shall be enclosed in sealed envelopes and have the following identifying information on the outside:

- Name and address of Offeror
- Closing Date and Time
- Request for Proposals Number
- RFP Title

1.9.2 Ship, Deliver or Hand Carry Sealed Offers to: The Office of the City Clerk, City /County Government Center, Basement Level, Room 2041, One Civic Plaza, N.W., Albuquerque, New Mexico 87102. Mark all packages as stated above.

1.9.3 Mail Sealed Responses to: Office of the City Clerk, Post Office Box 1293, Albuquerque, New Mexico 87103. (Certified Mail is recommended). The City shall not be responsible for the failure of mailed offers to actually be received by the Office of the City Clerk by 4:00 of the day of closing.

Note: The City picks up mail at the post office **only once** per day usually at 7:00 AM (Local Time). **Note: ALL SEALED PROPOSALS MUST BE RECEIVED BY THE OFFICE OF THE CITY CLERK NO LATER THAN 4:00 PM, LOCAL TIME AS RECORDED IN THE CITY CLERK'S OFFICE.**

1.9.4 No other methods of delivery: Neither telephone, facsimile, electronic, nor telegraphic offers shall be accepted.

1.9.5 Submit Hard and Soft Copies of the Proposal as follows:

- **Hard Copy - 1 original and 10copies of your Technical Proposal. Submit 1 original and 1 copy of your Cost Proposal. Soft Copy - Submit 1 Original Technical and Cost Proposal on a CD.**

1.9.6 Modification or Withdrawal of Offer: Offers may be modified by submittal of a substitute or supplemental proposal to the City Clerk's Office following the submission requirements set out above. Offers may be withdrawn by written request provided to the City Clerk. In either case, such action must occur prior to the hour and date specified for receipt of offers.

1.9.7 Failure to Submit Offer: If no offer is to be submitted, the recipient shall not return the Request For Proposals.

1.10 Receipt of Proposals: The only acceptable evidence to establish the time of receipt of proposals at the City Clerk's Office is the time-date stamp of such office on the proposal wrapper or other documentary evidence of receipt maintained by the office.

1.11 Acknowledgment of Amendments to the Request For Proposals: Receipt of an amendment to the Request For Proposals by an Offeror must be acknowledged (a) by signing and returning the amendment, (b) by letter, or (c) by mention in your proposal. Such acknowledgment may be submitted with your offer.

1.12 Deleted

1.13 Draft Agreement: A copy of the Draft Agreement to be entered into is attached. Please state that you accept the terms and conditions of the Draft Agreement, or note exceptions.

1.14 Evaluation period: The Water Authority reserves the right to analyze, examine and interpret any offer for a period of ninety (90) days after the hour and date specified for the receipt of offers.

1.15 Evaluation Assistance: The Water Authority, in evaluating proposals, reserves the right to use any assistance deemed advisable, including Water Authority contractors and consultants.

1.16 Rejection and Waiver: The Water Authority reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

1.17 Debarment of Offeror: Any proposal received from an Offeror that is, at the time of submitting its proposal or prior to receipt of award of a contract, debarred by or otherwise ineligible to receive funds from any agency of the State of New Mexico, any local public body of the State, or any state of the United States, shall be rejected.

1.18 Award of Contract:

1.18.1 When Award Occurs: Award of contract occurs when a Purchase Order is issued or other evidence of acceptance by the Water Authority is provided to the Offeror. A Recommendation of Award does not constitute award of contract.

1.18.2 Award: If a contract is awarded, it shall be awarded to the responsive and responsible Offeror whose offer conforming to the Request for Proposals will be most advantageous to the Water Authority as set forth in the Evaluation Criteria.

1.18.3 Contract Term: The contract term shall be for a period of two (2) years from the effective date of the contract and/or final execution by the Water Authority. This contract term may be extended to complete Phase 1. Funding for additional periods of time and phases are subject to appropriations. See Part 6. 3.C

1.18.4 Type of Contract: Time and Materials.

1.18.5 Debarment/Cancellation of Contract: Upon receipt of notice of debarment of an Offeror awarded a contract as a result of this RFP (the "Contractor"), or other ineligibility of the Contractor to receive funds from any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States, the Water Authority shall have the right to cancel the contract with the Contractor resulting from this RFP for cause as provided in accordance with the terms of said contract.

1.19 Cancellation: This Request for Proposals may be canceled and any and all proposals may be rejected in whole or in part when it is in the best interest of the Water Authority.

1.20 Negotiations: Negotiations may be conducted with the Offeror(s) recommended for award of contract.

1.21 Water Authority Furnished Property: No material, labor, or facilities will be furnished by the Water Authority unless otherwise provided for in the Request for Proposals.

1.22 Proprietary Data: This Request for Proposals shall be open to public inspection after the recommendation of award of a contract has been signed by the Executive Director, except to the extent the Offeror designates trade secrets or other proprietary data to be confidential. Material so designated must be separated from the Offeror's main proposal and each page shall be clearly marked in order to consider confidential and to facilitate public inspection of the nonconfidential portion of the proposal. Prices and makes and models or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available regardless of any designation to the contrary. The Water Authority will endeavor to restrict distribution of the material designated as confidential or proprietary to only those individuals involved in the review and analysis of the proposals. Offerors are cautioned that materials designated as confidential may nevertheless be subject to disclosure under the New Mexico Inspection of Public Records Act (Sections 14-2-1 et seq, NMSA 1978).

1.23 Preferences: Preferences for local, small and resident businesses may be available under the City of Albuquerque Public Purchases Ordinance, for this procurement. See Part 5 of this Request for Proposals for additional information.

1.24 REQUEST FOR PROPOSALS (RFP) PROTEST PROCESS:

1.24.1 When: If the protest concerns the specifications for a competitive solicitation or other matters pertaining to the solicitation documents, it must be received by the Purchasing Officer no later than ten working days prior to the deadline for the receipt of offers.

1.24.2 Recommendation of Award: If the protest concerns other matters relating to this solicitation, the protest must be filed within ten working days after the receipt of notice of the Recommendation of Award.

1.24.3 Timely Protests: Protests must be received by the Purchasing Officer prior to the appropriate deadline as set out herein, or they will not be considered valid. The Purchasing Officer may waive the deadline for good cause, including a delay caused by the fault of the City. Late delivery by the U.S. Postal Service or other carrier shall not be considered good cause.

1.24.4 How to File: The protest shall be addressed to the Purchasing Officer, must be submitted in written form and must be legible. Protests may be hand-delivered or mailed. Facsimile, telephonic, telegraphic or electronic protests will not be accepted.

1.24.5 Required Information: The protest shall contain at a minimum the following;

- The name and address of the protesting party;
- The number of the competitive solicitation;
- A clear statement of the reason(s) for the protest;
- Details concerning the facts, which support the protest;
- Attachments of any written evidence available to substantiate the claims of the protest; and
- A statement specifying the ruling requested.

1.24.6 Address Letters and Envelopes as Follows:

- City of Albuquerque
- Purchasing Division
- PO Box 1293
- Albuquerque, New Mexico 87103

RFP Number
PROTEST

1.24.7 Protest Response by Purchasing Officer: All protests will be responded to by the Purchasing Officer upon evaluation. The Purchasing Officer will, after evaluation of a protest, issue a response. Only the issues outlined in the written protest will be considered by the Purchasing Officer.

1.24.8 Protest Hearing: If a hearing is requested, the request must be included in the protest and received within the time limit to be allowed. The filing fee of twenty dollars ($20.00) must accompany the request for hearing. Only the issues outlined in the protest will be considered by the Purchasing Officer, or may be raised at a protest hearing. The granting of a hearing shall be at the discretion of the Purchasing Officer following review of the request.

1.25 BONDS and INSURANCE:

[This Section 1.25 is subject to review and comment by Sensus' risk management group.]

1.25.1 General Conditions: The Water Authority will require that the successful Offeror, referred to as the Contractor, procure and maintain at its expense during the term of the contract resulting from the RFP, insurance in the kinds and amounts hereinafter

provided with insurance companies authorized to do business in the State of New Mexico, covering all operations of the Contractor under the contract. Upon execution of the contract and on the renewal of all coverage, the Contractor shall furnish to the Water Authority a certificate or certificates in form satisfactory to the Water Authority showing that it has complied with these insurance requirements. All certificates of insurance shall provide that thirty (30) days written notice be given to the Risk Manager, Department of Finance and Administrative Services, City of Albuquerque, P.O. Box 470, Albuquerque, New Mexico, 87103, before a policy is canceled, materially changed, or not renewed. Various types of required insurance may be written in one or more policies. **The Albuquerque Bernalillo County Water Utility Authority shall be named an additional insured for Commercial General Liability insurance and Automobile Insurance and the coverages afforded shall be primary with respect to operations provided.**

1.25.2 Approval of Insurance: Even though the Contractor may have been given notice to proceed, it shall not begin any work under the contract resulting from this RFP until the required insurance has been obtained and the proper certificates (or policies) filed with the Water Authority. Neither approval nor failure to disapprove certificates, policies, or the insurance by the Water Authority shall relieve the Contractor of full responsibility to maintain the required insurance in full force and effect. If part of the contract is sublet, the Contractor shall include any or all subcontractors in its insurance policies, or require the subcontractor to secure insurance to protect itself against all hazards enumerated herein, which are not covered by the Contractor's insurance policies.

1.25.3 Coverage Required: The kinds and amounts of insurance required are as follows:

1.25.3.1 **Commercial General Liability Insurance.** A commercial general liability insurance policy with combined limits of liability for bodily injury or property damage as follows:

$1,000,000	Per Occurrence
$1,000,000	Policy Aggregate
$1,000,000	Products Liability/Completed Operations
$1,000,000	Personal and Advertising Injury
$ 50,000	Fire Legal
$ 5,000	Medical Payments

Said policy of insurance must include coverage for all operations performed for the Water Authority by the Contractor and contractual liability coverage shall specifically insure the hold harmless provisions of the contract resulting from this RFP.

1.25.3.2 Automobile Liability Insurance. A comprehensive automobile liability insurance policy with liability limits in amounts not less than $1,000,000 combined single limit of liability for bodily injury, including death, and property

damage in any one occurrence. The policy must include coverage for the use of all owned, non-owned, hired automobiles, vehicles and other equipment both on and off work.

1.25.3.3 Workers' Compensation Insurance. Workers' compensation insurance policy for the Contractor's employees, in accordance with the provisions of the Workers' Compensation Act of the State of New Mexico, (the "Act"). If the Contractor employs fewer than three employees and has determined that it is not subject to the Act, it will certify, in a signed statement, that it is not subject to the Act. The Contractor will notify the Water Authority and comply with the Act should it employ three or more persons during the term of the contract resulting from this RFP.

1.25.3.4 Bonds. The Offeror and the Contractor shall furnish a separate Proposal Bond, Performance Bond, and Labor and Material Payments Bond as follows:

[The existence of, amount and terms of the Proposal Bond, Performance Bond, and Labor and/or Material Payments Bond will be negotiated if Contractor is the successful bidder. This comment applies to this Section 1.25.3.4 and to all references to bonds throughout the RFP.]

PROPOSAL BOND: Each offer MUST be accompanied by a proposal bond (one original and one copy provided in a separate sealed envelope) issued by a surety, duly authorized to conduct business in the State of New Mexico and acceptable to the City, in the amount of ~~five percent (5%)~~_____ of the total amount offered and written on the form
provided in this RFP. The Proposal Bond is submitted as a guaranty that the OFFEROR, if awarded the contract, will promptly execute such contract in accordance with this Request for Proposals, will furnish good and sufficient bond for the faithful performance of the contract and for the payment of all labor and materials. The OFFEROR must be named as principal on the bond. NO THIRD PARTY BID BONDS WILL BE ACCEPTED.

PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENTS BOND: The Contractor will be required to furnish, at the Water Authority's expense, separate surety bonds ~~each~~ in the amount of ~~one hundred percent (100%)~~_____ of the total contract amount, offered as security for the faithful performance of the contract and for the payment of all labor and materials. ~~These bonds must be written on the forms provided in this RFP and furnished prior to or at the time of the issuance of a written notice of award of a contract resulting from this RFP.~~ The Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the City.

CASHIER'S CHECKS, CERTIFIED CHECKS, PERSONAL CHECKS, LETTERS OF CREDIT, CASH OR OTHER SUBSTITUTES WILL NOT BE ACCEPTED IN LIEU OF THESE BONDS.

Upon execution of the contract resulting from this RFP, and annually fifteen (15) calendar days prior to the commencement of each fiscal year (July 1 to June 30), the Contractor will furnish separate surety bonds (performance and labor and material

may be increased by the Water Authority after the first fiscal year if annual usage is in excess of this amount. The bonds may be renewed annually at the option of the surety by means of a continuation certificate. These bonds must be written on the forms provided in this RFP and the Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the Water Authority.

~~**1.25.5 Increased Limits:** During the life of the contract the Water Authority may require the Contractor to increase the maximum limits of any insurance required herein. In the event that the Contractor is so required to increase the limits of such insurance, an appropriate adjustment in the contract amount will be made.~~

payment bonds) as security for the faithful performance of the contract by the Contractor during the fiscal year and shall be XXX Dollars ($X,XXX,XXX) each and this amount

PART 5
Instructions for PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

1. **ALL INFORMATION MUST BE PROVIDED.** A 5% small business preference and a 5% local preference or resident business preference are available for this procurement. To qualify, an Offeror **MUST** complete and submit this Form **WITH ITS OFFER.** If an offer is received without the Form attached, completed, signed and certified, or if the Form is received without the required information, the preference will not be applied. **THE FORM OR A CORRECTED FORM WILL NOT BE ACCEPTED AFTER THE DEADLINE FOR RECEIPT OF BIDS OR PROPOSALS.**

2. **PHYSICAL LOCATION MUST BE STATED.** To qualify for the small business or local preference, a business must have its principal office and place of business in the Greater Albuquerque Metropolitan Area. The business location inserted on the Form must be a physical location, street address or such. **DO NOT** use a post office box or other postal address.

3. **FORM MUST BE COMPLETED BY PRINCIPAL OFFEROR.** This Form must be completed for the Principal Offeror, or one of the Principal Offerors if the Offeror is a joint venture or partnership, by an individual authorized to sign for the Offeror. Subcontractors of the Offeror may not qualify an offer for a preference and should not complete or submit the Form.

4. **APPLICATION OF PREFERENCES.** The small business preference and the local business preference will be applied to all offers submitted by eligible small businesses. The local preference only will be applied to all offers submitted by eligible local businesses which are not small businesses. If there are no offers submitted in response to a solicitation that are eligible for the local preference, then the Resident Business Preference will be applied to any offers submitted which have provided a valid, State of New Mexico-issued, Resident Business or Resident Manufacturer Certification Number.

5. **DEFINITIONS.** The following definitions apply:

- The Greater Albuquerque Metropolitan Area includes all locations within the City of Albuquerque and Bernalillo County.
- A local business is a business with its principal office and place of business in the Greater Albuquerque Metropolitan Area.
- A small business is a local business which employs an average of fewer than 20 full-time employees in a calendar year. The calendar year immediately prior to the request for the preference should be used.
- A principal office is the main or home office of the business as identified in tax returns, business licenses and other official business documents.
- A place of business is a location where the business conducts its daily operations, for the general public, if applicable.
- A full-time employee is an employee of the business who is hired to work at least forty (40) hours per week, whether in a permanent, temporary or seasonal status. If all full-time employees of the business are hired to work a shorter work week, the Water Authority's Purchasing Officer may reduce this requirement, upon receipt of adequate documentation.

6. **ADDITIONAL DOCUMENTATION.** If requested, a business will be required to provide, within three working days of receipt of the request, documentation to substantiate the information provided on the Form. The Water Authority's Purchasing Officer shall determine the sufficiency of such documentation.

PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

RFP NO: RFP2011-002-TC

Business Name: Sensus USA, Inc.

Principal Office:

8601 Six Forks Rd, Suite 700	NC	27615
Street Address	State	Zip code

Place of Business:

8601 Six Forks Rd, Suite 300	NC	27615
Street Address	State	Zip code

☞ *If your Principal Office and Place of Business are in the Greater Albuquerque Metropolitan Area (see definitions in Instructions attached), please provide the following information:*

Average Number of Full-time Employees over the Prior Calendar Year: SELECT ONE

☐ 0 – 19 employees.

☐ 20 employees or more.

☞ *If applicable, insert State of New Mexico Resident Business or Resident Manufacturer Certification Number:* _____

CERTIFICATION

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the Water Authority, will provide, within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: _____

Printed Name: William T. Yeates

Title: EVP, Conservation Solutions **Date:** July 29, 2010

YOU MUST RETURN THIS FORM WITH YOUR OFFER

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, NMSA 1978 Sections 13-1-28, et seq., as amended, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars ($250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

"**Applicable public official**" means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

"**Campaign Contribution**" means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals

who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

"**Family member**" means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

"**Pendency of the procurement process**" means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

"**Prospective contractor**" means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

"**Representative of a prospective contractor**" means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Names of Applicable Public Officials (completed by State Agency or Local Public Body)**:**

Mayor Richard J. Berry	Rey Garduno
Alan B. Armijo	Debbie O'Malley
Art de la Cruz	Maggie Hart Stebbins
Trudy Jones	Pablo R. Rael

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(Attach extra pages if necessary)

Contractor Firm Name

Signature

Date

Title (position)

--OR—

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS ($250) WERE MADE to an applicable public official by me, a family member or representative.

Sensus USA, Inc.

Contractor Firm Name

Signature

August 2, 2010

Date

Executive Vice President, Conservation Solutions

Title (Position)

PART 6
DRAFT AGREEMENT

THIS AGREEMENT is made and entered into on the date last entered below, by and between the Albuquerque Bernalillo County Water Utility Authority, a political subdivision of the State of New Mexico (Water Authority), and _____, hereinafter referred to as the "Contractor"), a _____, whose address is _____.

RECITALS

WHEREAS, the Water Authority issued a Request For Proposals for the, RFP2011-002-TC, titled "Advanced Meter Infrastructure System" excerpts of which are attached hereto as Exhibit A and by this reference, such excerpts are made a part of this Agreement; and

WHEREAS, the Contractor submitted its proposal, dated _____, in response to RFP2011-002-TC excerpts of which proposal is attached hereto as Exhibit B and by this reference, such excerpts are made a part of this Agreement; and

WHEREAS, the Water Authority desires to engage the Contractor to render certain services in connection therewith, and the Contractor is willing to provide such services.

NOW, THEREFORE, in consideration of the premises and mutual obligations herein, the parties hereto do mutually agree as follows:

1. Scope of Services. The Contractor shall perform the following services (hereinafter the "Services") ~~in a satisfactory and proper manner, as determined by the Water Authority~~according to the terms of this agreement:

> Provide implementation services for an advance meter infrastructure system in accordance with Exhibit A as supplemented by Exhibit B. [This provision is contingent upon receipt and review of Exhibit A and Exhibit B. This comment applies to all references to the "Services" or to Exhibits A and/or B throughout this RFP.]

2. Time of Performance. Services of the Contractor shall commence on the date of final execution of this Agreement and shall be undertaken and completed in such sequence as to assure their expeditious completion in light of the purposes of this Agreement; provided, however, that in any event, all of the Services required hereunder shall be completed within two years of the date of execution of this Agreement. This Agreement may be extended for future phases/periods upon written agreement of the parties.

3. Compensation and Method of Payment.

A. Compensation. For performing the Services specified in Section 1 hereof, the Water Authority agrees to pay the Contractor up to the amount of _____ Dollars ($_____), which amount ex~~in~~cludes any applicable gross receipts taxes and which amount shall constitute full and complete compensation for the

Contractor's Services under this Agreement, including all expenditures made and expenses incurred by the Contractor in performing such Services. Taxes will be added as a separate line item on the invoice; taxes shall be the responsibility of the Water Authority.

B. Method of Payment. Such amount shall be paid to the Contractor within thirty days after the date of the invoice~~in installments based on the payment schedule and milestones as identified in Exhibit C, which include any applicable gross receipts taxes~~. Goods shall be invoiced upon delivery of the relevant good and services shall be invoiced monthly in advance. ~~Payments shall be made to the Contractor upon completion of each task, upon receipt by the Water Authority of a properly documented requisition for payment as determined by the budgetary and fiscal guidelines of the Water Authority and on the condition that the Contractor has accomplished the Services to the satisfaction of the Water Authority.~~

C. Intentionally Omitted.~~Appropriations.~~ ~~Notwithstanding any other provisions in this Agreement, the terms of this Agreement are contingent upon the Water Board of the Albuquerque Bernalillo County Water Utility Authority making the appropriations necessary for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the Water Board, this Agreement may be terminated at the end of the Water Authority's then current fiscal year upon written notice given by the Water Authority to the Contractor. Such event shall not constitute an event of default. All payment obligations of the Water Authority and all of its interest in this Agreement will cease upon the date of termination. The Water Authority's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.~~

4. Independent Contractor. The Contractor is considered as an independent contractor at all times in the performance of the services described in Section 1. The Contractor further agrees that neither it nor its employees are entitled to any benefits from the Water Authority under the provisions of the Workers' Compensation Act of the State of New Mexico, or to any of the benefits granted to employees of the Water Authority under the provisions of the Merit System Ordinance as now enacted or hereafter amended.

5. Personnel.

A. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing all of the Services required under this Agreement. Such personnel shall not be employees of or have any contractual relationships with the Water Authority.

B. All the Services required hereunder will be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local law to perform such Services.

C. None of the work or Services covered by this Agreement shall be subcontracted without the prior written approval of the Water Authority. Any work or Services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this Agreement. Notwithstanding the foregoing, the Water Authority acknowledges that Contractor will subcontract certain services, such as any installation or project

management services, and the Water Authority hereby consents to such subcontracts.

6. Indemnity. Contractor on the one hand, and the Water Authority on the other hand (each an "Indemnifying Party") shall and hereby does indemnify, defend and hold harmless the other (the "Indemnified Party") from and against all Third Party Litigation Costs incurred by any Indemnified Party in any Third Party Litigation caused by: (i) the Indemnifying Party breaching this Agreement; or (ii) the negligence or intentional misconduct of the Indemnifying Party. As used in this Agreement, "Third Party Litigation" means litigation brought against an Indemnified Party by a Person that is not an Indemnified Party; and "Third Party Litigation Costs" means all reasonable attorneys' fees and other legal expenses incurred in the Third Party Litigation as well as the judgment rendered or settlement reached therein. To avoid doubt, "Third Party Litigation" does not include disputes between the Parties or their Affiliates. It is meant to cover only third party claims by persons or entities other than Indemnified Parties. The Indemnifying Party shall not settle any claim which may affect the Indemnified Party without the Indemnified Party's prior written approval ~~The Contractor agrees to defend, indemnify, and hold harmless the Water Authority and their officials, agents, and employees from and against any and all claims, actions, suits, or proceedings of any kind brought against said parties for or on account of any matter arising from the Services performed by the Contractor under this Agreement. The indemnity required herein shall not be limited by reason of the specification of any particular insurance coverage in this Agreement.~~

7. Insurance. The Contractor shall not commence any work under this Agreement until the insurances required in Exhibit A, Section 1.25, have been obtained and the proper certificates (or policies) have been submitted to the Water Authority. [This provision is subject to review and comment by Contractor's risk management group.]

8. Discrimination Prohibited. In performing the Services required hereunder, the Contractor shall not discriminate against any person on the basis of race, color, religion, gender, sexual preference, sexual orientation, national origin or ancestry, age, physical handicap or disability, as defined in the Americans With Disabilities Act of 1990, as currently enacted or hereafter amended.

9. ADA Compliance. In performing the Services required hereunder, the Contractor agrees to meet all the requirements of the Americans With Disabilities Act of 1990 (the "ADA"), which are imposed directly on the Contractor or which would be imposed on the Water Authority as a public entity. The Contractor agrees to be responsible for knowing all applicable rules and requirements of the ADA ~~and to defend, indemnify and hold harmless the Water Authority, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of any acts or omissions of the Contractor or its agents in violation of the ADA.~~

10. Reports and Information. At such reasonable times and in such forms as the Water Authority may require, there shall be furnished to the Water Authority such statements, records, reports, data and information, as the Water Authority may reasonably request pertaining to matters covered by this Agreement. Unless authorized by the Water Authority, the Contractor will not release any information concerning the work product including any reports or other documents prepared pursuant to the Agreement until the final product is submitted to the Water Authority.

11. Open Meetings Requirements. Any nonprofit organization in the Water

Authority which receives funds appropriated by the Water Authority, or which has as a member of its governing body an elected official, or appointed administrative official, as a representative of the Water Authority, is subject to the requirements of §2-5-1 *et seq.* R.O.A. 1994, Public Interest Organizations. The Contractor agrees to comply with all such requirements, if applicable.

12. Establishment and Maintenance of Records. Records shall be maintained by the Contractor in accordance with applicable law and requirements prescribed by the Water Authority in this Agreement with respect to all matters covered by this Agreement. Except as otherwise authorized by the Water Authority, such records shall be maintained for a period of three (3) years after ~~receipt of~~ final payment under this Agreement.

13. Audits and Inspections. At any time during Contractor's normal business hours and as often as the Water Authority may deem necessary, there shall be made available to the Water Authority for examination all of the Contractor's records with respect to all matters covered by this Agreement. The Contractor shall permit the Water Authority to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement. All such audits and inspections shall (a) occur upon prior written notice to Contractor; (b) be subject to reasonable confidentiality obligations; and (c) be at the Water Authority's sole cost and expense.

14. Publication, Reproduction and Use of Material. No Intellectual Property is assigned to Water Authority hereunder. Contractor shall own or continue to own all Intellectual Property used or created in the course of performing this Agreement. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Contractor by virtue of this Agreement or otherwise, and instead vests in Water Authority, Water Authority agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that Water Authority may have in and to such Intellectual Property. "Intellectual Property" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto ~~No material produced in whole or in part under this Agreement shall be subject to copyright in the United States or in any other country. The Water Authority shall have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data or other materials prepared under this Agreement.~~

15. Compliance with Laws. In providing the Scope of Services outlined herein, the Contractor shall comply with all applicable laws, ordinances, and codes of the federal, State, and local governments.

16. Changes. ~~The Water Authority may, from time to time, request changes in the Scope of Services of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the Water Authority and the Contractor, shall be incorporated in written amendments to this Agreement~~No modifications, amendments or other changes are binding on either party unless in a writing signed by both parties, including by a vice president of Contractor.

17. Assignability. The Contractor shall not assign any interest in this Agreement and shall not transfer any interest in this Agreement (whether by assignment or novation), without the prior written consent of the Water Authority thereto. Notwithstanding the foregoing, Contractor may assign this agreement, without the consent of Water Authority and without post-assignment liability, to a purchaser of all or substantially all of the assets of Contractor.

18. Termination for Cause. Either party may earlier terminate this Agreement if the other party commits a material breach of this Agreement and such material breach is not cured within

thirty (30) days of written notice by the other party~~If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligation under this Agreement or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Agreement, the Water Authority shall thereupon have the right to terminate this Agreement by giving five (5) days written notice to the Contractor of such termination and specifying the effective date of such termination. In such event, all finished or unfinished documents, data, and reports prepared by the Contractor under this Agreement shall, at the option of the Water Authority, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder. Notwithstanding the above, the Contractor shall not be relieved of liability to the Water Authority for damages sustained by the Water Authority by virtue of any breach of this Agreement by the Contractor, and the Water Authority may withhold any payments to the Contractor for the purposes of set-off until such time as the exact amount of damages due the Water Authority from the Contractor is determined~~.

19. Intentionally Omitted. ~~**Termination for Convenience of Water Authority.** The Water Authority may terminate this Agreement at any time by~~ giving at least fifteen (15) days notice in writing to the ~~Contractor. If the Contractor is terminated by the Water Authority as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the~~

~~Services actually performed bear to the total Services of the Contractor covered by this Agreement, less payments of compensation previously made. If this Agreement is terminated due to the fault of the Contractor, the preceding section hereof relative to termination shall apply.~~

20. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, such holding will not affect the validity or enforceability of any other part of this Agreement so long as the remainder of the Agreement is reasonably capable of completion.

21. Intentionally Omitted. ~~**Enforcement.** The Contractor agrees to pay to the Water Authority all costs and expenses including reasonable attorney's fees incurred by the Water Authority in exercising any of its rights or remedies in connection with the enforcement of this Agreement.~~

22. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith. Exhibits A and B, attached hereto, are hereby made a part of this Agreement.

23. Applicable Law. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New Mexico, and the laws, rules and regulations of the City of Albuquerque.

24. Approval Required. This Agreement shall not become effective or binding until approved by the Water Authority's Executive Director.

{INTENTIONALLY LEFT BLANK}

IN WITNESS WHEREOF, the Water Authority and the Contractor have executed this Agreement as of the date first above written.

ALBUQUERQUE BERNALILLO
COUNTY WATER UTILITY AUTHORITY Approved
By:

Executive Director

Date: _____

CONTRACTOR:
By: _____
Title: _____
Date: _____

Federal Tax ID No:

State Tax ID No:

_____, Director
Department _____ Date:
_____

The contract shall also contain terms addressing:

(i) limitations of liability
(ii) warranties, waiver of implied warranties, and exclusive remedies
(iii) pricing and price escalation
(iv) notices, disputes resolution
(v) force majeure, confidentiality waiver, survival
(vi) the terms under which Water Authority shall sub-license Contractor's FCC licenses
(vii) a responsibility breakdown for RF field maintenance
(viii) the terms for Water Authority to license Contractor's software
(ix) the terms for Contractor to provide software updates and maintenance

in each case consistent with Contractor's response to the RFP.

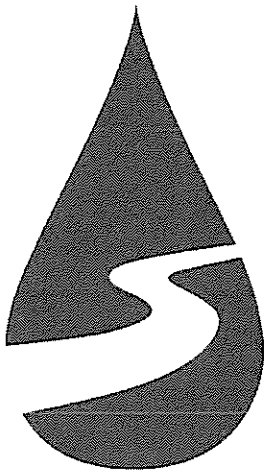
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 5

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
7/27/2010

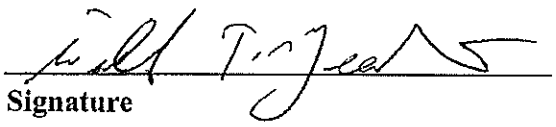
Addendum 5 is to post this notice that extends the RFP opening date to September 10, 2010, 4:00PM MST. This attachment was inadvertently omitted. This extension is to allow time to fully answer questions, and to allow adequate time for vendors to incorporate the answers into their responses.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

Addenda 1, 2, 3, and 4 were to add editable files for vendor use, the list of pre-proposal meeting attendees, and to extend the RFP opening date to the on-line posting. Signing this Addendum is acknowledgement that Addenda 1, 2, 3, 4, and 5 have been received.

****

Acknowledged & Returned:



Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

Company

XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

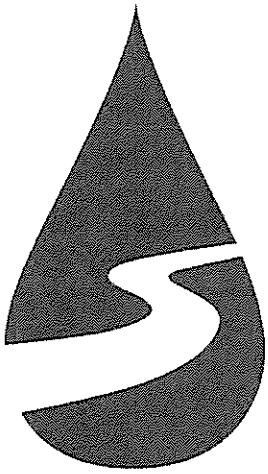
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 6

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/16/2010

RFP2011-002-TC
Addendum 6
ADVANCED METER INFRASTRUCTURE SYSTEM
PAGE 1

Addendum 6 is to answer questions provided by vendors. The questions and answers are provided below.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

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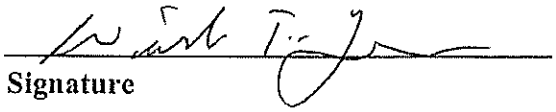

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John J. Vigil, Purchasing Manager
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Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 6

ADVANCED METER INFRASTRUCTURE SYSTEM

Due Date: September 10, 2010 NLT 4:00 p.m. MDT
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Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/16/2010

RFP2011-002-TC
Addendum 6
ADVANCED METER INFRASTRUCTURE SYSTEM
PAGE 1

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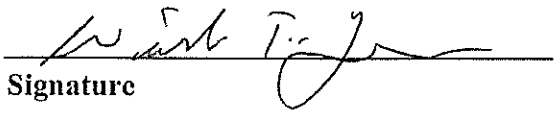

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Printed Name

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XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

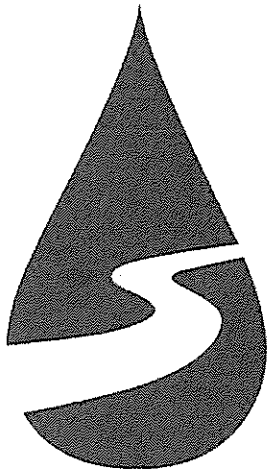
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 7

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/31/2010

RFP2011-002-TC
Addendum 7
ADVANCED METER INFRASTRUCTURE SYSTEM

Addendum 7 is to answer questions provided by vendors. The questions and answers are provided below.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

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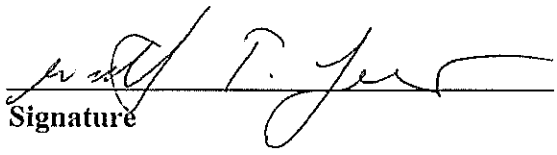

Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

Company

XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

FlexNet

Regional Network Interface

DESCRIPTION

The Regional Network Interface (RNI) is the data storage and processing center for the Sensus FlexNet system. One of the primary functions of the RNI is to receive and store data forwarded from the Tower Gateway Basestation (TGB). Once the data is received at the RNI, the utility can then use the data to assist them in improving efficiency throughout the utility. A major feature of the RNI is that it was designed to operate with standalone water or gas services and is also capable of operating in a combination utility environment that consists of water, gas and electric services. The RNI provides the necessary application to maximize the benefits of data collection.

The RNI consists of two unique servers: the Network Controller (NC) and the Utility Information Platform (UIP). The NC receives the meter data from the TGB and then routes it to the UIP. The NC provides two way communications with the TGB which allows the system to monitor the connection between the two devices. This two way functionality allows the utility to identify and solve any connectivity issues should they occur. The UIP collects the data routed from the NC, interprets the meter data and then processes for storage in the database. At the point of data interception within the UIP, historical meter data is reviewed and any missing data received is backfilled and made available to the end user. The redundant transmission of data assures the utility that transmitted data will be recorded and accessible for review.

Another feature of the RNI is the ability to store meter data should communication be lost between the two servers. If the NC loses the communication link with the UIP, the NC will forward the received data to the UIP server when the communication link is restored. This application assures the utility that access to their data will be achieved when uncontrollable events such as power outages or network interruptions occur.

Working in conjunction with the RNI is the Sensus Meter Data management (MDM) software. The MDM software provides the interface which allows the utility to review and manipulate stored data at the RNI into formal reports. In addition, the MDM provides the portal to store and view up to thirteen (13) months of data. A simple inquiry from the MDM to the RNI allows the end user to access previously received and stored data. This historical data can be used to solve billing disputes and also provides enough data to analyze customer usage. By accessing meter data stored within the MDM software, the utility will have the ability to utilize the information in a manner that best serves the utility operations and improves the overall efficiency.

SPECIFICATIONS

SERVER MODEL	Dell PowerEdge
DIMENSIONS	1U** Rack Mount 2U*** Rack Mount
WEIGHT	31 lbs ** 51 lbs ***
STORAGE	2 x 80GB Hard Disk Drives ** 6 x 73GB Hard Disk Drives ***
OPERATING SYSTEM (OS)	NC – Red Hat Enterprise Linux 5 UIP – Microsoft SQL Server 2005
MAINTENANCE HARDWARE	Provided through Dell
MAINTENANCE SOFTWARE	Sensus Licensed Software through Sensus Support Contract. Does not include Third Party Licensed Software.
POWER	Auto-Switching Universal 90 – 240VAC
OPERATING TEMPERATURE	50° F to 90° F *10° C to 32° C*

*RNI Requires 2 Servers
**Water Only and Gas Only Applications (Up to 50,000 Accounts)
***Combination Utility Applications (Up to 50,000 Accounts)

AUTHORIZED SENSUS DISTRIBUTOR

SENSUS

P.O. Box 487 | 450 North Gallatin Avenue
Uniontown, PA 15401 USA
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F: 1-800-888-2403
www.sensus.com/water
h2oinfo@sensus.com

FlexNet

Tower Gateway Base Station (TGB)

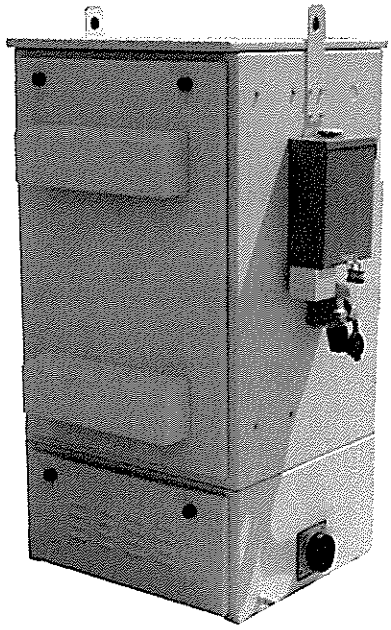
DESCRIPTION

Application: The Tower Gateway Base Station (TGB) is a two-way application that sends and receives transmissions from FlexNet SmartPoints in predetermined intervals. TGB's are strategically located within an area to insure coverage requirements are achieved. The TGB units can be housed on typical communications towers and/or on a utility's property should they meet the criteria for installation. Once the data is received at the TGB, the information is then forwarded to the Regional Network Interface (RNI) typically located at the utility.

Operation: The TGB was designed to insure data integrity and reliability. The TGB microprocessors employ multiple levels of access control to ensure that the only authorized users access the system. Access, authentication and authorization is controlled by a username and password restricted requirements. Users attempting to access the TGB will be required to submit a username and password using the Secure Shell Login (SSL). The secured login capability at the TGB site allows the end user to access redundant stored data should the communications link to the Regional Network Interface (RNI) breakdown and the customer requires data. In addition, when data is received at the TGB, the data is wrapped with a timestamp associated with the receive time, Time of Intercept (TOI) and then forwarded. Each packet is uniquely identified with a customer mask combined with the TGB identification. Data stored on the TGB remains encrypted and the encryption keys are never stored on the same equipment as the data.

The features incorporated in the TGB provide the industry's most reliable data collection system. Incorporated in the design, the system provides assurance that data will not be lost and can also be held for extended periods of time. One of the primary features of the TGB is its ability to store thirty (30) days worth of data. This feature provides the ability for the end user to access the tower should an extended outage occur. The TGB also incorporates other alternative communication methods in the chance that the primary communication link is disabled. In addition, the TGB provides an eight (8) hour battery backup in case the primary source of power is interrupted. In the case of multiple TGB sites in the coverage area, neighboring TGBs can accept and process data if required.

TGBs are strategically placed throughout the service territory to maximize coverage and minimize infrastructure requirements. Through the process known as propagation modeling, the locations of TGBs are determined. By incorporating numerous factors such as power output, tower heights, and terrain propagation modeling can predict infrastructure requirements and present a clear picture prior to deployment of the coverage provided by the TGB. This process maximizes coverage with the least amount of infrastructure compared to other systems operating at lower power output levels.



SPECIFICATIONS

DIMENSIONS	22" W x 25-1/2" D x 48" H (indoor unit) 30" W x 28" D x 58" H (outdoor unit)
WEIGHT	240 lbs (indoor unit) 660 lbs (outdoor unit)
RF DATA RATE	8 KBps Normal Mode
FREQUENCY RANGE	Input 901 – 902 MHz
MODULATION	7 Level FSK, 13 Level FSK
NETWORK CONTROL CENTER COMMUNICATIONS	TCP/IP
SENSITIVITY	-121 dBm Normal Mode
COMPLIANCE	FCC CFR 47: Parts 15, 24, 90, 101 Compliant Licensed Operation Industry Canada (IC) RSS-119,RSS-134
POWER SUPPLY	120 V grounded line at 10' Maximum (indoor unit) 120/240 V grounded line (outdoor unit)
TRANSCEIVER OPERATING TEMPERATURE	-40° C to +85° C -40° F to +185° F
ANTENNA REQUIREMENTS	External Omni Directional

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SENSUS

P.O. Box 487 | 450 North Gallatin Avenue
Uniontown, PA 15401 USA
T: 1-800-638-3748
F: 1-800-888-2403
www.sensus.com/water
h2oinfo@sensus.com

FlexNet

SmartPoint™ M2

Model 510M – Non Pit Set

DESCRIPTION

Application: The FlexNet SmartPoint M2 is a radio transceiver that provides water utilities inbound and outbound access to water measurement and ancillary device diagnostics via radio signal. The SmartPoint 510M is designed for non-submersible/non-pit installations. With its migratable, two-way communication ability, the M-Series SmartPoint functions as a walk-by/drive-by endpoint, fixed base endpoint, or combination of the two. This flexibility increases utility data collection capabilities and streamlines operations.

TouchCoupler Design: The SmartPoint M2 utilizes TouchCoupler, the patented Sensus inductive coupling communication system, to interface with the meter encoder as well as other devices. With TouchCoupler, the SmartPoint M2 can connect to the meter using existing two wire AMR installations instead of requiring utilities to access the home to install a new three-wire system. This results in a fast, efficient and reliable connection at minimal cost.

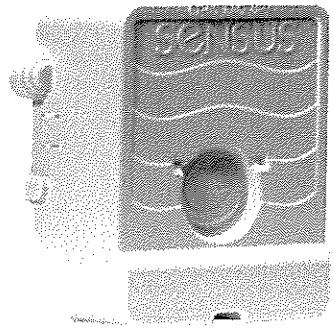
Operation: The FlexNet SmartPoint M2 receives input from the meter register and remotely sends data to a walk-by/drive-by or fixed base collection device. The SmartPoint M2 easily migrates from walk-by/drive-by to fixed base by simply installing a Tower Gateway Basestation (TGB).

In walk-by/drive-by mode, the SmartPoint M2 collects data and awaits an activation signal from the Vehicle Gateway Basestation (VGB) or Hand-Held Device (HHD). Upon signal receipt, it transmits readings, the meter identification number and any alarms.

As a fixed-base endpoint, the SmartPoint M2 interacts with one or more strategically placed TGBs located in the utility service area. Top of the hour readings and other diagnostics are instantly forwarded to the Regional Network Interface (RNI) at time of transmission. The FlexNet system provides unmatched reliability by using expansive tower receiver coverage of metering end points, data/message redundancy, fail over back up provisions and operation on FCC primary-use (unshared) RF spectrum.

Powerful Transmission, Flexible Platform: The SmartPoint M2 offers several advantages that control both deployment and lifetime operation costs. It's powerful, industry leading two watt transmitter broadcasts over large distances and minimizes collection infrastructure. And once the SmartPoint M2 is installed, its migratable, two-way system platform can be updated without requiring personnel to visit each meter and/or inconveniencing customers.

Additional SmartPoint M2 Features: The SmartPoint M2 obtains hourly readings and can monitor continuous flow over a programmable period of time, alerting the utility to leak conditions. In addition, the SmartPoint M2 stores up to 840 consumption intervals (35 days of hourly consumption), providing the utility with the ability to extract detailed usage profiles for consumer information and dispute resolution. The SmartPoint M2 also incorporates a two-port design, allowing the utility to connect multiple registers and ancillary devices (such as acoustic monitoring) to a single SmartPoint. This results in a compact installation that saves time, space and money – without reducing system performance.



SPECIFICATIONS

SERVICE	Wall mounted (non-pit/non-submersible) installation interfacing the utility meter to the Sensus FlexNet system.
PHYSICAL CHARACTERISTICS	Width: 5 9/16" x Height: 5 1/2" x Depth: 3"
WEIGHT	1.13 lbs/18.08 oz
COLOR	Tan
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps
MODULATION	Proprietary Narrow Band
MEMORY	Non-Volatile
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)
APPROVALS	**US:** FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation **Canada:** Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	- 22° F to +185° F *- 30° C to + 85° C*
OPTIONS	Dual or single port availability; TouchCoupler only, wired only (TouchCoupler connection available only with Sensus meters)
INSTALLATION ENVIRONMENT	The 510M is designed for side-of-home applications where it is not subject to submergence.
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII and ICE water registers **Wired Version Only:** Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead).
WARRANTY	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.

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SENSUS

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Uniontown, PA 15401 USA
T: 1-800-638-3748
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www.sensus.com/water
h2oinfo@sensus.com

FlexNet SmartPoint™ M2

Model 520M – Pit Set

DESCRIPTION

Application: The FlexNet SmartPoint M2 is a radio transceiver that provides water utilities inbound and outbound access to water measurement and ancillary device diagnostics via radio signal. The SmartPoint 520M is designed for submersible, pit-set environments. With its migratable, two-way communication ability, the M-Series SmartPoint functions as a walk-by/drive-by endpoint, fixed base endpoint, or combination of the two. This flexibility increases utility data collection capabilities and streamlines operations.

TouchCoupler Design: The SmartPoint M2 utilizes TouchCoupler, the patented Sensus inductive coupling communication system, to interface with the meter encoder as well as other devices. With TouchCoupler, the SmartPoint M2 can connect to the meter using existing two wire AMR installations instead of requiring utilities to access the home to install a new three-wire system. This results in a fast, efficient and reliable connection at minimal cost.

Operation: The FlexNet SmartPoint M2 receives input from the meter register and remotely sends data to a walk-by/drive-by or fixed base collection device. The SmartPoint M2 easily migrates from walk-by/drive-by to fixed base by simply installing a Tower Gateway Basestation (TGB).

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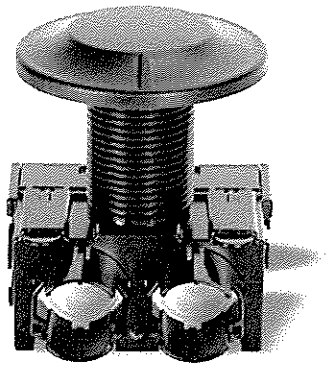
As a fixed-base endpoint, the SmartPoint M2 interacts with one or more strategically placed TGBs located in the utility service area. Top of the hour readings and other diagnostics are instantly forwarded to the Regional Network Interface (RNI) at time of transmission. The FlexNet system provides unmatched reliability by using expansive tower receiver coverage of metering end points, data/message redundancy, fail over back up provisions and operation on FCC primary-use (unshared) RF spectrum.

Powerful Transmission, Flexible Platform: The SmartPoint M2 offers several advantages that control both deployment and lifetime operation costs. It's powerful, industry leading two watt transmitter broadcasts over large distances and minimizes collection infrastructure. And once the SmartPoint M2 is installed, its migratable, two-way system platform can be updated without requiring personnel to visit each meter and/or inconveniencing customers.

Additional SmartPoint M2 Features: The SmartPoint M2 obtains hourly readings and can monitor continuous flow over a programmable period of time, alerting the utility to leak conditions. In addition, the SmartPoint M2 stores up to 840 consumption intervals (35 days of hourly consumption), providing the utility with the ability to extract detailed usage profiles for consumer information and dispute resolution. The SmartPoint M2 also incorporates a two-port design, allowing the utility to connect multiple registers and ancillary devices (such as acoustic monitoring) to a single SmartPoint. This results in a compact installation that saves time, space and money - without reducing system performance.



SPECIFICATIONS

SERVICE	Pit set installation interfacing the utility meter to the Sensus FlexNet system. Unit requires 1.75" diameter hole in pit lid; fits pit lid thicknesses up to 1.75"
PHYSICAL CHARACTERISTICS	Width: 4.43" x Height: 5.09" x Depth: 3"
WEIGHT	1.0 lbs/16.0 oz
COLOR	Black
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps
MODULATION	Proprietary Narrow Band
MEMORY	Non-Volatile
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)
APPROVALS	**US:** FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation **Canada:** Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	- 22° F to +185° F *- 30° C to + 85° C*
OPTIONS	Dual or single port availability; TouchCoupler only, wired only. (TouchCoupler connection available only with Sensus meters)
INSTALLATION ENVIRONMENT	100% condensing, water submersible
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII and ICE water registers **Wired Version Only:** Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead).
WARRANTY	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.

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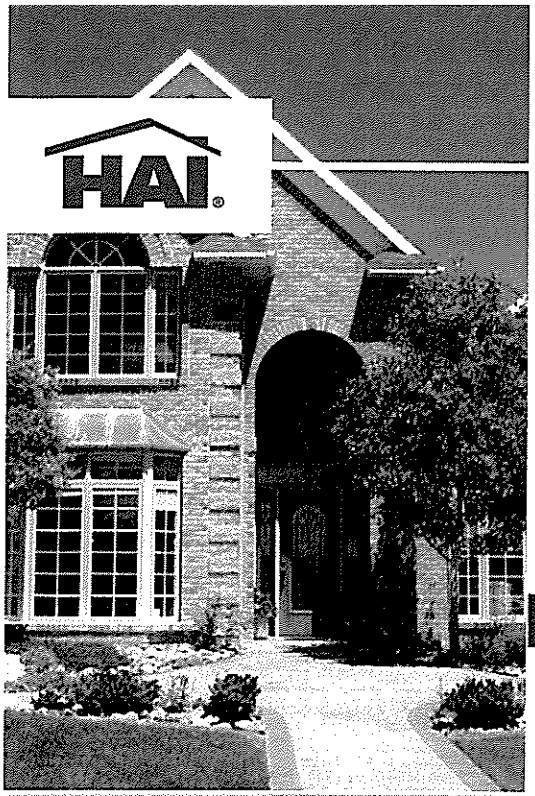
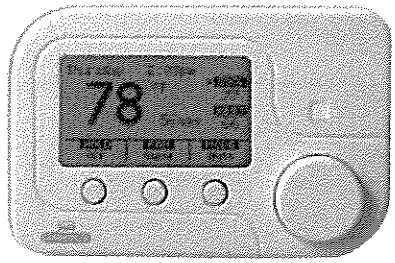


Demand Response Products for Utilities

HAI offers a full suite of products that cover any type of Home Area Network (HAN) application including In Home Displays (IHD), Load Control Modules (LCM), and Programmable Communicating Thermostats (PCT) that are designed to use the ZigBee Smart Energy, Sensus FlexNet, and other standard and proprietary RF network technologies for communication. Designed for Time of Use, Duty Cycling, and Energy Awareness programs for utility companies interested in Smart Grid and tailoring load profiles for best use of assets.

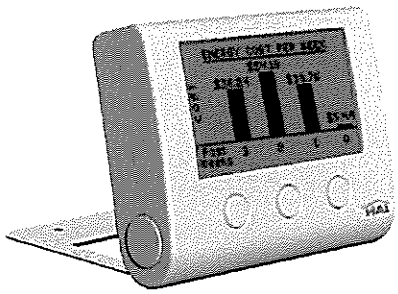
Omnistat2™ Thermostats



- Programmable and communicating
- Works as an In-Home Display
- TOU and duty cycling
- Customizable graphic energy display changes color
- Remote control of LCMs
- Standard, heat pump, and dual fuel
- Accessories include outdoor and remote temperature sensors, TPSM, and trim ring for easy retrofit

RC-1000 - Single Stage/Heat Pump
RC-1500 - Multi Stage Universal
RC-2000 - Multi Stage with Humidity

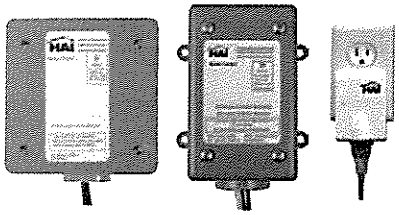
In-Home Display



- Customizable graphic energy display changes color
- Internal battery backup allows for notification after outage
- Remote control of thermostats, PCTs, and LCMs
- Two-way for pre-pay systems
- Flexible menu system
- Features are dependent on communication options

81A00-1 - In-Home Display

Load Control Modules (LCMs)



- Universal 100-250 VAC 50/60 HZ
- Ultra low stand-by power
- Time of use and/or duty cycling
- Tamper detection
- Small and easy to install

73A00-1 - 30A Wireless Utility LCM
73A00-4 - 5A Wireless Utility LCM
60A00-X - 15A Plug-in LCM (120V 60Hz)

MADE IN THE USA

www.homeauto.com

Advanced Options

Internet Access & Control
Multiple programs allow you to control and see the status of your home from anywhere via the Internet.

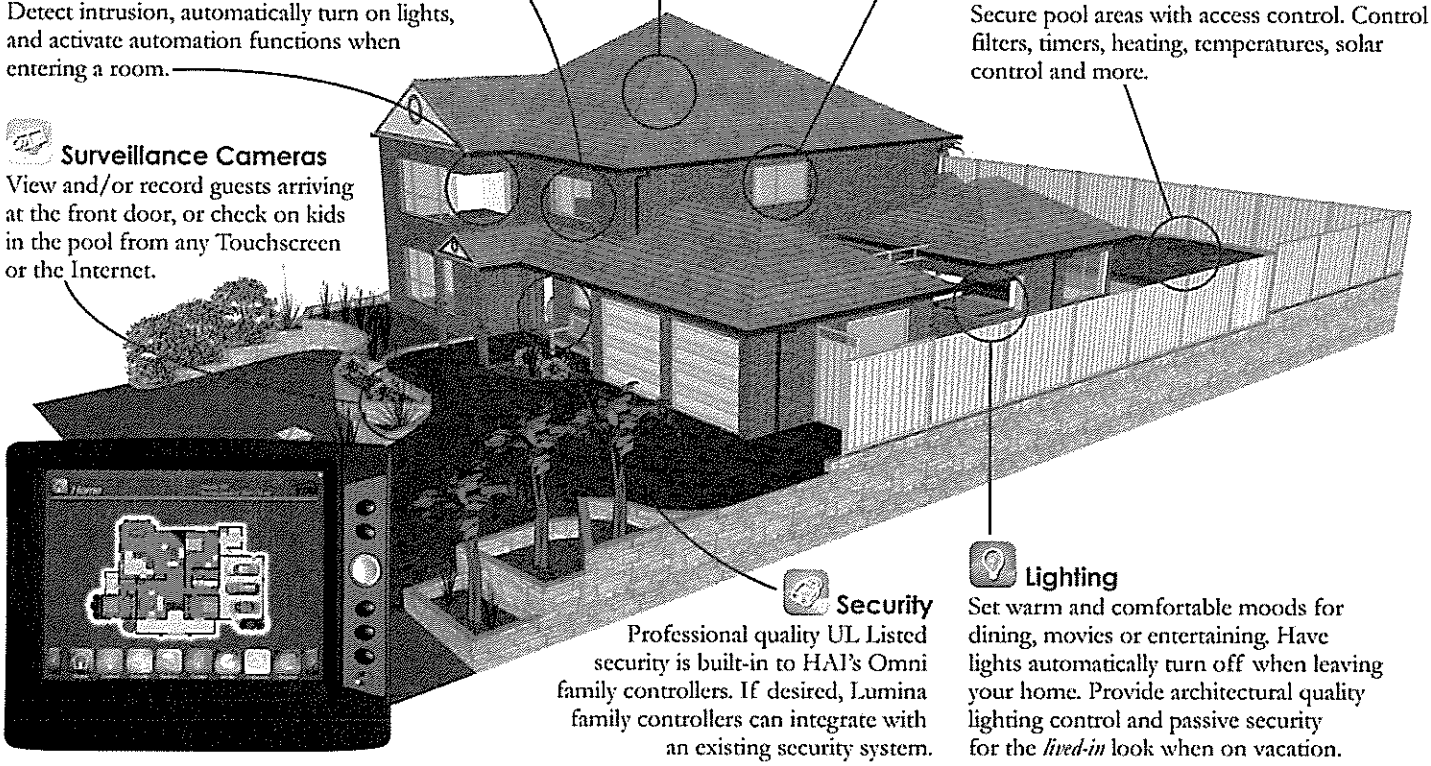
Energy Management
Be comfortable at home; save energy when away. Control temperatures in greenhouses, humidors, wine cellers, aquariums, & attics.

Entertainment
Share your favorite music throughout every zone of your home. Even play different songs in different zones at the same time.

Occupancy Sensing
Detect intrusion, automatically turn on lights, and activate automation functions when entering a room.

Pool & Spa
Secure pool areas with access control. Control filters, timers, heating, temperatures, solar control and more.

Surveillance Cameras
View and/or record guests arriving at the front door, or check on kids in the pool from any Touchscreen or the Internet.



Security
Professional quality UL Listed security is built-in to HAI's Omni family controllers. If desired, Lumina family controllers can integrate with an existing security system.

Lighting
Set warm and comfortable moods for dining, movies or entertaining. Have lights automatically turn off when leaving your home. Provide architectural quality lighting control and passive security for the *lived-in* look when on vacation.

Communication Options

- Sensus® FlexNet®
- Zigbee® Pro
  - Smart Energy Profile
  - Home Automation Profile
- Ethernet/Wi-Fi/IP
- Custom/Proprietary
- Z-Wave®

Support Programming

- Utility Pilot Support
- HAI Call Center Support
- End User Support via Flash Video
- Development kit available

Find out more!

Contact HAI at bizdev@homeauto.com for quotations, sample pricing and more information. Custom firmware and modifications available. See our complete product line at www.homeauto.com/utility

HAI®
since 1985

Since 1985, Home Automation, Inc. (HAI) has been the leading manufacturer of home control products providing comfort, convenience and safety for homeowners and businesses around the world. We engineer our products to be easy to use, which is why they are Automation Simplified.®

Specifications subject to change without notice. All trademarks are the property of their respective owners.

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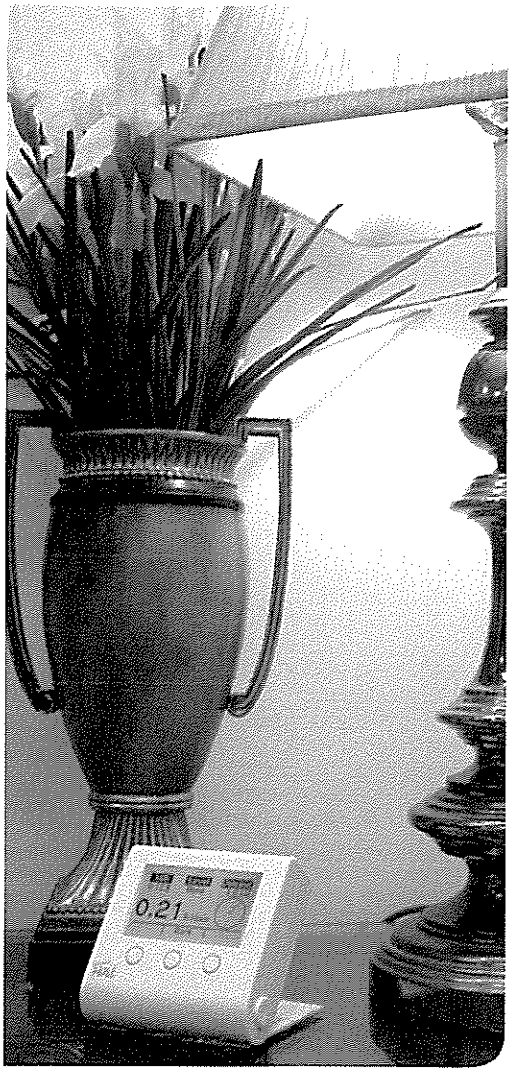
In-Home Display (IHD)

HAI smartgrid solutions



ZigBee

MULTICOLOR DISPLAY

MADE IN THE USA

HAI offers a full suite of products that cover any type of Home Area Network (HAN) application including In-Home Displays (IHD), Load Control Modules (LCM), and Programmable Communicating Thermostats (PCT) designed to use the ZigBee® Smart Energy, Sensus FlexNet, and other RF network technologies for communication. Designed for Time of Use, Duty Cycling, and Energy Awareness programs for utility companies interested in Smart Grid and tailoring load profiles for best use of assets.

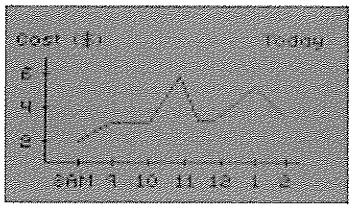
HAI®
since 1985

http://smartgrid.homeauto.com

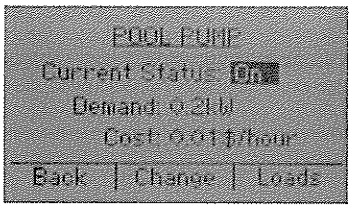
In-Home Display (IHD)

HAI smartgrid solutions

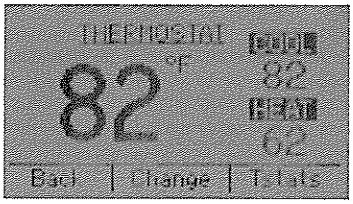
Energy usage view displays information on kwH used during time frames.

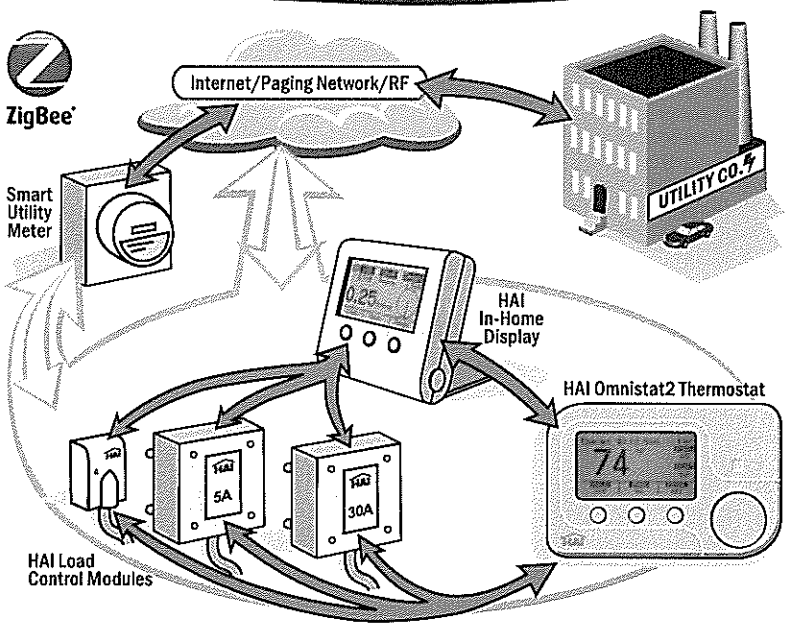


The LCM view allows for monitoring and control of high load devices.

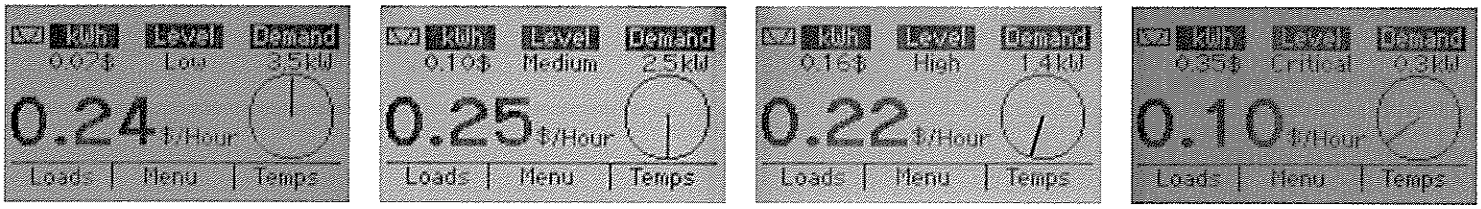


View thermostats and adjust setpoints.

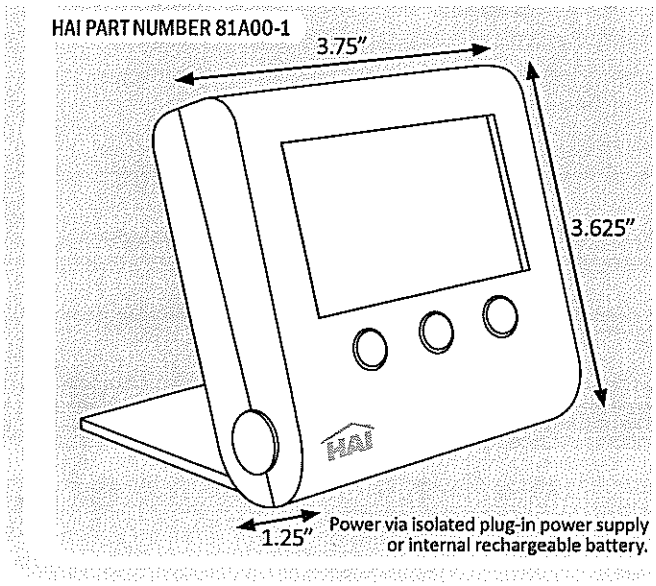




HAI's IHD increases homeowner convenience by allowing control of Load Control Modules (LCMs) and Thermostats (PCTs).



The IHD's LCD display color changes to indicate tier and real-time kwH price.



The IHD interface is designed to be intuitive and easy for the homeowner to use. Screens are customizable to provide any type of energy awareness information a customer may require.

By functioning as a ZigBee® coordinator, IHDs can provide real time feedback for customers about their usage in a simple easy to understand format. Provide charts and graphs of HVAC operation, total energy consumption, comparative analysis with typical energy usage, and even carbon footprint data—all information that can have a positive effect on homeowners' energy use.

AMI 490

FLEXNET CommandLink

You're in command.

The FlexNet® CommandLink is a wireless interface that allows utility personnel to access a complete suite of functional controls within a gas, water or electric SmartPoint. The Bluetooth-enabled CommandLink directs the SmartPoint's activation, programming, and diagnostic settings as well as performing on-demand interrogation of the device. CommandLink is capable of communicating with any Hand-Held Device (HHD) enabled with Bluetooth technology, Windows Mobile 6 GPS and 50 MB of available memory as well as laptop computers with Windows XP or Windows Vista, Bluetooth technology and GPS. What's more, this versatile device features rechargeable, field replaceable batteries giving technicians the power to program up to 250 SmartPoints over a two-day period on a single charge. CommandLink System Software includes a simple programmer for ad hoc programming and a route programmer for more structured programming.

Programming:

It couldn't be simpler. Following the physical installation of the SmartPoint, position the CommandLink on the SmartPoint (use the included strap to hold CommandLink in place, if necessary). CommandLink will automatically connect to the HHD or Laptop Computer via Bluetooth wireless technology, allowing personnel to communicate with the SmartPoint and begin the programming process. If programming adjustments are necessary, just follow the simple programming instructions displayed on the HHD or Laptop Computer screen.

Troubleshooting-one-call resolution

CommandLink provides instant access to the SmartPoint's programmed and stored information. With just a few keystrokes, the operator can pull setup information, validate readings, and verify or reprogram settings for optimal performance. You get immediate results. When finished, the CommandLink will initiate communication between the SmartPoint and TGB. Transmit reading, setup, binding or alarm information directly to the database, providing instant confirmation of any changes.

CommandLink®

PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

RFP NO: RFP2011-002-TC

Business Name: Sensus USA, Inc.

Principal Office:

8601 Six Forks Rd, Suite 700	NC	27615
Street Address	State	Zip code

Place of Business:

8601 Six Forks Rd, Suite 300	NC	27615
Street Address	State	Zip code

☞ *If your Principal Office and Place of Business are in the Greater Albuquerque Metropolitan Area (see definitions in Instructions attached), please provide the following information:*

Average Number of Full-time Employees over the Prior Calendar Year: SELECT ONE

☐ 0 – 19 employees.

☐ 20 employees or more.

☞ *If applicable, insert State of New Mexico Resident Business or Resident Manufacturer Certification Number:* _____

CERTIFICATION

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the Water Authority, will provide, within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: _____

Printed Name: William T. Yeates

Title: EVP, Conservation Solutions Date: July 29, 2010

YOU MUST RETURN THIS FORM WITH YOUR OFFER

PART 5
Instructions for PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

1. **ALL INFORMATION MUST BE PROVIDED.** A 5% small business preference and a 5% local preference or resident business preference are available for this procurement. To qualify, an Offeror **MUST** complete and submit this Form **WITH ITS OFFER.** If an offer is received without the Form attached, completed, signed and certified, or if the Form is received without the required information, the preference will not be applied. **THE FORM OR A CORRECTED FORM WILL NOT BE ACCEPTED AFTER THE DEADLINE FOR RECEIPT OF BIDS OR PROPOSALS.**

2. **PHYSICAL LOCATION MUST BE STATED.** To qualify for the small business or local preference, a business must have its principal office and place of business in the Greater Albuquerque Metropolitan Area. The business location inserted on the Form must be a physical location, street address or such. **DO NOT** use a post office box or other postal address.

3. **FORM MUST BE COMPLETED BY PRINCIPAL OFFEROR.** This Form must be completed for the Principal Offeror, or one of the Principal Offerors if the Offeror is a joint venture or partnership, by an individual authorized to sign for the Offeror. Subcontractors of the Offeror may not qualify an offer for a preference and should not complete or submit the Form.

4. **APPLICATION OF PREFERENCES.** The small business preference and the local business preference will be applied to all offers submitted by eligible small businesses. The local preference only will be applied to all offers submitted by eligible local businesses which are not small businesses. If there are no offers submitted in response to a solicitation that are eligible for the local preference, then the Resident Business Preference will be applied to any offers submitted which have provided a valid, State of New Mexico-issued, Resident Business or Resident Manufacturer Certification Number.

5. **DEFINITIONS.** The following definitions apply:

- The Greater Albuquerque Metropolitan Area includes all locations within the City of Albuquerque and Bernalillo County.
- A local business is a business with its principal office and place of business in the Greater Albuquerque Metropolitan Area.
- A small business is a local business which employs an average of fewer than 20 full-time employees in a calendar year. The calendar year immediately prior to the request for the preference should be used.
- A principal office is the main or home office of the business as identified in tax returns, business licenses and other official business documents.
- A place of business is a location where the business conducts its daily operations, for the general public, if applicable.
- A full-time employee is an employee of the business who is hired to work at least forty (40) hours per week, whether in a permanent, temporary or seasonal status. If all full-time employees of the business are hired to work a shorter work week, the Water Authority's Purchasing Officer may reduce this requirement, upon receipt of adequate documentation.

6. **ADDITIONAL DOCUMENTATION.** If requested, a business will be required to provide, within three working days of receipt of the request, documentation to substantiate the information provided on the Form. The Water Authority's Purchasing Officer shall determine the sufficiency of such documentation.

11.2 Price Escalation Clause

Contractor agrees that prices are firm for all meters and modules ordered by the Utilities for three years after the date the contract is effective ("Effective Date"). Starting on the third anniversary of the Effective Date of the contract, and annually thereafter, the pricing for all meters and modules shall increase automatically to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding twelve-month period (which product shall not be less than zero, such that the pricing for meters and modules cannot decrease under this section). "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All Items Less Food and Energy" for the U.S. City Average for All Items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index. Any CPI increases called forth in this Agreement shall be calculated to the third decimal point (e.g. 2.576%). All prices stated shall be FOB to ABCWUA.

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COST PROPOSAL 4 – OTHER CONTRACT COSTS

The following items will need to be specified for future use by the Water Authority and may be incorporated as part of the final contract.

COST ACTIVITY	COST
Per hour cost for custom programming and/or requested enhancements	$1750 per day. Or $225 per hour.
Per day cost of on-site, non-maintenance related activity. Include all expenses	$1750 per day.
Cost of additional user/seat licenses. Also include options for enterprise licensing.	None from Sensus. Utility responsible for third party seat licenses.
Please note any cost incurred for an addition database instance to be used for testing/development.	No charge from Sensus for db seat license. Utility responsible for any third party seat licenses.
Future annual support. Please note any escalators.	All hardware items are fixed price. All software maintenance, project management, and annual network operations are subject to CPI escalation.
COST PROPOSAL 4 TOTAL	Total Cost is dependent on options selected by ABCWUA in items 1 and 2 above.

The undersigned certifies that the proposed AMR/AMI will satisfy all elements and requirements of the related RFP.

Proposer Name: William T. Yeates, Sensus USA Inc.

Signature: William T. Yeates

Title: Executive Vice President, Conservation Solutions

Date: September 8, 2010

COST PROPOSAL 3 - ANNUAL MAINTENANCE SUPPORT CONTRACT COST

The vendor shall submit an itemized listing of each component in the maintenance support contract. Specify proposed terms of the maintenance cost. The vendor shall also describe in detail the annual percentage charged for maintenance based upon each cost item. The cost item shall also be defined.

Provide cost figured for annual maintenance and future releases. Maintenance costs shall not exceed a five percent (5%) increase over the previous year's amount. Specify costs for future releases as the lower of, a state percentage off of the then current list price, or today's current price. Describe when the maintenance will become effective.

MAINTENANCE SUPPORT AND DESCRIPTION	ANNUAL MAINTENANCE COST
Annual support for one year; support to commence after 90-day warranty period following formal system acceptance. Also include, if available, the cost for 24x7 support. 24 x 7 support via pager included with 4 hour response time.	20% of RNI head end license fee to support 850 units or $9,000 annually for year one.
	20% of $200,000 or $40,000 annually for mass deployment scenario (subject to annual CPI escalation)
Pricing for any additional support services as per the requirements matrix (Attachment A). Please list by line item. All items in Section O included.	Annual Network Operations Fee of $12,000 for 850 endpoint pilot.
	Annual Network Operations Fee of $80,000 for 200,000 unit mass deployment scenario.(subject to annual CPI escalation)
COST PROPOSAL 3 TOTAL	**$21,000 for 850 Unit Pilot year one.**

COST PROPOSAL 2 TOTAL				$215,250

• System Interfaces	Up to 5 days – Flat file interface recommended during the pilot period.	Oracle CIS Flat File or Interface – up to 5 days @ $1750/day	$8,750	$8,750
	Assumes MultiSpeak interface – up to 20 days, depending on level of complexity	Oracle CIS Web Services Interface – up to 20 days @ $1750/day	TBD	$0
	Detailed specifications on ESRI interfaces are required for an accurate response.	$1750/day	TBD	$0
• Documentation		Incl	Incl	$0
• Training. Indicate number of days per class and number of hours per day below:	Note: Ongoing training is also provided during deployment and turn up by Sensus PM and IT lead personnel			
System Administrator/Technical	2 Days	$1750/day	$3,500	$3,500
End-User	2 Days	$1750/day	$3,500	$3,500
Optional: Other, please specify_____ Meter/MIU Installation and Troubleshooting Training	1 Day	$1750/day	$1,750	$1,750
Modifications necessary to meet the stated functionality.		Incl	Incl	$0
Other services required to meet the RFP requirements. Please explain.		Incl	Incl	$0
COST PROPOSAL 2 SUBTOTAL				**$180,250**
Travel and Related Expenses • A not-to-exceed estimate should be provided. The Water Authority will not accept "as incurred" or similar response. (Note: Vendor should indicate the total number of trips and days onsite proposed).	24 Trips for PM and IT lead 3 Trips for Trainers 8 trips for other subject matter experts		Not to Exceed $35,000	$35,000

COST PROPOSAL 2 - SUMMARY COST BY ACTIVITY

ACTIVITY	VENDOR HOURS	VENDOR PERSONNEL COST	VENDOR EXPENSES	TOTAL COST
Project management, quality assurance, or other administrative services.	2 months PM	$15K per month	See "Travel and Related Expenses" Below	$30,000
	2 months IT lead *Assumes utility permits deployment of all 5 RCU sites and endpoints in 60 day period from project start.*	$15K per month *Longer project timelines will require PM and IT lead resources to match.*	See "Travel and Related Expenses" Below	$30,000
Implementation services as described in proposal. Include all elements of delivery such as installation, configuration, acceptance testing, etc., with the following five items separate:	Third party endpoint subcontractor including travel expense. *Endpoint Installation*	850 Meters @ $65 each *(See below for register replacement or confined space)*	Included	$55,250
	Register Replacement *(if required – does not include Confined Space)*	$9 per register	Included	TBD
	Confined Space Entry Adder *(if required to access wires or replace register)*	$85 per meter	Included	TBD
	QTY 5 Sensus RCU collector installation *(excluding site prep.)*	$6,000 each	Included	$30,000
• Report Development. Indicate number of reports proposed. (Minimum of those named reports in requirements matrix, plus 10 additional days).	10 days *Includes branding and minor modifications of standard reports.*	$1750/day	$17,500	$17,500
• Data Migration (if any)	Assuming the use of standard file types - this is included.	Incl.	Incl.	$0

Network hardware (MIUs, RCUs, etc.) as required in the equirements Matrix.		QTY 658 MIU SmartPoint transmitter (Single Port)	$98	$83,300	10 year full/10 year prorated. See attached standard warranty document G-500.
		QTY 96 MIU SmartPoint transmitter (Dual Port)	$104	$9884	10 year full/10 year prorated. See attached standard warranty document G-500.
		Adapter Cable for MIU to Itron connector	$15 Each *Not required for Sensus registers with TR/PL connectors*	TBD	20 Years
		QTY 5 RCU/TGB collector - hardware only. Outdoor version.	$59,000	$295,000	Lifetime warranty on parts paid through Annual Network Operations Fee on Cost Proposal 3.
Other products required to meet the RFP requirements. Please list and explain. Please price each product separately.		QTY 9 Site Prep for RCU locations	Responsibility of Utility	Responsibility of Utility	None
		QTY 850 Lid Machining for MIU Endpoint Radios	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	None
Modifications proposed including any third-party software/hardware to meet the requirements.		Users require PC standard web browser with Network/Internet Access.	Responsibility of Utility (typically standard on Windows PC)	Responsibility of Utility (typically standard on Windows PC)	None
COST PROPOSAL 1 TOTAL				**$413,184**	

COST PROPOSAL 1 - SYSTEM COST

List all software cost being proposed including one-time cost. Indicate product number when applicable for product line.

SOFTWARE NAME AND DESCRIPTION (list software name, description, version no. and purpose)	PRODUCT NUMBER	QTY	UNIT COST	TOTAL COST	WARRANTY PERIOD
Licenses for AMR/AMI. Please note version and any limitation or restrictions. Please base pricing on either 100 named users or 25 concurrent users. Please note the Water Authority prefers concurrent licensing if available.		QTY 1 For 850 units only	$25,000	$25,000	Perpetual as long as software maintenance contract is maintained
		QTY 1 Note : *For 190,000 Meter Full Deployment*	*$200,000*	*TBD*	Perpetual as long as software maintenance contract is maintained
Additional Licensing required for establishment of an AMR/AMI test environment.		Any additional sites for Albuquerque included no charge	Included	Included	Perpetual as long as software maintenance contract is maintained
Any third party software/hardware required to meet the stated functionality. Please note licensing registrations (number and type).		Multiple unbundled software elements require direct license by utility	See Exhibit C	See Exhibit C	Per third party license. No warranty from Sensus.
Licenses for Interfaces to third party systems. Please provide a cost for each system listed in the requirements matrix.		No licenses required for interfaces to third party systems, but integration fees apply. See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	Perpetual as long as software maintenance contract is maintained

ATTACHMENT D – COST PROPOSAL

Submitted proposals should include but are not limited to the following information. The Water Authority seeks firm prices for the products and services outlined in Section 2.1.10 (Implementation Work Plan items) and Part 3 (Scope of Services) of Proposals. As part of Attachment D, the Proposer shall include a proposed Payment Schedule. The Cost of Services and Payment Schedule shall also be included in electronic format on the submittal CD.

Further granularity within the sections below is encouraged to indicate **EXACTLY** what is included in the quoted price. The Proposer assumes all liabilities with respect to any ambiguity in presentation of cost. Note: The Water Authority does *not* wish for the Proposer to include its own quotation format.

The vendor shall submit the following cost proposals in the format shown on the following pages: All cost proposals are on a not to exceed basis for each cost item below. Specify terms and conditions for site licenses, delivery, payment, and other applicable goods and services. Prices must be in effect for three (3) years after the Notice to Proceed date, including freight charges, applicable taxes, any other delivery costs incurred, and installation.

1. Cost Proposal 1:	System Costs Explain any necessary customization for mandatory Authority requirements and cost them out separately
2. Cost Proposal 2:	Summary Cost by Activity
3. Cost Proposal 3:	Annual Maintenance Support Costs
4. Cost Proposal 4:	Other Contract Costs

Albuquerque, NM Water Pilot
1,020 Pit-Set Water Meter Locations

Date Completed: 8/23/2010
RF Engineer: Ray Dugger

TGB Name	Latitude	Longitude	Site Address	Proposed Antenna Centerline (ft)	Base Antenna Type	Base Antenna 3dB Beamwidth (deg)	Base Antenna Azimuth (deg)	Total Meter Location Levels: > -92dBm	-102 to -112	Total Covered Meter Locations (>-112dBm)	-112 to -122	< -122
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	160	362	522	269	229
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	105	295	400	284	336
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	126	769	895	91	34
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	61	670	731	230	59
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	1	15	16	347	657
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	1	6	7	220	793
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	296	421	717	191	112
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	159	469	628	242	150
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	357	591	948	59	13
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	152	637	789	199	32
Best Server 80'								767	247	1,014	5	1
Best Server 40'								461	528	989	31	0

The meter counts indicated for the individual sites are cumulative in nature, and coverage overlap is involved.

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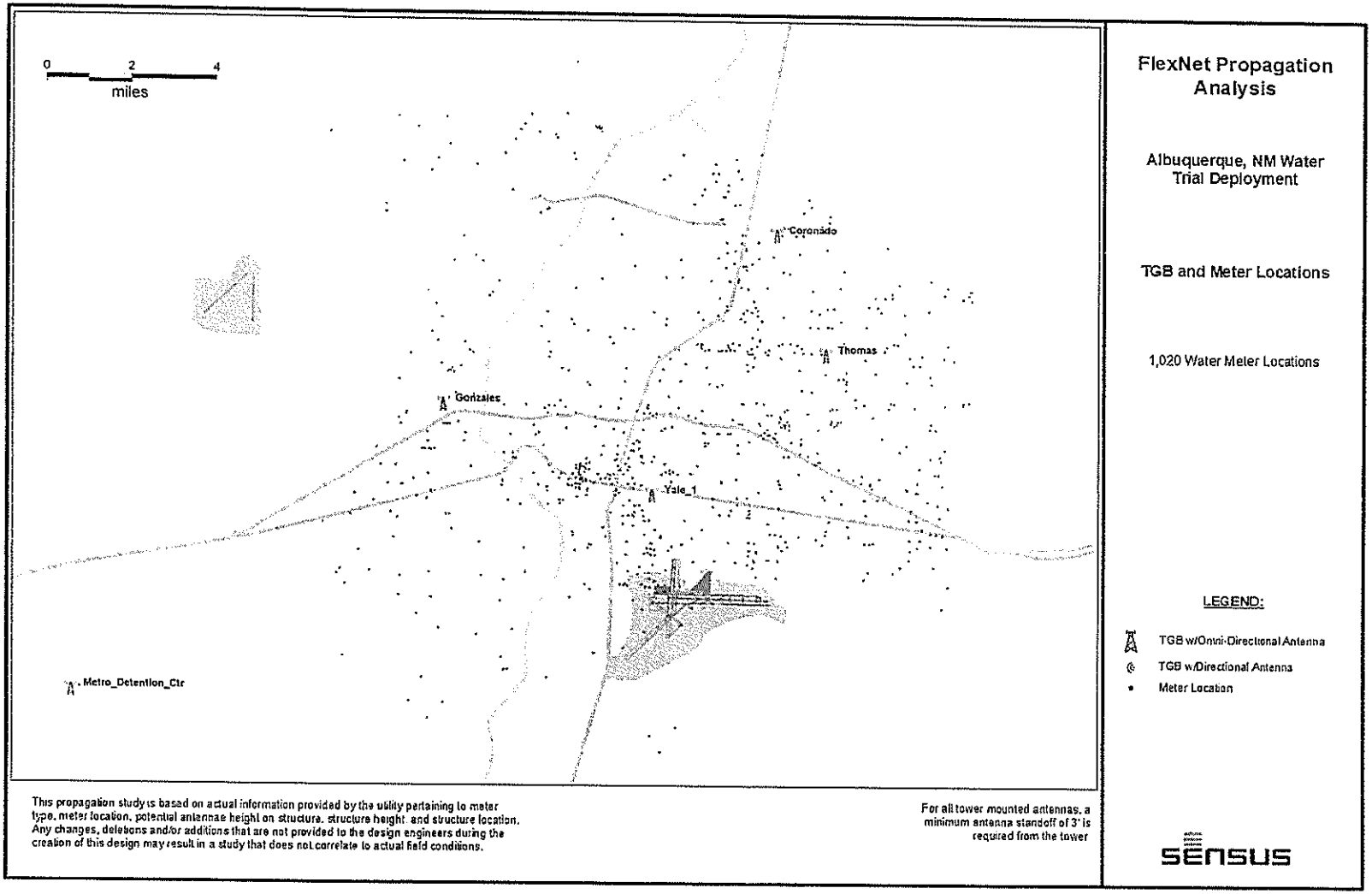

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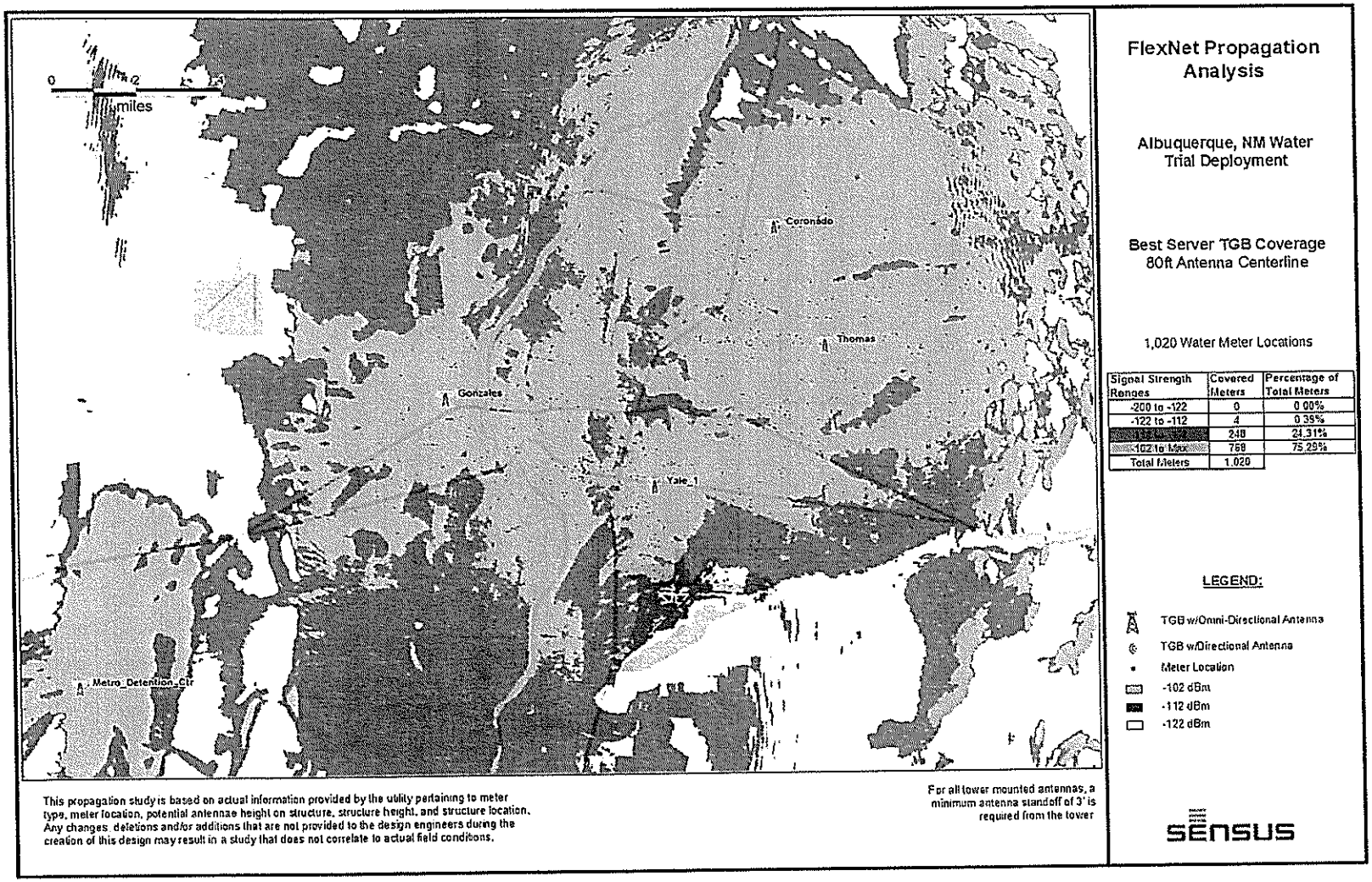

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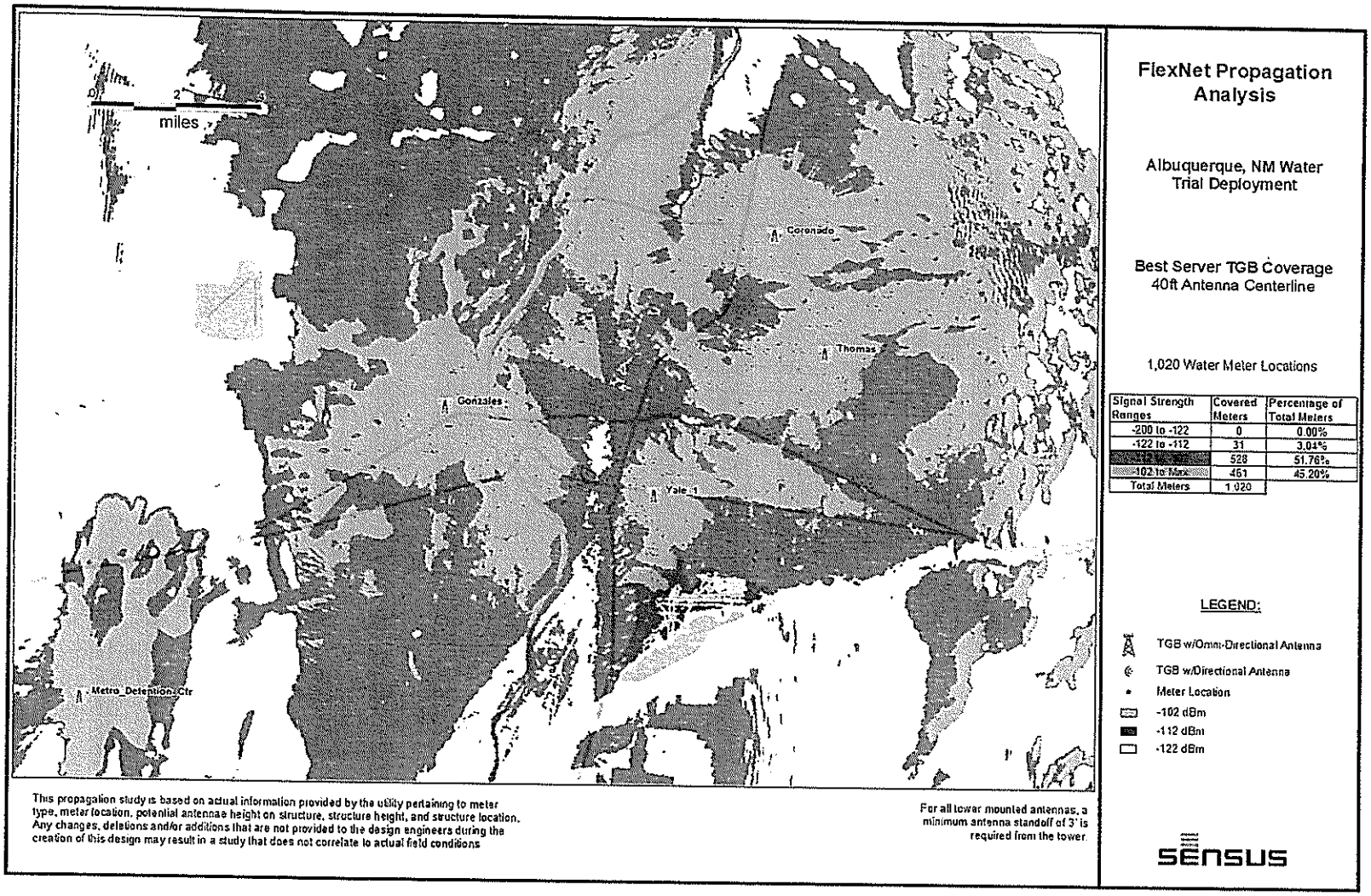

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The five (5) sites selected in the FlexNet propagation study are:

1. Metro Detention Center Reservoir 2 (currently needed only for one meter at the Detention Center)
2. Gonzales Reservoir
3. Yale 1 Reservoir
4. Coronado Reservoir
5. Thomas Reservoir

The different colors on the propagation study maps below depict areas of different signal strength from the combined coverage of the five (5) individual RCUs (TGBs). Green and blue coverage is considered "excellent and good" coverage respectively, and yellow coverage is defined as "acceptable" coverage. More than 170 deployed Water FlexNet networks have demonstrated that meters in the yellow areas of the study are typically well covered when multiple TGBs are deployed in the surrounding area (such as the design proposed). If required, repeater devices can be installed in any areas where coverage is not sufficient, but Sensus does not expect to require any other equipment apart from the five (5) TGBs specified in our proposal to cover all of the 850 meters in Phase 1. The signal strength ranges for each color are related to the excellent sensitivity of the FlexNet TGB receivers (-122 dB).

As stated in the site list above, the RCU (TGB) at Metro Detention Center Reservoir 2 is currently only required to cover the single meter located near that facility. It would be possible to eliminate this RCU (TGB) from the RF design and use either a repeater or FlexNet Remote Portal (FRP) for this meter (an FRP is essentially a very small collector used for small remote areas such as this). Using either a repeater or FRP device at this location would reduce system costs, but Sensus has chosen to propose in this RFP a TGB device at this location to simplify the network design and provide identical coverage for all 850 meters considered in this RFP. However, ABCWUA will have the option to select a TGB, repeater or FRP for the Metro Detention Center location.

Plots showing coverage for both 40 feet and 80 feet antenna heights are shown below:

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10.0 Attachment C: Propagation Study

Sensus has performed a very detailed propagation study for the ABCWUA AMI project. This study has taken into account not only the 850 meters that are considered in this RFP, but also a future full deployment scenario. All five (5) selected RCU (TGB) sites were selected to ensure excellent performance for this first phase, but also to provide excellent coverage and capacity for any later phases the Authority may wish to deploy.

Sensus has a tremendous amount of experience in Radio Frequency (RF) propagation modeling. Sensus has run literally hundreds of propagation studies for utilities across North America, and has been able to then validate the propagation study results against real-world performance data collected from more than 170 deployed water networks. Sensus has tuned the FlexNet propagation model over several years, and currently has a very accurate model that is both field validated and guaranteed.

Sensus uses leading RF Industry software applications (Planet EV) to perform propagation study analysis. FlexNet propagation study results take into account the following factors, among others:

- RCU (TGB) antenna height
- Detailed topography information
- Detailed RF clutter information (RF industry term for different signal absorption caused by buildings, trees, shrubbery, etc.)
- Known and validated RF signal strength and propagation qualities of the FlexNet MIU endpoints
- Known and validated RF receiver sensitivity of FlexNet RCUs (TGBs)
- Location of the FlexNet MIU SmartPoints (in this case, Pit Set water meter boxes).

The Sensus FlexNet Propagation Study performed for ABCWUA included analysis of all available sites provided by the Authority at various heights. Sensus has determined that five (5) sites at the locations listed below will provide excellent coverage of the 850 meters in Phase 1, as well as the vast majority of remaining meters in the ABCWUA service territory. All sites were run at both 40 feet and 80 feet for comparison purposes. While 80 feet does provide additional range for these sites, it has been determined that 40 feet for all sites will provide excellent overlapping coverage that will also allow these sites to remain in place under a full deployment scenario. This height is flexible, and can be higher or lower, depending on requirements or available heights at each site. The sites themselves are also flexible, as the range of the FlexNet system allows RCUs (TGBs) to be moved if a particular site listed below is not available, or is later determined by ABCWUA not to be suitable as an RCU (TGB) location.

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- Recommending or performing over-the-air refinements to meters
- Recommending meter change-outs for customers to improve performance
- Maintaining daily/weekly/monthly maintenance plans and logs and prepare Key Performance Indicators (KPIs)
- Performing preventive maintenance of network components
- Following and enforcing all corporate and safety and professional standards

Prerequisites

- Associates degree preferred. Minimum of a high school diploma. Preferred trade school education in electric, gas, or water industry. Prior utility experience a plus.
- Experience with or ability to learn mapping applications such as Planet EV, MapInfo, and other GIS mapping tools for use in network planning and maintenance as well as systems optimization
- Must possess and maintain a valid driver's license and drive to field sites in a safe manner
- Must be able to work wearing safety equipment and follow all Sensus, customer, and industry standard safety practices
- Working knowledge and ability with SQL and database querying and structure
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and use other project-related customized computer software and hand-held computing tools
- Experience with WAN and LAN networking technologies and protocols

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Gary McCarver has served as PM for the following Sensus utility accounts: Atmos Energy, Cleco Home Area Networking Pilot, Pensacola Gas, and Olathe Water AMI

- (1995 – 2008) Itron Project Management, Senior PM
- (1990 – 1995) Sprint, PM

Education: University of Phoenix, BSIT (52 hours with a GPA of 3.92)

Additional training includes Project Management Institute (PMP) and the Stanford University Project Management Certification (SCPM)

Robert Smoot, Project Manager

Experience and Background

Robert Smoot is an AMI Deployment PM for the South-Central region having the overall responsibility for project management of AMI deployments. Responsibilities include AMI field studies, AMI system deployment, AMI system training, and field services. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Deployment PM, Robert was a Senior PM with United Metering. In this capacity, Robert was responsible for the overall project management of AMR installation drive-by systems for water project deployments. Robert also worked with Enron Energy Services where he managed electric AMR projects for accounts in Phoenix, Arizona and throughout the state university system in California.

Robert has in excess of 20 years combined project management experience involving various AMR and AMI products and technologies. His project management experience includes successfully managing major multi-million dollar AMR deployments to include controlling project-related costs and timely deliveries.

Duties and Responsibilities

The PM is responsible for overall planning and execution of the FlexNet pilot and deployment projects employing generally-accepted PMP and Sensus processes. This position will also be responsible for business planning, customer interface, subcontracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor, and customer personnel assigned to the project

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9.0 Response to Attachment B: Resumes of Proposed Implementation Team

Gary L. McCarver, Midwest Regional Manager

Experience & Background

Gary McCarver is an AMI Regional Manager having the overall responsibility for project management of AMI deployments including AMI field studies, AMI system deployment, AMI system training, and field services across 15 states in the Midwest. Additionally, he is responsible for building customer relationships during endpoint field installation, operation, maintenance, and customer training of the AMI networks.

Prior to becoming an AMI Regional Manager, Gary was a Senior PM at Itron, Inc. In this capacity, Gary was responsible for the overall project management of Itron water, gas, and electric Automated Meter Reading (AMR) technologies. He has an extensive background in large system deployments exclusively in the communications and utility sectors.

Gary has over 20 years of combined project and program management experience with high-technology products at such firms as Sprint and Computer Network Technologies in addition to Itron, Inc. He has held positions in sales support, system engineering, program management, and project management. His program management experience includes successfully managing major AMR programs in excess of $50 million.

Professional Experience

2008 – Present, Sensus USA, AMI Regional Manager Midwest

- Oversees project management efforts for Sensus' AMI, gas, water, and electric businesses within a 15 state region
- Assists with the development and implementation of business processes to allow Sensus to manage AMI project deployments
- Sets up project management positions to align with the Midwest regional gas, water, and electric Sales Managers
- Develops business relationships with installation contractors, acquires project quotes, negotiates contracts, and manages subcontractor activities throughout the planning and execution phases of all projects. These business partnerships expand Sensus' ability to offer complete technology solutions to AMI customers.

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Duties and Responsibilities

The PM is responsible for overall planning and execution of the FlexNet pilot and deployment projects employing generally-accepted PMP and Sensus processes. This position will also be responsible for business planning, customer interface, subcontracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor, and customer personnel assigned to the project

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- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will develop topics for and conduct routine meetings with customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Business, Construction, Engineering, Computer Science, or equivalent
- Project management experience in large-scale activities managing multi-person teams
- PMP certification a plus
- Experience managing and tracking project budgets
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high quality solutions to problems
- Must be able to work independently and function well as part of a team
- Must be completely literate with all Microsoft (MS) Office suite applications, general computer skills, able to type efficiently, develop MS PowerPoint presentations, spreadsheets, graphs, and analyses of project-related information

Network Deployment Manager (for ABCWUA, this will be the Project Manager)

Duties and Responsibilities

The Network Deployment Manager is responsible for overall planning, coordination, and support for the installation of FlexNet system components including Tower Gateway Base Stations (TGBs), FlexNet Network Portals (FNPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Also included is the systems optimization for all network and metering components requiring field visits to various locations throughout the service area. This position is also responsible for the deployment planning, customer interface, and coordinating the utilities resources, subcontractors, and Sensus employees for the network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with office and field staff of the customer organization, supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor and customer personnel assigned to the project

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- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will provide reports and participate in routine meetings with the customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Electrical Engineering, Business, Construction, Engineering, or equivalent
- Expert use of tools such as MapInfo, Planet EV, and other GIS mapping tools
- Working knowledge and ability with SQL and database querying and structure
- Experience in large scale activities, managing multi-person teams
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads.
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and other project related information
- Experience in WAN and LAN networking technologies and protocols

Kevin McCullor, Integration Technology Project Manager

Experience and Background

Kevin McCullor is an AMI Integration Technology (IT) PM providing monitoring and management of the Regional Network Interface (RNI) and field-related equipment.

Prior to becoming a member of Sensus, Kevin was employed as a Senior Systems Engineer with a nationwide paging provider. In this capacity, Kevin was responsible for the development and maintenance of a statistics collection and forecasting platform. This platform assisted executives in discussion-making and reducing overall cost of operation of the entire company.

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Kevin started as a Field Engineer and, through his vast knowledge of the industry, became one of the most trusted in his department. Kevin brings a solid understanding of RF and IT issues. He has been managing project both large and small for more than ten years.

Duties and Responsibilities

- Monitor and manage the health of the FlexNet system and its components
- Provide performance analysis and direct the optimization of the system using standard tools available in the FlexNet system and as provided for in the customer utility, third party contractors, or Sensus field optimization processes and/or systems
- Compile FlexNet project status reports, coordinate project schedules, manage technical project meetings, and identify and resolve technical problems
- Identify and analyze systems requirements and define project scope, requirements, and deliverables
- Coordinate technical project activities and ensure all project phases are documented appropriately
- Provide expert judgment and analysis for the design, development, and implementation of technical products and systems
- Resolve highly complex technical issues and conduct advanced research
- Recommend alterations to development and design to improve quality of products and/or procedures
- Develop, implement, and monitor information systems policies and controls to ensure data accuracy, security, and regulatory compliance
- Review reports of computer and hardware equipment production, malfunction, and maintenance to determine and address problems
- Aid in the design and development of hardware equipment and systems and/or redesign of existing systems as needed to fulfill the needs of customers
- Responsibilities also include providing equipment functionality and capability reports to the sales force and acting as technical liaison to the sales team
- Rely on extensive experience and judgment to plan and accomplish goals. Perform a variety of complex tasks. May lead and direct the work of others. A wide degree of creativity and latitude is expected.

Prerequisites

Minimum requirements for this position include:

- A bachelor's or master's degree in area of specialty (Engineering or Computer Sciences)
- Five to eight years of experience in the AMR, AMI, utilities, or related technical field
- Superior communication and interpersonal skills

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- Excellent analytical skills
- Entry to mid-level Perl and/or Unix shell scripting
- Mid-level Unix and Windows OS experience
- Mid-level SQL experience (MS SQL, Postgres SQL, Oracle)
- Solid understanding of basic telecommunications concepts (ping, ssh, telnet, ftp, traceroute, etc.)
- Good troubleshooting skills
- Know project management methodology, a PMP certification is a plus
- Be able to deal with multiple projects concurrently
- Ability to communicate with internal and external customers under stressful environments

RF Engineer/Technician

Duties and Responsibilities

The FlexNet RF Technician is responsible for assisting in the interpretation and implementation of the RF network plan, overseeing and/or certifying network equipment installation work, performing and/or overseeing network equipment maintenance, and ensuring the overall system performance of the FlexNet system components, including TGBs, FNPs, FlexNet Remote Portals (FRPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Inherent in these responsibilities is the overall systems optimization for network and metering components requiring field visits to various locations throughout the service area.

This Technician is responsible for:

- Serving as the interface between and among the Sensus RF Network Planning and Propagation Group, installation contractors, the utility, and tower site owners in implementing the network plan, optimization, systems acceptance testing, and customer acceptance
- Scheduling and conducting periodic reviews and imposing scheduled maintenance and operational tests to ensure system performance
- Performing site visits to network equipment sites to determine feasibility of use and extent of equipment installation requirements
- Providing reports and participating in routine meetings with the utility, contractors, and corporate headquarters for project reviews and special meetings as necessary
- Reviewing system reports for network/meter failures
- Coordinating and taking action to enhance meter read performance

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- Recommending or performing over-the-air refinements to meters
- Recommending meter change-outs for customers to improve performance
- Maintaining daily/weekly/monthly maintenance plans and logs and prepare Key Performance Indicators (KPIs)
- Performing preventive maintenance of network components
- Following and enforcing all corporate and safety and professional standards

Prerequisites

- Associates degree preferred. Minimum of a high school diploma. Preferred trade school education in electric, gas, or water industry. Prior utility experience a plus.
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10.0 Attachment C: Propagation Study

Sensus has performed a very detailed propagation study for the ABCWUA AMI project. This study has taken into account not only the 850 meters that are considered in this RFP, but also a future full deployment scenario. All five (5) selected RCU (TGB) sites were selected to ensure excellent performance for this first phase, but also to provide excellent coverage and capacity for any later phases the Authority may wish to deploy.

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- Detailed topography information
- Detailed RF clutter information (RF industry term for different signal absorption caused by buildings, trees, shrubbery, etc.)
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The five (5) sites selected in the FlexNet propagation study are:

1. Metro Detention Center Reservoir 2 (currently needed only for one meter at the Detention Center)
2. Gonzales Reservoir
3. Yale 1 Reservoir
4. Coronado Reservoir
5. Thomas Reservoir

The different colors on the propagation study maps below depict areas of different signal strength from the combined coverage of the five (5) individual RCUs (TGBs). Green and blue coverage is considered "excellent and good" coverage respectively, and yellow coverage is defined as "acceptable" coverage. More than 170 deployed Water FlexNet networks have demonstrated that meters in the yellow areas of the study are typically well covered when multiple TGBs are deployed in the surrounding area (such as the design proposed). If required, repeater devices can be installed in any areas where coverage is not sufficient, but Sensus does not expect to require any other equipment apart from the five (5) TGBs specified in our proposal to cover all of the 850 meters in Phase 1. The signal strength ranges for each color are related to the excellent sensitivity of the FlexNet TGB receivers (-122 dB).

As stated in the site list above, the RCU (TGB) at Metro Detention Center Reservoir 2 is currently only required to cover the single meter located near that facility. It would be possible to eliminate this RCU (TGB) from the RF design and use either a repeater or FlexNet Remote Portal (FRP) for this meter (an FRP is essentially a very small collector used for small remote areas such as this). Using either a repeater or FRP device at this location would reduce system costs, but Sensus has chosen to propose in this RFP a TGB device at this location to simplify the network design and provide identical coverage for all 850 meters considered in this RFP. However, ABCWUA will have the option to select a TGB, repeater or FRP for the Metro Detention Center location.

Plots showing coverage for both 40 feet and 80 feet antenna heights are shown below:

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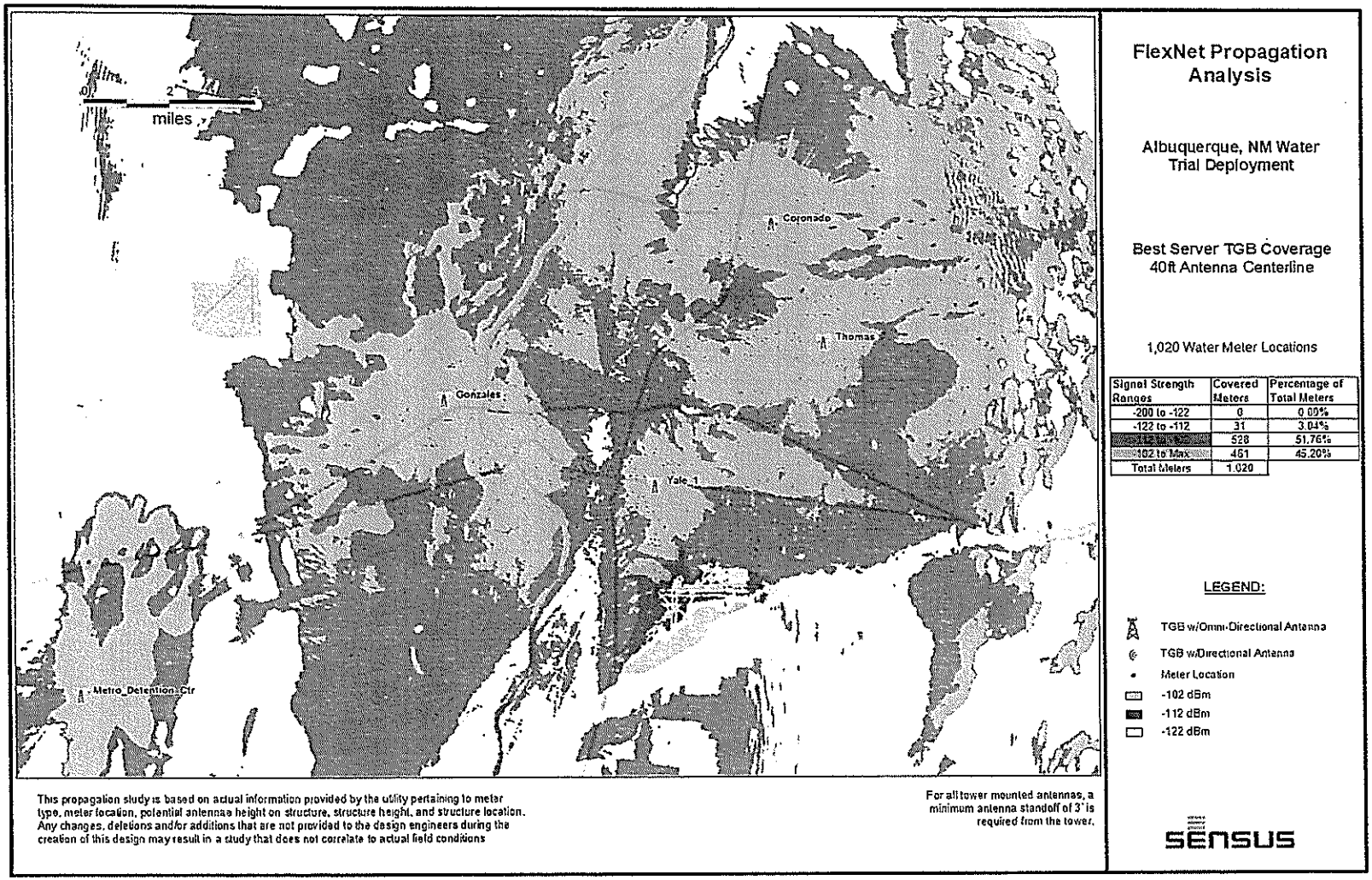

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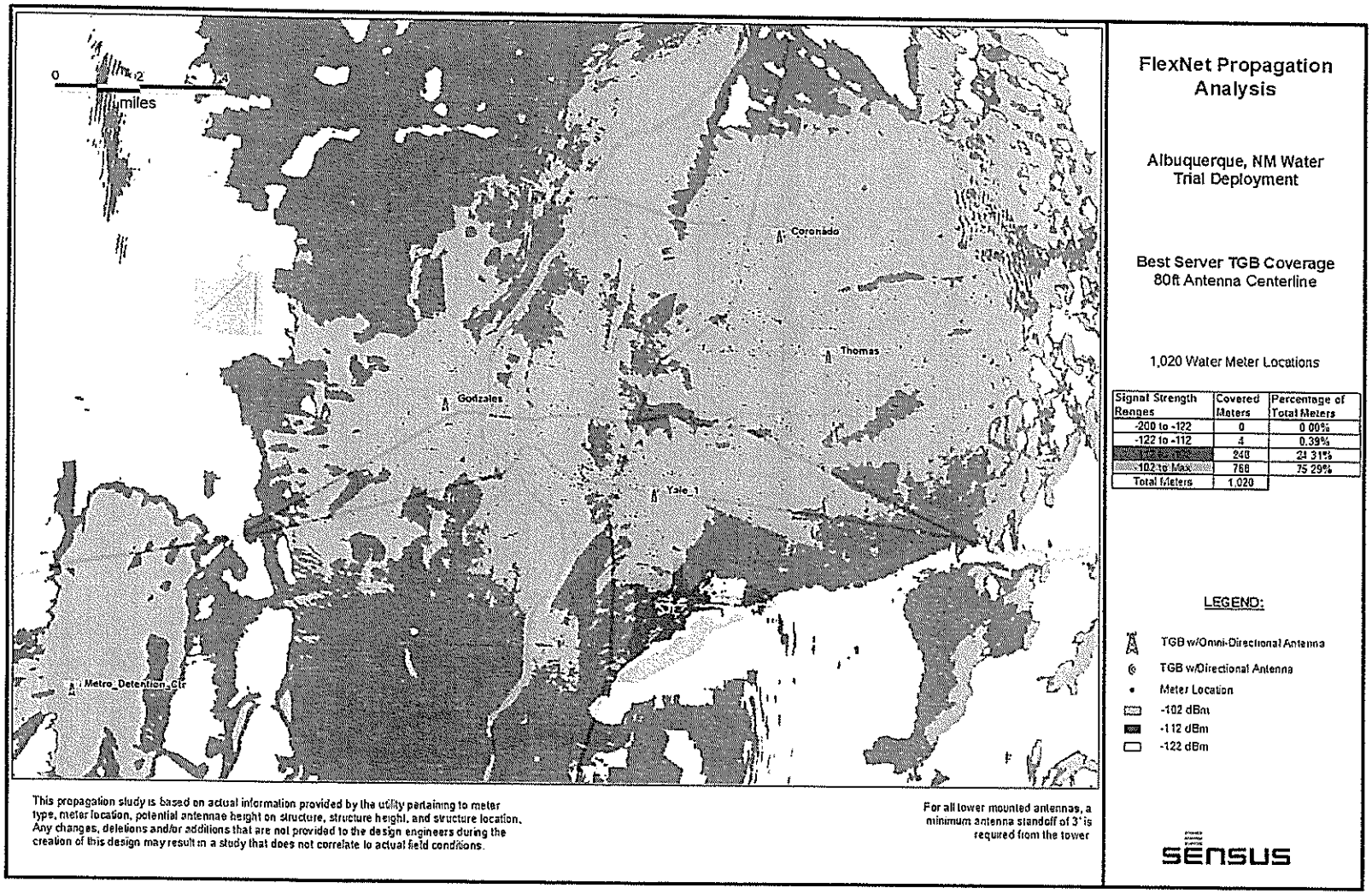

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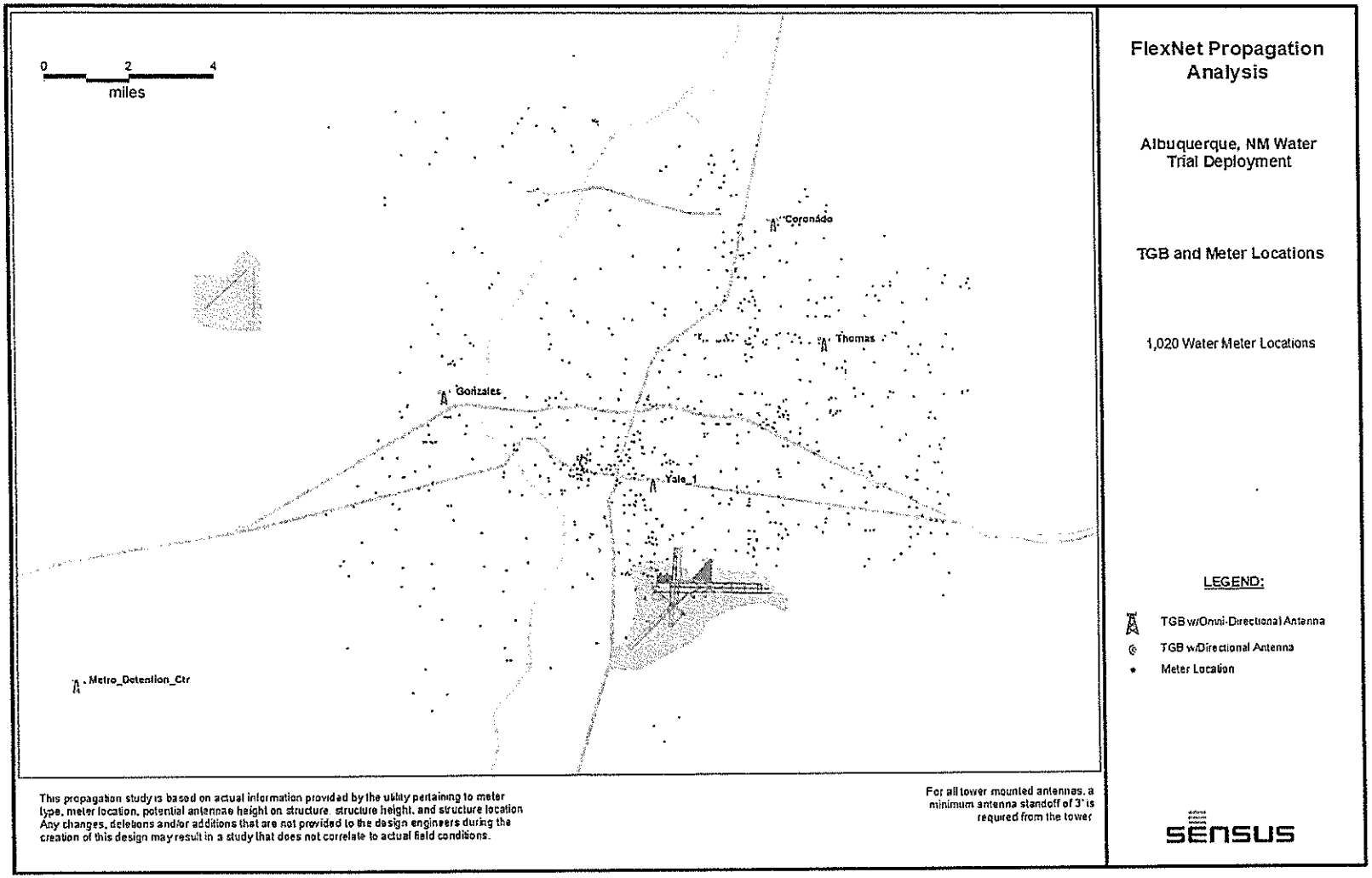

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Albuquerque, NM Water Pilot
1,020 Pit-Set Water Meter Locations

Date Completed: 8/23/2010
RF Engineer: Ray Dugger

TGB Name	Latitude	Longitude	Site Address	Proposed Antenna Centerline (ft)	Base Antenna Type	Base Antenna 3dB Beamwidth (deg)	Base Antenna Azimuth (deg)	Total Meter Location Levels >-92dBm	-102 to -112	Total Covered Meter Locations (>-112dBm)	-112 to -122	< -122
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	160	362	522	269	229
Coronado	35.173109	-106.571357	Palomas Ave NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	105	295	400	284	336
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	126	769	895	91	34
Gonzales	35.111920	-106.709142	Keswick Place NW, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	61	670	731	230	59
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	1	15	16	347	657
Metro Detention Center	35.009934	-106.861122	Shelly Dr, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	1	6	7	220	793
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	296	421	717	191	112
Thomas	35.131853	-106.549858	Wyoming Blvd NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	159	469	628	242	150
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	80	BCD-87010-25	Omni	Omni	357	591	948	59	13
Yale_1	35.082017	-106.621399	Redondo Dr NE, Albuquerque, NM	40	BCD-87010-25	Omni	Omni	152	637	789	199	32
Best Server 80'								767	247	1,014	5	1
Best Server 40'								461	528	989	31	0

The meter counts indicated for the individual sites are cumulative in nature, and coverage overlap is involved.

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ATTACHMENT D – COST PROPOSAL

Submitted proposals should include but are not limited to the following information. The Water Authority seeks firm prices for the products and services outlined in Section 2.1.10 (Implementation Work Plan items) and Part 3 (Scope of Services) of Proposals. As part of Attachment D, the Proposer shall include a proposed Payment Schedule. The Cost of Services and Payment Schedule shall also be included in electronic format on the submittal CD.

Further granularity within the sections below is encouraged to indicate **EXACTLY** what is included in the quoted price. The Proposer assumes all liabilities with respect to any ambiguity in presentation of cost. Note: The Water Authority does *not* wish for the Proposer to include its own quotation format.

The vendor shall submit the following cost proposals in the format shown on the following pages: All cost proposals are on a not to exceed basis for each cost item below. Specify terms and conditions for site licenses, delivery, payment, and other applicable goods and services. Prices must be in effect for three (3) years after the Notice to Proceed date, including freight charges, applicable taxes, any other delivery costs incurred, and installation.

1. Cost Proposal 1:	System Costs Explain any necessary customization for mandatory Authority requirements and cost them out separately
2. Cost Proposal 2:	Summary Cost by Activity
3. Cost Proposal 3:	Annual Maintenance Support Costs
4. Cost Proposal 4:	Other Contract Costs

COST PROPOSAL 1 - SYSTEM COST

List all software cost being proposed including one-time cost. Indicate product number when applicable for product line.

SOFTWARE NAME AND DESCRIPTION (list software name, description, version no. and purpose)	PRODUCT NUMBER	QTY	UNIT COST	TOTAL COST	WARRANTY PERIOD
Licenses for AMR/AMI. Please note version and any limitation or restrictions. Please base pricing on either 100 named users or 25 concurrent users. Please note the Water Authority prefers concurrent licensing if available.		QTY 1 For 850 units only	$25,000	$25,000	Perpetual as long as software maintenance contract is maintained
		QTY 1 Note : *For 190,000 Meter Full Deployment*	*$200,000*	*TBD*	Perpetual as long as software maintenance contract is maintained
Additional Licensing required for establishment of an AMR/AMI test environment.		Any additional sites for Albuquerque included no charge	Included	Included	Perpetual as long as software maintenance contract is maintained
Any third party software/hardware required to meet the stated functionality. Please note licensing registrations (number and type).		Multiple unbundled software elements require direct license by utility	See Exhibit C	See Exhibit C	Per third party license. No warranty from Sensus.
Licenses for Interfaces to third party systems. Please provide a cost for each system listed in the requirements matrix.		No licenses required for interfaces to third party systems, but integration fees apply. See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	See Cost Proposal 2, "System Interfaces"	Perpetual as long as software maintenance contract is maintained

Network hardware (MIUs, RCUs, etc.) as required in the equirements Matrix.		QTY 658 MIU SmartPoint transmitter (Single Port)	$98	$83,300	10 year full/10 year prorated. See attached standard warranty document G-500.
		QTY 96 MIU SmartPoint transmitter (Dual Port)	$104	$9884	10 year full/10 year prorated. See attached standard warranty document G-500.
		Adapter Cable for MIU to Itron connector	$15 Each *Not required for Sensus registers with TR/PL connectors*	TBD	20 Years
		QTY 5 RCU/TGB collector - hardware only. Outdoor version.	$59,000	$295,000	Lifetime warranty on parts paid through Annual Network Operations Fee on Cost Proposal 3.
Other products required to meet the RFP requirements. Please list and explain. Please price each product separately.		QTY 9 Site Prep for RCU locations	Responsibility of Utility	Responsibility of Utility	None
		QTY 850 Lid Machining for MIU Endpoint Radios	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	Pricing shown within contract installer quote in Cost Proposal 2, "Implementation Services"	None
Modifications proposed including any third-party software/hardware to meet the requirements.		Users require PC standard web browser with Network/Internet Access.	Responsibility of Utility (typically standard on Windows PC)	Responsibility of Utility (typically standard on Windows PC)	None
COST PROPOSAL 1 TOTAL				**$413,184**	

COST PROPOSAL 2 - SUMMARY COST BY ACTIVITY

ACTIVITY	VENDOR HOURS	VENDOR PERSONNEL COST	VENDOR EXPENSES	TOTAL COST
Project management, quality assurance, or other administrative services.	2 months PM	$15K per month	See "Travel and Related Expenses" Below	$30,000
	2 months IT lead *Assumes utility permits deployment of all 5 RCU sites and endpoints in 60 day period from project start.*	$15K per month *Longer project timelines will require PM and IT lead resources to match.*	See "Travel and Related Expenses" Below	$30,000
Implementation services as described in proposal. Include all elements of delivery such as installation, configuration, acceptance testing, etc., with the following five items separate:	Third party endpoint subcontractor including travel expense. *Endpoint Installation*	850 Meters @ $65 each *(See below for register replacement or confined space)*	Included	$55,250
	Register Replacement *(if required – does not include Confined Space)*	$9 per register	Included	TBD
	Confined Space Entry Adder *(if required to access wires or replace register)*	$85 per meter	Included	TBD
	QTY 5 Sensus RCU collector installation *(excluding site prep.)*	$6,000 each	Included	$30,000
• Report Development. Indicate number of reports proposed. (Minimum of those named reports in requirements matrix, plus 10 additional days).	10 days *Includes branding and minor modifications of standard reports.*	$1750/day	$17,500	$17,500
• Data Migration (if any)	Assuming the use of standard file types - this is included.	Incl.	Incl.	$0

• System Interfaces	Up to 5 days – Flat file interface recommended during the pilot period.	Oracle CIS Flat File or Interface – up to 5 days @ $1750/day	$8,750	$8,750
	Assumes MultiSpeak interface – up to 20 days, depending on level of complexity	Oracle CIS Web Services Interface – up to 20 days @ $1750/day	TBD	$0
	Detailed specifications on ESRI interfaces are required for an accurate response.	$1750/day	TBD	$0
• Documentation		Incl	Incl	$0
• Training. Indicate number of days per class and number of hours per day below:	Note: Ongoing training is also provided during deployment and turn up by Sensus PM and IT lead personnel			
System Administrator/Technical	2 Days	$1750/day	$3,500	$3,500
End-User	2 Days	$1750/day	$3,500	$3,500
Optional: Other, please specify_____ Meter/MIU Installation and Troubleshooting Training	1 Day	$1750/day	$1,750	$1,750
Modifications necessary to meet the stated functionality.		Incl	Incl	$0
Other services required to meet the RFP requirements. Please explain.		Incl	Incl	$0
COST PROPOSAL 2 SUBTOTAL				**$180,250**
Travel and Related Expenses • A not-to-exceed estimate should be provided. The Water Authority will not accept "as incurred" or similar response. (Note: Vendor should indicate the total number of trips and days onsite proposed).	24 Trips for PM and IT lead 3 Trips for Trainers 8 trips for other subject matter experts		Not to Exceed $35,000	$35,000

COST PROPOSAL 2 TOTAL				$215,250

COST PROPOSAL 3 - ANNUAL MAINTENANCE SUPPORT CONTRACT COST

The vendor shall submit an itemized listing of each component in the maintenance support contract. Specify proposed terms of the maintenance cost. The vendor shall also describe in detail the annual percentage charged for maintenance based upon each cost item. The cost item shall also be defined.

Provide cost figured for annual maintenance and future releases. Maintenance costs shall not exceed a five percent (5%) increase over the previous year's amount. Specify costs for future releases as the lower of, a state percentage off of the then current list price, or today's current price. Describe when the maintenance will become effective.

MAINTENANCE SUPPORT AND DESCRIPTION	ANNUAL MAINTENANCE COST
Annual support for one year; support to commence after 90-day warranty period following formal system acceptance. Also include, if available, the cost for 24x7 support. 24 x 7 support via pager included with 4 hour response time.	20% of RNI head end license fee to support 850 units or $9,000 annually for year one.
	20% of $200,000 or $40,000 annually for mass deployment scenario (subject to annual CPI escalation)
Pricing for any additional support services as per the requirements matrix (Attachment A). Please list by line item. All items in Section O included.	Annual Network Operations Fee of $12,000 for 850 endpoint pilot.
	Annual Network Operations Fee of $80,000 for 200,000 unit mass deployment scenario.(subject to annual CPI escalation)
COST PROPOSAL 3 TOTAL	**$21,000 for 850 Unit Pilot year one.**

COST PROPOSAL 4 – OTHER CONTRACT COSTS

The following items will need to be specified for future use by the Water Authority and may be incorporated as part of the final contract.

COST ACTIVITY	COST
Per hour cost for custom programming and/or requested enhancements	$1750 per day. Or $225 per hour.
Per day cost of on-site, non-maintenance related activity. Include all expenses	$1750 per day.
Cost of additional user/seat licenses. Also include options for enterprise licensing.	None from Sensus. Utility responsible for third party seat licenses.
Please note any cost incurred for an addition database instance to be used for testing/development.	No charge from Sensus for db seat license. Utility responsible for any third party seat licenses.
Future annual support. Please note any escalators.	All hardware items are fixed price. All software maintenance, project management, and annual network operations are subject to CPI escalation.
COST PROPOSAL 4 TOTAL	Total Cost is dependent on options selected by ABCWUA in items 1 and 2 above.

The undersigned certifies that the proposed AMR/AMI will satisfy all elements and requirements of the related RFP.

Proposer Name: William T. Yeates, Sensus USA Inc.

Signature: William T. Yeates

Title: Executive Vice President, Conservation Solutions

Date: September 8, 2010

11.2 Price Escalation Clause

Contractor agrees that prices are firm for all meters and modules ordered by the Utilities for three years after the date the contract is effective ("Effective Date"). Starting on the third anniversary of the Effective Date of the contract, and annually thereafter, the pricing for all meters and modules shall increase automatically to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding twelve-month period (which product shall not be less than zero, such that the pricing for meters and modules cannot decrease under this section). "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All Items Less Food and Energy" for the U.S. City Average for All Items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index. Any CPI increases called forth in this Agreement shall be calculated to the third decimal point (e.g. 2.576%). All prices stated shall be FOB to ABCWUA.

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PART 5
Instructions for PREFERENCE CERTIFICATION FORM
For Local, Small or Resident Business Preferences (Goods & Services)

1. **ALL INFORMATION MUST BE PROVIDED.** A 5% small business preference and a 5% local preference or resident business preference are available for this procurement. To qualify, an Offeror **MUST** complete and submit this Form **WITH ITS OFFER.** If an offer is received without the Form attached, completed, signed and certified, or if the Form is received without the required information, the preference will not be applied. **THE FORM OR A CORRECTED FORM WILL NOT BE ACCEPTED AFTER THE DEADLINE FOR RECEIPT OF BIDS OR PROPOSALS.**

2. **PHYSICAL LOCATION MUST BE STATED.** To qualify for the small business or local preference, a business must have its principal office and place of business in the Greater Albuquerque Metropolitan Area. The business location inserted on the Form must be a physical location, street address or such. **DO NOT** use a post office box or other postal address.

3. **FORM MUST BE COMPLETED BY PRINCIPAL OFFEROR.** This Form must be completed for the Principal Offeror, or one of the Principal Offerors if the Offeror is a joint venture or partnership, by an individual authorized to sign for the Offeror. Subcontractors of the Offeror may not qualify an offer for a preference and should not complete or submit the Form.

4. **APPLICATION OF PREFERENCES.** The small business preference and the local business preference will be applied to all offers submitted by eligible small businesses. The local preference only will be applied to all offers submitted by eligible local businesses which are not small businesses. If there are no offers submitted in response to a solicitation that are eligible for the local preference, then the Resident Business Preference will be applied to any offers submitted which have provided a valid, State of New Mexico-issued, Resident Business or Resident Manufacturer Certification Number.

5. **DEFINITIONS.** The following definitions apply:

- The Greater Albuquerque Metropolitan Area includes all locations within the City of Albuquerque and Bernalillo County.
- A local business is a business with its principal office and place of business in the Greater Albuquerque Metropolitan Area.
- A small business is a local business which employs an average of fewer than 20 full-time employees in a calendar year. The calendar year immediately prior to the request for the preference should be used.
- A principal office is the main or home office of the business as identified in tax returns, business licenses and other official business documents.
- A place of business is a location where the business conducts its daily operations, for the general public, if applicable.
- A full-time employee is an employee of the business who is hired to work at least forty (40) hours per week, whether in a permanent, temporary or seasonal status. If all full-time employees of the business are hired to work a shorter work week, the Water Authority's Purchasing Officer may reduce this requirement, upon receipt of adequate documentation.

6. **ADDITIONAL DOCUMENTATION.** If requested, a business will be required to provide, within three working days of receipt of the request, documentation to substantiate the information provided on the Form. The Water Authority's Purchasing Officer shall determine the sufficiency of such documentation.

PREFERENCE CERTIFICATION FORM

For Local, Small or Resident Business Preferences (Goods & Services)

RFP NO: RFP2011-002-TC

Business Name: Sensus USA, Inc.

Principal Office:
8601 Six Forks Rd, Suite 700 | NC | 27615
Street Address | State | Zip code

Place of Business:
8601 Six Forks Rd, Suite 300 | NC | 27615
Street Address | State | Zip code

☞ *If your Principal Office and Place of Business are in the Greater Albuquerque Metropolitan Area (see definitions in Instructions attached), please provide the following information:*

Average Number of Full-time Employees over the Prior Calendar Year: SELECT ONE

☐ 0 – 19 employees.

☐ 20 employees or more.

☞ *If applicable, insert State of New Mexico Resident Business or Resident Manufacturer Certification Number:* _____

CERTIFICATION

I hereby certify that the business set out above is the principal Offeror submitting this offer or is one of the principal Offerors jointly submitting this offer (e.g. as a partnership, joint venture). I hereby certify that the information which I have provided on this Form is true and correct, that I am authorized to sign on behalf of the business set out above and, if requested by the Water Authority, will provide, within 3 working days of receipt of notice, the necessary documents to substantiate the information provided on this Form.

Signature of Authorized Individual: _____

Printed Name: William T. Yeates

Title: EVP, Conservation Solutions **Date:** July 29, 2010

YOU MUST RETURN THIS FORM WITH YOUR OFFER

CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to the Procurement Code, NMSA 1978 Sections 13-1-28, et seq., as amended, any prospective contractor seeking to enter into a contract with any state agency or local public body **for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources** must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars ($250) over the two year period.

Furthermore, the state agency or local public body may cancel a solicitation or proposed award for a proposed contract pursuant to Section 13-1-181 NMSA 1978 or a contract that is executed may be ratified or terminated pursuant to Section 13-1-182 NMSA 1978 of the Procurement Code if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

The state agency or local public body that procures the services or items of tangible personal property shall indicate on the form the name or names of every applicable public official, if any, for which disclosure is required by a prospective contractor.

THIS FORM MUST BE INCLUDED IN THE REQUEST FOR PROPOSALS AND MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE.

The following definitions apply:

"**Applicable public official**" means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

"**Campaign Contribution**" means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that official's behalf for the purpose of electing the official to statewide or local office. "Campaign Contribution" includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals

who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

"**Family member**" means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law of (a) a prospective contractor, if the prospective contractor is a natural person; or (b) an owner of a prospective contractor.

"**Pendency of the procurement process**" means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

"**Prospective contractor**" means a person or business that is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person or business qualifies for a sole source or a small purchase contract.

"**Representative of a prospective contractor**" means an officer or director of a corporation, a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

Names of Applicable Public Officials (completed by State Agency or Local Public Body):

Mayor Richard J. Berry
Alan B. Armijo
Art de la Cruz
Trudy Jones
Rey Garduno
Debbie O'Malley
Maggie Hart Stebbins
Pablo R. Rael

DISCLOSURE OF CONTRIBUTIONS BY PROSPECTIVE CONTRACTOR:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(Attach extra pages if necessary)

Contractor Firm Name

Signature

Date

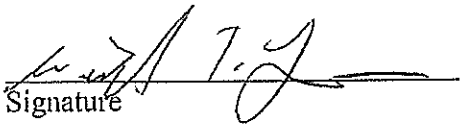
Title (position)

--OR—

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS ($250) WERE MADE to an applicable public official by me, a family member or representative.

Sensus USA, Inc.

Contractor Firm Name



Signature

August 2, 2010

Date

Executive Vice President, Conservation Solutions

Title (Position)

PART 1
INSTRUCTIONS TO OFFERORS

1.1 RFP Number and Title: RFP2011-002-TC, Advanced Meter Infrastructure System

1.2 Proposal Due Date: August 6, 2010 - NLT 4:00 PM (Local Time)
The time and date proposals are due shall be strictly observed.

1.2.1 Instructions regarding Pre-Proposal Conference: The Water Authority will conduct a Pre-Proposal Conference on June 30, 2010 at 8:30am. Conference will be held at 400 Marquette NW, 7th Floor, Room 7096, CIP Conference Room.

1.2.2 Non-Mandatory: This is not a mandatory pre-proposal conference, but highly recommended. Those vendors who choose not to attend shall be solely responsible for obtaining any additional information, clarification or addenda resulting from this meeting.

1.2.3 Questions: The Water Authority shall have in attendance key personnel to answer questions or discuss issues that may arise. Questions should be prepared prior to the conference and both hard and soft copy of such questions submitted to the purchasing representative on the **day of the conference. Verbal answers, oral explanations, or instructions given before the award of the contract or at any time will not be binding on the Water Authority.**

1.3 Purchasing Office: This RFP is issued on behalf of the Albuquerque Bernalillo County Water Utility Authority by the City of Albuquerque Purchasing Office, which is the sole point of contact during the entire procurement process.

1.4 Authority: The Albuquerque Bernalillo County Water Utility Authority, pursuant to Section 72-1-10, NMSA 1978, is granted all powers to carry out and effectuate its public and corporate purposes. To this end, the Water Authority has adopted the City of Albuquerque Public Purchases Ordinance. It is intended that this ordinance shall govern the purchasing transactions of the Water Authority.

1.5 Acceptance of Offer: Acceptance of Offer is contingent upon Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the following:

1.5.1 City Public Purchases Ordinance

1.5.2 City Purchasing Rules and Regulations: City of Albuquerque Purchasing Rules and Regulations: These Rules and Regulations (the "Regulations") are written to clarify and implement the provisions of the Public Purchases Ordinance (the "Ordinance"). These Regulations establish policies, procedures, and guidelines relating

to the procurement, management, control, and disposal of goods, services, and construction, as applicable, under the authority of the Ordinance.

1.5.3 Civil Rights Compliance: Acceptance of offer is contingent upon the Offeror's certification and agreement by submittal of its offer, to comply and act in accordance with all provisions of the Albuquerque Human Rights Ordinance, the New Mexico Human Rights Act, Title VII of the U.S. Civil Rights Act of 1964, as amended, and all federal statutes and executive orders, New Mexico statutes and City of Albuquerque ordinances and resolutions relating to the enforcement of civil rights and affirmative action. Questions regarding civil rights or affirmative action compliance requirements should be directed to the City of Albuquerque Human Rights Division, Family and Community Services Department.

1.5.4 Americans with Disabilities Act Compliance: Offeror certifies and agrees, by submittal of its offer, to comply and act in accordance with all applicable provisions of the Americans With Disabilities Act of 1990 and federal regulations promulgated there under.

1.5.5 Insurance and Bonding Compliance: Acceptance of offer is contingent upon Offeror's ability to comply with the insurance requirements as stated herein. Please include a certificate or statement of compliance in your proposal and bonds as required.

1.5.6 Ethics:

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

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

1.5.7 Participation/Offeror Preparation: Offeror may not use the consultation or assistance of any person, firm company who has participated in whole or in part in the writing of these specifications or the Scope of Services, for the preparation of its offer or in the management of its business if awarded the contract resulting from this RFP.

1.5.8 Debarment or Ineligibility Compliance: By submitting its offer in response to this RFP, the Offeror certifies that (i) it has not been debarred or otherwise found ineligible to receive funds by any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States; and (ii) should any notice of debarment, suspension, ineligibility or exclusion be received by the Offeror, the Offeror will notify the Water Authority immediately.

1.5.9 Goods Produced Under Decent Working Conditions: It is the policy of the Water Authority not to purchase, lease, or rent goods for use or for resale at Water Authority owned enterprises that were produced under sweatshop conditions. The Offeror certifies, by submittal of its offer in response to this solicitation, that the goods offered to the Water Authority were produced under decent working conditions. The Water Authority defines "under decent working conditions" as production in a factory in which child labor and forced labor are not employed; in which adequate wages and benefits are paid to workers; in which workers are not required to work more than 48 hours per week (or less if a shorter workweek applies); in which employees are free from physical, sexual or verbal harassment; and in which employees can speak freely about working conditions and can participate in and form unions. [*Council Bill No. M-8, Enactment No. 9-1998*]

1.5.10 Graffiti Free: When required, the Contractor will be required to furnish equipment, facilities, or other items required to complete these services, that are graffitifree. Failure of Contractor to comply with this requirement may result in cancellation of the contract resulting from this RFP.

1.6 City Contact: The sole point of contact for this Request for Proposals is the City of Albuquerque Purchasing Division. Contact the following individual(s) regarding this RFP:

- Thomas Courtin, Senior Buyer, Department of Finance and Administrative Services, Purchasing Division,
- Phone: (505) 768-3504 or E-Mail: tkcourtin@abcwua.org
- Post Office Box 1293, Albuquerque, New Mexico 87103

1.7 Contract Management: The contract resulting from this RFP will be managed by the Albuquerque Bernalillo County Water Utility Authority.

1.8 Clarification: Any explanation desired by an Offeror regarding the meaning or interpretation of this Request For Proposals must be requested in writing not less than ten (10) working days prior to the hour and date specified for the receipt of offers to allow sufficient time for a reply to reach Offerors before the submission of their offers. All inquiries must be directed to the Purchasing Office as stated herein. Oral explanations or instructions given before the award of the contract or at any time will not be binding. Any information given to a prospective Offeror concerning this Request For Proposals, will be furnished to all prospective Offerors as an amendment to this Request for Proposals, if such information is necessary to Offerors in

submitting offers on this Request For Proposals or if the lack of such information would be prejudicial to uninformed Offerors.

1.9 Submission of Offers: The Offeror's sealed proposal must be in the format outlined in Part 2 of this Request for Proposals and mailed or delivered pursuant to the following requirements:

1.9.1 Envelope preparation. Offers and modifications thereof shall be enclosed in sealed envelopes and have the following identifying information on the outside:

- Name and address of Offeror
- Closing Date and Time
- Request for Proposals Number
- RFP Title

1.9.2 Ship, Deliver or Hand Carry Sealed Offers to: The Office of the City Clerk, City /County Government Center, Basement Level, Room 2041, One Civic Plaza, N.W., Albuquerque, New Mexico 87102. Mark all packages as stated above.

1.9.3 Mail Sealed Responses to: Office of the City Clerk, Post Office Box 1293, Albuquerque, New Mexico 87103. (Certified Mail is recommended). The City shall not be responsible for the failure of mailed offers to actually be received by the Office of the City Clerk by 4:00 of the day of closing.

Note: The City picks up mail at the post office **only once** per day usually at 7:00 AM (Local Time). **Note: ALL SEALED PROPOSALS MUST BE RECEIVED BY THE OFFICE OF THE CITY CLERK NO LATER THAN 4:00 PM, LOCAL TIME AS RECORDED IN THE CITY CLERK'S OFFICE.**

1.9.4 No other methods of delivery: Neither telephone, facsimile, electronic, nor telegraphic offers shall be accepted.

1.9.5 Submit Hard and Soft Copies of the Proposal as follows:

- **Hard Copy - 1 original and 10copies of your Technical Proposal. Submit 1 original and 1 copy of your Cost Proposal. Soft Copy - Submit 1 Original Technical and Cost Proposal on a CD.**

1.9.6 Modification or Withdrawal of Offer: Offers may be modified by submittal of a substitute or supplemental proposal to the City Clerk's Office following the submission requirements set out above. Offers may be withdrawn by written request provided to the City Clerk. In either case, such action must occur prior to the hour and date specified for receipt of offers.

1.9.7 Failure to Submit Offer: If no offer is to be submitted, the recipient shall not return the Request For Proposals.

1.10 Receipt of Proposals: The only acceptable evidence to establish the time of receipt of proposals at the City Clerk's Office is the time-date stamp of such office on the proposal wrapper or other documentary evidence of receipt maintained by the office.

1.11 Acknowledgment of Amendments to the Request For Proposals: Receipt of an amendment to the Request For Proposals by an Offeror must be acknowledged (a) by signing and returning the amendment, (b) by letter, or (c) by mention in your proposal. Such acknowledgment may be submitted with your offer.

1.12 Deleted

1.13 Draft Agreement: A copy of the Draft Agreement to be entered into is attached. Please state that you accept the terms and conditions of the Draft Agreement, or note exceptions.

1.14 Evaluation period: The Water Authority reserves the right to analyze, examine and interpret any offer for a period of ninety (90) days after the hour and date specified for the receipt of offers.

1.15 Evaluation Assistance: The Water Authority, in evaluating proposals, reserves the right to use any assistance deemed advisable, including Water Authority contractors and consultants.

1.16 Rejection and Waiver: The Water Authority reserves the right to reject any or all offers and to waive informalities and minor irregularities in offers received.

1.17 Debarment of Offeror: Any proposal received from an Offeror that is, at the time of submitting its proposal or prior to receipt of award of a contract, debarred by or otherwise ineligible to receive funds from any agency of the State of New Mexico, any local public body of the State, or any state of the United States, shall be rejected.

1.18 Award of Contract:

1.18.1 When Award Occurs: Award of contract occurs when a Purchase Order is issued or other evidence of acceptance by the Water Authority is provided to the Offeror. A Recommendation of Award does not constitute award of contract.

1.18.2 Award: If a contract is awarded, it shall be awarded to the responsive and responsible Offeror whose offer conforming to the Request for Proposals will be most advantageous to the Water Authority as set forth in the Evaluation Criteria.

1.18.3 Contract Term: The contract term shall be for a period of two (2) years from the effective date of the contract and/or final execution by the Water Authority. This contract term may be extended to complete Phase 1. Funding for additional periods of time and phases are subject to appropriations. See Part 6. 3.C

1.18.4 Type of Contract: Time and Materials.

1.18.5 Debarment/Cancellation of Contract: Upon receipt of notice of debarment of an Offeror awarded a contract as a result of this RFP (the "Contractor"), or other ineligibility of the Contractor to receive funds from any agency of the federal government, the State of New Mexico, any local public body of the State, or any state of the United States, the Water Authority shall have the right to cancel the contract with the Contractor resulting from this RFP for cause as provided in accordance with the terms of said contract.

1.19 Cancellation: This Request for Proposals may be canceled and any and all proposals may be rejected in whole or in part when it is in the best interest of the Water Authority.

1.20 Negotiations: Negotiations may be conducted with the Offeror(s) recommended for award of contract.

1.21 Water Authority Furnished Property: No material, labor, or facilities will be furnished by the Water Authority unless otherwise provided for in the Request for Proposals.

1.22 Proprietary Data: This Request for Proposals shall be open to public inspection after the recommendation of award of a contract has been signed by the Executive Director, except to the extent the Offeror designates trade secrets or other proprietary data to be confidential. Material so designated must be separated from the Offeror's main proposal and each page shall be clearly marked in order to consider confidential and to facilitate public inspection of the nonconfidential portion of the proposal. Prices and makes and models or catalog numbers of the items offered, deliveries, and terms of payment shall be publicly available regardless of any designation to the contrary. The Water Authority will endeavor to restrict distribution of the material designated as confidential or proprietary to only those individuals involved in the review and analysis of the proposals. Offerors are cautioned that materials designated as confidential may nevertheless be subject to disclosure under the New Mexico Inspection of Public Records Act (Sections 14-2-1 et seq, NMSA 1978).

1.23 Preferences: Preferences for local, small and resident businesses may be available under the City of Albuquerque Public Purchases Ordinance, for this procurement. See Part 5 of this Request for Proposals for additional information.

1.24 REQUEST FOR PROPOSALS (RFP) PROTEST PROCESS:

1.24.1 When: If the protest concerns the specifications for a competitive solicitation or other matters pertaining to the solicitation documents, it must be received by the Purchasing Officer no later than ten working days prior to the deadline for the receipt of offers.

1.24.2 Recommendation of Award: If the protest concerns other matters relating to this solicitation, the protest must be filed within ten working days after the receipt of notice of the Recommendation of Award.

1.24.3 Timely Protests: Protests must be received by the Purchasing Officer prior to the appropriate deadline as set out herein, or they will not be considered valid. The Purchasing Officer may waive the deadline for good cause, including a delay caused by the fault of the City. Late delivery by the U.S. Postal Service or other carrier shall not be considered good cause.

1.24.4 How to File: The protest shall be addressed to the Purchasing Officer, must be submitted in written form and must be legible. Protests may be hand-delivered or mailed. Facsimile, telephonic, telegraphic or electronic protests will not be accepted.

1.24.5 Required Information: The protest shall contain at a minimum the following;

- The name and address of the protesting party;
- The number of the competitive solicitation;
- A clear statement of the reason(s) for the protest;
- Details concerning the facts, which support the protest;
- Attachments of any written evidence available to substantiate the claims of the protest; and
- A statement specifying the ruling requested.

1.24.6 Address Letters and Envelopes as Follows:

- City of Albuquerque
- Purchasing Division
- PO Box 1293
- Albuquerque, New Mexico 87103

RFP Number
PROTEST

1.24.7 Protest Response by Purchasing Officer: All protests will be responded to by the Purchasing Officer upon evaluation. The Purchasing Officer will, after evaluation of a protest, issue a response. Only the issues outlined in the written protest will be considered by the Purchasing Officer.

1.24.8 Protest Hearing: If a hearing is requested, the request must be included in the protest and received within the time limit to be allowed. The filing fee of twenty dollars ($20.00) must accompany the request for hearing. Only the issues outlined in the protest will be considered by the Purchasing Officer, or may be raised at a protest hearing. The granting of a hearing shall be at the discretion of the Purchasing Officer following review of the request.

1.25 BONDS and INSURANCE:

[This Section 1.25 is subject to review and comment by Sensus' risk management group.]

1.25.1 General Conditions: The Water Authority will require that the successful Offeror, referred to as the Contractor, procure and maintain at its expense during the term of the contract resulting from the RFP, insurance in the kinds and amounts hereinafter

provided with insurance companies authorized to do business in the State of New Mexico, covering all operations of the Contractor under the contract. Upon execution of the contract and on the renewal of all coverage, the Contractor shall furnish to the Water Authority a certificate or certificates in form satisfactory to the Water Authority showing that it has complied with these insurance requirements. All certificates of insurance shall provide that thirty (30) days written notice be given to the Risk Manager, Department of Finance and Administrative Services, City of Albuquerque, P.O. Box 470, Albuquerque, New Mexico, 87103, before a policy is canceled, materially changed, or not renewed. Various types of required insurance may be written in one or more policies. **The Albuquerque Bernalillo County Water Utility Authority shall be named an additional insured for Commercial General Liability insurance and Automobile Insurance and the coverages afforded shall be primary with respect to operations provided.**

1.25.2 Approval of Insurance: Even though the Contractor may have been given notice to proceed, it shall not begin any work under the contract resulting from this RFP until the required insurance has been obtained and the proper certificates (or policies) filed with the Water Authority. Neither approval nor failure to disapprove certificates, policies, or the insurance by the Water Authority shall relieve the Contractor of full responsibility to maintain the required insurance in full force and effect. If part of the contract is sublet, the Contractor shall include any or all subcontractors in its insurance policies, or require the subcontractor to secure insurance to protect itself against all hazards enumerated herein, which are not covered by the Contractor's insurance policies.

1.25.3 Coverage Required: The kinds and amounts of insurance required are as follows:

1.25.3.1 **Commercial General Liability Insurance.** A commercial general liability insurance policy with combined limits of liability for bodily injury or property damage as follows:

$1,000,000	Per Occurrence
$1,000,000	Policy Aggregate
$1,000,000	Products Liability/Completed Operations
$1,000,000	Personal and Advertising Injury
$ 50,000	Fire Legal
$ 5,000	Medical Payments

Said policy of insurance must include coverage for all operations performed for the Water Authority by the Contractor and contractual liability coverage shall specifically insure the hold harmless provisions of the contract resulting from this RFP.

1.25.3.2 Automobile Liability Insurance. A comprehensive automobile liability insurance policy with liability limits in amounts not less than $1,000,000 combined single limit of liability for bodily injury, including death, and property

damage in any one occurrence. The policy must include coverage for the use of all owned, non-owned, hired automobiles, vehicles and other equipment both on and off work.

1.25.3.3 Workers' Compensation Insurance. Workers' compensation insurance policy for the Contractor's employees, in accordance with the provisions of the Workers' Compensation Act of the State of New Mexico, (the "Act"). If the Contractor employs fewer than three employees and has determined that it is not subject to the Act, it will certify, in a signed statement, that it is not subject to the Act. The Contractor will notify the Water Authority and comply with the Act should it employ three or more persons during the term of the contract resulting from this RFP.

1.25.3.4 Bonds. The Offeror and the Contractor shall furnish a separate Proposal Bond, Performance Bond, and Labor and Material Payments Bond as follows:

[The existence of, amount and terms of the Proposal Bond, Performance Bond, and Labor and/or Material Payments Bond will be negotiated if Contractor is the successful bidder. This comment applies to this Section 1.25.3.4 and to all references to bonds throughout the RFP.]

PROPOSAL BOND: Each offer MUST be accompanied by a proposal bond (one original and one copy provided in a separate sealed envelope) issued by a surety, duly authorized to conduct business in the State of New Mexico and acceptable to the City, in the amount of ~~five percent (5%)~~_____ of the total amount offered and written on the form
provided in this RFP. The Proposal Bond is submitted as a guaranty that the OFFEROR, if awarded the contract, will promptly execute such contract in accordance with this Request for Proposals, will furnish good and sufficient bond for the faithful performance of the contract and for the payment of all labor and materials. The OFFEROR must be named as principal on the bond. NO THIRD PARTY BID BONDS WILL BE ACCEPTED.

PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENTS BOND: The Contractor will be required to furnish, at the Water Authority's expense, separate surety bonds ~~each~~ in the amount of ~~one hundred percent (100%)~~_____ of the total contract amount, offered as security for the faithful performance of the contract and for the payment of all labor and materials. ~~These bonds must be written on the forms provided in this RFP and furnished prior to or at the time of the issuance of a written notice of award of a contract resulting from this RFP.~~ The Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the City.

CASHIER'S CHECKS, CERTIFIED CHECKS, PERSONAL CHECKS, LETTERS OF CREDIT, CASH OR OTHER SUBSTITUTES WILL NOT BE ACCEPTED IN LIEU OF THESE BONDS.

Upon execution of the contract resulting from this RFP, and annually fifteen (15) calendar days prior to the commencement of each fiscal year (July 1 to June 30), the Contractor will furnish separate surety bonds (performance and labor and material

may be increased by the Water Authority after the first fiscal year if annual usage is in excess of this amount. The bonds may be renewed annually at the option of the surety by means of a continuation certificate. These bonds must be written on the forms provided in this RFP and the Contractor must be named as principal on the bonds. No third party performance bonds will be accepted. The sureties on such bonds shall be duly authorized to conduct business in the State of New Mexico, and acceptable to the Water Authority.

~~**1.25.5 Increased Limits:** During the life of the contract the Water Authority may require the Contractor to increase the maximum limits of any insurance required herein. In the event that the Contractor is so required to increase the limits of such insurance, an appropriate adjustment in the contract amount will be made.~~

payment bonds) as security for the faithful performance of the contract by the Contractor during the fiscal year and shall be XXX Dollars ($X,XXX,XXX) each and this amount

PART 6
DRAFT AGREEMENT

THIS AGREEMENT is made and entered into on the date last entered below, by and between the Albuquerque Bernalillo County Water Utility Authority, a political subdivision of the State of New Mexico (Water Authority), and _____, hereinafter referred to as the "Contractor"), a _____, whose address is _____.

RECITALS

WHEREAS, the Water Authority issued a Request For Proposals for the, RFP2011-002-TC, titled "Advanced Meter Infrastructure System" excerpts of which are attached hereto as Exhibit A and by this reference, such excerpts are made a part of this Agreement; and

WHEREAS, the Contractor submitted its proposal, dated _____, in response to RFP2011-002-TC excerpts of which proposal is attached hereto as Exhibit B and by this reference, such excerpts are made a part of this Agreement; and

WHEREAS, the Water Authority desires to engage the Contractor to render certain services in connection therewith, and the Contractor is willing to provide such services.

NOW, THEREFORE, in consideration of the premises and mutual obligations herein, the parties hereto do mutually agree as follows:

1. **Scope of Services.** The Contractor shall perform the following services (hereinafter the "Services") ~~in a satisfactory and proper manner, as determined by the Water Authority~~according to the terms of this agreement:

> Provide implementation services for an advance meter infrastructure system in accordance with Exhibit A as supplemented by Exhibit B. [This provision is contingent upon receipt and review of Exhibit A and Exhibit B. This comment applies to all references to the "Services" or to Exhibits A and/or B throughout this RFP.]

2. **Time of Performance.** Services of the Contractor shall commence on the date of final execution of this Agreement and shall be undertaken and completed in such sequence as to assure their expeditious completion in light of the purposes of this Agreement; provided, however, that in any event, all of the Services required hereunder shall be completed within two years of the date of execution of this Agreement. This Agreement may be extended for future phases/periods upon written agreement of the parties.

3. **Compensation and Method of Payment.**

A. **Compensation.** For performing the Services specified in Section 1 hereof, the Water Authority agrees to pay the Contractor up to the amount of _____ Dollars ($_____), which amount ex~~in~~cludes any applicable gross receipts taxes and which amount shall constitute full and complete compensation for the

Contractor's Services under this Agreement, including all expenditures made and expenses incurred by the Contractor in performing such Services. Taxes will be added as a separate line item on the invoice; taxes shall be the responsibility of the Water Authority.

B. Method of Payment. Such amount shall be paid to the Contractor within thirty days after the date of the invoice~~in installments based on the payment schedule and milestones as identified in Exhibit C, which include any applicable gross receipts taxes~~. Goods shall be invoiced upon delivery of the relevant good and services shall be invoiced monthly in advance. ~~Payments shall be made to the Contractor upon completion of each task, upon receipt by the Water Authority of a properly documented requisition for payment as determined by the budgetary and fiscal guidelines of the Water Authority and on the condition that the Contractor has accomplished the Services to the satisfaction of the Water Authority.~~

C. Intentionally Omitted.~~Appropriations.~~ ~~Notwithstanding any other provisions in this Agreement, the terms of this Agreement are contingent upon the Water Board of the Albuquerque Bernalillo County Water Utility Authority making the appropriations necessary for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the Water Board, this Agreement may be terminated at the end of the Water Authority's then current fiscal year upon written notice given by the Water Authority to the Contractor. Such event shall not constitute an event of default. All payment obligations of the Water Authority and all of its interest in this Agreement will cease upon the date of termination. The Water Authority's decision as to whether sufficient appropriations are available shall be accepted by the Contractor and shall be final.~~

4. Independent Contractor. The Contractor is considered as an independent contractor at all times in the performance of the services described in Section 1. The Contractor further agrees that neither it nor its employees are entitled to any benefits from the Water Authority under the provisions of the Workers' Compensation Act of the State of New Mexico, or to any of the benefits granted to employees of the Water Authority under the provisions of the Merit System Ordinance as now enacted or hereafter amended.

5. Personnel.

A. The Contractor represents that it has, or will secure at its own expense, all personnel required in performing all of the Services required under this Agreement. Such personnel shall not be employees of or have any contractual relationships with the Water Authority.

B. All the Services required hereunder will be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local law to perform such Services.

C. None of the work or Services covered by this Agreement shall be subcontracted without the prior written approval of the Water Authority. Any work or Services subcontracted hereunder shall be specified by written contract or agreement and shall be subject to each provision of this Agreement. Notwithstanding the foregoing, the Water Authority acknowledges that Contractor will subcontract certain services, such as any installation or project

management services, and the Water Authority hereby consents to such subcontracts.

6. **Indemnity.** Contractor on the one hand, and the Water Authority on the other hand (each an "Indemnifying Party") shall and hereby does indemnify, defend and hold harmless the other (the "Indemnified Party") from and against all Third Party Litigation Costs incurred by any Indemnified Party in any Third Party Litigation caused by; (i) the Indemnifying Party breaching this Agreement; or (ii) the negligence or intentional misconduct of the Indemnifying Party. As used in this Agreement, "Third Party Litigation" means litigation brought against an Indemnified Party by a Person that is not an Indemnified Party; and "Third Party Litigation Costs" means all reasonable attorneys' fees and other legal expenses incurred in the Third Party Litigation as well as the judgment rendered or settlement reached therein. To avoid doubt, "Third Party Litigation" does not include disputes between the Parties or their Affiliates. It is meant to cover only third party claims by persons or entities other than Indemnified Parties. The Indemnifying Party shall not settle any claim which may affect the Indemnified Party without the Indemnified Party's prior written approval ~~The Contractor agrees to defend, indemnify, and hold harmless the Water Authority and their officials, agents, and employees from and against any and all claims, actions, suits, or proceedings of any kind brought against said parties for or on account of any matter arising from the Services performed by the Contractor under this Agreement. The indemnity required herein shall not be limited by reason of the specification of any particular insurance coverage in this Agreement.~~

7. **Insurance.** The Contractor shall not commence any work under this Agreement until the insurances required in Exhibit A, Section 1.25, have been obtained and the proper certificates (or policies) have been submitted to the Water Authority. [This provision is subject to review and comment by Contractor's risk management group.]

8. **Discrimination Prohibited.** In performing the Services required hereunder, the Contractor shall not discriminate against any person on the basis of race, color, religion, gender, sexual preference, sexual orientation, national origin or ancestry, age, physical handicap or disability, as defined in the Americans With Disabilities Act of 1990, as currently enacted or hereafter amended.

9. **ADA Compliance.** In performing the Services required hereunder, the Contractor agrees to meet all the requirements of the Americans With Disabilities Act of 1990 (the "ADA"), which are imposed directly on the Contractor or which would be imposed on the Water Authority as a public entity. The Contractor agrees to be responsible for knowing all applicable rules and requirements of the ADA ~~and to defend, indemnify and hold harmless the Water Authority, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of any acts or omissions of the Contractor or its agents in violation of the ADA~~.

10. **Reports and Information.** At such reasonable times and in such forms as Water the Authority may require, there shall be furnished to the Water Authority such statements, records, reports, data and information, as the Water Authority may reasonably request pertaining to matters covered by this Agreement. Unless authorized by the Water Authority, the Contractor will not release any information concerning the work product including any reports or other documents prepared pursuant to the Agreement until the final product is submitted to the Water Authority.

11. **Open Meetings Requirements.** Any nonprofit organization in the Water

Authority which receives funds appropriated by the Water Authority, or which has as a member of its governing body an elected official, or appointed administrative official, as a representative of the Water Authority, is subject to the requirements of §2-5-1 *et seq.* R.O.A. 1994, Public Interest Organizations. The Contractor agrees to comply with all such requirements, if applicable.

12. Establishment and Maintenance of Records. Records shall be maintained by the Contractor in accordance with applicable law and requirements prescribed by the Water Authority in this Agreement with respect to all matters covered by this Agreement. Except as otherwise authorized by the Water Authority, such records shall be maintained for a period of three (3) years after receipt of final payment under this Agreement.

13. Audits and Inspections. At any time during Contractor's normal business hours and as often as the Water Authority may deem necessary, there shall be made available to the Water Authority for examination all of the Contractor's records with respect to all matters covered by this Agreement. The Contractor shall permit the Water Authority to audit, examine, and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement. All such audits and inspections shall (a) occur upon prior written notice to Contractor; (b) be subject to reasonable confidentiality obligations; and (c) be at the Water Authority's sole cost and expense.

14. Publication, Reproduction and Use of Material. No Intellectual Property is assigned to Water Authority hereunder. Contractor shall own or continue to own all Intellectual Property used or created in the course of performing this Agreement. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Contractor by virtue of this Agreement or otherwise, and instead vests in Water Authority, Water Authority agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that Water Authority may have in and to such Intellectual Property. "Intellectual Property" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto ~~No material produced in whole or in part under this Agreement shall be subject to copyright in the United States or in any other country. The Water Authority shall have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data or other materials prepared under this Agreement.~~

15. Compliance with Laws. In providing the Scope of Services outlined herein, the Contractor shall comply with all applicable laws, ordinances, and codes of the federal, State, and local governments.

16. Changes. ~~The Water Authority may, from time to time, request changes in the Scope of Services of the Contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation, which are mutually agreed upon by and between the Water Authority and the Contractor, shall be incorporated in written amendments to this Agreement~~No modifications, amendments or other changes are binding on either party unless in a writing signed by both parties, including by a vice president of Contractor.

17. Assignability. The Contractor shall not assign any interest in this Agreement and shall not transfer any interest in this Agreement (whether by assignment or novation), without the prior written consent of the Water Authority thereto. Notwithstanding the foregoing, Contractor may assign this agreement, without the consent of Water Authority and without post-assignment liability, to a purchaser of all or substantially all of the assets of Contractor.

18. Termination for Cause. Either party may earlier terminate this Agreement if the other party commits a material breach of this Agreement and such material breach is not cured within

thirty (30) days of written notice by the other party~~If, through any cause, the Contractor shall fail to fulfill in a timely and proper manner its obligation under this Agreement or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Agreement, the Water Authority shall thereupon have the right to terminate this Agreement by giving five (5) days written notice to the Contractor of such termination and specifying the effective date of such termination. In such event, all finished or unfinished documents, data, and reports prepared by the Contractor under this Agreement shall, at the option of the Water Authority, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder. Notwithstanding the above, the Contractor shall not be relieved of liability to the Water Authority for damages sustained by the Water Authority by virtue of any breach of this Agreement by the Contractor, and the Water Authority may withhold any payments to the Contractor for the purposes of set-off until such time as the exact amount of damages due the Water Authority from the Contractor is determined~~.

19. Intentionally Omitted. ~~**Termination for Convenience of Water Authority.** The Water Authority may terminate this Agreement at any time by giving at least fifteen (15) days notice in writing to the Contractor. If the Contractor is terminated by the Water Authority as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the~~

~~Services actually performed bear to the total Services of the Contractor covered by this Agreement, less payments of compensation previously made. If this Agreement is terminated due to the fault of the Contractor, the preceding section hereof relative to termination shall apply.~~

20. **Construction and Severability.** If any part of this Agreement is held to be invalid or unenforceable, such holding will not affect the validity or enforceability of any other part of this Agreement so long as the remainder of the Agreement is reasonably capable of completion.

21. **Intentionally Omitted.** ~~**Enforcement.** The Contractor agrees to pay to the Water Authority all costs and expenses including reasonable attorney's fees incurred by the Water Authority in exercising any of its rights or remedies in connection with the enforcement of this Agreement.~~

22. **Entire Agreement.** This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understandings, oral or written, whether previous to the execution hereof or contemporaneous herewith. Exhibits A and B, attached hereto, are hereby made a part of this Agreement.

23. **Applicable Law.** This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New Mexico, and the laws, rules and regulations of the City of Albuquerque.

24. **Approval Required.** This Agreement shall not become effective or binding until approved by the Water Authority's Executive Director.

{INTENTIONALLY LEFT BLANK}

IN WITNESS WHEREOF, the Water Authority and the Contractor have executed this Agreement as of the date first above written.

ALBUQUERQUE BERNALILLO
COUNTY WATER UTILITY AUTHORITY Approved
By:

Executive Director

Date: _____

CONTRACTOR:
By: _____
Title: _____
Date: _____

Federal Tax ID No:

State Tax ID No:

_____, Director
Department _____ Date:
_____

The contract shall also contain terms addressing:

(i) limitations of liability
(ii) warranties, waiver of implied warranties, and exclusive remedies
(iii) pricing and price escalation
(iv) notices, disputes resolution
(v) force majeure, confidentiality waiver, survival
(vi) the terms under which Water Authority shall sub-license Contractor's FCC licenses
(vii) a responsibility breakdown for RF field maintenance
(viii) the terms for Water Authority to license Contractor's software
(ix) the terms for Contractor to provide software updates and maintenance

in each case consistent with Contractor's response to the RFP.

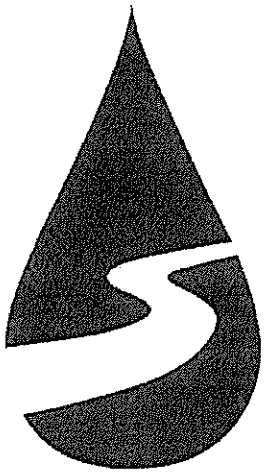
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 5

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
7/27/2010

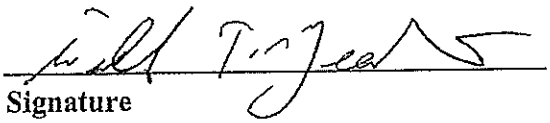
Addendum 5 is to post this notice that extends the RFP opening date to September 10, 2010, 4:00PM MST. This attachment was inadvertently omitted. This extension is to allow time to fully answer questions, and to allow adequate time for vendors to incorporate the answers into their responses.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

Addenda 1, 2, 3, and 4 were to add editable files for vendor use, the list of pre-proposal meeting attendees, and to extend the RFP opening date to the on-line posting. Signing this Addendum is acknowledgement that Addenda 1, 2, 3, 4, and 5 have been received.

****

Acknowledged & Returned:



Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

Company

XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

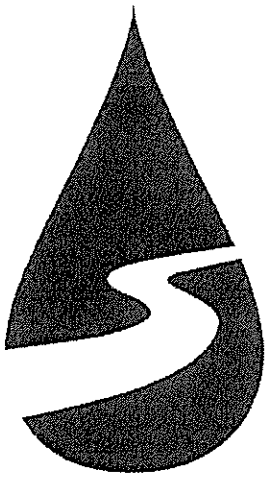
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 6

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/16/2010

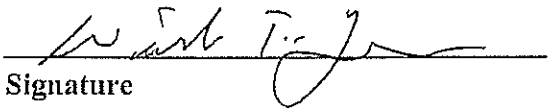
RFP2011-002-TC
Addendum 6
ADVANCED METER INFRASTRUCTURE SYSTEM
PAGE 1

Addendum 6 is to answer questions provided by vendors. The questions and answers are provided below.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

****

Acknowledged & Returned:



Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

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XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

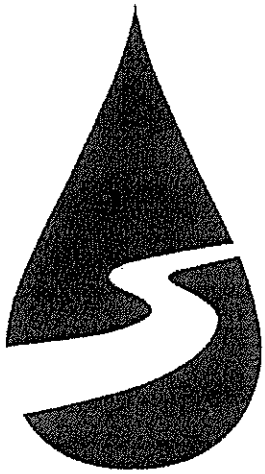
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 6

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/16/2010

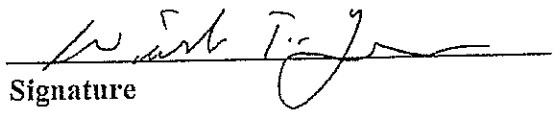
RFP2011-002-TC
Addendum 6
ADVANCED METER INFRASTRUCTURE SYSTEM
PAGE 1

Addendum 6 is to answer questions provided by vendors. The questions and answers are provided below.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

****

Acknowledged & Returned:



Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

Company

XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

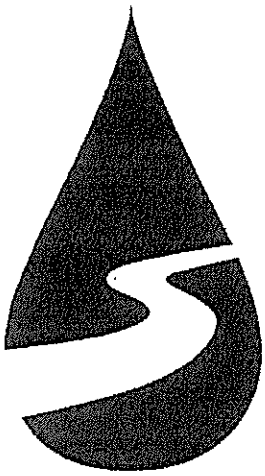
Albuquerque Bernalillo County Water Utility Authority

Request for Proposals

Solicitation Number: RFP2011-002-TC

Addendum 7

ADVANCED METER INFRASTRUCTURE SYSTEM



Due Date: September 10, 2010 NLT 4:00 p.m. MDT
The time and date proposals are due shall be strictly observed.

Albuquerque Bernalillo County Water Utility Authority
Purchasing Office
8/31/2010

- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will develop topics for and conduct routine meetings with customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Business, Construction, Engineering, Computer Science, or equivalent
- Project management experience in large-scale activities managing multi-person teams
- PMP certification a plus
- Experience managing and tracking project budgets
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads
- The ability to work under pressure and provide high quality solutions to problems
- Must be able to work independently and function well as part of a team
- Must be completely literate with all Microsoft (MS) Office suite applications, general computer skills, able to type efficiently, develop MS PowerPoint presentations, spreadsheets, graphs, and analyses of project-related information

Network Deployment Manager (for ABCWUA, this will be the Project Manager)

Duties and Responsibilities

The Network Deployment Manager is responsible for overall planning, coordination, and support for the installation of FlexNet system components including Tower Gateway Base Stations (TGBs), FlexNet Network Portals (FNPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Also included is the systems optimization for all network and metering components requiring field visits to various locations throughout the service area. This position is also responsible for the deployment planning, customer interface, and coordinating the utilities resources, subcontractors, and Sensus employees for the network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with office and field staff of the customer organization, supervise on-site Sensus personnel, and coordinate the activities of corporate, subcontractor and customer personnel assigned to the project

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- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance, and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance
- Will provide reports and participate in routine meetings with the customers, project reviews with corporate headquarters, and special meetings as necessary

Prerequisites

- Bachelor's degree in Electrical Engineering, Business, Construction, Engineering, or equivalent
- Expert use of tools such as MapInfo, Planet EV, and other GIS mapping tools
- Working knowledge and ability with SQL and database querying and structure
- Experience in large scale activities, managing multi-person teams
- Strong problem solving and analytical skills are essential
- Excellent interpersonal communications and presentation skills are essential, as this role involves direct customer liaison and interaction with Sensus employees, contractors, and functional department heads.
- The ability to work under pressure and provide high-quality solutions to problems – must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, PowerPoint, Excel spreadsheets, Access, Visio, and other project related information
- Experience in WAN and LAN networking technologies and protocols

Kevin McCullor, Integration Technology Project Manager

Experience and Background

Kevin McCullor is an AMI Integration Technology (IT) PM providing monitoring and management of the Regional Network Interface (RNI) and field-related equipment.

Prior to becoming a member of Sensus, Kevin was employed as a Senior Systems Engineer with a nationwide paging provider. In this capacity, Kevin was responsible for the development and maintenance of a statistics collection and forecasting platform. This platform assisted executives in discussion-making and reducing overall cost of operation of the entire company.

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Kevin started as a Field Engineer and, through his vast knowledge of the industry, became one of the most trusted in his department. Kevin brings a solid understanding of RF and IT issues. He has been managing project both large and small for more than ten years.

Duties and Responsibilities

- Monitor and manage the health of the FlexNet system and its components
- Provide performance analysis and direct the optimization of the system using standard tools available in the FlexNet system and as provided for in the customer utility, third party contractors, or Sensus field optimization processes and/or systems
- Compile FlexNet project status reports, coordinate project schedules, manage technical project meetings, and identify and resolve technical problems
- Identify and analyze systems requirements and define project scope, requirements, and deliverables
- Coordinate technical project activities and ensure all project phases are documented appropriately
- Provide expert judgment and analysis for the design, development, and implementation of technical products and systems
- Resolve highly complex technical issues and conduct advanced research
- Recommend alterations to development and design to improve quality of products and/or procedures
- Develop, implement, and monitor information systems policies and controls to ensure data accuracy, security, and regulatory compliance
- Review reports of computer and hardware equipment production, malfunction, and maintenance to determine and address problems
- Aid in the design and development of hardware equipment and systems and/or redesign of existing systems as needed to fulfill the needs of customers
- Responsibilities also include providing equipment functionality and capability reports to the sales force and acting as technical liaison to the sales team
- Rely on extensive experience and judgment to plan and accomplish goals. Perform a variety of complex tasks. May lead and direct the work of others. A wide degree of creativity and latitude is expected.

Prerequisites

Minimum requirements for this position include:

- A bachelor's or master's degree in area of specialty (Engineering or Computer Sciences)
- Five to eight years of experience in the AMR, AMI, utilities, or related technical field
- Superior communication and interpersonal skills

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- Excellent analytical skills
- Entry to mid-level Perl and/or Unix shell scripting
- Mid-level Unix and Windows OS experience
- Mid-level SQL experience (MS SQL, Postgres SQL, Oracle)
- Solid understanding of basic telecommunications concepts (ping, ssh, telnet, ftp, traceroute, etc.)
- Good troubleshooting skills
- Know project management methodology, a PMP certification is a plus
- Be able to deal with multiple projects concurrently
- Ability to communicate with internal and external customers under stressful environments

RF Engineer/Technician

Duties and Responsibilities

The FlexNet RF Technician is responsible for assisting in the interpretation and implementation of the RF network plan, overseeing and/or certifying network equipment installation work, performing and/or overseeing network equipment maintenance, and ensuring the overall system performance of the FlexNet system components, including TGBs, FNPs, FlexNet Remote Portals (FRPs), and other network devices employing generally-accepted commercial practices and Sensus processes. Inherent in these responsibilities is the overall systems optimization for network and metering components requiring field visits to various locations throughout the service area.

This Technician is responsible for:

- Serving as the interface between and among the Sensus RF Network Planning and Propagation Group, installation contractors, the utility, and tower site owners in implementing the network plan, optimization, systems acceptance testing, and customer acceptance
- Scheduling and conducting periodic reviews and imposing scheduled maintenance and operational tests to ensure system performance
- Performing site visits to network equipment sites to determine feasibility of use and extent of equipment installation requirements
- Providing reports and participating in routine meetings with the utility, contractors, and corporate headquarters for project reviews and special meetings as necessary
- Reviewing system reports for network/meter failures
- Coordinating and taking action to enhance meter read performance

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AMI 490

FLEXNET

CommandLink

You're in command.

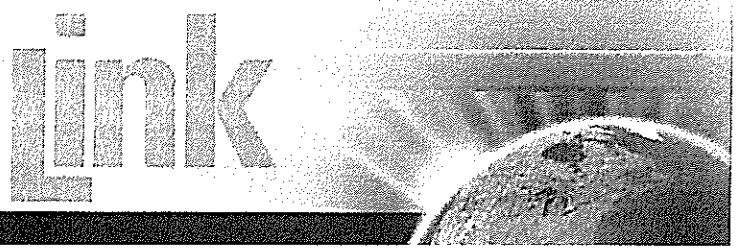
The FlexNet® CommandLink is a wireless interface that allows utility personnel to access a complete suite of functional controls within a gas, water or electric SmartPoint. The Bluetooth-enabled CommandLink directs the SmartPoint's activation, programming, and diagnostic settings as well as performing on-demand interrogation of the device. CommandLink is capable of communicating with any Hand-Held Device (HHD) enabled with Bluetooth technology, Windows Mobile 6 GPS and 50 MB of available memory as well as laptop computers with Windows XP or Windows Vista, Bluetooth technology and GPS. What's more, this versatile device features rechargeable, field replaceable batteries giving technicians the power to program up to 250 SmartPoints over a two-day period on a single charge. CommandLink System Software includes a simple programmer for ad hoc programming and a route programmer for more structured programming.

Programming:

It couldn't be simpler. Following the physical installation of the SmartPoint, position the CommandLink on the SmartPoint (use the included strap to hold CommandLink in place, if necessary). CommandLink will automatically connect to the HHD or Laptop Computer via Bluetooth wireless technology, allowing personnel to communicate with the SmartPoint and begin the programming process. If programming adjustments are necessary, just follow the simple programming instructions displayed on the HHD or Laptop Computer screen.

Troubleshooting-one-call resolution

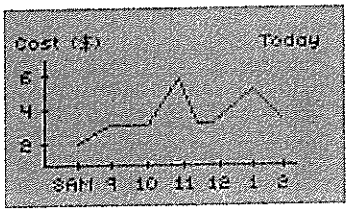
CommandLink provides instant access to the SmartPoint's programmed and stored information. With just a few keystrokes, the operator can pull setup information, validate readings, and verify or reprogram settings for optimal performance. You get immediate results. When finished, the CommandLink will initiate communication between the SmartPoint and TGB. Transmit reading, setup, binding or alarm information directly to the database, providing instant confirmation of any changes.



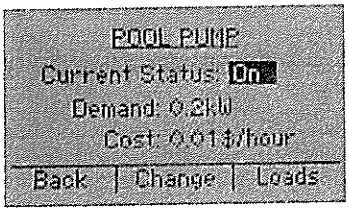
In-Home Display (IHD)

HAI smartgrid solutions

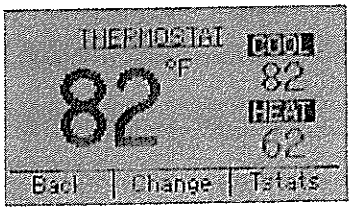
Energy usage view displays information on kwH used during time frames.

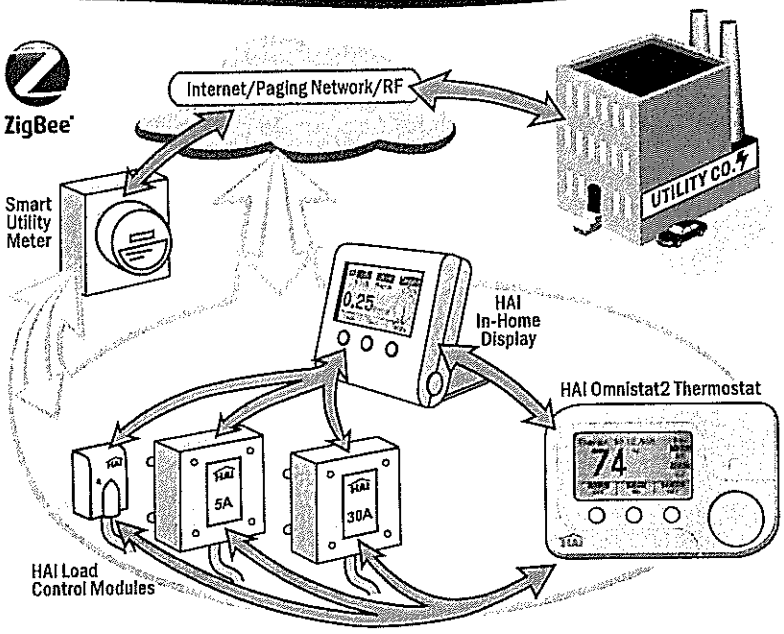


The LCM view allows for monitoring and control of high load devices.

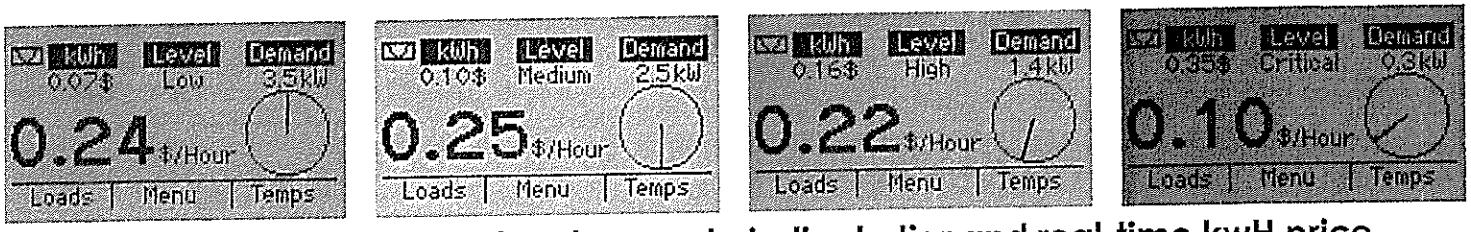


View thermostats and adjust setpoints.

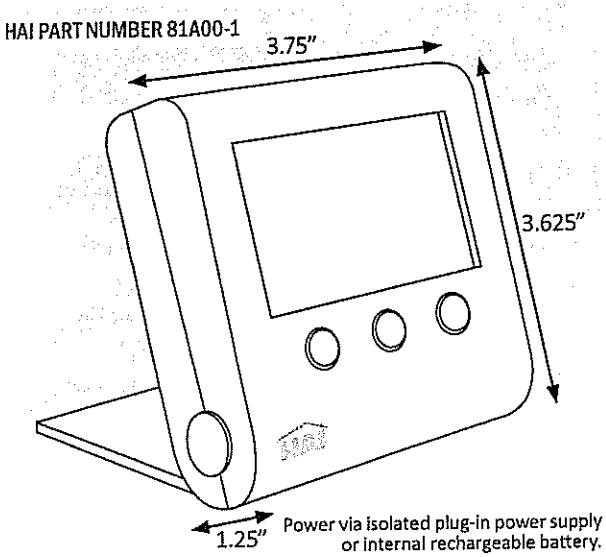




HAI's IHD increases homeowner convenience by allowing control of Load Control Modules (LCMs) and Thermostats (PCTs).



The IHD's LCD display color changes to indicate tier and real-time kwH price.



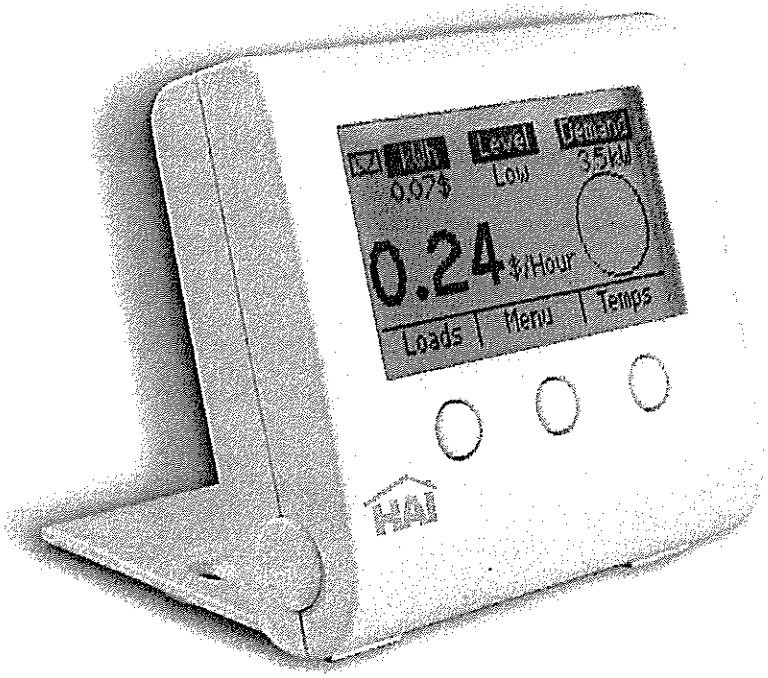
The IHD interface is designed to be intuitive and easy for the homeowner to use. Screens are customizable to provide any type of energy awareness information a customer may require.

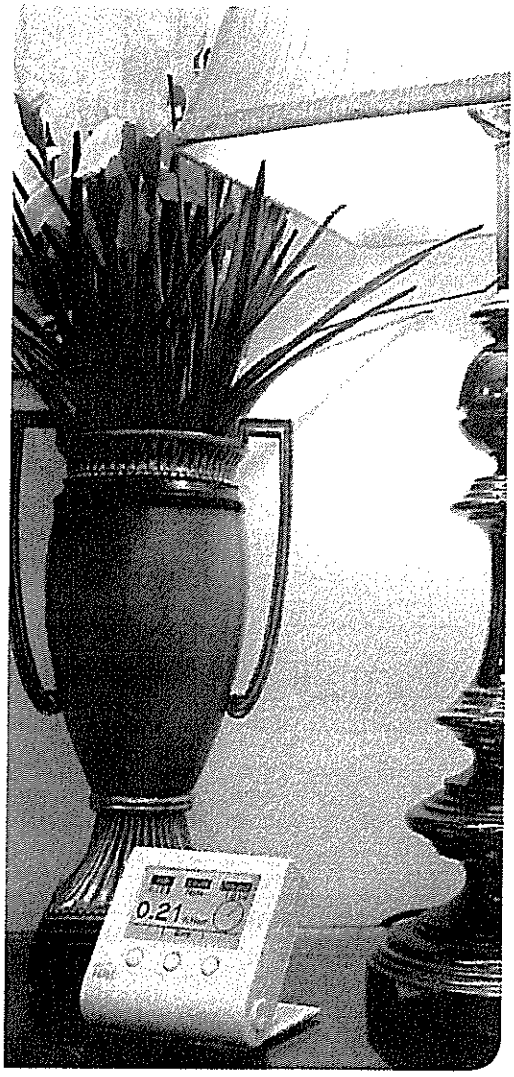
By functioning as a ZigBee® coordinator, IHDs can provide real time feedback for customers about their usage in a simple easy to understand format. Provide charts and graphs of HVAC operation, total energy consumption, comparative analysis with typical energy usage, and even carbon footprint data—all information that can have a positive effect on homeowners' energy use.

More HAI Smartgrid Solutions at http://smartgrid.homeauto.com

In-Home Display (IHD)

HAI smartgrid solutions





ZigBee

MULTICOLOR DISPLAY

MADE IN THE USA

HAI offers a full suite of products that cover any type of Home Area Network (HAN) application including In-Home Displays (IHD), Load Control Modules (LCM), and Programmable Communicating Thermostats (PCT) designed to use the ZigBee® Smart Energy, Sensus FlexNet, and other RF network technologies for communication. Designed for Time of Use, Duty Cycling, and Energy Awareness programs for utility companies interested in Smart Grid and tailoring load profiles for best use of assets.

HAI®

since 1985

http://smartgrid.homeauto.com

Advanced Options

Internet Access & Control
Multiple programs allow you to control and see the status of your home from anywhere via the Internet.

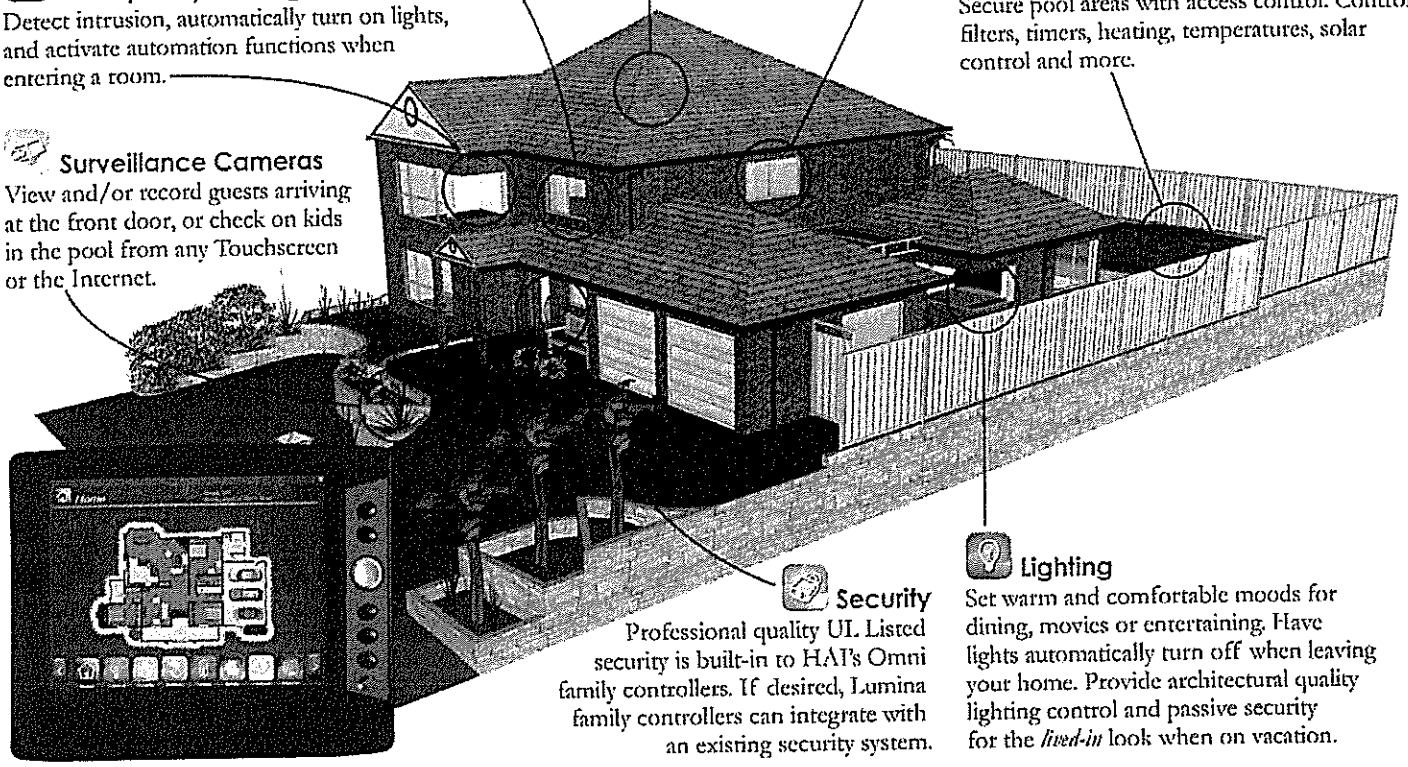
Occupancy Sensing
Detect intrusion, automatically turn on lights, and activate automation functions when entering a room.

Surveillance Cameras
View and/or record guests arriving at the front door, or check on kids in the pool from any Touchscreen or the Internet.

Energy Management
Be comfortable at home; save energy when away. Control temperatures in greenhouses, humidors, wine cellers, aquariums, & attics.

Entertainment
Share your favorite music throughout every zone of your home. Even play different songs in different zones at the same time.

Pool & Spa
Secure pool areas with access control. Control filters, timers, heating, temperatures, solar control and more.



Security
Professional quality UL Listed security is built-in to HAI's Omni family controllers. If desired, Lumina family controllers can integrate with an existing security system.

Lighting
Set warm and comfortable moods for dining, movies or entertaining. Have lights automatically turn off when leaving your home. Provide architectural quality lighting control and passive security for the *lived-in* look when on vacation.

Communication Options

- Sensus® FlexNet®
- Zigbee® Pro
  - Smart Energy Profile
  - Home Automation Profile
- Ethernet/Wi-Fi/IP
- Custom/Proprietary
- Z-Wave®

Support Programming

- Utility Pilot Support
- HAI Call Center Support
- End User Support via Flash Video
- Development kit available

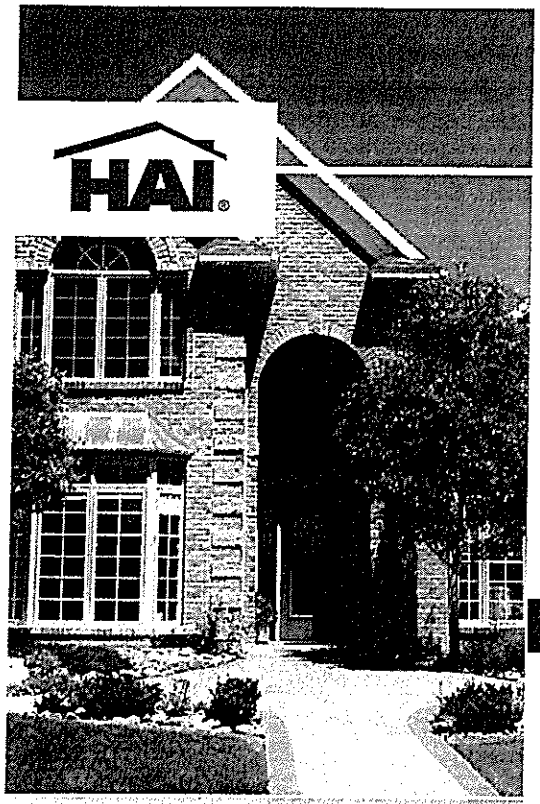
Find out more!

Contact HAI at bizdev@homeauto.com for quotations, sample pricing and more information. Custom firmware and modifications available. See our complete product line at www.homeauto.com/utility

HAI®
since 1985

Since 1985, Home Automation, Inc. (HAI) has been the leading manufacturer of home control products providing comfort, convenience and safety for homeowners and businesses around the world. We engineer our products to be easy to use, which is why they are Automation Simplified.®

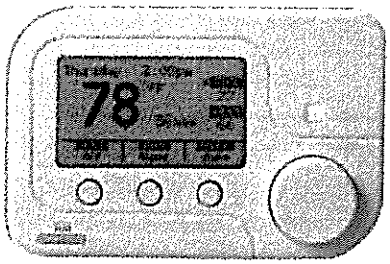
Specifications subject to change without notice. All trademarks are the property of their respective owners.



Demand Response Products for Utilities

HAI offers a full suite of products that cover any type of Home Area Network (HAN) application including In Home Displays (IHD), Load Control Modules (LCM), and Programmable Communicating Thermostats (PCT) that are designed to use the ZigBee Smart Energy, Sensus FlexNet, and other standard and proprietary RF network technologies for communication. Designed for Time of Use, Duty Cycling, and Energy Awareness programs for utility companies interested in Smart Grid and tailoring load profiles for best use of assets.

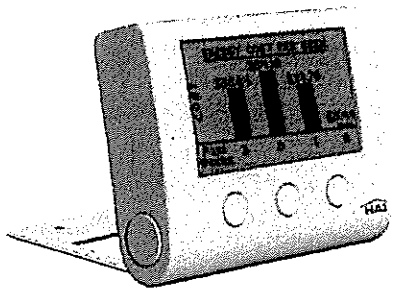
Omnistat2™ Thermostats



- Programmable and communicating
- Works as an In-Home Display
- TOU and duty cycling
- Customizable graphic energy display changes color
- Remote control of LCMs
- Standard, heat pump, and dual fuel
- Accessories include outdoor and remote temperature sensors, TPSM, and trim ring for easy retrofit

RC-1000 - Single Stage/Heat Pump
RC-1500 - Multi Stage Universal
RC-2000 - Multi Stage with Humidity

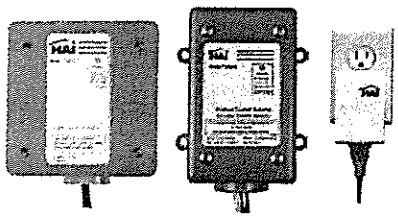
In-Home Display



- Customizable graphic energy display changes color
- Internal battery backup allows for notification after outage
- Remote control of thermostats, PCTs, and LCMs
- Two-way for pre-pay systems
- Flexible menu system
- Features are dependent on communication options

81A00-1 - In-Home Display

Load Control Modules (LCMs)



- Universal 100-250 VAC 50/60 HZ
- Ultra low stand-by power
- Time of use and/or duty cycling
- Tamper detection
- Small and easy to install

73A00-1 - 30A Wireless Utility LCM
73A00-4 - 5A Wireless Utility LCM
60A00-X - 15A Plug-in LCM (120V 60Hz)

FlexNet

SmartPoint™ M2

Model 520M – Pit Set

DESCRIPTION

Application: The FlexNet SmartPoint M2 is a radio transceiver that provides water utilities inbound and outbound access to water measurement and ancillary device diagnostics via radio signal. The SmartPoint 520M is designed for submersible, pit-set environments. With its migratable, two-way communication ability, the M-Series SmartPoint functions as a walk-by/drive-by endpoint, fixed base endpoint, or combination of the two. This flexibility increases utility data collection capabilities and streamlines operations.

TouchCoupler Design: The SmartPoint M2 utilizes TouchCoupler, the patented Sensus inductive coupling communication system, to interface with the meter encoder as well as other devices. With TouchCoupler, the SmartPoint M2 can connect to the meter using existing two wire AMR installations instead of requiring utilities to access the home to install a new three-wire system. This results in a fast, efficient and reliable connection at minimal cost.

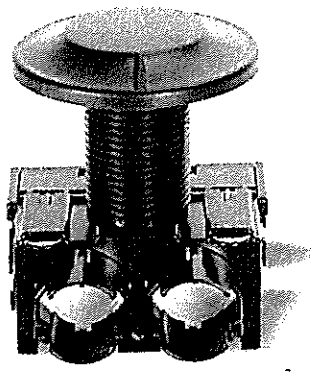
Operation: The FlexNet SmartPoint M2 receives input from the meter register and remotely sends data to a walk-by/drive-by or fixed base collection device. The SmartPoint M2 easily migrates from walk-by/drive-by to fixed base by simply installing a Tower Gateway Basestation (TGB).

In walk-by/drive-by mode, the SmartPoint M2 collects data and awaits an activation signal from the Vehicle Gateway Basestation (VGB) or Hand-Held Device (HHD). Upon signal receipt, it transmits readings, the meter identification number and any alarms.

As a fixed-base endpoint, the SmartPoint M2 interacts with one or more strategically placed TGBs located in the utility service area. Top of the hour readings and other diagnostics are instantly forwarded to the Regional Network Interface (RNI) at time of transmission. The FlexNet system provides unmatched reliability by using expansive tower receiver coverage of metering end points, data/message redundancy, fail over back up provisions and operation on FCC primary-use (unshared) RF spectrum.

Powerful Transmission, Flexible Platform: The SmartPoint M2 offers several advantages that control both deployment and lifetime operation costs. It's powerful, industry leading two watt transmitter broadcasts over large distances and minimizes collection infrastructure. And once the SmartPoint M2 is installed, its migratable, two-way system platform can be updated without requiring personnel to visit each meter and/or inconveniencing customers.

Additional SmartPoint M2 Features: The SmartPoint M2 obtains hourly readings and can monitor continuous flow over a programmable period of time, alerting the utility to leak conditions. In addition, the SmartPoint M2 stores up to 840 consumption intervals (35 days of hourly consumption), providing the utility with the ability to extract detailed usage profiles for consumer information and dispute resolution. The SmartPoint M2 also incorporates a two-port design, allowing the utility to connect multiple registers and ancillary devices (such as acoustic monitoring) to a single SmartPoint. This results in a compact installation that saves time, space and money - without reducing system performance.



SPECIFICATIONS

SERVICE	Pit set installation interfacing the utility meter to the Sensus FlexNet system. Unit requires 1.75" diameter hole in pit lid; fits pit lid thicknesses up to 1.75"
PHYSICAL CHARACTERISTICS	Width: 4.43" x Height: 5.09" x Depth: 3"
WEIGHT	1.0 lbs/16.0 oz
COLOR	Black
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps
MODULATION	Proprietary Narrow Band
MEMORY	Non-Volatile
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)
APPROVALS	**US:** FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation **Canada:** Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	- 22° F to +185° F *- 30° C to + 85° C*
OPTIONS	Dual or single port availability; TouchCoupler only, wired only. (TouchCoupler connection available only with Sensus meters)
INSTALLATION ENVIRONMENT	100% condensing, water submersible
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII and ICE water registers **Wired Version Only:** Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead).
WARRANTY	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.

AUTHORIZED SENSUS DISTRIBUTOR

SENSUS

P.O. Box 487 | 450 North Gallatin Avenue
Uniontown, PA 15401 USA
T: 1-800-638-3748
F: 1-800-888-2403
www.sensus.com/water
h2oinfo@sensus.com

AMR-336

FlexNet

SmartPoint™ M2

Model 510M – Non Pit Set

DESCRIPTION

Application: The FlexNet SmartPoint M2 is a radio transceiver that provides water utilities inbound and outbound access to water measurement and ancillary device diagnostics via radio signal. The SmartPoint 510M is designed for non-submersible/non-pit installations. With its migratable, two-way communication ability, the M-Series SmartPoint functions as a walk-by/drive-by endpoint, fixed base endpoint, or combination of the two. This flexibility increases utility data collection capabilities and streamlines operations.

TouchCoupler Design: The SmartPoint M2 utilizes TouchCoupler, the patented Sensus inductive coupling communication system, to interface with the meter encoder as well as other devices. With TouchCoupler, the SmartPoint M2 can connect to the meter using existing two wire AMR installations instead of requiring utilities to access the home to install a new three-wire system. This results in a fast, efficient and reliable connection at minimal cost.

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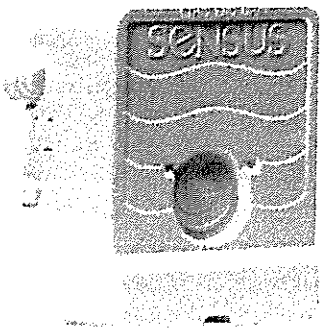

SPECIFICATIONS

SERVICE	Wall mounted (non-pit/non-submersible) installation interfacing the utility meter to the Sensus FlexNet system.	
PHYSICAL CHARACTERISTICS	Width: 5 9/16" x Height: 5 1/2" x Depth: 3"	
WEIGHT	1.13 lbs/18.08 oz	
COLOR	Tan	
FREQUENCY RANGE	900 – 950 MHz, 8000 channels X 6.25 kHz steps	
MODULATION	Proprietary Narrow Band	
MEMORY	Non-Volatile	
POWER	Lithium Thionyl Chloride batteries in conjunction with a hybrid layer capacitor (HLC)	
APPROVALS	**US:**	FCC CFR 47: Part 90, Part 24D, Part 101C, Part 15 Licensed operation
	Canada:	Industry Canada (IC) RSS-134, RSS-119, RSS-210
OPERATING TEMPERATURE	- 22° F to +185° F *- 30° C to + 85° C*	
OPTIONS	Dual or single port availability; TouchCoupler only, wired only (TouchCoupler connection available only with Sensus meters)	
INSTALLATION ENVIRONMENT	The 510M is designed for side-of-home applications where it is not subject to submergence.	
COMPATIBILITY	**TouchCoupler and Wired Version:** Sensus ECRII and ICE water registers **Wired Version Only:** Badger ADE, Elster Encoder (Sensus protocol), Neptune ARB VI (ProRead).	
WARRANTY	20 years – Based on six transmissions per day. Refer to Sensus G-500 for warranty.	

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FlexNet

Tower Gateway Base Station (TGB)

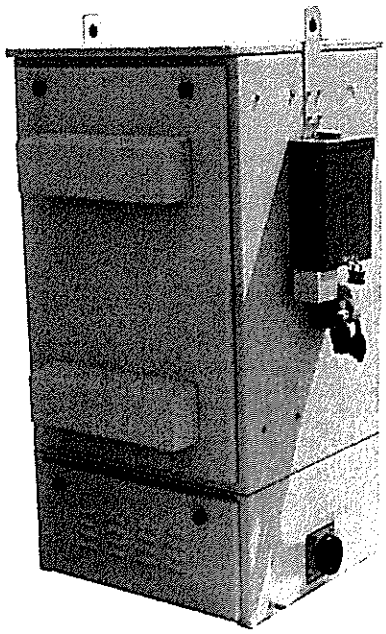
DESCRIPTION

Application: The Tower Gateway Base Station (TGB) is a two-way application that sends and receives transmissions from FlexNet SmartPoints in predetermined intervals. TGB's are strategically located within an area to insure coverage requirements are achieved. The TGB units can be housed on typical communications towers and/or on a utility's property should they meet the criteria for installation. Once the data is received at the TGB, the information is then forwarded to the Regional Network Interface (RNI) typically located at the utility.

Operation: The TGB was designed to insure data integrity and reliability. The TGB microprocessors employ multiple levels of access control to ensure that the only authorized users access the system. Access, authentication and authorization is controlled by a username and password restricted requirements. Users attempting to access the TGB will be required to submit a username and password using the Secure Shell Login (SSL). The secured login capability at the TGB site allows the end user to access redundant stored data should the communications link to the Regional Network Interface (RNI) breakdown and the customer requires data. In addition, when data is received at the TGB, the data is wrapped with a timestamp associated with the receive time, Time of Intercept (TOI) and then forwarded. Each packet is uniquely identified with a customer mask combined with the TGB identification. Data stored on the TGB remains encrypted and the encryption keys are never stored on the same equipment as the data.

The features incorporated in the TGB provide the industry's most reliable data collection system. Incorporated in the design, the system provides assurance that data will not be lost and can also be held for extended periods of time. One of the primary features of the TGB is its ability to store thirty (30) days worth of data. This feature provides the ability for the end user to access the tower should an extended outage occur. The TGB also incorporates other alternative communication methods in the chance that the primary communication link is disabled. In addition, the TGB provides an eight (8) hour battery backup in case the primary source of power is interrupted. In the case of multiple TGB sites in the coverage area, neighboring TGBs can accept and process data if required.

TGBs are strategically placed throughout the service territory to maximize coverage and minimize infrastructure requirements. Through the process known as propagation modeling, the locations of TGBs are determined. By incorporating numerous factors such as power output, tower heights, and terrain propagation modeling can predict infrastructure requirements and present a clear picture prior to deployment of the coverage provided by the TGB. This process maximizes coverage with the least amount of infrastructure compared to other systems operating at lower power output levels.



SPECIFICATIONS

DIMENSIONS	22" W x 25-1/2" D x 48" H (indoor unit) 30" W x 28" D x 58" H (outdoor unit)
WEIGHT	240 lbs (indoor unit) 660 lbs (outdoor unit)
RF DATA RATE	8 KBps Normal Mode
FREQUENCY RANGE	Input 901 – 902 MHz
MODULATION	7 Level FSK, 13 Level FSK
NETWORK CONTROL CENTER COMMUNICATIONS	TCP/IP
SENSITIVITY	-121 dBm Normal Mode
COMPLIANCE	FCC CFR 47: Parts 15, 24, 90, 101 Compliant Licensed Operation Industry Canada (IC) RSS-119,RSS-134
POWER SUPPLY	120 V grounded line at 10' Maximum (indoor unit) 120/240 V grounded line (outdoor unit)
TRANSCEIVER OPERATING TEMPERATURE	-40° C to +85° C -40° F to +185° F
ANTENNA REQUIREMENTS	External Omni Directional

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AMI-420-R1

FlexNet

Regional Network Interface

DESCRIPTION

The Regional Network Interface (RNI) is the data storage and processing center for the Sensus FlexNet system. One of the primary functions of the RNI is to receive and store data forwarded from the Tower Gateway Basestation (TGB). Once the data is received at the RNI, the utility can then use the data to assist them in improving efficiency throughout the utility. A major feature of the RNI is that it was designed to operate with standalone water or gas services and is also capable of operating in a combination utility environment that consists of water, gas and electric services. The RNI provides the necessary application to maximize the benefits of data collection.

The RNI consists of two unique servers: the Network Controller (NC) and the Utility Information Platform (UIP). The NC receives the meter data from the TGB and then routes it to the UIP. The NC provides two way communications with the TGB which allows the system to monitor the connection between the two devices. This two way functionality allows the utility to identify and solve any connectivity issues should they occur. The UIP collects the data routed from the NC, interprets the meter data and then processes for storage in the database. At the point of data interception within the UIP, historical meter data is reviewed and any missing data received is backfilled and made available to the end user. The redundant transmission of data assures the utility that transmitted data will be recorded and accessible for review.

Another feature of the RNI is the ability to store meter data should communication be lost between the two servers. If the NC loses the communication link with the UIP, the NC will forward the received data to the UIP server when the communication link is restored. This application assures the utility that access to their data will be achieved when uncontrollable events such as power outages or network interruptions occur.

Working in conjunction with the RNI is the Sensus Meter Data management (MDM) software. The MDM software provides the interface which allows the utility to review and manipulate stored data at the RNI into formal reports. In addition, the MDM provides the portal to store and view up to thirteen (13) months of data. A simple inquiry from the MDM to the RNI allows the end user to access previously received and stored data. This historical data can be used to solve billing disputes and also provides enough data to analyze customer usage. By accessing meter data stored within the MDM software, the utility will have the ability to utilize the information in a manner that best serves the utility operations and improves the overall efficiency.

SPECIFICATIONS

SERVER MODEL	Dell PowerEdge
DIMENSIONS	1U** Rack Mount 2U*** Rack Mount
WEIGHT	31 lbs ** 51 lbs ***
STORAGE	2 x 80GB Hard Disk Drives ** 6 x 73GB Hard Disk Drives ***
OPERATING SYSTEM (OS)	NC – Red Hat Enterprise Linux 5 UIP – Microsoft SQL Server 2005
MAINTENANCE HARDWARE	Provided through Dell
MAINTENANCE SOFTWARE	Sensus Licensed Software through Sensus Support Contract. Does not include Third Party Licensed Software.
POWER	Auto-Switching Universal 90 – 240VAC
OPERATING TEMPERATURE	50° F to 90° F *10° C to 32° C*

*RNI Requires 2 Servers

**Water Only and Gas Only Applications (Up to 50,000 Accounts)

***Combination Utility Applications (Up to 50,000 Accounts)

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RFP2011-002-TC
Addendum 7
ADVANCED METER INFRASTRUCTURE SYSTEM

Addendum 7 is to answer questions provided by vendors. The questions and answers are provided below.

Please incorporate this Addendum into the original RFP document. Sign and return this Addendum acknowledgment with your RFP response. Failure to acknowledge this Addendum may cause the RFP response to be considered non-responsive.

****

Acknowledged & Returned:

Signature

William T. Yeates

Printed Name

Executive Vice President, Conservation Solutions

Title

Sensus USA Inc.

Company

XC: Mark S. Sanchez, Executive Director
John J. Vigil, Purchasing Manager
City Clerk

EXHIBIT

B

II

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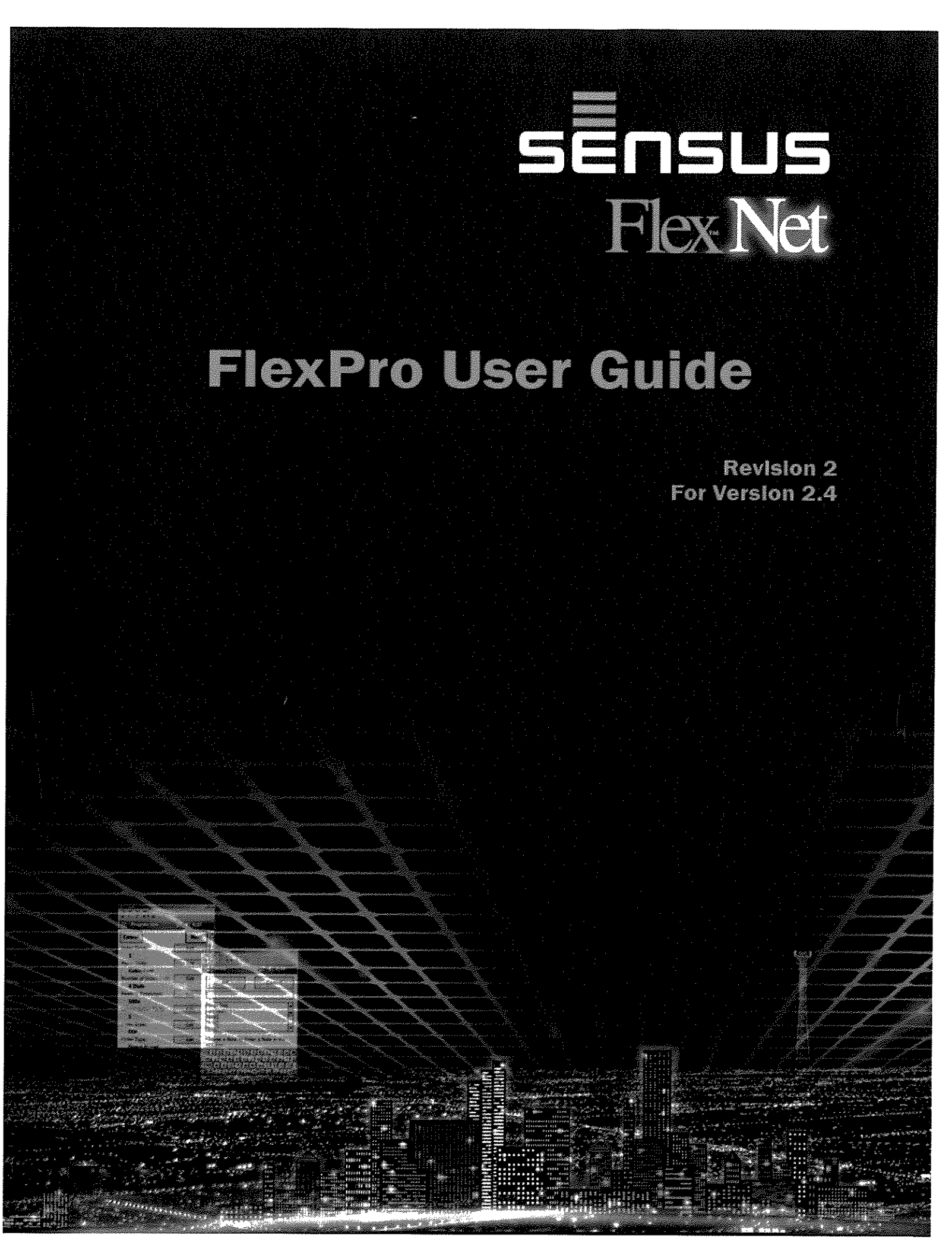
FlexNet

FlexPro User Guide

Revision 2
For Version 2.4



Revisions

Rev No.	Date	Description
Rev 1	5/25/2010	Initial Release
Rev 2	8/01/2010	Updated to support Two-Way Gas Endpoints

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1 Introduction

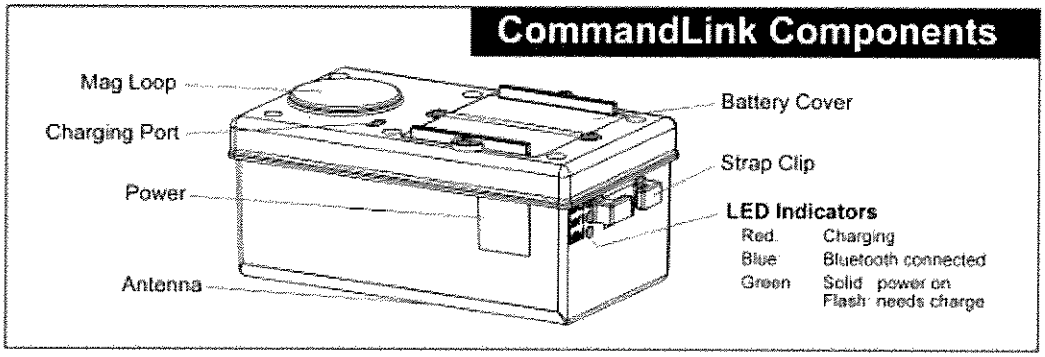
FlexPro is the FlexNet® SmartPoint™ module programming software. This software is loaded onto a Windows Mobile HandHeld Device and connects wirelessly using Bluetooth to the CommandLink. The software has built-in modules for water, gas and electric programming.

This guide includes information for FlexPro users and describes in detail the features and functionality of the FlexPro application.

Some configuration is required before using FlexPro. The application is highly configurable, and it is expected that a supervisor (in concert with Sensus Technical Support) has already set up the HandHeld Device. For information on installing and configuring the FlexPro application, see the *FlexPro Administrator Guide*.

1.1 CommandLink

The CommandLink is a battery operated SmartPoint interface tool used in conjunction with a Handheld Device to program FlexNet water, gas and electric SmartPoint modules.



The CommandLink has a removable **Battery Cover** for simple battery replacement and a **Charging Port** for use with the supplied charging adapter.

There are 3 **LED Indicators** located on the CommandLink. These show the status of the unit.

- Green – Solid indicates Power On; Flashing indicates Needs Charge
- Blue – Bluetooth Connected
- Red – Charging

The **Power** button is used to power CommandLink ON/OFF. To power on CommandLink, press the power button once. The Green LED illuminates to let you know that the unit is powered on. To power off CommandLink, press and hold the power button for 2 seconds. The Green LED turns off to let you know the unit is powered off.

The **Strap Clip** is where the elastic strap mounts to the CommandLink. This strap is used when programming water and gas SmartPoint modules allowing you hands free operation.

The **Mag Loop** area is the programming port for one-way water and gas SmartPoint modules. It is to be positioned on the programming area of the water and gas SmartPoint modules then secured with the strap. This allows for the magnetic coupling to occur and the programming process to be successful.

The **Antenna** is the radio used to communicate with two-way water and gas SmartPoint modules, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules and the 300GM gas SmartPoint module.

1.1.1 Charging CommandLink

The CommandLink comes equipped with three "AA" rechargeable batteries and a charger. Charge the CommandLink battery daily. This will allow for optimum performance of the batteries.

***Note**: CommandLink can also use AA non-rechargeable batteries. If batteries have been replaced, ensure that they are rechargeable before attempting to charge them in the CommandLink unit. DO NOT attempt to charge any Alkaline, Lithium, or NiCad (Nickel-Cadmium) battery types.*

The green LED on the CommandLink will blink when the batteries need to be recharged. When the batteries in the CommandLink are charging, the green and red LEDs will illuminate. When the batteries are fully charged, no LEDs will be illuminated.

1.2 Hand Held Devices (HHD)

FlexPro software is pre-installed on Sensus AR5500 Series HHDs prior to shipment. This software can also be installed on other compatible HHDs. See the *FlexPro Administrator Guide* for details on installing the software on a HandHeld Device.

1.2.1 Compatible HHDs

Sensus FlexPro-compatible devices must meet the following requirements:

- Windows Mobile 6
- GPS Receiver
- Bluetooth
- 50MB Memory
- TouchScreen

1.2.2 Charging HHDs

The HandHeld Device loaded with the FlexPro software must be charged daily. If you are using a Sensus AR5500 series HHD, place the device in the charging cradle and verify that the charging light on the cradle is illuminated.

***Note**: If using another manufacturer's HandHeld Device, charge using the approved charging device and following the charging specifications.*

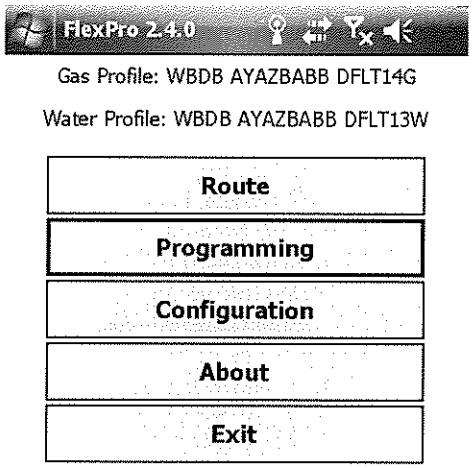
2 Installing and Programming One-Way Water Endpoints

Programming is used when installing a new SmartPoint module and also when reprogramming to modify parameters of an existing SmartPoint module.

2.1 Access the Water Programmer Screen

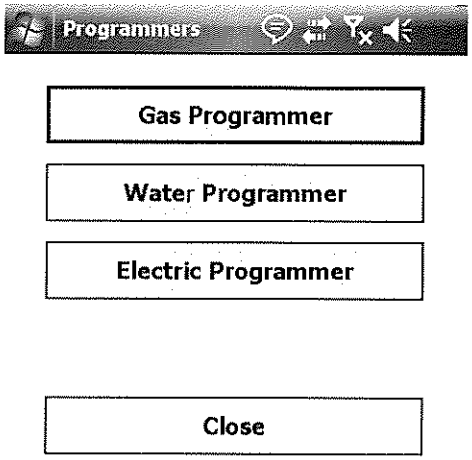
To access the Water Programmer screen:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start** → **FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**.



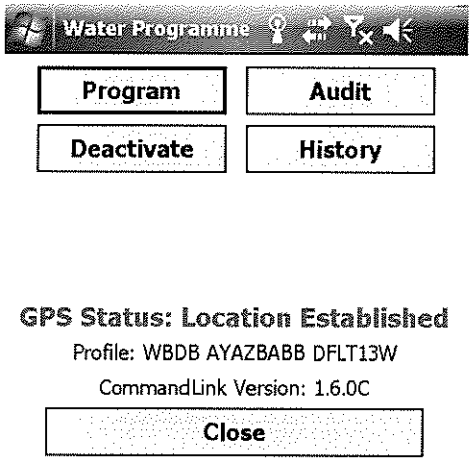
Note: *If your supervisor has disallowed Ad-Hoc Programming, then this* ***Programming*** *button will not be available. You can access the Programmers screen via the Route application. See Chapter 12 for information on routes.*

5. On the Programmers screen, you may see a button for **Gas Programmer**, **Water Programmer**, **Electric Programmer**, or any combination of the three.



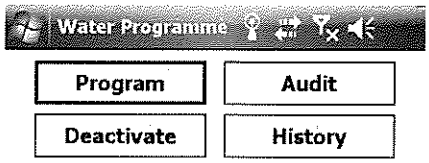
Note: *Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. The FlexPro Administator Guide includes information on setting up Programming Modules.*

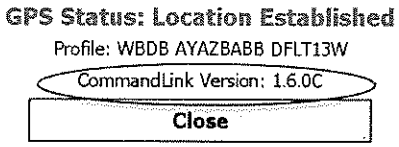
6. Tap the **Water Programmer** button. You are now on the Water Programmer screen.



2.2 Ensure That CommandLink is Powered On and Connected

You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.

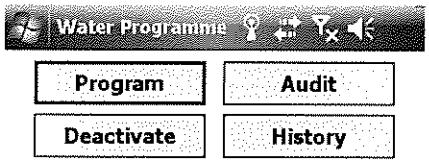


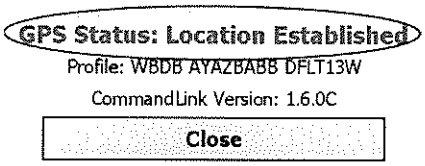


- If you have a connection to CommandLink, you will see the CommandLink version on the Water Programmer screen.
- If only zeros are displayed, then FlexPro is not communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

2.3 Ensure That Proper GPS Connectivity Has Been Obtained

The GPS status is displayed on the Water Programmer screen. This display represents the state of the GPS link. Verify that you have the proper connectivity before proceeding to program the SmartPoint module.

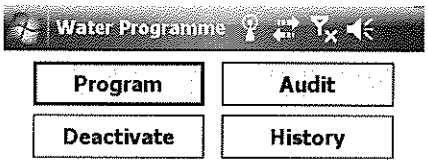


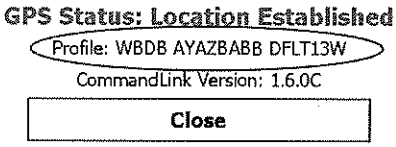


- A green or yellow GPS status indicates a good signal.
- A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

2.4 Verify the Profile

Each time you enter the programming application, you must verify that the profile listed is the correct one for your system.

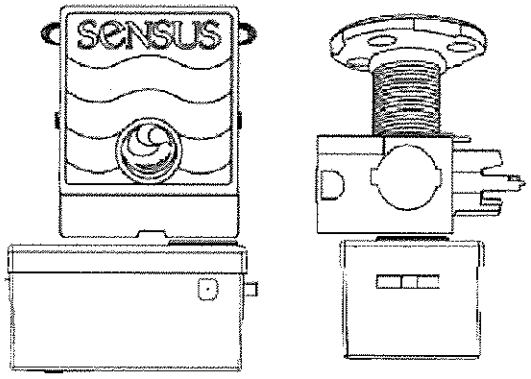




Note: *Never proceed to program a SmartPoint module without first verifying the profile and all programming parameters. An incorrect profile setting will cause the SmartPoint module to not operate properly. Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint modules, resulting in incorrect reading information.*

2.5 Properly Position the CommandLink Device

You must position CommandLink to have physical contact with the SmartPoint module. Position the CommandLink's Mag Loop area on the programming area of the water SmartPoint module, then secure with the strap. See section 1.1 for a CommandLink overview.



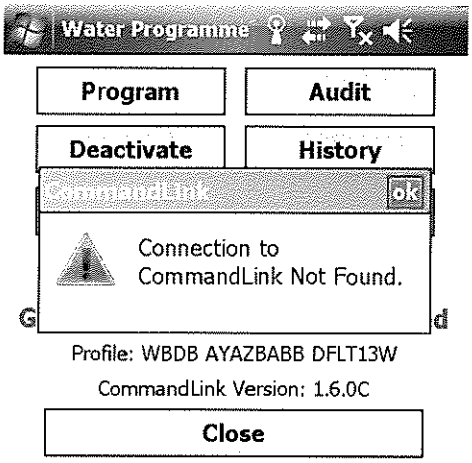
510x series **520x series**

2.6 Begin the Initialization

To proceed with programming, tap the **Program** button on the Water Programmer screen.

If you are unable to proceed to the programming screens, you may have one of the following issues that must be resolved before continuing.

2.6.1 No Connection to CommandLink



You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.

- Be sure CommandLink is powered on.
- Be sure FlexPro is communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

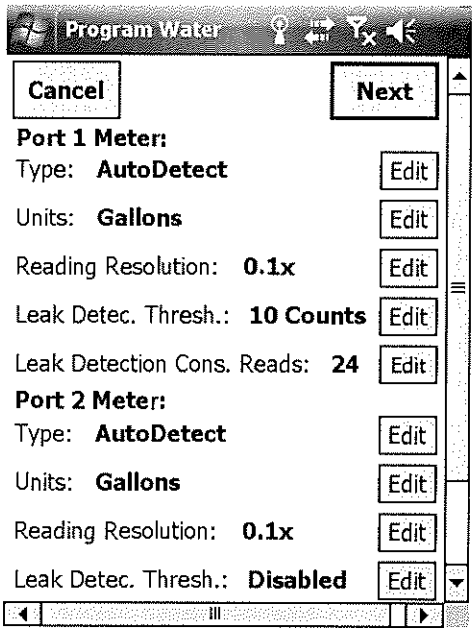
2.6.2 No GPS Connection

You must have a green or yellow GPS status to proceed to program the SmartPoint module. A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

2.7 Verify Parameters and Program the SmartPoint Module

2.7.1 Verify the Programming Parameters

Before proceeding with the programming or installation, verify the parameters on the Program Water screen. If programming a dual port unit, you must verify the parameters for each port.



If no changes are needed, tap **Next** to proceed with the programming.

2.7.2 Change the Programming Parameters

If a change is needed, tap the **Edit** button next to the parameter. After making any changes, verify the selected parameters and tap **Next** to proceed with the programming.

Type indicates the type of register connected to the SmartPoint module. There is also an option to *AutoDetect* the type of register. If no register is connected to the specific port on the SmartPoint module, then you must set this value to *Not Used.*
Select from: *AutoDetect, Sensus TouchCoupler, Sensus 3 Wire, Neptune Proread E-Coder, AMCO Scancoder, Elster InVISION, Badger ADE, and Not Used.*

Units indicates the units of measure of the register read.
Select from: *Gallons, Liters, Cubic Feet and Cubic Meters.*

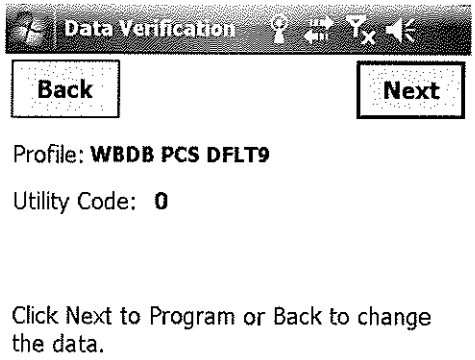
Reading Resolution is the resolution of the AMR register reading. This value is set to reflect the AMR Reading Resolution, which is transmitted through the system.
Select from: *0.1x, 1x, 10x, 100x, 1000x, 0.01x, 0.001x, and 10000x.*

Leak Detec. Thresh. indicates the number of units that need to pass per interval for the number of intervals programmed to trigger a leak alarm. This value is used to determine a leak condition.
Select from: *Disabled, 1 count, 2 counts, 10 counts.*

Leak Detection Cons. Reads sets the number of intervals required for a leak to be set. If the meter reports a reading that exceeds the threshold for this number of consecutive readings, then a leak condition will be flagged by the SmartPoint module.
Select from: *24, 36, 48 and 72.*

2.7.3 Data Verification

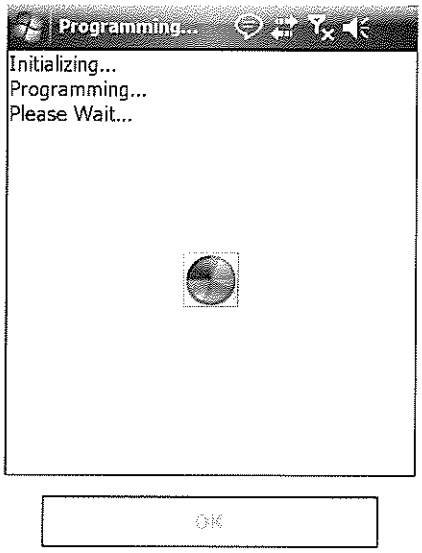
Before proceeding with the programming or installation, verify that the Utility Code and Profile are set correctly.



***Note**: This screen will not be displayed if the Supervisor has configured the FlexPro application to not show the verification screen. See the FlexPro Administrator Guide for information on configuring FlexPro.*

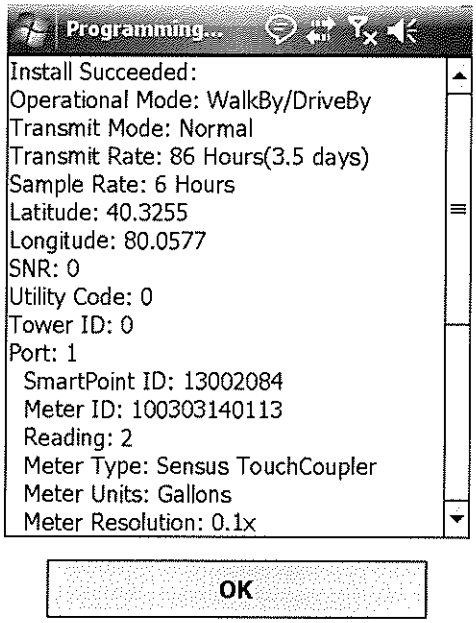
2.7.4 Program the SmartPoint

Tap **Next** to begin the programming session. The session will last approximately 60 seconds. (If the programming is not successful, there may be a problem with the register or with the wiring connections; see Appendix section B.3.4.)



2.7.5 Review the Parameters That Were Programmed

Review the parameters that were programmed in the SmartPoint module. Tap **OK** to complete the programming.



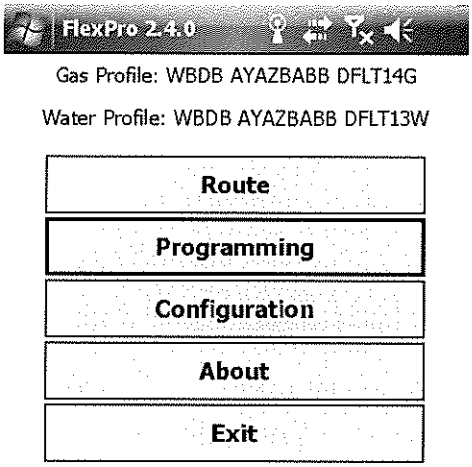
3 Installing and Programming Two-Way Water Endpoints

Programming is used when installing a new SmartPoint module and also when reprogramming to modify parameters of an existing SmartPoint module.

3.1 Access the Water Programmer Screen

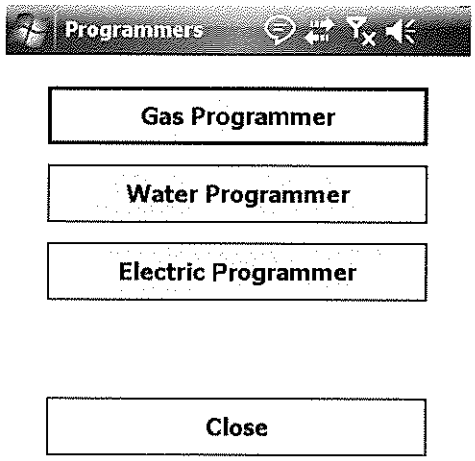
To access the Water Programmer screen:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**.



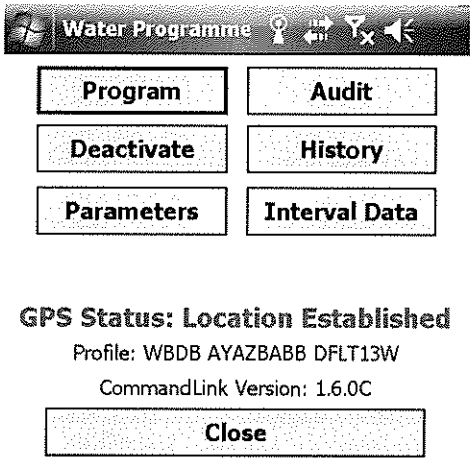
Note: *If your supervisor has disallowed Ad-Hoc Programming, then this* ***Programming*** *button will not be available. You can access the programming screens via the Route application. See Chapter 12 for information on routes.*

5. On the Programmers screen, you may see a button for **Gas Programmer**, **Water Programmer**, **Electric Programmer**, or any combination of the three.



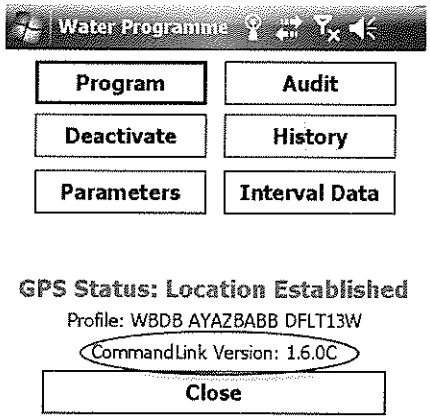
***Note**: Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

6. Tap the **Water Programmer** button. You are now on the Water Programmer screen.



3.2 Ensure That CommandLink is Powered On and Connected

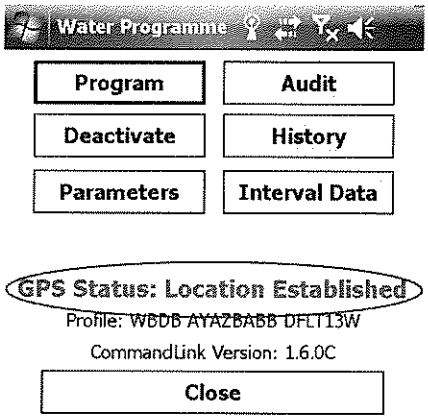
You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.



- If you have a connection to CommandLink, you will see the CommandLink version on the Water Programmer screen.
- If only zeros are displayed, then FlexPro is not communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

3.3 Ensure That Proper GPS Connectivity Has Been Obtained

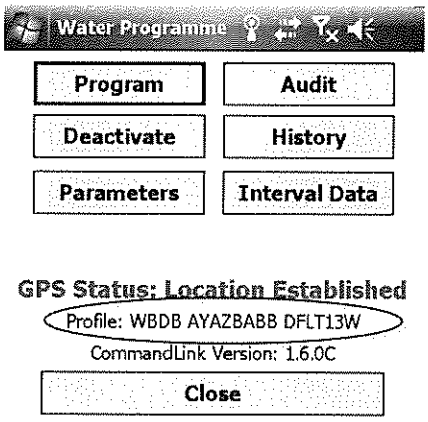
The GPS status is displayed on the Water Programmer screen. This display represents the state of the GPS link. Verify that you have the proper connectivity before proceeding to program the SmartPoint module.



- A green or yellow GPS status indicates *a* good signal.
- A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

3.4 Verify the Profile

Each time you enter the programming application, you must verify that the profile listed is the correct one for your system.



***Note**: Never proceed to program a SmartPoint module without first verifying the profile and all programming parameters. An incorrect profile setting will cause the SmartPoint module to not operate properly. Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint modules, resulting in incorrect reading information.*

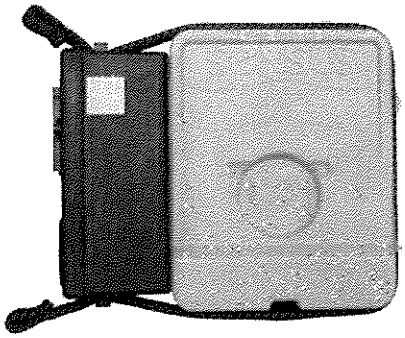
3.5 Properly Position the CommandLink Device

The CommandLink radio is used to initiate communications with Sensus SmartPoint modules with two-way technology, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules. You must position CommandLink to have physical contact with the SmartPoint module. See section 1.1 for a CommandLink overview.

NOTE: *Water endpoints with two-way technology can communicate with the CommandLink device without physical contact; however, physical contact is initially required to ensure that the CommandLink device is communicating with the correct FlexNet SmartPoint module.*

3.5.1 Non-Pit Units (510P and 510M)

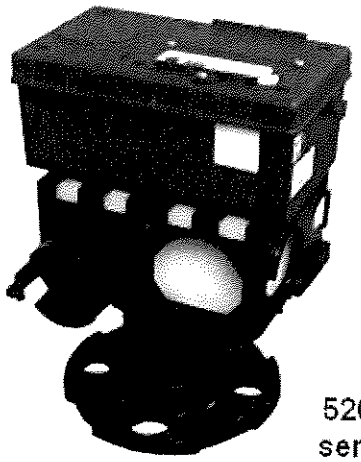
Position CommandLink on the left side of the unit with the battery door of the CommandLink facing away from the unit. The label of the CommandLink should be touching the unit and the Power Button of the CommandLink should be visible while viewing the front of the unit.



510M series

3.5.2 Pit Units (520P and 520M)

Remove the pit lid and position the CommandLink on the unit with the battery door of the CommandLink facing away from the unit. The label of the CommandLink should be touching the bottom of the unit and positioned such that it is on the area where Port 2 of a TouchCoupler is indicated (opposite side of the unit's label). The Power Button of the CommandLink should be visible if you are viewing the side of the TouchCoupler ports (opposite side from the label).



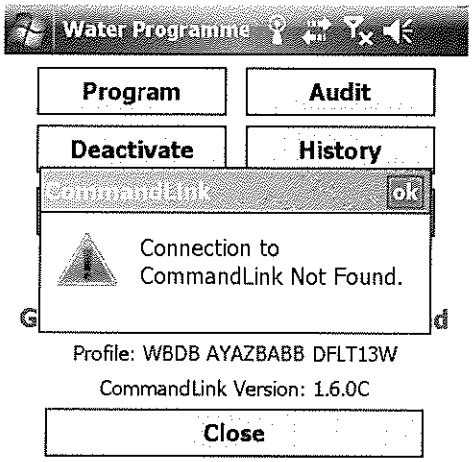
520M series

3.6 Begin the Initialization

To proceed with programming, tap the **Program** button on the Water Programmer screen.

- For two-way water endoints, the FlexPro configuration must be set to **FlexNet SmartPoints M2** to enable two-way SmartPoint programming. If the initialization does not detect a two-way endpoint, the application falls back to one-way SmartPoint programming. This fallback process takes appoximately 30 seconds. See Chapter 2 for details on programming a one-way water endpoint.
- If you are unable to proceed to the programming screens, you may have one of the following issues that must be resolved before continuing.

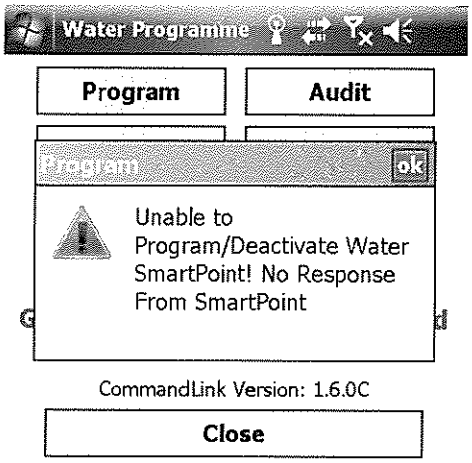
3.7 No Connection to CommandLink



You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.

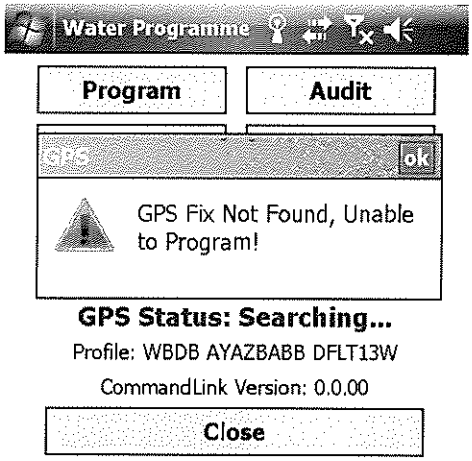
- Be sure CommandLink is powered on.
- Be sure FlexPro is communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

3.7.1 No Response From SmartPoint



There was no response from the Smartpoint module during the programming attempt. Be sure the CommandLink device is properly positioned; see section 3.5.

3.7.2 No GPS Connection

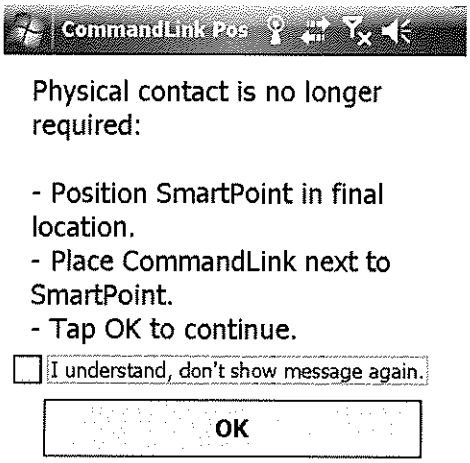


You must have a green or yellow GPS status to proceed to program the SmartPoint module. A red GPS status (GPS Status: Searching....) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

3.8 Position the SmartPoint Module in Final Location

After tapping the **Program** button, the CommandLink Position message may appear. This message informs you that physical contact positioning of the CommandLink with the SmartPoint module is no longer required.

NOTE: *Though the CommandLink radio can communicate with the endpoint without physical contact, initial physical contact was required to ensure that the CommandLink device was communicating with the correct FlexNet SmartPoint module.*

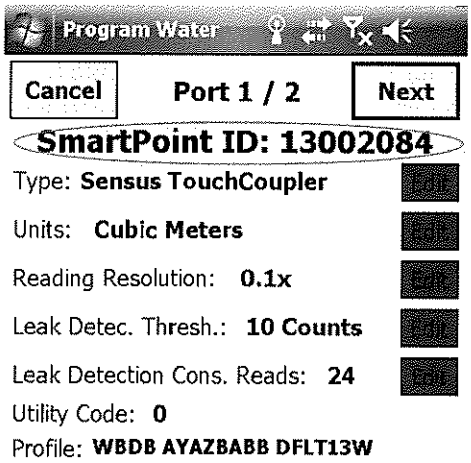


- To **program** a **pit unit:**
  - **a.** Remove the CommandLink from the bottom of the SmartPoint module.
  - **b.** Install the pit lid (with the SmartPoint module attached) in its final position to ensure that FlexNet settings will be properly configured.
    - The radio characteristics between the tower and the SmartPoint module's location are analyzed during the over-the-air programming of the SmartPoint module.
    - If the SmartPoint module is configured out of the pit, then the RF link to the tower is likely to be different during configuration than it is after installation when the SmartPoint module is in the ground.
  - **c.** Position the CommandLink device nearby, as close as two inches to the pit lid. *Do not place the CommandLink device on the unit's mushroom or on the pit lid.*
  - **d.** Tap **OK**.
- **To program a non-pit unit:**
  - **a.** There is no need to reposition the SmartPoint module since it is already in its final position. If you are *exclusively* installing and programming non-pit units, select I **understand, don't show message again**.
  - **b.** Tap **OK**.

3.9 Verify Parameters and Program the SmartPoint Module

3.9.1 Verify the FlexNet SmartPoint ID

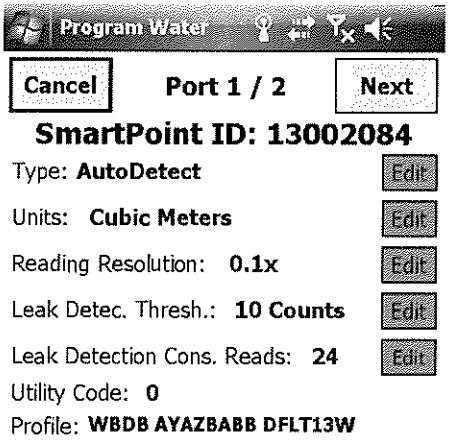
Before proceeding with the programming or installation, verify that you are communicating with the correct FlexNet SmartPoint module.

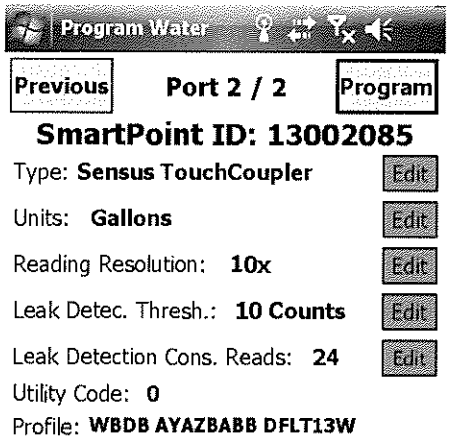


3.9.2 Verify Programming Parameters

Before proceeding with the programming or installation, verify the parameters on the Program Water screen. Be sure to verify that the Utility Code and Profile are set correctly.

If you are programming a dual port unit, you must tap **Next** and verify the parameters for each port.





- If the **Edit** buttons are green, then the SmartPoint module has NOT been initially programmed and the default programming parameters are displayed. The default programming parameters are set by the Supervisor; see the *FlexPro Administrator Guide* for details.
- If the **Edit** buttons are red, then the SmartPoint module has already been programmed to the displayed valued, and any changes will alter the previous programming.
- If the **Edit** buttons are yellow, then the SmartPoint module is not in use.

3.9.3 Change the Programming Parameters

If a change is needed, tap the **Edit** button next to the parameter.

After making any changes, tap **Program** to proceed with the programming.

Type indicates the type of register connected to the SmartPoint module. There is also an option to *AutoDetect* the type of register. If no register is connected to the specific port on the SmartPoint module (the **Edit** buttons are yellow), then you must set this value to *Not Used.*
Select from: *AutoDetect, Sensus TouchCoupler, Sensus 3 Wire, Neptune Proread E-Coder, AMCO Scancoder, Elster InVISION, Badger ADE, and Not Used.*

Units indicates the units of measure of the register read.
Select from: *Gallons, Liters, Cubic Feet and Cubic Meters.*

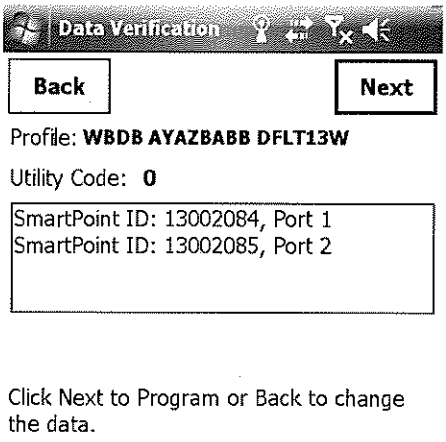
Reading Resolution is the resolution of the AMR register reading. This value is set to reflect the AMR Reading Resolution, which is transmitted through the system.
Select from: *0.1x, 1x, 10x, 100x, 1000x, 0.01x, 0.001x, and 10000x.*

Leak Detec. Thresh. indicates the number of units that need to pass per interval for the number of intervals programmed. This value is used to determine a leak condition.
Select from: *Disabled, 1 count, 2 counts, 10 counts, 100 counts, and 1000 counts.*

Leak Detection Cons. Reads sets the number of intervals required for a leak to be set. If the meter reports a reading that exceeds the threshold for this number of consecutive readings, then a leak condition will be flagged by the SmartPoint module.
Select from: *24, 36, 48 and 72.*

3.9.4 Verify the Programming Parameters

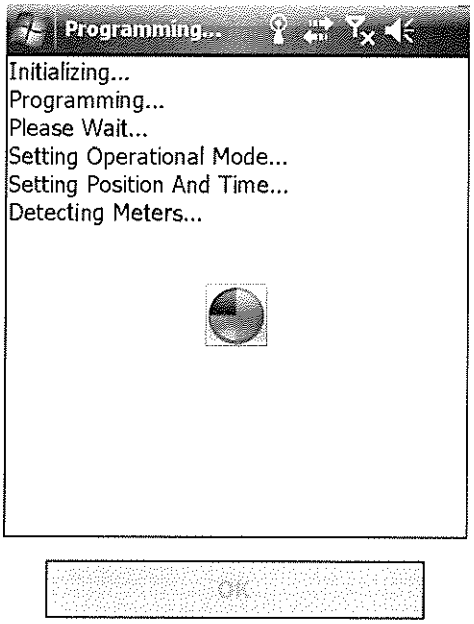
Check the Profile and Utility Code to be sure they are correct. Also, check the SmartPoint ID to verify that you are communicating with the correct FlexNet SmartPoint module. Tap **Next** to begin the programming session.



***Note**: This screen will not be displayed if the Supervisor has configured the FlexPro application to not show the verification screen. See the FlexPro Administrator Guide for information on configuring FlexPro.*

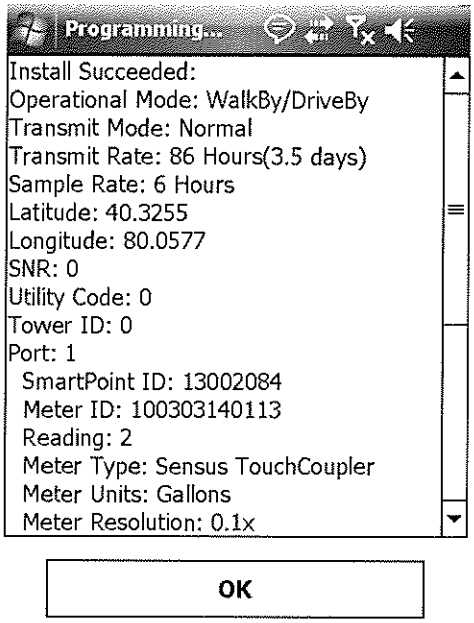
3.9.5 Program the SmartPoint

The session will last approximately 60 seconds. (If the programming is not successful, there may be a problem with the register or with the wiring connections. See Appendix section B.3.4.)



3.9.6 Review the Parameters That Were Programmed

Review the parameters that were programmed in the SmartPoint module. Tap **OK** to complete the programming.



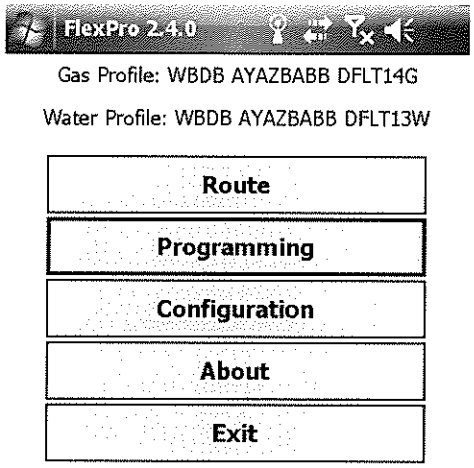
4 Installing and Programming One-Way Gas Endpoints

Programming is used when installing a new SmartPoint module and also when reprogramming to modify parameters of an existing SmartPoint module.

4.1 Gas Programmer Screen

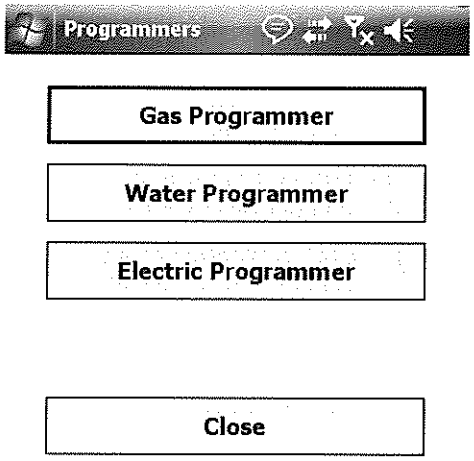
To access the Gas Programmer screen:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**.



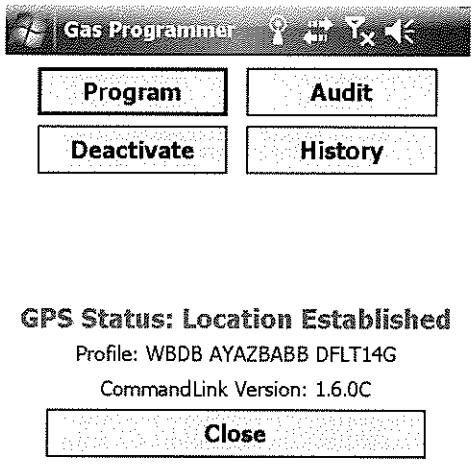
Note: *If your supervisor has disallowed Ad-Hoc Programming, then this* ***Programming*** *button will not be available. You can access the Programmers screen via the Route application. See Chapter 12 for information on routes.*

5. On the Programmers screen, you may see a button for **Gas Programmer**, **Water Programmer**, **Electric Programmer**, or any combination of the three.



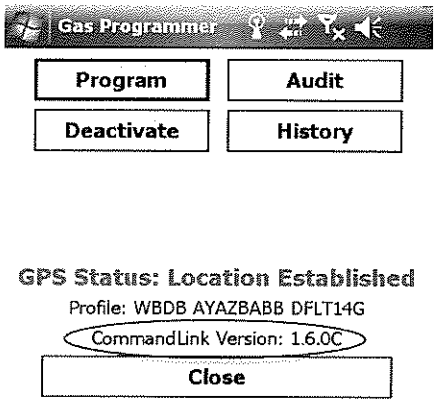
***Note**: Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

6. Tap the **Gas Programmer** button. You are now on the Gas Programmer screen.



4.2 Ensure That CommandLink is Powered On and Connected

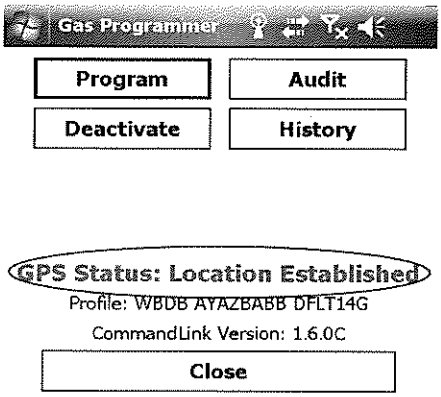
You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.



- If you have a connection to CommandLink, you will see the CommandLink version on the Water Programmer screen.
- If only zeros are displayed, then FlexPro is not communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

4.3 Ensure that Proper GPS Connectivity Has Been Obtained

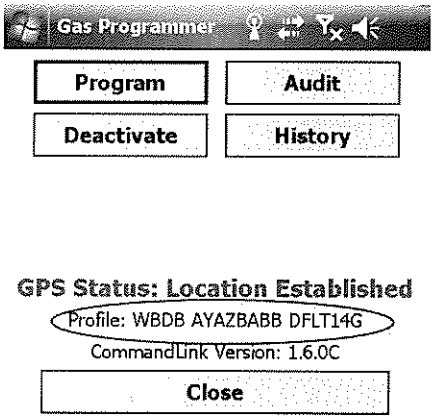
The GPS status is displayed on the Water Programmer screen. This display represents the state of the GPS link. Verify that you have the proper connectivity before proceeding to program the SmartPoint module.



- A green or yellow GPS status indicates a good signal.
- A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

4.4 Verify the Profile

Each time you enter the programming application, you must verify that the profile listed is the correct one for your system.

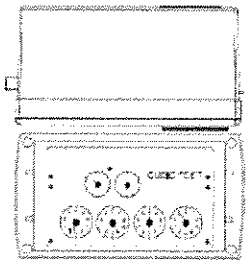


***Note**: Never proceed to program an endpoint without first verifying all programming parameters. Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint module, resulting in incorrect reading information.*

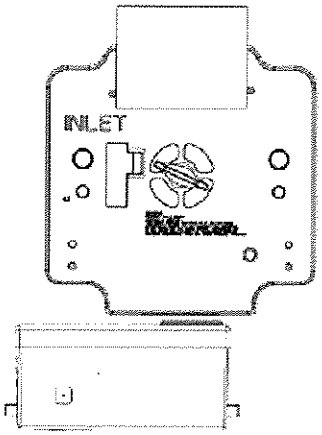
4.5 Position the CommandLink Device

The CommandLink must be properly positioned at the SmartPoint module for communication between the CommandLink and the SmartPoint module to take place.

Position the CommandLink's Mag Loop area on the programming area of the gas SmartPoint module, then secure with the strap. See section 1.1 for a CommandLink overview.



Front-mount SmartPoint/index



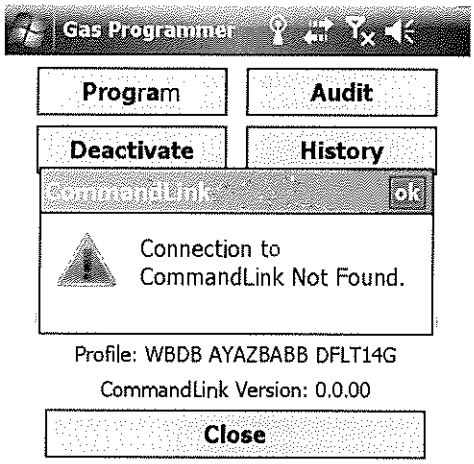
Top-mount SmartPoint/index

4.6 Begin the Initialization

To proceed with programming, tap the **Program** button on the Gas Programmer screen.

If you are unable to proceed to the programming screens, you may have one of the following issues that must be resolved before continuing.

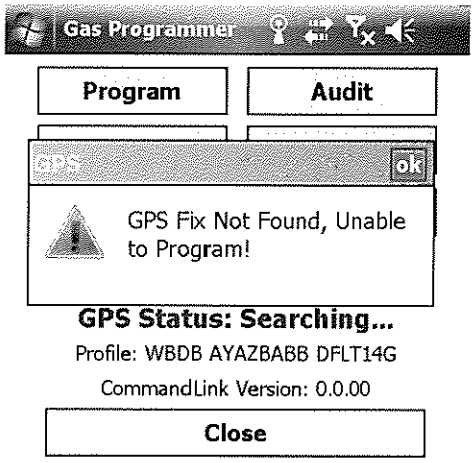
4.6.1 No Connection to CommandLink



You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.

- Be sure CommandLink is powered on.
- Be sure FlexPro is communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

4.6.2 No GPS Connection

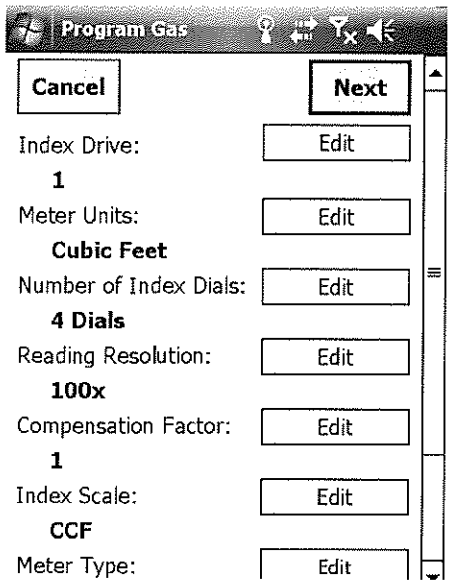


You must have a green or yellow GPS status to proceed to program the SmartPoint module. A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

4.7 Verify Parameters and Program the SmartPoint Module

4.7.1 Verify the Programming Parameters

Before proceeding with the programming or installation, verify the parameters on the Program Gas screen.



If no changes are needed, tap **Next** to proceed with the programming.

4.7.2 Change the Programming Parameters

If a change is needed, tap the **Edit** button next to the parameter. After making any changes, verify the selected parameters and tap **Next** to proceed with the programming.

Index Drive is the number of volume measurement units (cubic feet or cubic meters) per revolution of the drive log.
Select from: *1, 2, 5, 10, 20, 25, 50, 100, 250, 500,* and *1000.*

Meter Units is the unit of measure of the meter.
Select from: *Cubic Feet, Cubic Meters, Liters, and Gallons.*

Number of Index Dials is the number of significant index dials on the index face of the meter connected to the SmartPoint module.
Select from: *2 Dials, 3 Dials, 4 Dials, 5 Dials, 6 Dials, 7 Dials, and 8 Dials.*

Reading Resolution is the **Meter Units** multiplied by the **Reading Resolution** equals the multiplier for the Meter Reading units. For example, if the **Meter Units** are *Cubic Feet*, and the **Reading Resolution** is *100x*, then a Reading of 1234 represents a volume of 123,400 CF (1234 CCF).
Select from: *1x, 10x, 100x,* and *1000x.*

Compensation Factor is used to determine pulse count on Temperature/Pressure compensated indexes.
Set to a value between 0-4 (including decimal values.)

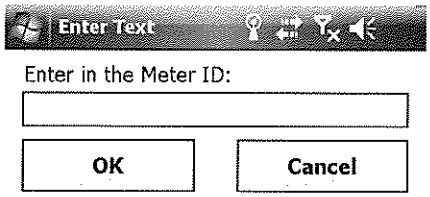
Index Scale represents Hundreds of Cubic Feet, Thousands of Cubic Feet, or Cubic Meters.
Select from: *CCF, MCF,* and *M3.*

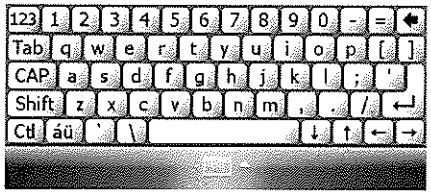
Meter Type represents the type of meter that is connected to the SmartPoint module. Remote Mount indicates the 700G-FL series SmartPoint module.
Select from: *Remote Mount and Direct Mount.*

Pulse/Revolution indicates the number of pulses per revolution of the Form A pulsing device attached to the meter. This option is only active when the *Remote Mount* Meter Type is selected.
Select from: *1, 2, 5, 10, 20, 50, 100, 500, and 1000.*

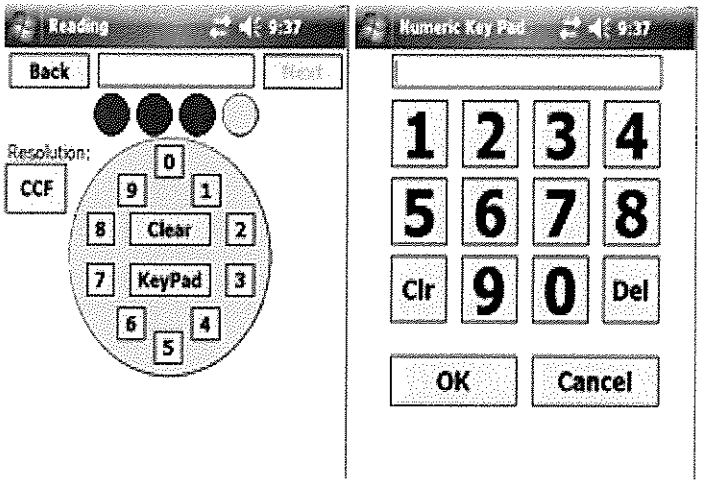
4.7.3 Enter the Meter ID and Reading

1. Enter the Meter ID of the meter the SmartPoint module is being installed on and tap **OK**.



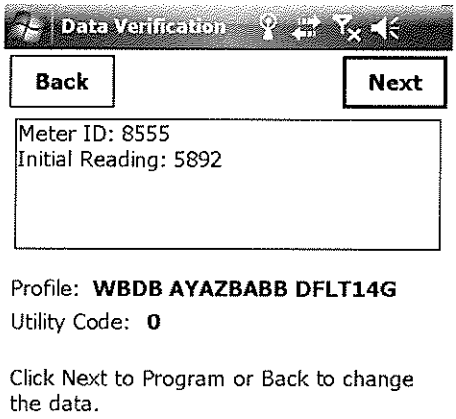


2. Enter the current reading of the index and tap **Next**. If you would rather enter with a keypad, tap the **Keypad** button.



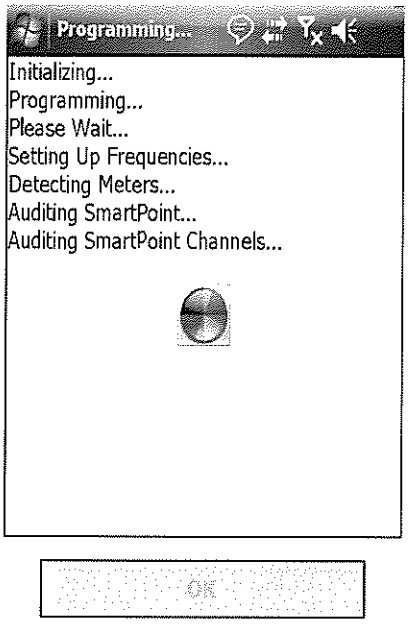
4.7.4 Data Verification

Before proceeding with the programming or installation, verify that the Utility Code and Profile are set correctly.



4.7.5 Program the SmartPoint

Tap **Next** to begin the programming session. The session will last approximately 60 seconds.



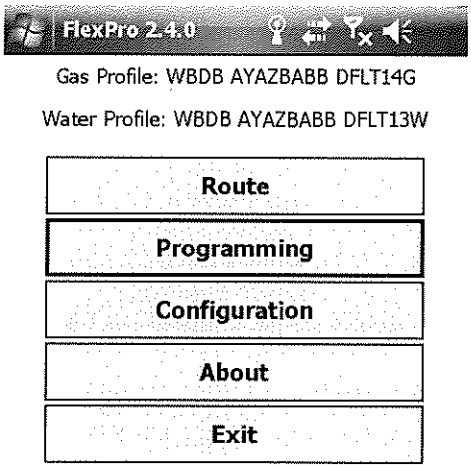
5 Installing and Programming Two-Way Gas Endpoints

Programming is used when installing a new SmartPoint module and also when reprogramming to modify parameters of an existing SmartPoint module.

5.1 Gas Programmer Screen

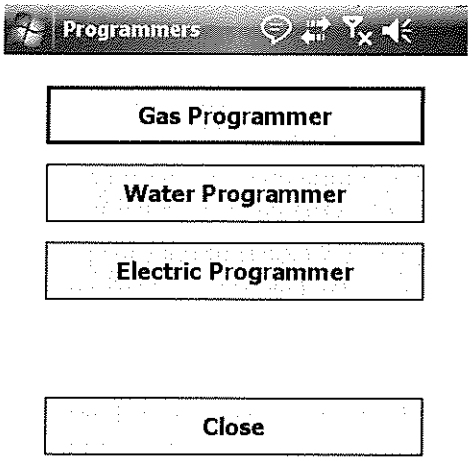
To access the Gas Programmer screen:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**.



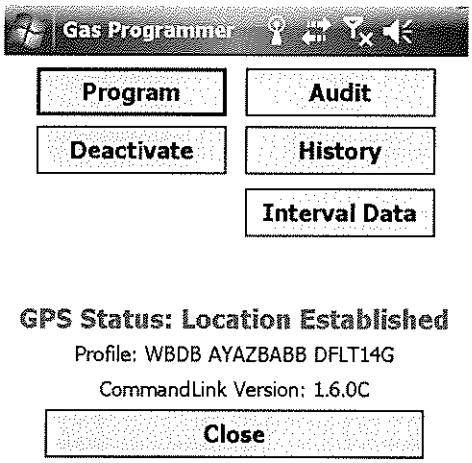
Note: *If your supervisor has disallowed Ad-Hoc Programming, then this* ***Programming*** *button will not be available. You can access the Programmers screen via the Route application. See Chapter 12 for information on routes.*

5. On the Programmers screen, you may see a button for **Gas Programmer**, **Water Programmer**, **Electric Programmer**, or any combination of the three.



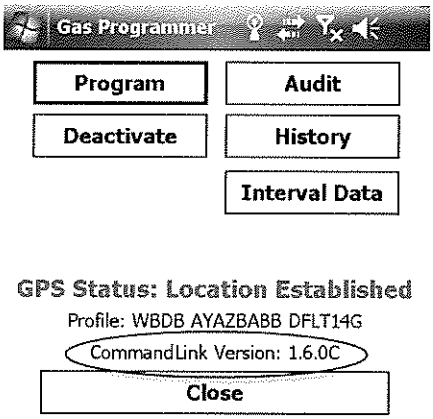
Note: *Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

6. Tap the **Gas Programmer** button. You are now on the Gas Programmer screen.



5.2 Ensure That CommandLink is Powered On and Connected

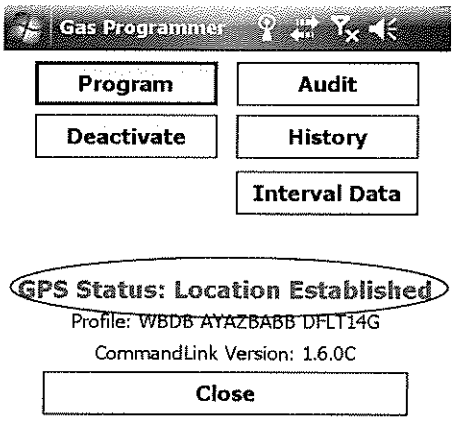
You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.



- If you have a connection to CommandLink, you will see the CommandLink version on the Water Programmer screen.
- If only zeros are displayed, then FlexPro is not communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

5.3 Ensure that Proper GPS Lock Has Been Obtained

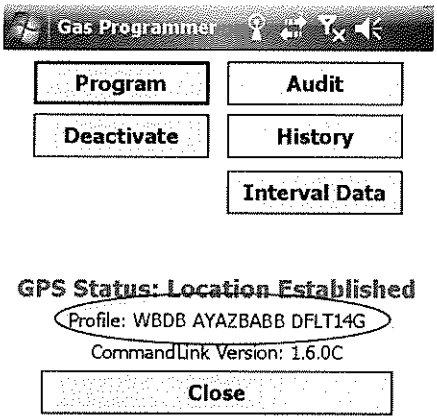
The GPS status is displayed on the Gas Programmer screen. This display represents the state of the GPS link. Verify that you have the proper connectivity before proceeding to program the SmartPoint module.



- A green or yellow GPS status indicates a good signal.
- A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

5.4 Verify the Profile

Each time you enter the programming application, you must verify that the profile listed is the correct one for your system.

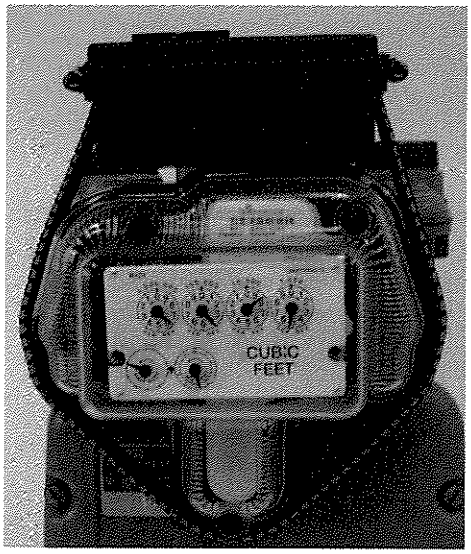


***Note**: Never proceed to program an endpoint without first verifying all programming parameters. Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint module, resulting in incorrect reading information.*

5.5 Position the CommandLink Device

The CommandLink must be properly positioned at the SmartPoint module for communication between the CommandLink and the SmartPoint module to take place.

Position the CommandLink's antenna area on the programming area of the gas SmartPoint module, then secure with the strap. (The Sensus label on the CommandLink will be facing the top surface of the SmartPoint module. The battery door will be facing away from the SmartPoint module.) See section 1.1 for a CommandLink overview.

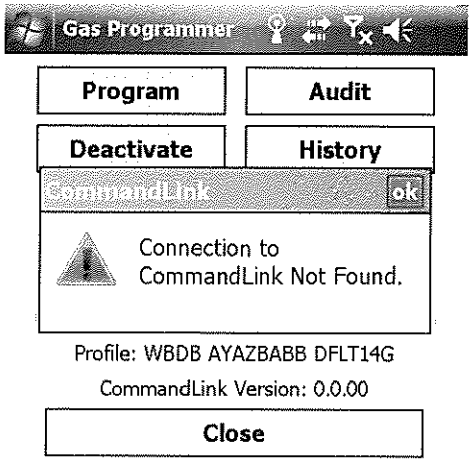


5.6 Begin the Initialization

To proceed with programming, tap the **Program** button on the Gas Programmer screen.

If you are unable to proceed to the programming screens, you may have one of the following issues that must be resolved before continuing.

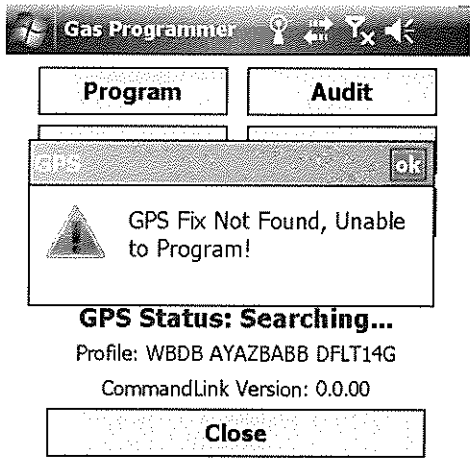
5.6.1 No Connection to CommandLink



You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.

- Be sure CommandLink is powered on.
- Be sure FlexPro is communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

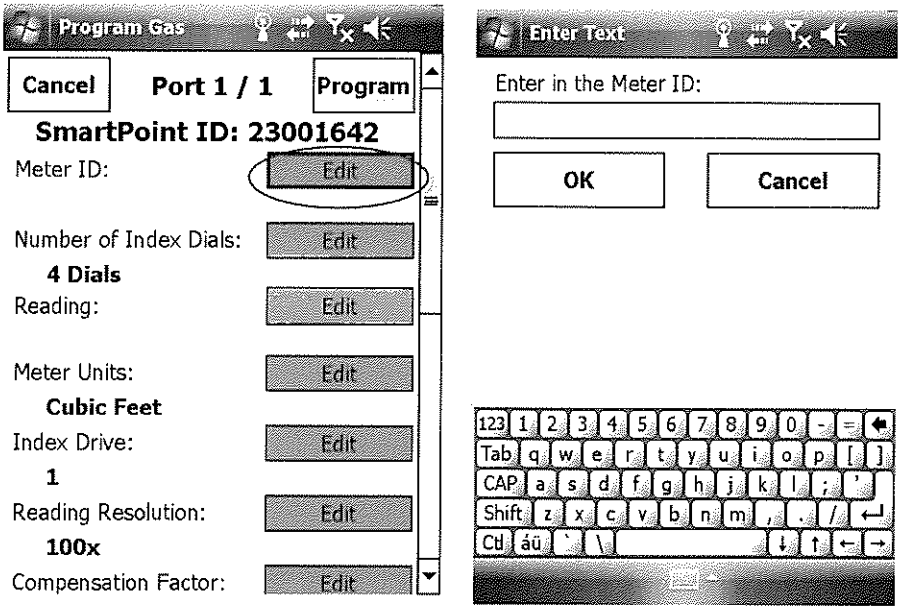
5.6.2 No GPS Connection



You must have a green or yellow GPS status to proceed to program the SmartPoint module. A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

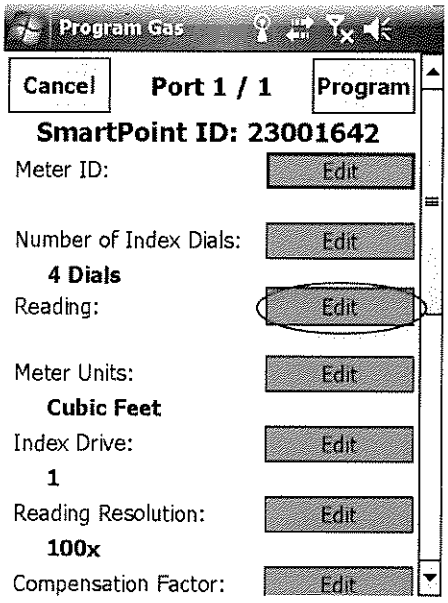
5.6.3 Enter the Meter ID

Tap the **Edit** button next to the **Meter ID** entry on the Program Gas screen, then enter the Meter ID of the meter the SmartPoint module is being installed on and tap **OK**. The Meter ID can be the meter's serial number or a unique identifier used by the gas utility for identifying that particular meter.

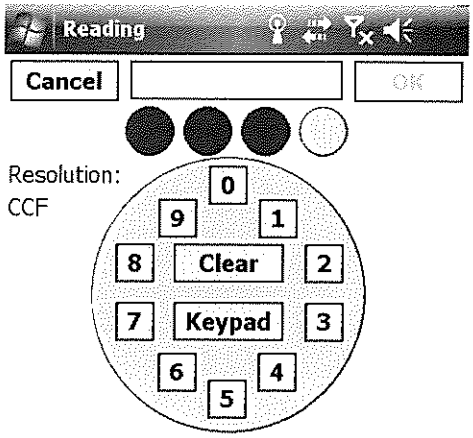


5.6.4 Enter the Reading

Tap the **Edit** button next to the **Reading** entry on the Program Gas screen.

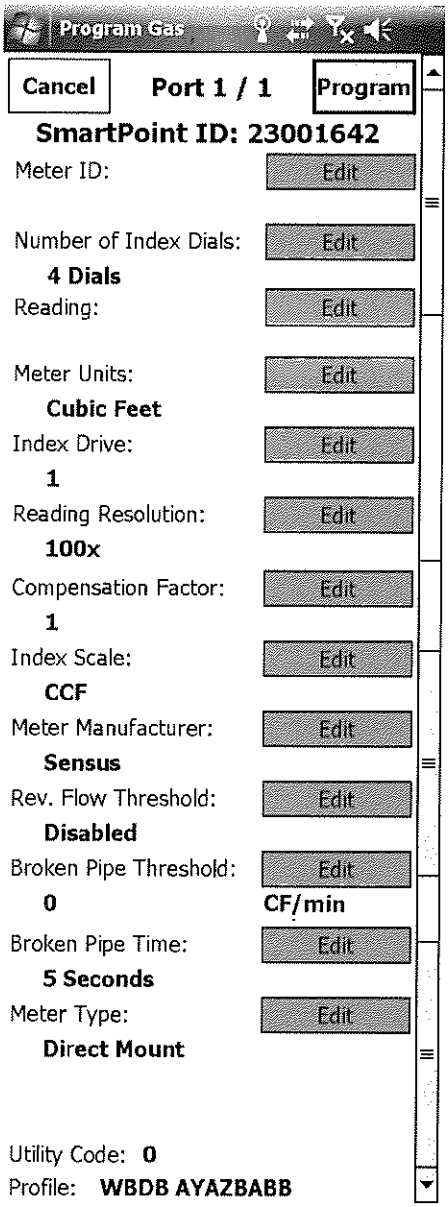


Enter the current reading of the index and tap **OK**. If you would rather enter with a keypad, tap the **Keypad** button.



5.6.5 Verify the Programming Parameters

Before proceeding with the programming or installation, verify the parameters on the Program Gas screen.



If no changes are needed, tap **Program** to proceed with the programming.

5.6.6 Change the Programming Parameters

If a change is needed, tap the **Edit** button next to the parameter. After making any changes, verify the selected parameters and tap **Program** to proceed with the programming.

Meter ID is the Meter ID of the meter the SmartPoint module is being installed on.

Number of Index Dials is the number of significant index dials on the index face of the meter connected to the SmartPoint module.
Select from: *2 Dials, 3 Dials, 4 Dials, 5 Dials, 6 Dials, 7 Dials, and 8 Dials.*

Reading is the current meter reading.

Meter Units is the unit of measure of the meter.
Select from: *Cubic Feet, Cubic Meters, Liters, and Gallons.*

Index Drive is the number of volume measurement units (cubic feet or cubic meters) per revolution of the drive dog.
Select from: *1, 2, 5, 10, 20, 25, 50, 100, 250, 500,* and *1000.*

Reading Resolution is used in computing consumption. The **Meter Units** multiplied by the **Reading Resolution** equals the multiplier for the Meter Reading units. For example, if the **Meter Units** are *Cubic Feet*, and the **Reading Resolution** is *100x*, then a Reading of 1234 represents a volume of 123,400 CF (1234 CCF).
Select from: *1x, 10x, 100x,* and *1000x.*

Compensation Factor is used to determine pulse count on Temperature/Pressure compensated indexes.
Set to a value between 0-4 (including decimal values.)

Index Scale represents Hundreds of Cubic Feet, Thousands of Cubic Feet, or Cubic Meters.
Select from: *CCF, MCF,* and *M3.*

Meter Manufacturer represents the manufacturer of the meter on which the endpoint is installed. The direction of rotation of the meter's drive dog varies depending on the meter manufacturer and is required to differentiate between forward flow and reverse flow.
Select from: *Sensus, Invensys, Rockwell, Equimeter, American, Actaris, Schlumberger, Sprague, National, Lancaster, Other: Clockwise Rotation, Other: Counterclockwise Rot.*

Rev. Flow Threshold indicates the number of reverse rotations needed to trigger the backflow alarm. The backflow alarm is enabled only for direct mount meters. It is not possible to detect reverse flow for remote mount meters with only a pulse input.
When the endpoint detects a reverse flow condition, it will accumulate the reverse pulses. When the number of reverse rotations detected exceeds the programmed reverse flow threshold, the backflow alarm is triggered. When disabled, the endpoint does not monitor or report reverse flow.
Select from: *Disabled, 1 count, 2 counts, 5 counts, 10 counts, and 100 counts.*

Broken Pipe Threshold indicates the excessive flow rate setting that causes a broken pipe alarm to be reported. If the excessive flow rate continues for an amount of time longer than the configured **Broken Pipe Time**, the broken pipe alarm is triggered. The threshold value may be set to 0. If set to 0, the endpoint considers the alarm to be disabled and does not monitor or report broken pipe alarms.
Select from: *0-4 including decimal values (a 0 value is Disabled).* Not all values can be represented exactly on the endpoint. If a value is entered for the **Broken Pipe Threshold** that cannot be used, FlexPro changes that value to the next lowest value that can be represented on the endpoint.

***Note**: Three meter parameters are used in calculating the **Broken Pipe Threshold** in units of meter units/min: **Compensation Factor**, **Index Drive**, **Pulse per Revolution**. A change to any of these parameters may cause the **Broken Pipe Threshold** to be invalid.*

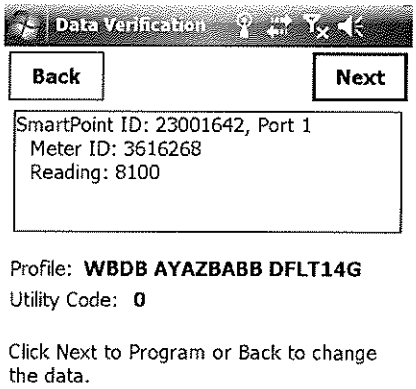
Broken Pipe Time sets the time duration for excessive flow to trigger a broken pipe alarm. If the time is set to 0, the endpoint reports a broken pipe alarm immediately upon detection of a pulse rate that exceeds the **Broken Pipe Threshold**.
Select from: *0, 5, 10, 15, 30, or 60 seconds*

Meter Type represents the type of meter that is connected to the SmartPoint module. Remote Mount indicates the 700G-FL series SmartPoint module.
Select from: *Remote Mount and Direct Mount.*

Pulse/Revolution indicates the number of pulses per revolution of the Form A pulsing device attached to the meter. This option is only active when the *Remote Mount* Meter Type is selected.
Select from: *1, 2, 5, 10, 20, 50, 100, 500, and 1000.*

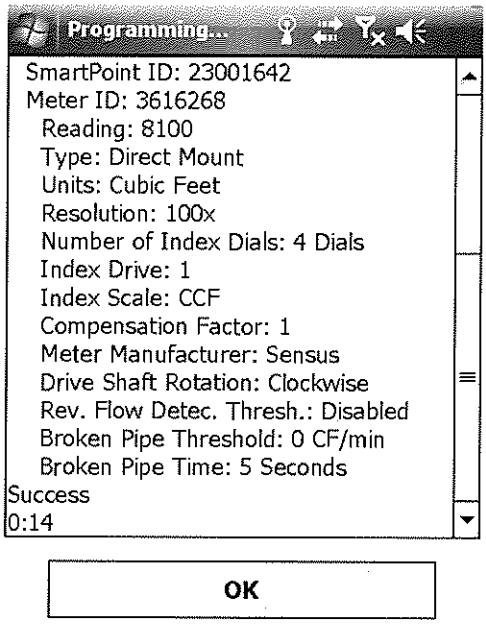
5.6.7 Data Verification

Before proceeding with the programming or installation, verify that the Utility Code and Profile are set correctly.



5.6.8 Program the SmartPoint

Tap **Next** to begin the programming session. The session will last up to approximately 60 seconds.



6 Installing and Programming Electric Endpoints

Programming is used when installing a new SmartPoint module. You can use FlexPro to program FlexNet electric meters with Sensus SmartPoint modules, including:

iCon G

iCon A

iCon A Gen 3

iCon APX

Elster

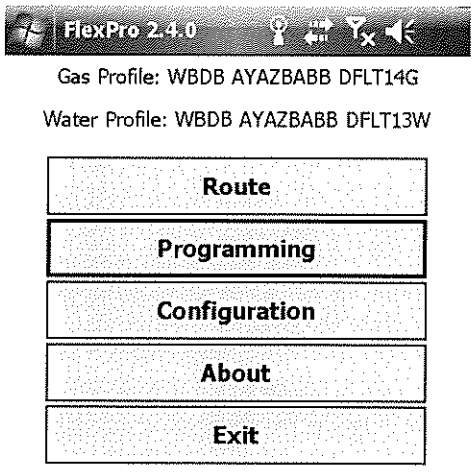
Landis+Gyr

GE KV2c

6.1 Electric Programmer Screen

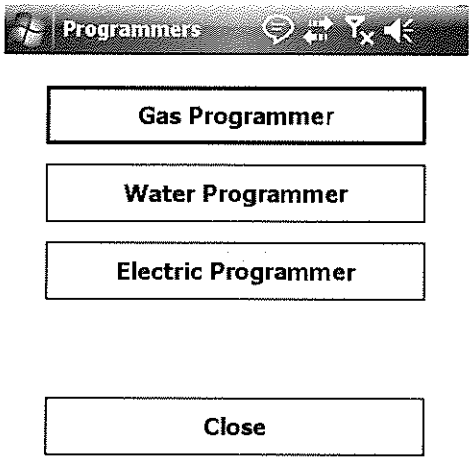
To access the Electric Programmer screen:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**.



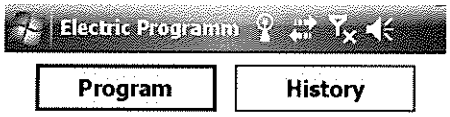
Note: *If your supervisor has disallowed Ad-Hoc Programming, then this* ***Programming*** *button will not be available. You can access the Programmers screen via the Route application. See Chapter 12 for information on routes.*

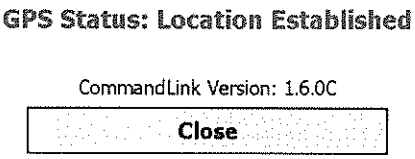
5. On the Programmers screen, you may see a button for **Gas Programmer**, **Water Programmer**, **Electric Programmer**, or any combination of the three.



***Note**: Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

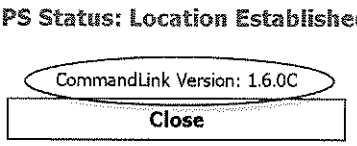
6. Tap the **Electric Programmer** button. You are now on the Electric Programmer screen.





6.2 Ensure That CommandLink is Powered On and Connected

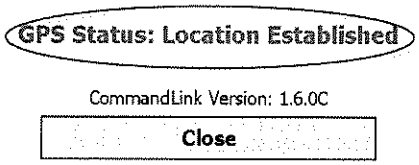
You will be unable to proceed to the programming screens unless FlexPro has a connection to the CommandLink.



- If you have a connection to CommandLink, you will see the CommandLink version on the Water Programmer screen.
- If only zeros are displayed, then FlexPro is not communicating with the CommandLink device. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

6.3 Ensure That Proper GPS Connectivity Has Been Obtained

The GPS status is displayed on the Water Programmer screen. This display represents the state of the GPS link. Verify that you have the proper connectivity before proceeding to program the SmartPoint module.



- A green or yellow GPS status indicates a good signal.
- A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to enter the programming screens. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

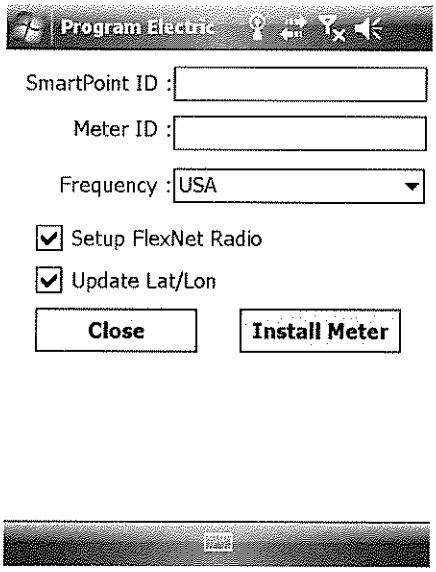
6.4 Position the CommandLink Device

The CommandLink uses RF communications when programming electric SmartPoint modules. The MagLoop is not used; therefore, the CommandLink does not need to be in contact with the meter, but within 20 feet.

***Note**: Since the CommandLink does not have physical contact with the meter, but uses RF communications which nearby meters may receive, you will be required to specify the meter's FlexNet ID and Meter ID when programming the SmartPoint module.*

6.5 Install/Program the Meter

To proceed with programming, tap the **Program** button on the Electric Programmer screen. The Program Electric screen is displayed.



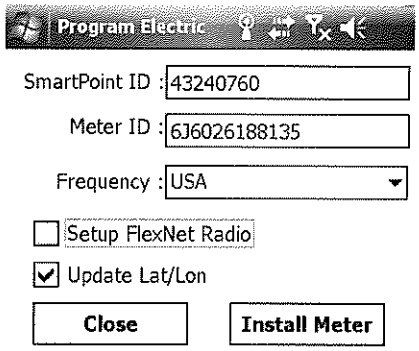
1. Tap the **SmartPoint ID** field and enter or scan the SmartPoint ID of the electric meter's SmartPoint module. The SmartPoint ID is an all-numeric code under the FlexNet labeled barcode on the meter.

2. Tap the **Meter ID** field and enter or scan the electric meter's Meter ID. The Meter ID is listed under a barcode on the meter; the barcode label differs depending on the type of meter.
3. Verify that the correct Frequency is displayed in the **Frequency** box. This frequency must match the frequency set on the electric meter. (This value should be set by the Supervisor when setting up the Electric Programmer and does not need to be changed.)
4. If you want to reconfigure the RF parameters in the SmartPoint module, check **Setup FlexNet Radio** The RF parameters will be set to default values:
   - Meter Sample Rate of 1 hour
   - Supervisory Transmit Rate of 4 hours
   - 1:8 Buddy/Normal Transmit Sequence
   - Buddy mode enabled

5. If you want to update the latitude and longitude in the SmartPoint module with the acquired value from the GPS connected to FlexPro, check **Update Lat/Lon**.

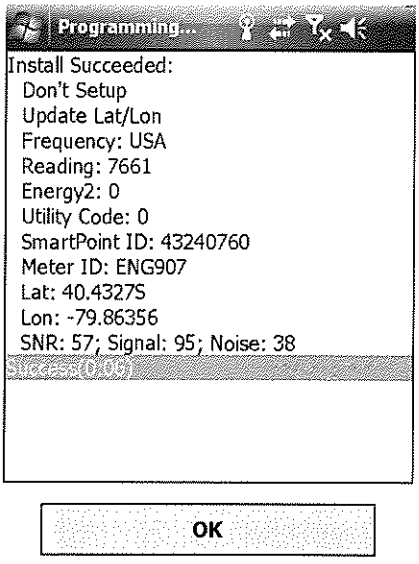
   ***Note**: If no option is selected in the electric programming module, i.e. both checkboxes are unchecked, then the electric meter will not be programmed. See section 6.6.*

6. Tap **Install Meter** to program the electric meter.



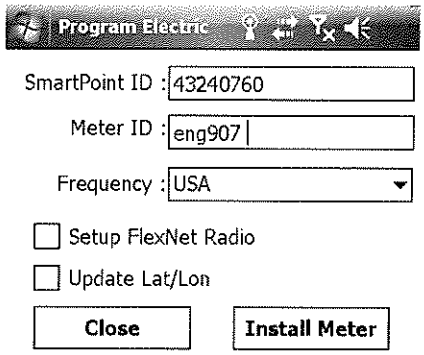
In this example, the electric meter will be installed using the current GPS coordinates, but the SmartPoint module's RF settings will not be changed. FlexPro is communicating with the electric meter on the USA frequency.

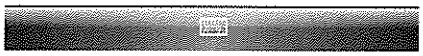
7. The programming session will last approximately 60 seconds.



6.6 Audit the Meter

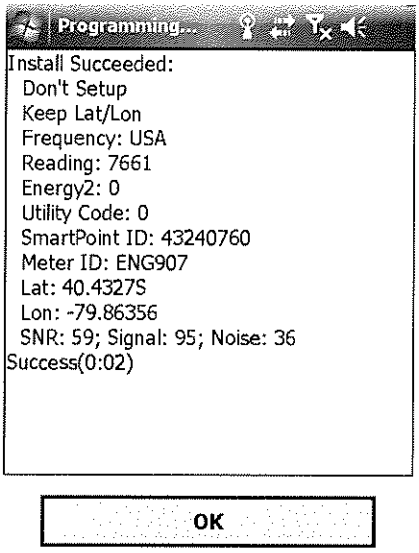
If no option is selected in the electric programming module, i.e. both checkboxes are left unchecked, then the electric meter is **not** programmed.





In this example, tapping **Install Meter** only polls the electric meter, resulting in:

- An audit of the parameters that currently exist on the SmartPoint module.
- Validation of the IDs entered for the SmartPoint ID and Meter ID.
- Verification that the meter is communicating on the specified frequency.



7 Auditing Endpoints

You can audit water and gas FlexNet SmartPoint modules.

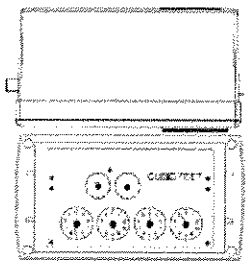
7.1 Before Auditing...

- Ensure that CommandLink is powered on and connected. You will be unable to audit a SmartPoint module unless FlexPro has a connection to the CommandLink.
- Ensure that proper GPS connectivity has been obtained.
  - A green or yellow GPS status indicates a good signal.
  - A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to audit the endpoint. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

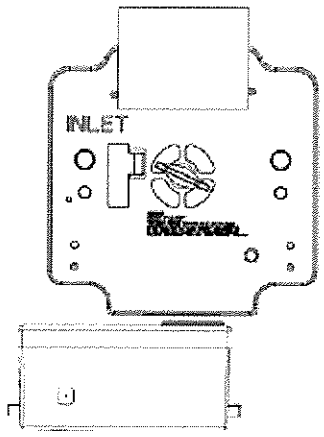
7.2 Properly Position the CommandLink Device

7.2.1 Gas Endpoints With One-Way Technology

Position the CommandLink's Mag Loop area on the programming area of the gas SmartPoint module, then secure with the strap.



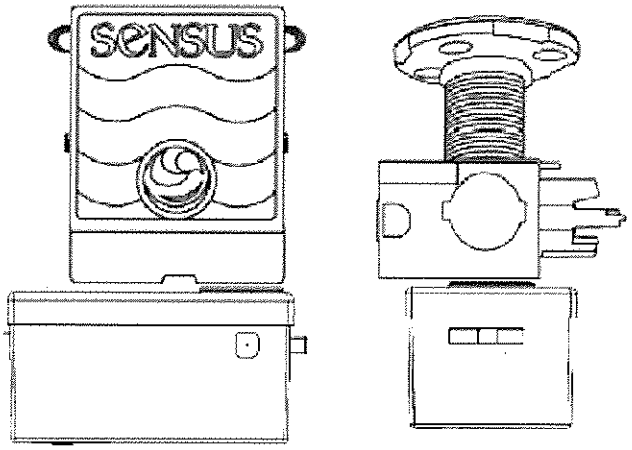
Front-mount SmartPoint/index



Top-mount SmartPoint/index

7.2.2 Water Endpoints With One-Way Technology

Position the CommandLink's Mag Loop area on the programming area of the water SmartPoint module, then secure with the strap.



510x series **520x series**

7.2.3 Water and Gas Endpoints With Two-Way Technology

The CommandLink radio is used to initiate communications with Sensus SmartPoint modules with two-way technology, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules and the Sensus 300GM gas SmartPoint module.

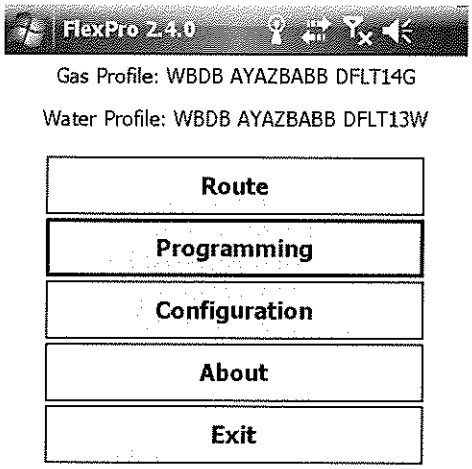
- For Short Range Communication, position the CommandLink to touch the SmartPoint module.
- For Long Range Communication, position the CommandLink within 7 to 30 feet of the SmartPoint module. The actual distance depends on environmental conditions.
- ***Do not*** position the CommandLink between 4 to 7 feet of the SmartPoint module.

7.3 Run the Audit Command

To audit an endpoint:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*

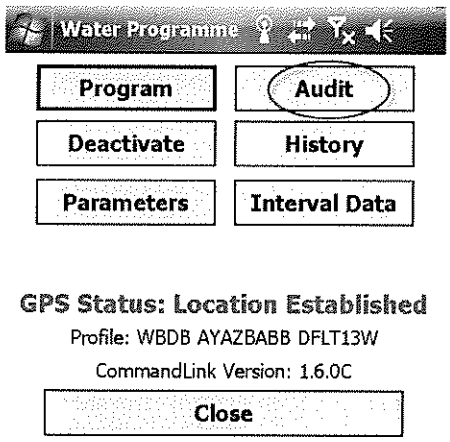
4. On the FlexPro main menu, select **Programming**.



Note: *If your supervisor has disallowed Ad-Hoc Programming, then the* ***Programming*** *button will not be available. You can audit endpoints using the Route application. See Chapter 12 for information on routes.*

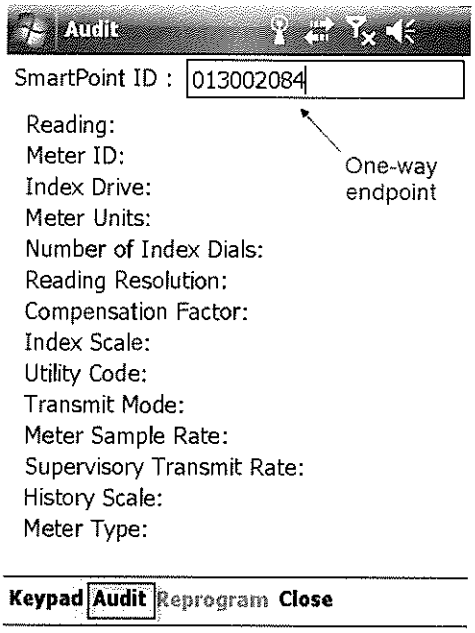
5. Select **Gas Programmer** *or* **Water Programmer**.
Note: *Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

6. From the Gas or Water Programmer, select **Audit**.



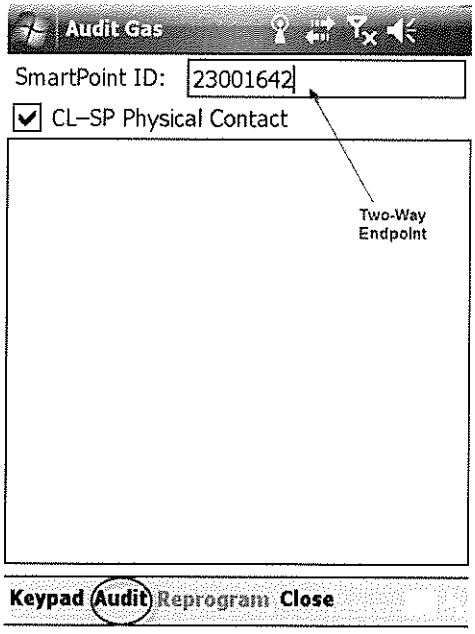
7. Initiate the audit of the endpoint.

a. For one-way endpoints, enter the SmartPoint ID and tap **Audit**. The SmartPoint ID is always the ID of port 1 on multiple port units.

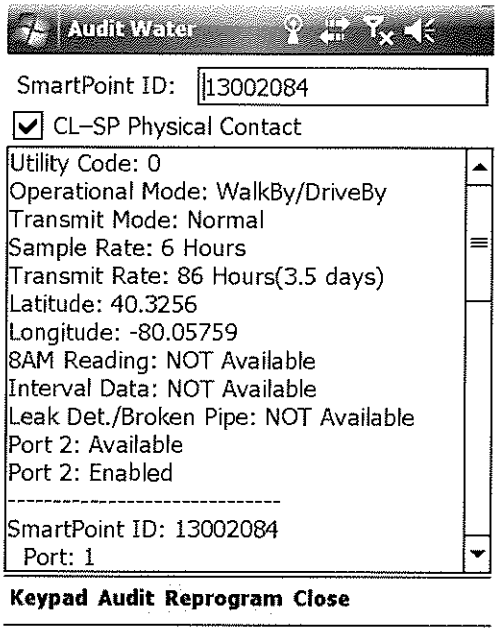


b. For two-way endpoints, enter the SmartPoint ID, select the CommandLink range, and tap **Audit**. The SmartPoint ID is always the ID of port 1 on multiple port units.

- Select **CL-SP Physical Contact** if the CommandLink is positioned to be touching the SmartPoint module.
- Uncheck the **SCL-SP Physical Contact** checkbox when the CommandLink device is positioned for long range communication within 7 to 30 feet of the SmartPoint module. (When using long range communication, the actual maximum distance depends on environmental conditions.)



8. The audit takes approximately 15-20 seconds to complete and returns the parameters stored on the SmartPoint module along with a current register reading. Verify the parameters and tap **Close**. You can reprogram the endpoint, if necessary. To reprogram, select **Reprogram** from the Audit screen.



8 Deactivating Endpoints

You can deactivate water and gas FlexNet SmartPoint modules. This allows you to place the SmartPoint module back into factory sleep mode. You must deactivate a SmartPoint module when removing it from service. The deactivate command breaks the link between the SmartPoint module and the meter.

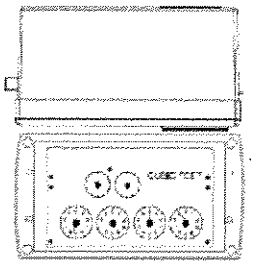
8.1 Before Deactivating...

- Ensure that CommandLink is powered on and connected. You will be unable to deactivate a SmartPoint module unless FlexPro has a connection to the CommandLink.
- Ensure that proper GPS connectivity has been obtained.
  - A green or yellow GPS status indicates a good signal.
  - A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to deactivate the endpoint. See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

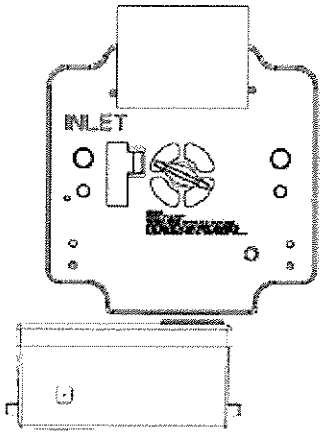
8.2 Properly Position the CommandLink Device

8.2.1 Gas Endpoints

Position the CommandLink's Mag Loop area on the programming area of the gas SmartPoint module, then secure with the strap.



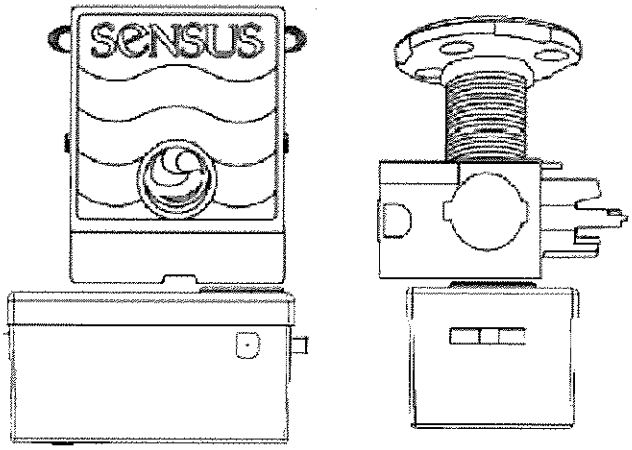
Front-mount SmartPoint/index



Top-mount SmartPoint/index

8.2.2 Water Endpoints With One-Way Technology

Position the CommandLink's Mag Loop area on the programming area of the water SmartPoint module, then secure with the strap.



510x series 520x series

8.2.3 Water and Gas Endpoints With Two-Way Technology

The CommandLink radio is used to initiate communications with Sensus SmartPoint modules with two-way technology, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules and the Sensus 300GM gas SmartPoint module.

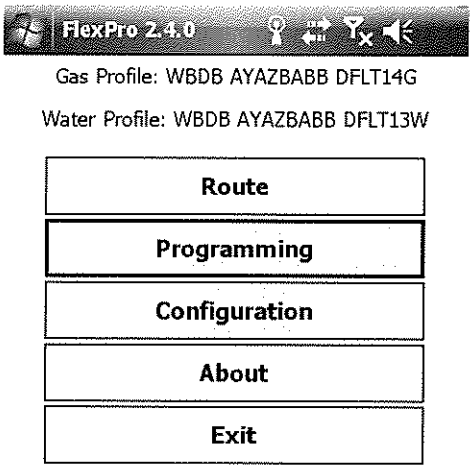
When deactivating a SmartPoint module, Short Range Communication is required. Position the CommandLink to have physical contact with the SmartPoint module.

8.3 Run the Deactivate Command

To deactivate an endpoint:

1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*

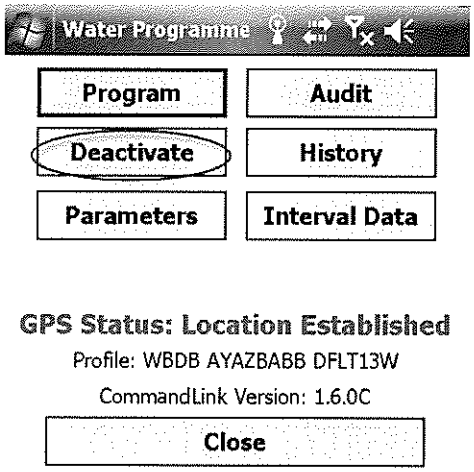
4. On the FlexPro main menu, select **Programming**.



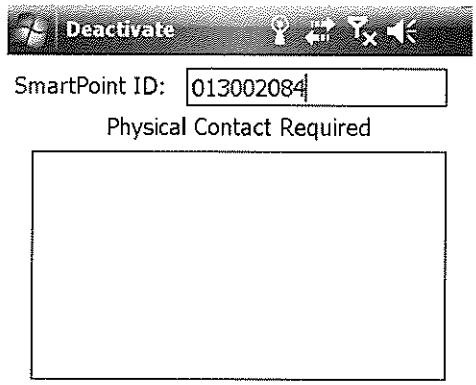
Note: *If your supervisor has disallowed Ad-Hoc Programming, then the* ***Programming*** *button will not be available. See the FlexPro Administrator Guide for information on Ad-Hoc Programming.*

5. Select **Gas Programmer** or **Water Programmer**.
Note: *Your supervisor sets up programming modules; this determines which Programmers are available from the Programmers screen. See the FlexPro Administrator Guide for information on setting up Programming Modules.*

6. From the Gas or Water Programmer, select **Deactivate**.

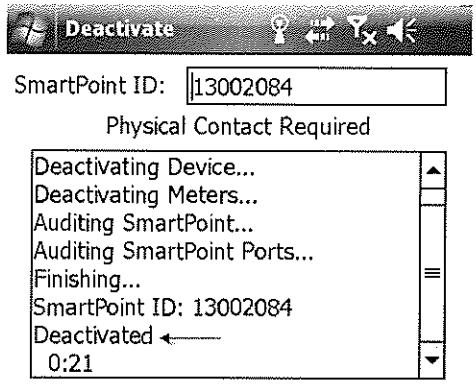


7. Enter the SmartPoint ID and tap **Deactivate**.



8. Verify the deactivation.

   The deactivation takes approximately 10-15 seconds to complete. Look for the `Deactivated` message to verify that the deactivation was successful.



9 Reviewing Transactions

The FlexPro application keeps track of all transactions that take place during programming. The list of transactions is viewable through the **History** option on the Water, Gas, and Electric Programmer screens. When you select the **History** option, you can review all of the previous programming and other activity you completed.

9.1 Transaction Types

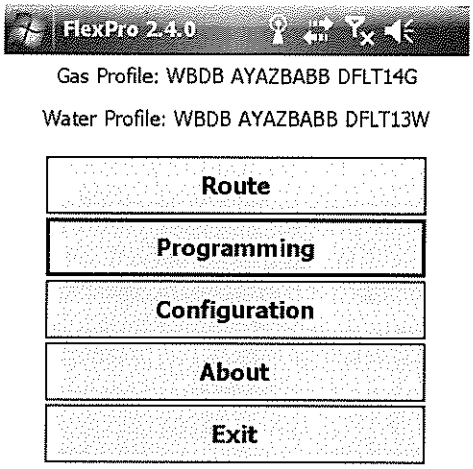
The following FlexPro functions are stored as transactions.

- Programming, whether successful or failed.
- Successful audits
- Successful deactivations
- SmartPoint firmware upgrades

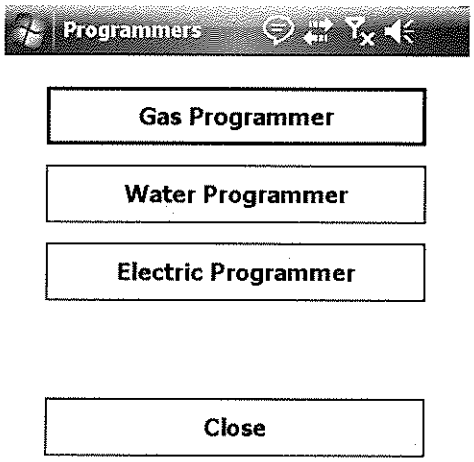
9.2 Reviewing Transactions

To review previous programming transactions:

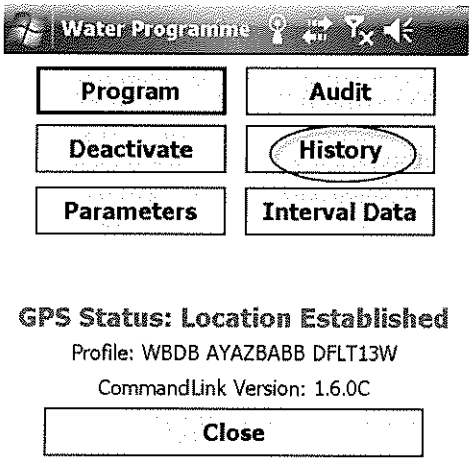
1. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
2. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
3. On the FlexPro main menu, select **Programming**.



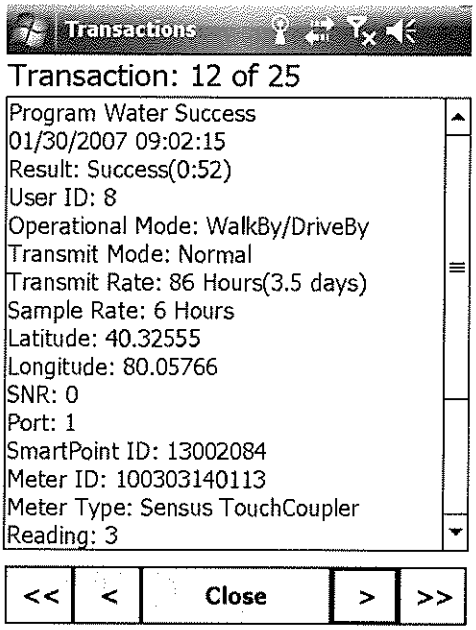
4. Tap the **Gas Programmer, Water Programmer,** or **Electric Programmer** button.



5. Tap **History**.



6. The most recent programming transaction is displayed. Tap the arrow keys to scroll through the list of transactions. Tap **Close** to exit the Transactions screen.



10 Getting Interval Data

You can get interval data for two-way water and gas SmartPoint modules.

10.1 Before Getting Interval Data...

- Ensure that CommandLink is powered on and connected.
  - You will be unable to proceed to access Interval Data unless FlexPro has a connection to the CommandLink.
  - If you do not have a connection, make the following selections. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**
- Ensure that proper GPS connectivity has been obtained.
  - A green or yellow GPS status indicates a good signal.
  - A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to proceed to any programming screens unless FlexPro has acquired a GPS link (green or yellow status). See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

10.2 Properly Position the CommandLink Device

The CommandLink radio is used to communicate with Sensus SmartPoint modules with two-way technology, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules and the Sensus 300GM gas SmartPoint module.

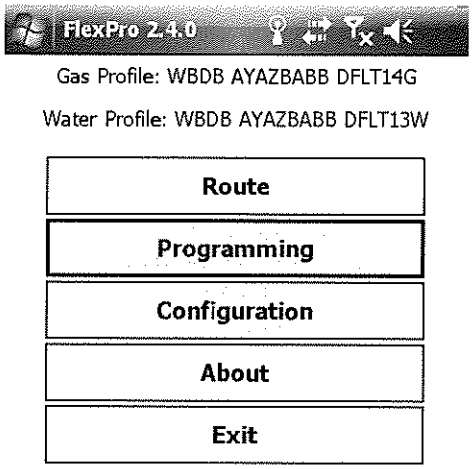
- For Short Range Communication, position the CommandLink to touch the SmartPoint module.
- For Long Range Communication, position the CommandLink within 7 to 30 feet of the SmartPoint module. The actual distance depends on environmental conditions.
- ***Do not*** position the CommandLink between 4 to 7 feet of the SmartPoint module.

10.3 Run the Get Interval Data Command

To get interval data:

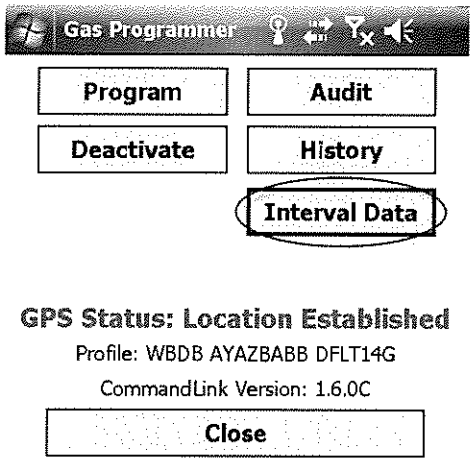
1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*

4. On the FlexPro main menu, select **Programming**.



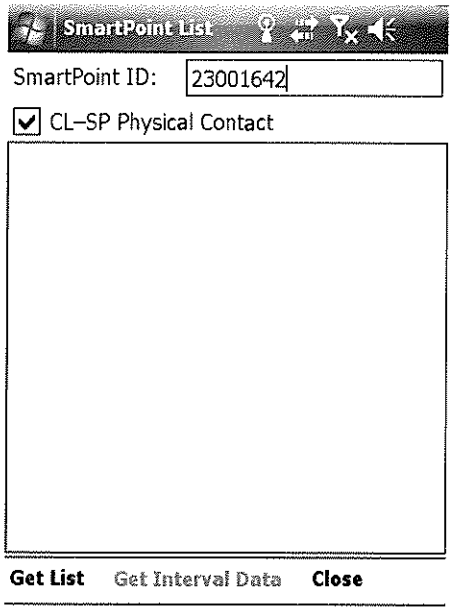
Note: *If your supervisor has disallowed Ad-Hoc Programming, then the* ***Programming*** *button will not be available. See the FlexPro Administrator Guide* for information on Ad-Hoc Programming.

5. Select **Water Programmer**, then select **Interval Data**..

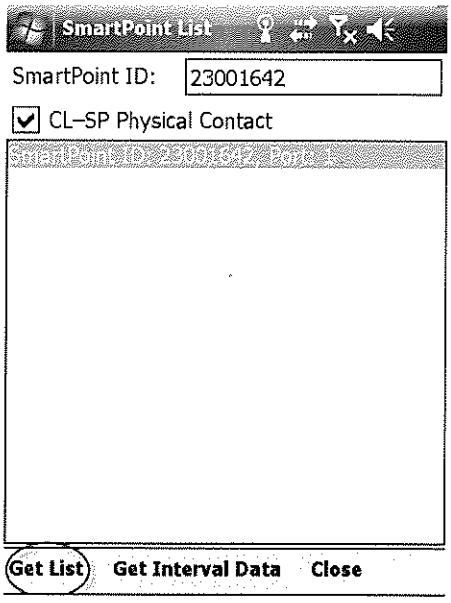


6. Enter the SmartPoint ID (or scan the barcode) and designate the CommandLink communication range.
   - Select **CL-SP Physical Contact** if the CommandLink is positioned to be touching the SmartPoint module.
   - Uncheck the **SCL-SP Physical Contact** checkbox when the CommandLink device is positioned for long range communication within 7 to 30 feet of the SmartPoint module. (When using long range communication, the actual maximum distance depends on environmental conditions.)

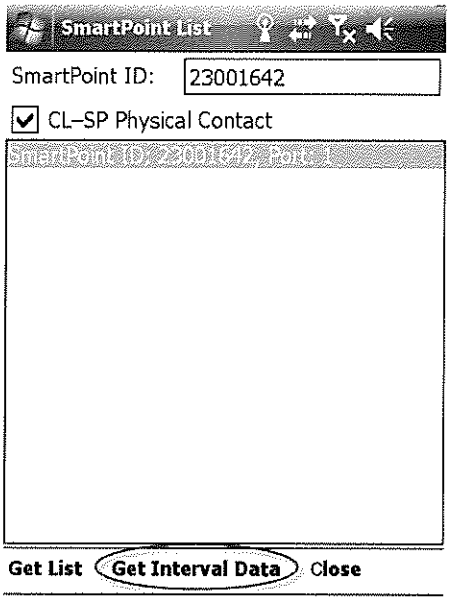
Note: *Do not position the CommandLink between 4 to 7 feet of the SmartPoint module.*



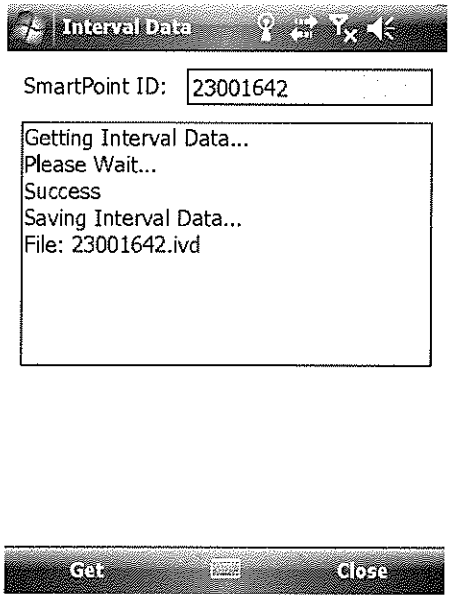
7. Select **Get List** to get a list of SmartPoint IDs from the designated SmartPoint module. When two SmartPoint IDs are listed, then the SmartPoint module is a dual-port endpoint.



8. Tap a SmartPoint ID to select it and then tap **Get Interval Data**.

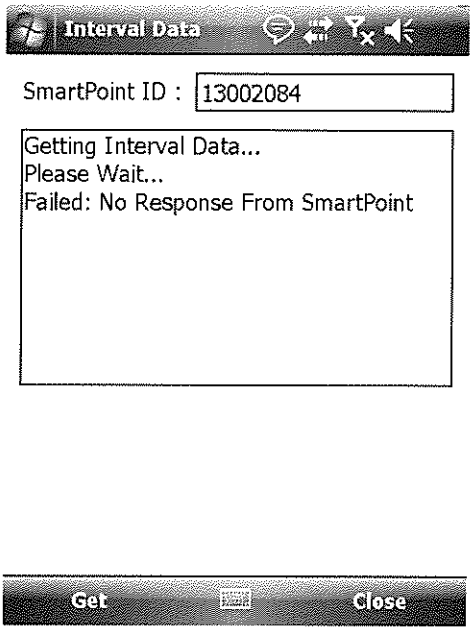


The interval data for the selected SmartPoint module is stored in a file named *SmartPointID*.ivd in the application's Read folder at \Program Files\Sensus Metering Systems\FlexPro\Read.



10.4 Unable to Get Interval Data

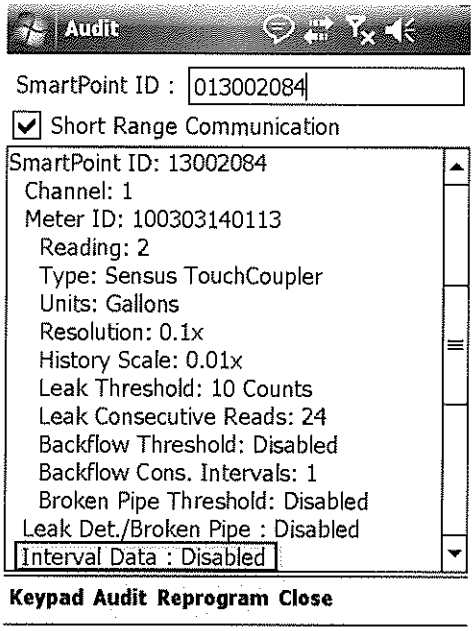
The FlexPro application can possibly fail to get interval data from the selected SmartPoint module and return a `No Response From SmartPoint` message. If you receive this failure message, verify that Interval Data functionality is enabled on the selected SmartPoint module.



To verify the status of Interval Data functionality:

1. Perform an audit of the SmartPoint module. See Chapter 7 for information on the auditing process.

2. When the audit is complete, scroll down the report to the Interval Data heading. If the audit report includes `Interval Data: Disabled`, then the SmartPoint module you have audited is not configured for Interval Data functionality.



11 Editing Parameters

Use the Parameters screen to edit parameters for two-way water SmartPoint modules. You can modify one parameter or multiple parameters for the endpoint without performing an entire reprogramming/reinstallation of the SmartPoint module.

11.1 Before Editing Parameters...

- Ensure that CommandLink is powered on and connected.
  - You will be unable to proceed to the Parameters screens unless FlexPro has a connection to the CommandLink.
  - If you do not have a connection, make the following selections. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**
- Ensure that proper GPS connectivity has been obtained.
  - A green or yellow GPS status indicates a good signal.
  - A red GPS status (GPS Status: Searching...) indicates no signal; you will not be able to proceed to any programming screens unless FlexPro has acquired a GPS link (green or yellow status). See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

11.2 Properly Position the CommandLink Device

The CommandLink radio is used to communicate with Sensus SmartPoint modules with two-way technology, such as the Sensus 510M/520M and Sensus 510P/520P water SmartPoint modules.

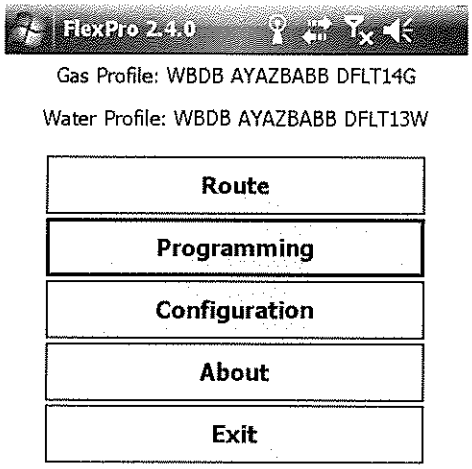
- For Short Range Communication, position the CommandLink to touch the SmartPoint module.
- For Long Range Communication, position the CommandLink within 7 to 30 feet of the SmartPoint module. The actual distance depends on environmental conditions.
- ***Do not*** position the CommandLink between 4 to 7 feet of the SmartPoint module.

11.3 Run the Edit Parameters Command

To access a list of programmed parameters:

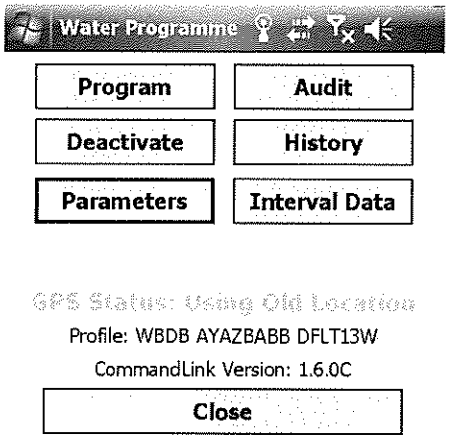
1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*

4. On the FlexPro main menu, select **Programming**.



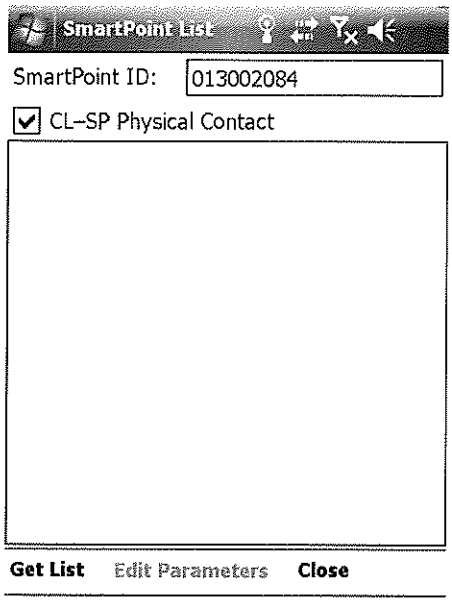
Note: *If your supervisor has disallowed Ad-Hoc Programming, then the* ***Programming*** *button will not be available. See the FlexPro Administrator Guide for information on Ad-Hoc Programming.*

5. Select **Water Programmer**, then select **Parameters**.

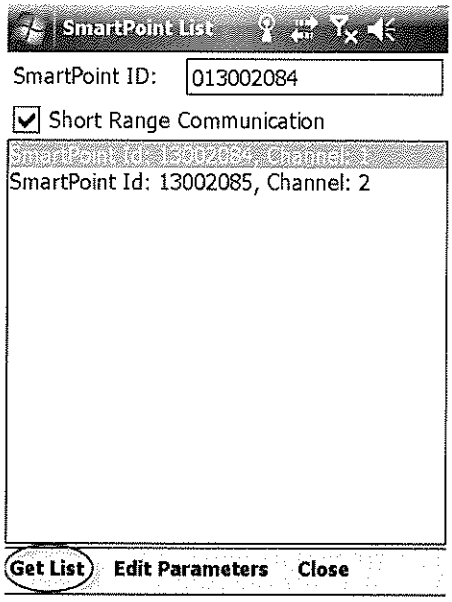


6. Ener the SmartPoint ID (or scan the barcode) and designate the CommandLink communication range.
   - Select **CL-SP Physical Contact** if the CommandLink is positioned to be touching the SmartPoint module.
   - Uncheck the **SCL-SP Physical Contact** checkbox when the CommandLink device is positioned for long range communication within 7 to 30 feet of the SmartPoint module. (When using long range communication, the actual maximum distance depends on environmental conditions.)

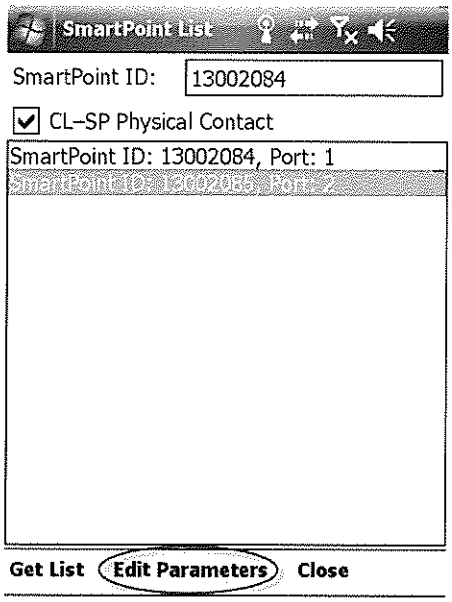
***Note**: Do not position the CommandLink between 4 to 7 feet of the SmartPoint module.*



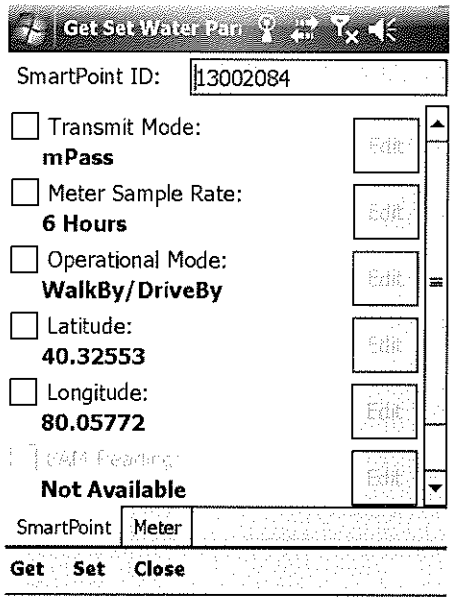
7. Select **Get List** to get a list of SmartPoint IDs from the designated SmartPoint module. When two SmartPoint IDs are listed, then the SmartPoint module is a dual-port endpoint.



8. Tap a SmartPoint ID to select it and then tap **Edit Parameters**.



9. The Get Set Water Parameters screen displays the currently programmed settings for the SmartPoint module.

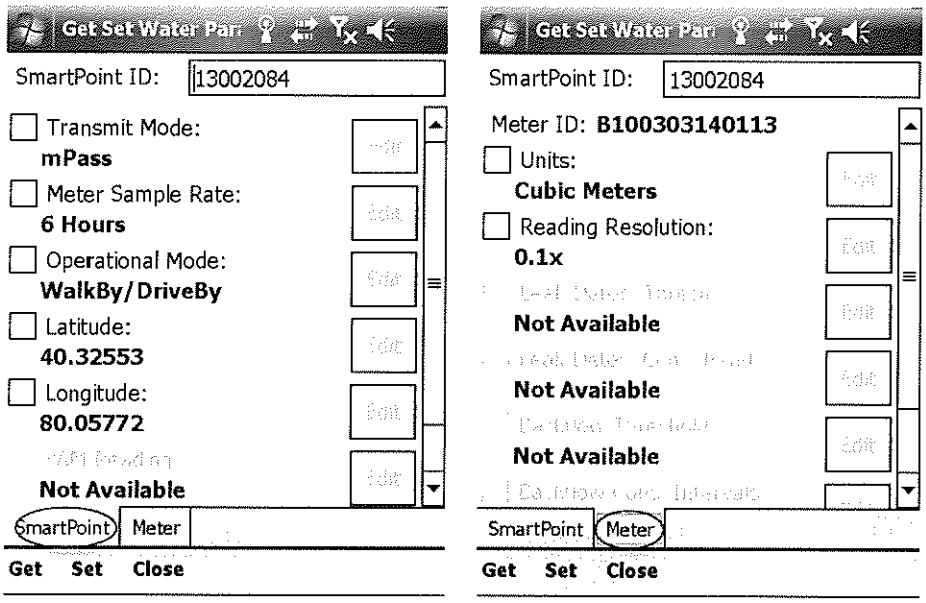


11.4 Edit Parameters

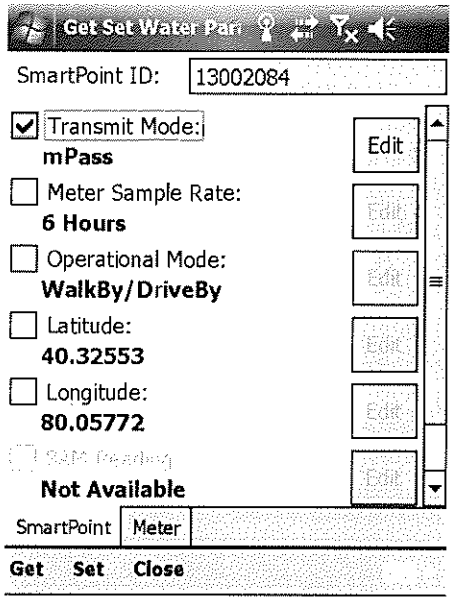
You can edit SmartPoint parameters and meter parameters. *Be very careful when modifying parameters. Setting incorrect parameters on the SmartPoint module will result in incorrect reading information.*

To edit parameters:

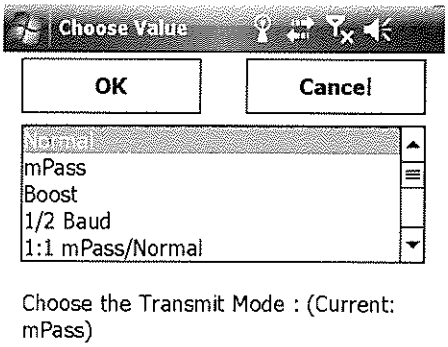
1. Select the **SmartPoint** tab to edit SmartPoint module settings or select the **Meter** tab to edit meter settings.



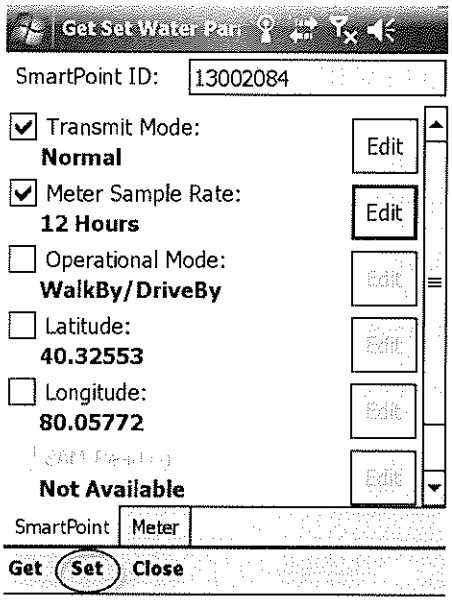
2. Select the checkbox next to the parameter that you want to edit, then tap **Edit**.



3. On the Choose Value screen, select the new value for the parameter and tap **OK**.



4. Make changes to parameters on both tabs, as needed. After all desired changes have been made, tap **Set**.



5. FlexPro modifies the selected settings on the Smartpoint module. When the update has successfully completed, a tone will sound and the previously-selected **Edit** buttons will be grayed out.

   Tap **Close** to return to the SmartPoint list; tap **Close** again to exit the Parameters area of FlexPro.

12 Routes

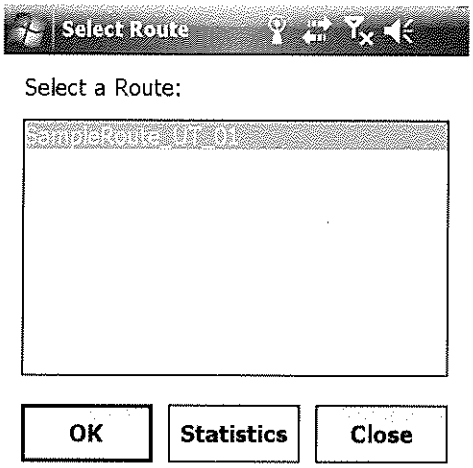
You can use the FlexPro application to read, program, and audit endpoints on a route.

The advantage to programming endoints using the Route screen is that you can enter a final reading before programming as well as take notes about the installation. This also enforces an order of the installations and helps connect a location/address to each installation.

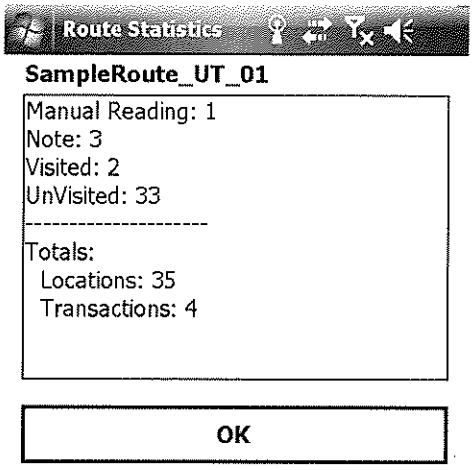
12.1 Route Selection

To load a route on the HHD:

1. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
2. Select **Route** to display the Select Route screen. This screen displays the installation routes that are loaded on the HHD. Select a route from the available routes in the list.



3. Before selecting a route, you can view some route details by tapping **Statistics.** The Route Statistics screen displays information on the selected route, including total locations in the route, how many locations are visited/unvisited, and total transactions. (See section for details on the Statistics screen.) Tap **OK** to return to the Select **R**oute screen.



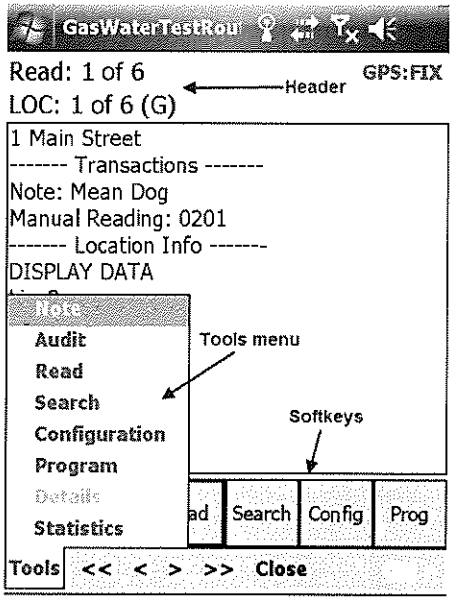
4. On the Select Route screen, tap **OK** to open the Route screen for the selected route.

12.2 The Route Screen

The Route screen is displayed after you have selected your route. The Route screen contains the information for the location you are currently set up to program.

The Route screen displays four areas of information for the selected location in the route: Location, Transactions, and Location Info. The Route screen also allows users to access FlexPro funcationality using the **Tools** menu and the Route TouchScreen Softkeys.

Additionally, the Header information on the Route screen provides information on the loaded route, including the location's position within the route and the route's read statistics.



Your Route screen may not look exactly like the one pictured here. A Supervisor can hide the TouchScreen Softkeys. When hidden, the Softkeys no longer appear on the screen. A Supervisor can

also disable some or all of the Softkeys and the **Tools** menu options so that the FlexPro functionality is no longer available through the FlexPro Route screen. See the *FlexPro Administrator Guide*.

12.2.1 Header

This top area of the Route screen displays the total number of locations included in the route along with the current location's position within the route. For example, `LOC:1 of 6` indicates that you are at the first location out of a total of six locations in the route.

The Header also displays the read information for the loaded route. The read statistics indicate the total number of meters read (regardless of method: AMR or manual). For example, `Read:1 of 6` indicates that one location has been read out of a total of six locations in the route.

12.2.2 Location

This area of the Route screen displays the address of your current location in the route.

12.2.3 Transactions

This area of the Route screen displays transaction for the displayed location in the route. The following transaction types are displayed in the Transaction area of the route screen.

- Reading
- Alarm
- Note
- Programming
- Audit
- Deactivation
- Firmware Upgrade

To view details of a transaction:

1. Tap a transaction to select it.
2. Tap **Tools → Details**. You can now use the arrow keys to scroll through the detailed view of the transactions for the selected location, or you can tap Close to return to the Route screen.

***Note**: If there are no transactions for the location, there will be no Transactions area on this screen.*

12.2.4 Location Info

This area of the Route screen contains additional information for the displayed location in the route. All display data information for the location that is in the route file (.rte) is displayed in the Location Info area of the Route screen. Display data is known information about the location, such as information on how to gain access to a gated community or details on where on a house the meter is located.

Note: If there is no display data for the location, there will be no Location Info area on the Route screen.

12.3 Tools Menu and Touchscreen Softkeys

From the Route screen, you can use the **Tools** menu or the softkeys, if enabled, to do the following route functions.

- Enter a note about the location

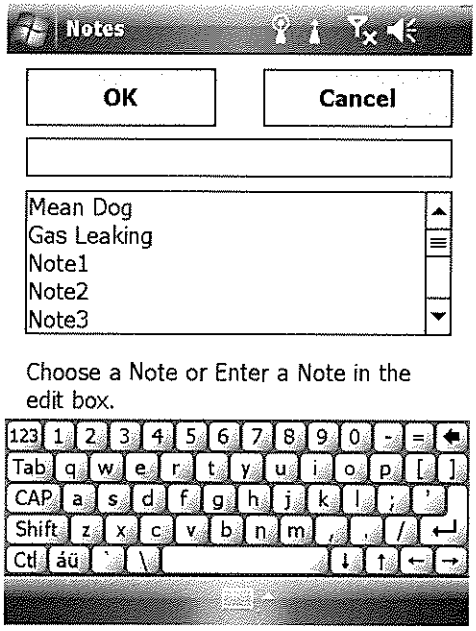
- Audit the endpoint
- Read the meter
- Search for a location
- Access the Configuration screen, and from there access the Reading Management settings and, with Supervisor password, the Touchscreen Softkey settings.
- Program the endpoint
- View route statistics

12.4 Note

The **Note** softkey or **Note** option on the **Tools** menu allows you to enter notes on the location. Notes for a location are listed in the Transactions area of the Route screen.

To add a note to a **Route location:**

1. Tap the **Note** Softkey or tap **Tools** → **Note** to open the Notes screen.
2. Select a note from the list and tap **OK**. Alternately, you can enter the note using the on-screen keypad or, if available, the keypad on the HHD.



***Note**: The notes available from the list are determined by the notes.txt file. To modify the default note list, thus changing the notes that will be available in the list on the Notes screen, you must edit the FlexPro note.txt file. See the FlexPro Administrator Guide for details.*

12.5 Audit

The **Audit** softkey or **Audit** option on the **Tools** menu takes you to the Audit screen. You can perform an audit to view the parameters stored on the SmartPoint module along with a current register reading. See Chapter 7 for details on auditing an endpoint.

12.6 Read

The **Read** softkey or **Read** option on the **Tools** menu allows you to enter a meter reading for the location. Readings for a location are listed in the Transactions area of the Route screen.

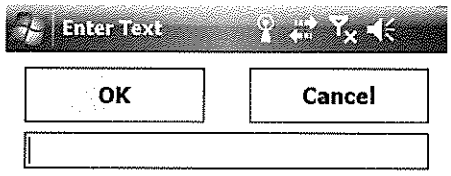
This reading can be used as the final reading if doing a meter change out or to verify the meter reading prior to installation of the SmartPoint module.

You can enter a manual reading for the location or initiate an AMR reading (for two-way water endpoints only). Note that AMR often reads multiple meters, and may miss the one at the current location.

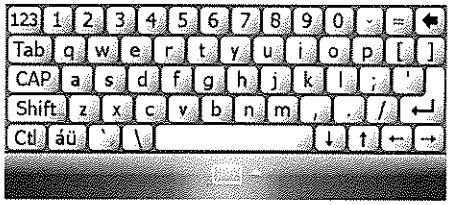
12.6.1 Manual Read

To enter a manual reading:

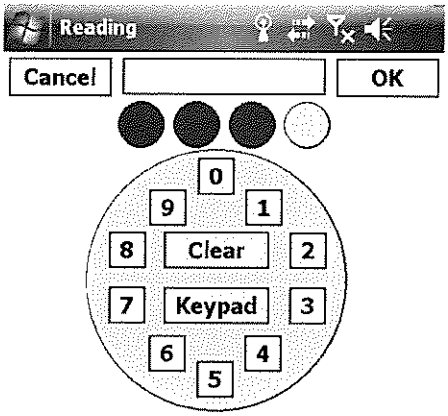
1. Tap the **Read** softkey or tap **Tools** → **Read**.
2. If reading a water or electric endpoint, the Enter Text screen appears. Enter the current reading from the meter's index and tap **OK**.



Enter in the Reading:



If reading a gas endpoint, the Reading screen appears. Enter the current reading of the index and tap **OK**. Tap **Keypad** to enter the reading using the on-screen keypad.

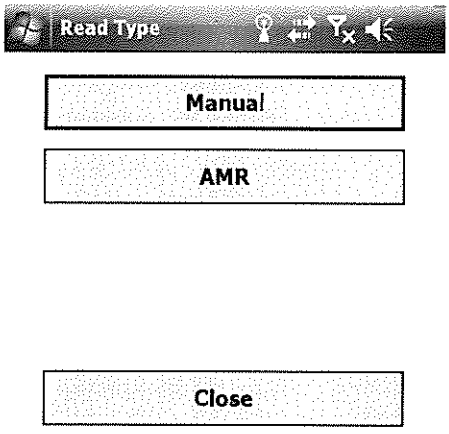


3. The next unread location in the route is now displayed on the Route screen.

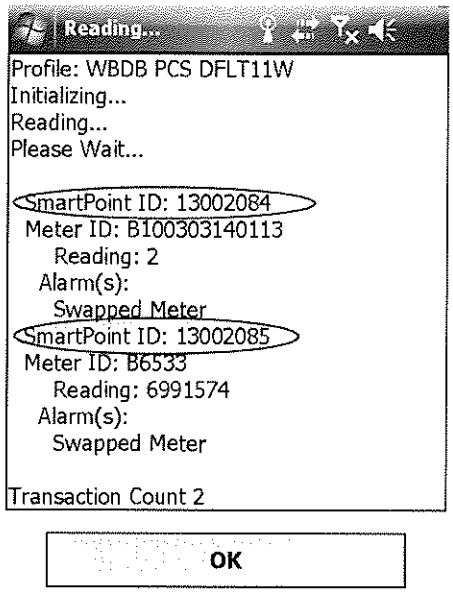
12.6.2 AMR Read

To initiate an AMR reading:

1. Ensure that the CommandLink device is powered on and connected. You will be unable to AMR read a SmartPoint module unless FlexPro has a connection to the CommandLink.
2. Position the CommandLink device within 15 to 60 feet of the SmartPoint module. (The CommandLink radio is used to communicate with Sensus SmartPoint modules with two-way technology. The radio's range varies depending on environmental conditions.)
3. Tap the **Read** softkey or tap **Tools → Read**.
4. Select **AMR** on the Read Type screen.



5. The FlexPro application reads the SmartPoint modules that are in range of the CommandLink device. Note that AMR often reads multiple meters, and may miss the one at the current location.
   - The HHD and the CommandLink request that the two-way SmartPoint modules in the vicinity transmit their readings.
   - An AMR Read lasts about 30 seconds.
   - If you cannot read the SmartPoint module via AMR, you have the option to enter a manual reading or a note to that address location.
   - If there are legacy MXUs or Touchpads loaded on your route, then you will need to exit the FlexPro application. From the Windows Mobile 6 desktop, tap **Start** and click the shortcut to SMS Apps from the Windows menu. This will take you to the HHD Menu screen. You can now access the HHD's route for reading Touchpads and MXUs.
6. Verify the SmartPoint IDs that are returned with the AMR readings, then tap **OK**.



7. The next unread location in the route is now displayed on the Route screen.

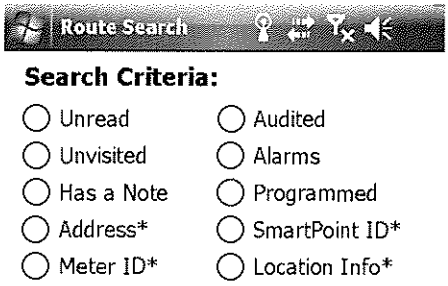
12.7 Search

The **Search** softkey or **Search** option on the **Tools** menu allows you to search the route for text to find a location quickly.

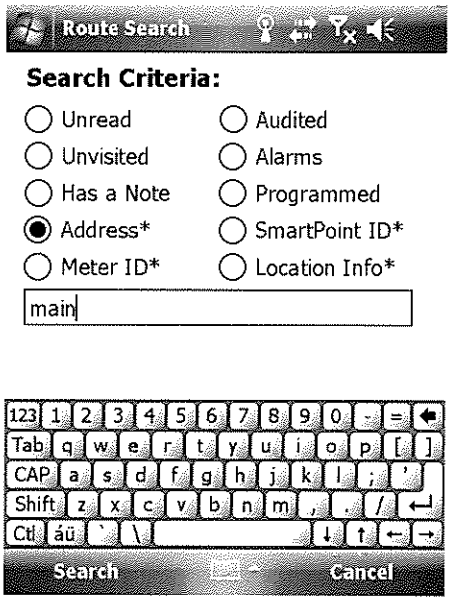
To search for a location in the route:

1. Tap the **Search** softkey or tap **Tools** → **Search**.

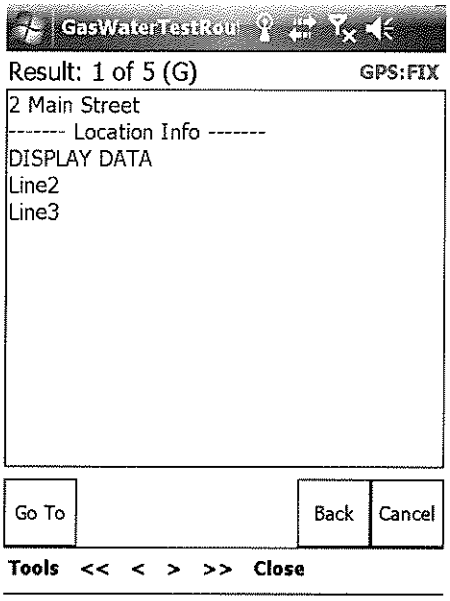
2. Select the search criteria.



Items in the criteria list that are marked with an asterisk require additional information. For example, if searching based on the location's address, enter part of or the entire address in the text box. You can enter the text using the on-screen keypad or, if available, the keypad on the HHD.



3. Tap **Search**. The search results are displayed.



4. Use the left and right arrows to scroll through the results.
   Tap **Go To** to display the location on the Route screen.
   Tap **Back** to return to the Route Search screen and modify the search criteria.
   Tap **Cancel** to return to the Route screen.

12.8 Configuration

The **Config** softkey or **Configuration** option on the **Tools** menu takes you to the FlexPro Configuration menu. From the Configuration menu, you can perform the following configuration functions.

- You can access the Reading Management settings and, with Supervisor password, the Touchscreen Softkey settings.
- You can check the status of the battery by tapping the **Battery Status** button.
- You can set up CommandLink configuration settings and GPS settings by tapping the Communications button.
- You can access the Supervisor screen to perform various FlexPro configuration functions.

***Note**: See the FlexPro Administrator Guide for information on FlexPro configuration.*

12.9 Program

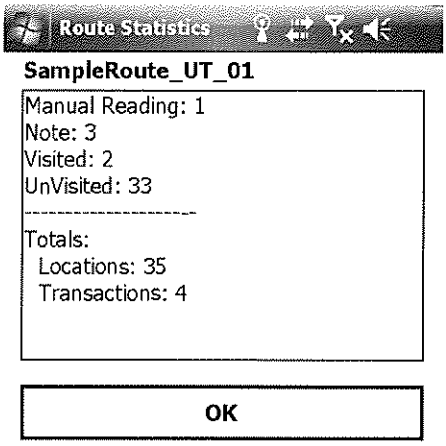
The **Prog** softkey or **Program** button takes you directly to the Programming screen to allow you to program or install a SmartPoint module.

- For installing and programming one-way water endpoints, see Chapter 2.
- For installing and programming two-way water endpoints, see Chapter 3.
- For installing and programming one-way gas endpoints, see Chapter 4.
- For installing and programming two-way gas endpoints, see Chapter 5.
- For installing and programming electric endpoints, see Chapter 6.

Note: Depending on the content of the Route file, certain options available with Ad Hoc programming may not be configurable when programming a location on a route.

12.10 Statistics

The **Statistics** option on the **Tools** menu takes you to the Route Statistics screen, which displays information on the loaded route, including total locations in the route, how many locations are visited/unvisited, and total transactions.



- A location that has one or more transaction is *visited*.
- Transactions include the following actions.
    - Manual Reading
    - AMR Reading
    - Note
    - Program Gas Success
    - Program Gas Failed
    - Program Water Success
    - Program Water Failed
    - Program Electric Success
    - Program Electric Failed
    - Index Change Out
    - Gas Audit
    - Water Audit
    - Deactivate Gas SmartPoint - Success
    - Deactivate Gas SmartPoint - Failed
    - Deactivate Water SmartPoint - Success
    - Deactivate Water SmartPoint - Failed
    - SmartPoint Firmware Update
    - Get Water Parameters
    - Get Interval Data
    - Alarm

Appendix A Locking Gas Endpoints

Locking protects gas SmartPoint modules from being reprogrammed or deactivated easily. Upon initial SmartPoint installation (or subsequent reprogramming), you can lock the SmartPoint module by setting the global locking state. Once a SmartPoint module is locked, a combination of physical and mechanical actions must be performed to open a temporary 10-minute reprogramming window during which programming can occur.

- Locking protects all programmable SmartPoint configuration settings, except the Meter ID.
- The global locking state is, by default, not locked.
- The state is changed by first using the Supervisor menu to select or deselect the locking option and then successfully programming the endpoint.
- The SmartPoint module's current global locking state is reported during an audit. The reported state is the locking state that resulted as of the last successful programming of the SmartPoint module, regardless of the FlexPro configuration settings.
- To perform a reprogramming when the SmartPoint module is in the locked state, you must first initiate a 10-minute reprogramming window.

A.1 Programming a SmartPoint Module With Locking

To place an endpoint in a locked state, you must first configure locking in the FlexPro application, and then you must program the endpoint. In the default FlexPro configuration, locking is disabled.

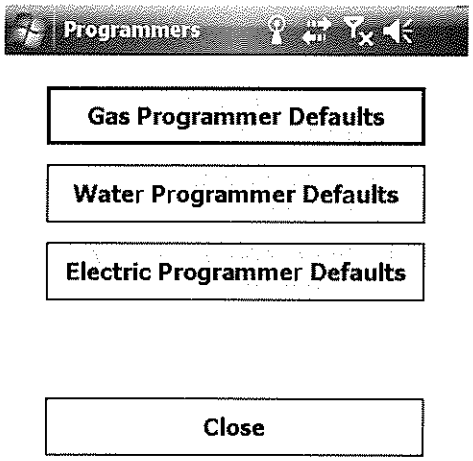
A.1.1 Configure Locking

FlexNet programming parameters are set on the FlexNet Programming screen.

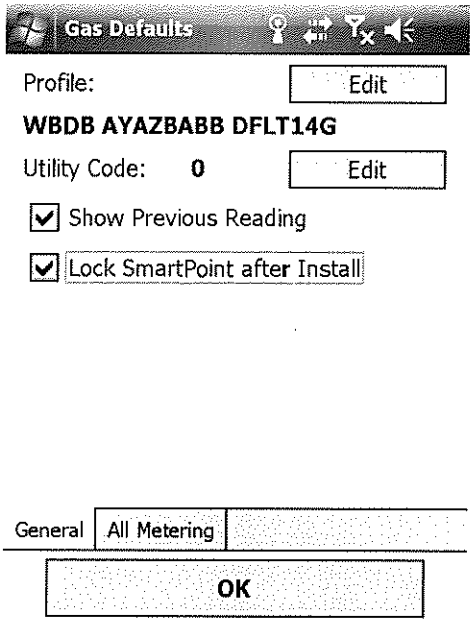
To configure locking:

1. From the FlexPro main menu, select **Configuration**.
2. Tap **Supervisor**. You will be prompted for a password. Enter your Supervisor password; the default password is **55555** (five 5s). Tap **OK**.
3. Tap **Programmer Defaults**.

4. The Programmer Defaults screen appears. Select **Gas Programmer Defaults**.



5. On the Gas Defaults screen, select **Lock SmartPoint after Install** and tap **OK**. Tap **Close** to return to the Supervisor screen and then tap **Close** *two more times* to return to the main FlexPro menu.



The FlexPro application is now configured to lock the endpoint after the next programming.

A.1.2 Program the Endpoint

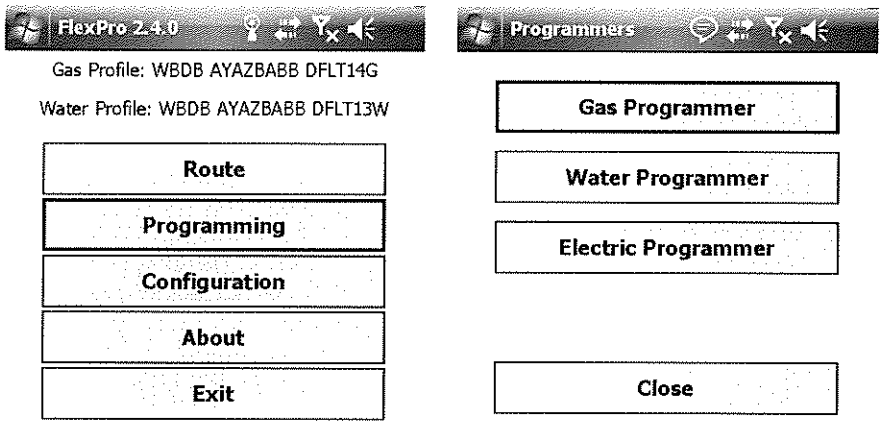
Ensure that CommandLink is powered on and connected.

- You will be unable to proceed to program the endpoint unless FlexPro has a connection to the CommandLink.
- If you do not have a connection, make the following selections. From the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect.**

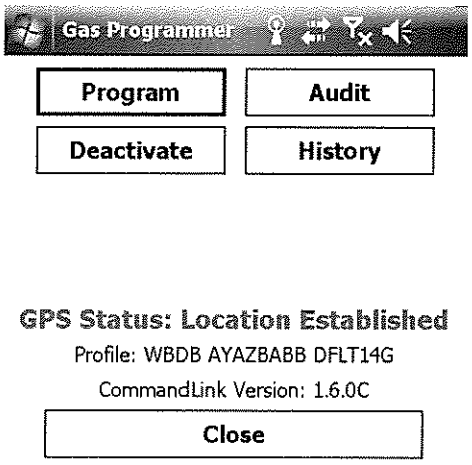
Ensure that proper GPS connectivity has been obtained. You will be unable to proceed to the programming screens unless FlexPro has acquired a GPS link (green or yellow GPS status). See Appendix section B.3.3 for information on troubleshooting your GPS connectivity.

To program a Gas SmartPoint:

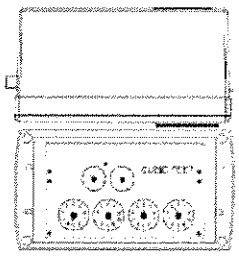
1. Power on the CommandLink and the Handheld Device.
2. Select **Start → FlexPro** or use the soft key assigned to the FlexPro application.
3. When the application opens, enter your User ID and tap **OK**. Your User ID is the ID assigned to you by your supervisor.
   Note: *If your supervisor has disabled the User ID request, then the application will not ask you to enter your User ID.*
4. On the FlexPro main menu, select **Programming**, then tap the **Gas Programmer** button.



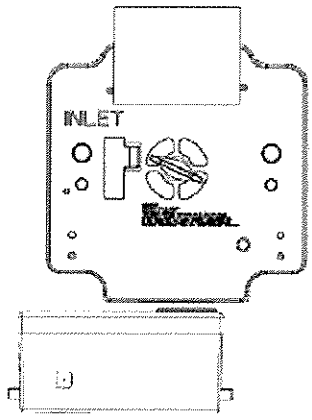
5. You are now on the Gas Programmer screen.



6. The CommandLink must be properly positioned at the endpoint for communication between the CommandLink and the SmartPoint module to take place. Position the CommandLink's Mag Loop area on the programming area of the gas SmartPoint module, then secure with the strap. See section 1.1 for a CommandLink overview



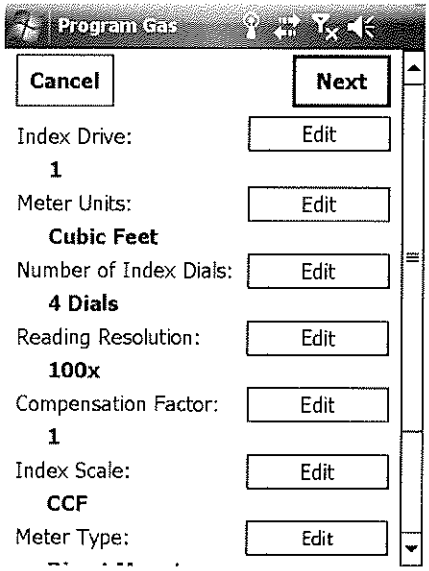
Front-mount SmartPoint/index



Top-mount SmartPoint/index

7. Tap the **Program** button on the Gas Programmer screen.
8. Before proceeding with the programming or installation, verify the parameters on the Program Gas screen.

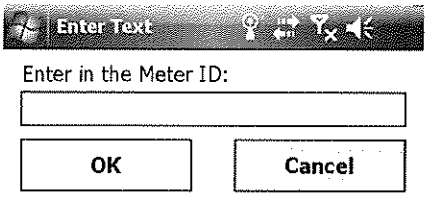
Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint modules, resulting in incorrect reading information being sent over the network.

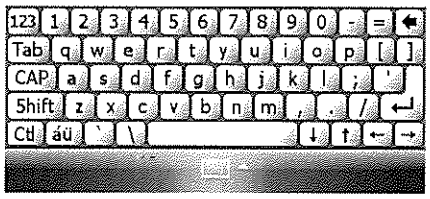


If no changes are needed, tap **Next** to proceed with the programming.

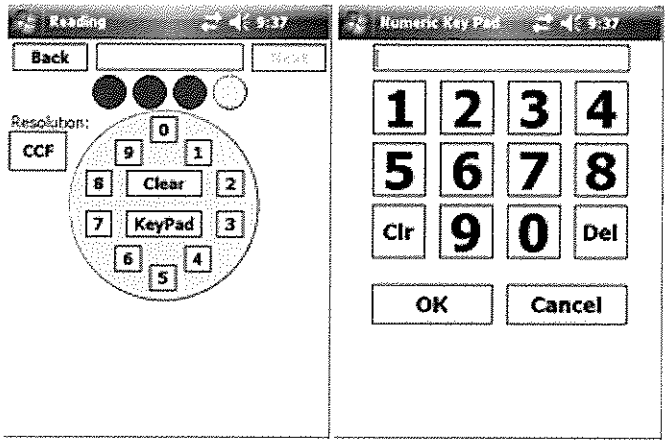
If a change is needed, tap the **Edit** button next to the parameter. After making any changes, verify the selected parameters and tap **Next** to proceed with the programming.

9. Enter the Meter ID of the meter the SmartPoint module is being installed on and tap **OK**.

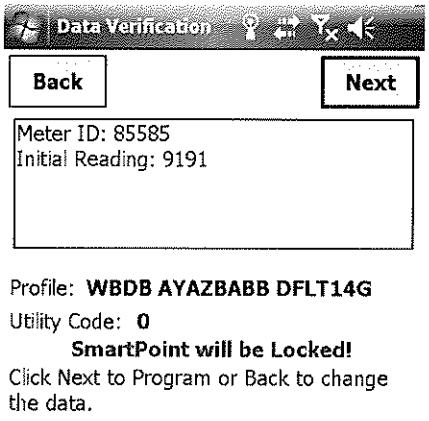




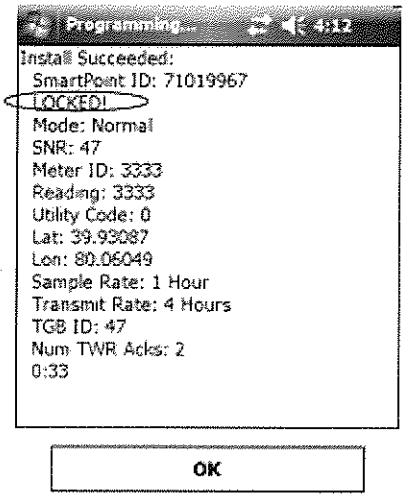
10. Enter the current reading of the index and tap **Next**. If you would rather enter with a keypad, tap the **Keypad** button.



11. Before proceeding with the programming or installation, verify that the Utility Code and Profile are set correctly. The Data Verification screen alerts you that if you proceed with the programming, the SmartPoint module will be locked.



12. Tap **Next** to begin the programming session. The session will last approximately 60 seconds. When the meter has been successfully programmed, you will receive verification that the endpoint is locked.

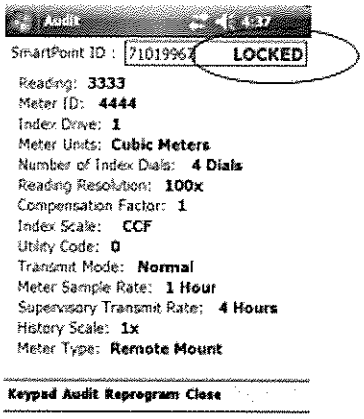


A.2 Reprogramming a Locked Endpoint

To program an endpoint that is in the locked state, you must physically initiate a 10-minute reprogramming window using a magnet device.

A.2.1 Verify FlexPro's Locking Configuration

Before initiating a 10-minute reprogramming window, audit the endpoint to verify that it is in a locked state. After successfully auditing a locked endpoint, LOCKED appears in the **SmartPoint ID** field. This state is the locking state that resulted as of the last successful programming of the SmartPoint module, regardless of the FlexPro's current configuration settings.



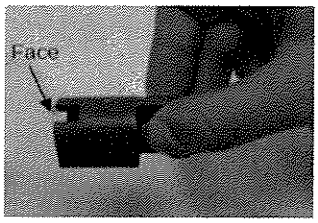
Before initiating the 10-minute reprogramming window and programming the endpoint, also check the locking configuration in the FlexPro application. This will determine the global locking state of the endpoint after it is reprogrammed. See section A.1.1 to configure locking and determine if the SmartPoint module will be locked or unlocked after the programming.

A.2.2 Initiate a 10-Minute Reprogramming Window

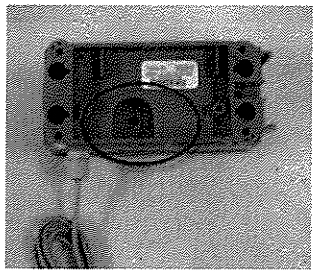
To initiate a 10-minute reprogramming window:

Note: *You must have a Magnet Device to initiate a 10-minute reprogramming window.*

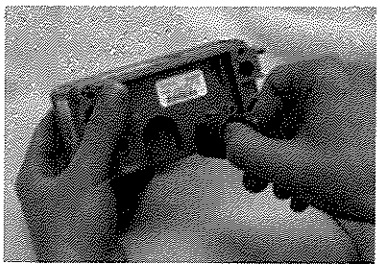
1. Identify the face of the Magnet Device.



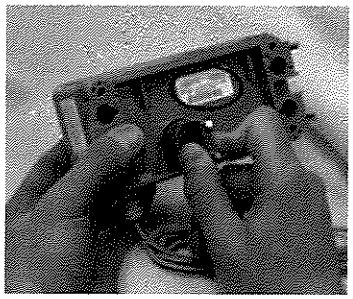
2. Identify the place where the Magnet Device will be placed.



3. Hold the SmartPoint module in your left hand and the Magnet Device in your right hand. Insert the Magnet Device into the slot in the SmartPoint module. The magnet can only fit one way into this slot. Make sure when attempting to unlock the SmartPoint module that the magnet is flush against the endpoint.

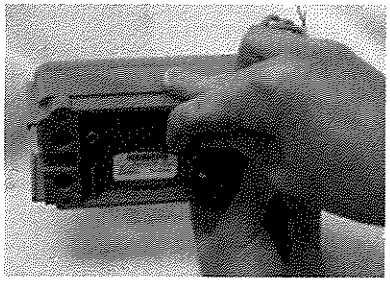


4. At this point, the SmartPoint module should be level, basically parallel to the floor. The endpoint's white barcode label is to the right of the Magnet Device.



5. Rotate the SmartPoint module to trip the tamper switch.

   Rotate the SmartPoint module 180 degrees to the left, while holding the Magnet Device in place, and hold it in that position for a few seconds. Once again, the SmartPoint module should remain basically parallel to the floor. The white barcode label on the SmartPoint module is now on the left side of the Maget Device.

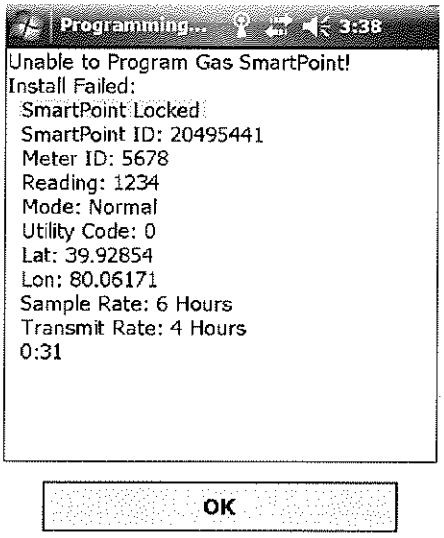


   Rotate the SmartPoint module back to its original position while still holding the Magnet Device in place, and hold it there for a few seconds.

6. Slowly remove the Magnet Device from the SmartPoint module.

   You now have a 10-minute window to reprogram the SmartPoint module. If you do not send any new programming commands to the SmartPoint module (via FlexPro and CommandLink) in this time frame, the SmartPoint module will revert itself back to a lock state automatically.

   If the temporary reprogramming window terminated or the mechanical unlock process was not preformed correctly, the reprogram will fail and you will see an Install Failed message. Before reattempting to reprogram the endpoint, the mechanical unlocking procedure must be repeated.



***Note**: The only way to tell if the SmartPoint module has been successfully unlocked for reprogramming is to attempt to reprogram it.*

Appendix B Maintenance and Troubleshooting

B.1 Important Daily Maintenance

- You must verify FlexPro programming parameters daily
- You must charge your HandHeld Device daily.
- You must charge the CommandLink device daily.

B.1.1 Verify Programming Parameters

Before sending the HHD and CommandLink into service, the Supervisor or Operator must verify the default settings in FlexPro. If the settings are incorrect, they should be changed to the proper default settings. Refer to the *FlexPro Administrator Guide*.

***Note**: Never proceed to program an endpoint without first verifying the programming parameters. Incorrect FlexPro programming parameters will result in incorrect parameters being set on the SmartPoint modules, resulting in incorrect reading information.*

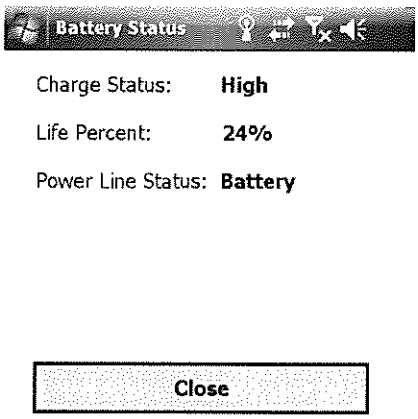
B.1.2 Charge Your HandHeld Device

The HandHeld Device loaded with the FlexPro software must be charged daily. If you are using a Sensus AR5500 series HHD, place the device in the charging cradle and verify that the charging light on the cradle is illuminated.

***Note**: If using another manufacturer's HandHeld Device, charge using the approved charging device and following the charging specifications.*

To check the status of the HHD battery:

1. Open FlexPro by tapping **Start → FlexPro**.
2. Select the **Configuration** menu.
3. Tap **Battery Status**. The Battery Status screen displays the **Charging Status**, which is how well the battery is charged, the **Life Percent**, which is the amount of life that the battery has remaining, and the **Power Line Status**, which indicates if the HHD is working off of the battery or plugged into AC power.



B.1.3 Charge the CommandLink Device

The CommandLink comes equipped with three "AA" rechargeable batteries and a charger. Charge the CommandLink batteries daily. This will allow for optimum performance of the batteries. It is recommended that CommandLink be connected to the charger when not in use.

In addition to CommandLink's internal charger, you can charge the batteries using Energizer - NiMH AA Battery Charger, Model CHVCMWB-4 or comparable charger.

If you are unable to charge the CommandLink battery daily, then remove the batteries from the device for long-term storage.

B.2 Other Routine Maintenance

B.2.1 Changing the CommandLink Battery

Battery replacement is recommended to be done annually. Always change batteries in a clean, dry environment to ensure that no moisture or dirt intrusion occurs during replacement.

***Note**: CommandLink can also use AA non-rechargeable batteries. Always ensure that batteries are rechargeable before attempting to charge them in the CommandLink unit. DO NOT attempt to charge any Alkaline, Lithium, or NiCad (Nickel-Cadmium) battery types.*

To change the batteries:

1. Remove the four screws holding on the battery cover.
2. Carefully remove the cover being sure to keep the rubber gasket intact.
3. Remove the three AA size batteries from the compartment and replace.
   *Always insert the batteries based on the polarity markings in the battery compartment.
4. Place the battery cover back on the unit.
5. Tighten the four screws.

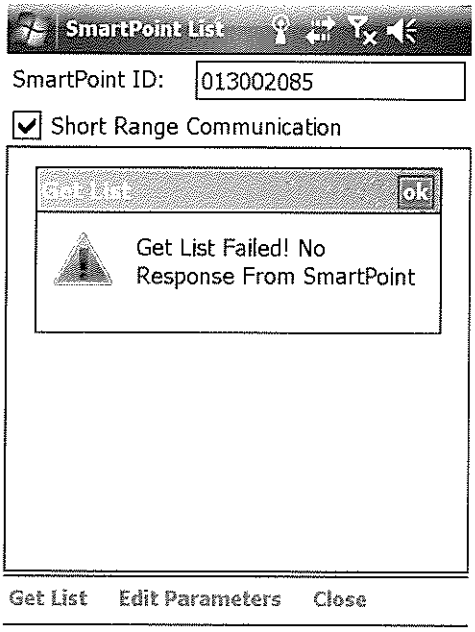
B.2.2 Removing/Replacing the CommandLink Strap

CommandLink utilizes a nylon bungee type strap. After repeated use this strap can lose elasticity. When this occurs, you need to replace the strap.

B.3 Troubleshooting

B.3.1 No Response from SmartPoint Message

When performing programming functions, such as auditing, deactivating, and upgrading firmware, you may receive the No Response From SmartPoint message.

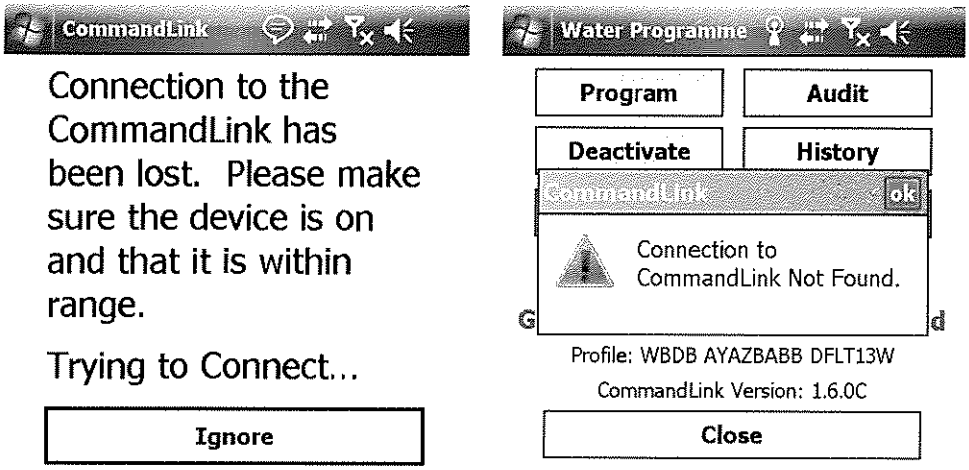


This message can indicate any of the following issues.

- The CommandLink device is not positioned properly for communication with the SmartPoint module. If programming a one-way SmartPoint module, try repositioning the CommandLink slightly to get a good MagLoop connection.
- You may have entered the SmartPoint ID of Port 2 on a dual-port SmartPoint module. If so, enter the SmartPoint ID of Port 1 and then retry the operation.
- The SmartPoint may be defective.
- The CommandLink device may be defective.

B.3.2 Connection to CommandLink Messages

When performing programming functions, such as programming, auditing, and deactivating, you may receive the Connection to the CommandLink has been lost message or a Connection to CommandLink Not Found message.



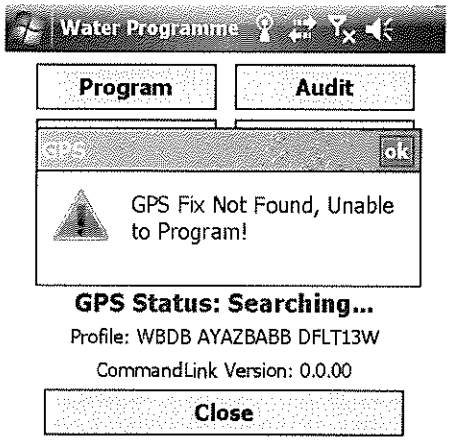
This message is displayed due to the following issues.

- The HHD may have been moved out of range of communication with the CommandLink.
- The CommandLink device is not powered on.
- No connection was made between the HHD and the CommandLink device.

To continue, tap **Ignore** or **Close** to close the message. Power on the CommandLink device. Then, from the main FlexPro menu, tap **Configuration → Communications → CommandLink** and select **Connect**.

B.3.3 Difficulty Acquiring a GPS Fix.

You must have a GPS fix on the HHD before you can proceed to do any programming functions. If you attempt to proceed to the programming screens without a GPS fix, you will receive the GPS Fix Not Found message.

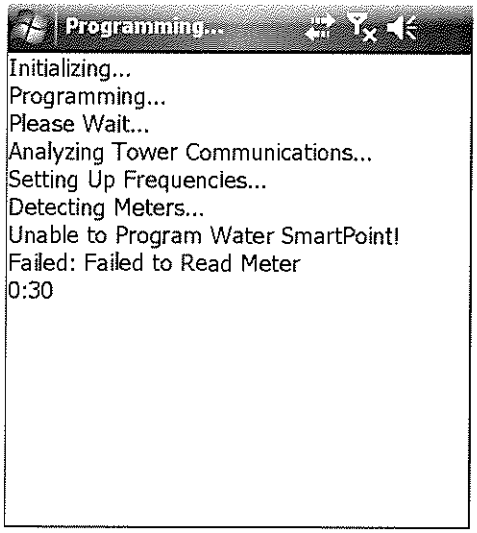


This message can indicate any of the following issues.

- GPS is not enabled on the HHD.
- GPS is enabled and receiving coordinates, but a GPS link has not been acquired on the HHD. From the main FlexPro menu, tap **Configuration → Communications → GPS** and select **Connect**.
- You may be in a location in which the GPS receiver is unable to acquire your coordinates. If this is the case, go outside or to a window where you will have a line of sight to the sky so that the GPS receiver will be able to acquire your coordinates. It may take as long as 15 minutes for the GPS receiver to get an initial GPS lock.

B.3.4 Failed to Program Meter Messages

When installing and reprogramming SmartPoint modules, you may receive a Failed message.



This message can indicate any of the following issues.

- The wiring connections between the register and the SmartPoint module may be pinched or severed.
- The register may have come unattached from the SmartPoint module.
- A dual-port SmartPoint module may have only one register attached. On a dual-port SmartPoint module, any port that is *not* connected to a register must have the Meter Type parameter set as `Not Used`. Setting the Meter Type of an unused port to anything other than `Not Used` will result in a programming failure.
- The register may be defective.

Technical Services

Technical Support, Problem Escalation, Processes, and Procedures

Revision 1

Sign-offs

Product Marketing:	
CS Quality:	
Technical Services	
Software Organization:	
Operations:	

1 Introduction

1.1 Purpose

The purpose of this document is to outline Sensus Technical Services procedures for identifying, escalating and resolving user issues.

1.2 Function

Sensus Technical Services provides utility customers with a single point of contact for Tier 1 support of technical issues as well as any coordination of additional resources required to resolve the issue. Requests that require specialized skills are to be forwarded to a senior support engineer or Technical Advisor within the team for further analysis. If Technical Services has exhausted all troubleshooting efforts for the product type, the issue will escalate to the Engineering Support Team. Occasionally, field support may be required for on-site troubleshooting/analysis. The following items categorize and describe levels of support and procedures:

2 Support Categories

2.1 General questions regarding functionality, use of product, how-to, and requests for assistance on Sensus AMR, AMI, Metering Products, and Demand Response Management System (FlexServer).

2.2 Proactive reporting and resolution of problems

2.3 Reactive reporting to isolate, document, and solve reported software defects

2.4 Responding to service requests and product changes

2.5 Addressing customer inquiries with printed or electronic documentation, examples, or additional explanation/clarification

3 Support Hours

3.1 Standard Support Hours: Toll-free telephone support (1-800-638-3748 option #2) is available Monday thru Friday from 8:00AM EST to 6:00PM EST.

4 Support Procedures

1. Customer identifies an issue or potential problem and calls Technical Services at 1-800-638-3748 Option #2. The Customer Service Associate or Technical Support Engineer will submit a SensusCare ticket.
2. The Customer Service Associate or Technical Support Engineer will identify the caller name and utility by the assigned software serial number, city, and state in which the call originated. The nature of the problem is then captured into SensusCare for ticket creation and resolution processing:
   - **A.** Severity Levels Description:

     Sev1 Customer's production system is down. The system is unusable resulting in total disruption of work. No workaround is available and requiring immediate attention.

     Network mass outage, all reading collection devices inoperable, inoperable head end software (e.g., FlexWare, MDM, and Autoread).

     Sev2 Major system feature/function failure. Operations are severity restricted; there is a major disruption of work, no acceptable work around is available, and failure requires immediate attention.

     Service affecting network equipment failure; e.g., FNP/FRP, TGB transceiver, or VGB. A reading collection device is inoperable; e.g., AR5500, VXU, VGB, or Commandlink. Head end software application MDM or Autoread software has important functionality not working, preventing billing export file.

     Sev3 The system is usable and the issue doesn't affect critical overall operation.

     Service affecting minor network equipment failure; e.g., FNP/FRP false alarms or TGB transceiver false alarms. Head end software application MDM and Autoread software operable but reports are not running properly or some function of the software is not running.

     Sev4 Minor system issues, questions, or enhancement requests to be corrected in future versions.

     Minor system issues, questions, and How Tos.

   - **B.** Brief description of questions, problem symptoms, or error messages depending on nature of the incident.
3. The Customer Service Associate or Technical Support Engineer identifies whether or not the customer is on support. If the customer is not on support, the customer is advised of the service options as well as any applicable charges that may be billed.
4. Calls are placed in a queue from which they are accessible to Technical Support Engineers on a first-come-first-serve basis. A 1st level Customer Service Associate may assist the customer, depending on the difficulty of the call and the representative's technical knowledge. Technical Support Engineers (Tier 1 support) typically respond/resolve the majority of calls based on their product knowledge and experience. A call history for the particular account is researched to note any existing pattern or if the call is a new report. This research provides the representative a basis and understanding of the account as well as any associated problems and/or resolutions that have been communicated.
   - **A.** Technical Services confirms that there is an issue or problem that needs further analysis to determine its cause. The following information must be collected: a detailed description of the issue's symptoms, details on the software/hardware product and version, a description of the environment in which the issue arises, and a list of any corrective action already taken.

B. Technical Services will check the internal database and product defect tracking system, to see if reports of a similar problem exist, and if any working solutions were provided. If an existing resolution is found that will address the reported issue, it shall be communicated to the customer. Once it is confirmed that the issue has been resolved, the ticket is closed

C. If there is no known defect or support that defines the behavior, Technical Services will work with the customer to reproduce the issue. If the issue can be reproduced, either at the customer site or within support center test lab, Technical Services will escalate the ticket for further investigation / resolution.

   If the issue involves units that are considered to be defective with no known reason, the representative will open a Special Investigation RMA through the SensusCare system. If it is determined that a sample is required for further analysis, the customer will be provided with instructions that detail where to send the product sample(s) for a root cause analysis. Once it is determined that the issue cannot be resolved by Tier 1 resources, the ticket will be escalated to Tier 2 support for confirmation/workarounds to resolve immediate issue. Technical Services will immediately contact the customer to advise of the escalation. The response and escalation times are listed in Section 5. At this time, screen shots, log files, configuration files, and database backups will be created and attached to the ticket.

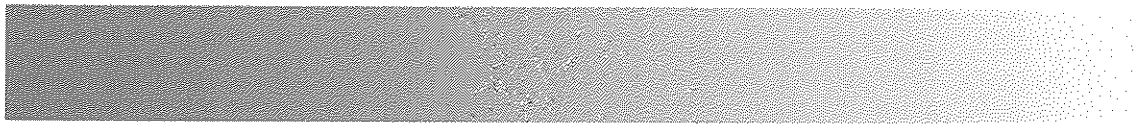
5 Response and Resolution Targets

Sensus Technical Support will use reasonable efforts to meet the following resolution targets:

Severity	Standard Target Response	Standard Target Resolution	Resolution (one or more of the following)
1	30 Minutes	Immediately assign trained and qualified Services Staff to correct the error on an expedited basis. Provide ongoing communication on the status of a correction.	• Satisfactory workaround is provided. • Program patch is provided. • Fix incorporated into future release. • Fix or workaround incoporated into SensusCare Knowledge Base.
2	4 Hours	Assign trained and qualified Services Staff to correct the error. Provide communication as updates occur.	• Satisfactory workaround is provided. • Program patch is provided. • Fix incorporated into future release. • Fix or workaround incoporated into SensusCare Knowledge Base.
3	1 Business Day	30 Business Days	• Answer to question is provided. • Satisfactory workaround is provided. • Fix or workaround incoporated into SensusCare Knowledge Base. • Fix incorporated into future release.
4	3 Business Days	60 Days	• Answer to question is provided. • Fix or workaround incoporated into SensusCare Knowledge Base.

6 Problem Escalation Process

1. If the normal support process does not produce the desired results, or if the severity has changed, the issue may be escalated as follows to a higher level of authority.
2. To escalate an issue, please call 1-800-638-3748, Option 2. Please specify the SensusCare ticket number and the reason why the issue is being escalated.
3. In the event that a customer is not satisfied with the level of support or continual problem with their products, they may escalate a given SensusCare ticket to Manager of Technical Services.



C.3 SensusCare FlexNet Training Outline

RNI Head End System General User Training - 1 Day

This course is recommended for representatives of the following departments: Customer Service, Billing, Meter Technician, FlexNet Operator and all users that will need to look up and control meters.

The course is designed to provide project and technical staff with hands-on training regarding the day-to-day operations of the FlexNet system. Attendees will obtain a working knowledge of basic Meter Lookup, Meter Lookup and Statistics, Installed Meter Report, Meter Alarm Data, Identifying meter Alarms, Meter Information page Commstats, Data Analysis, 2-way Commands, Types of Meter Reads, Diagnostics Reports and the Sensus RMA Process.

The one day course includes the following topics:

- FlexNet Overview
- Operation and Monitoring of the FlexNet system from within the RNI
- User Interface Training

RNI Head End System Administrative Users - 1 Day

Recommended for IT Administrators, Power Users, FlexNet Administrators.

The course will cover OTA Messages, System Architecture Overview, Adding User to DRMS, Network Optimization, Using the Web Interfaces to Manage the System. Hands On Case Studies; RNI Configuration Information, LDAP Configuration, Adding Users to the DRMS Administrative Collection, Changing User Permissions, Changing User Roles.

RNI Head End System Advanced Users – 1 Day

Recommended for Advanced Administrators, Data/Business Analysts, System / IT Engineers, Project Managers

Topics included in this course are MSSQL Database Overview, Dataflow from Meter to XML or CMEP, MDMS File Generation and Delivery, Reports.

Participants will see hands on case studies: Attaching to SQL DATA Bases Query Tables, Storage and Retrieval of On-Air Message Data, Decoding the On-Air Message Data, Storage and Retrieval of On-Air Message Data, Event logs, Monitoring and Maintenance Scripts, Resolving Quarantine Reads

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TGB Data Collector Training – 2 Days

Recommended for AMI Project Staff, Systems Engineers, Telecom Engineers, Project Managers

The course will discuss a FlexNet Overview, TGB Operations, TGB Installation, and TGB maintenance

Water Endpoint Training – 1 Day

Recommended for Water Meter Personnel and Field Personnel

Class covers water meters, water SmartPoints, Configuration, On-Air Messages, Handheld Operation

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NOTE	Should it be necessary to remove the enclosure air conditioner, doors, or riser, see Installation/Preparation in the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

4.2.2 Enclosure Support

A supporting structure (slab, roof top, etc. with a minimum loading capacity of 600lb./ sq.ft.) is required to support a fully loaded enclosure (rectifiers, batteries, air conditioning, etc.). For detailed enclosure support information, see the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

For the concrete pad, cast-in-place or pre-cast concrete slabs can be used. The pad layout is shown in Figure 4-3.

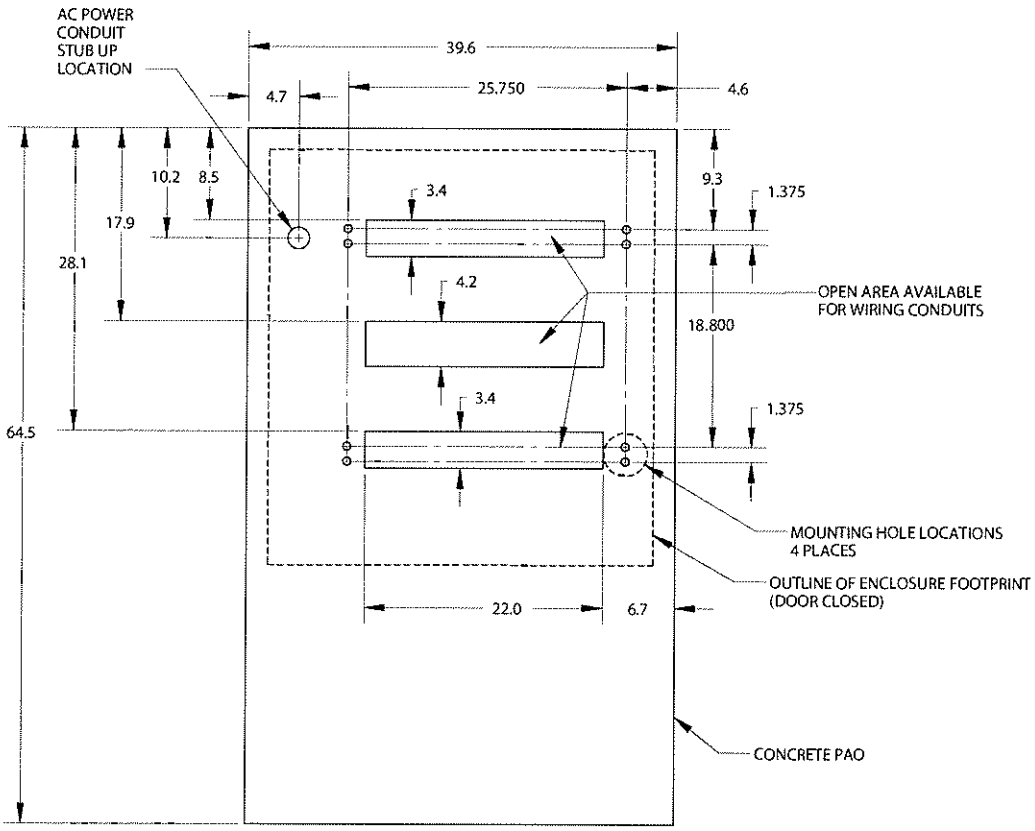


Figure 4-3: Outdoor Installation Concrete Pad Layout

4.2.3 Enclosure Mechanical Installation

For detailed enclosure mechanical installation information, see the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

4.2.4 Power System Installation and Connection

	The wire to connect to the service must be 120/240V, 4-wire (two hot wires, one neutral wire, and one ground wire), and must be sized for 30 Amp service.

Electrical service should be run up the side of the cabinet from the pad and enter the Generator Transfer Switch Box on the left outside of the cabinet. Connect the 4-wire service line to the 30 A main feed breaker on the inside of the Transfer Switch Box. A 120/208 V service is acceptable. It is possible to run the enclosure with 120 V only if there is no other service available, but Sensus must be notified in advance to make necessary modifications. If local code prohibits the tying of service ground and tower ground, tower ground always gets priority (see Section 4.4.1).

	Electrical service to the outdoor cabinet should be installed by a licensed electrician in accordance with local codes. A dedicated grounding system is required for grounding the AC panel. See Te17 Outdoor Enclosure Manual for grounding termination details. See Appendix A for grounding specifications.

	Verify electrical codes prior to installation. Codes may vary and contain specific conduit and wire sizes for connection to the AC load center. Connection to utility power must be approved by the local utility before installing the power supply.

4.2.5 Power System Installation Procedure

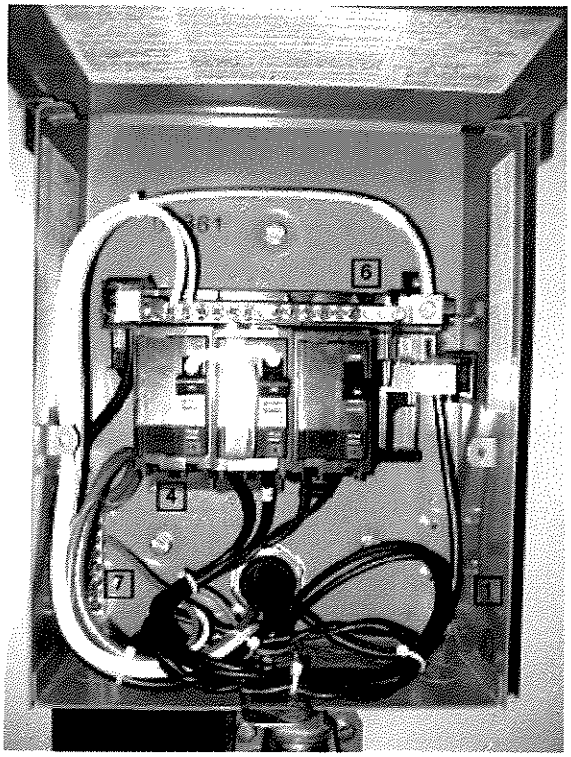


Figure 4-4: Utility Connection in the Generator Transfer Switch Box

1. Open the Transfer Switch Box on the left of the outside of the enclosure.
2. Install the conduit nipple into the load center via a knockout at the top or right side and secure it in place using the appropriate threaded conduit lockouts.
3. Install conduit outlet body using an appropriate sealing gasket on the outside of the enclosure.
4. Locate the screw lug terminals on the Transfer Switch Box's circuit breaker assembly.
5. Connect one of the incoming wires to the left terminal (L1). Connect the remaining Black (or Red) wore to the right terminal (L2). **If the wire at L2 is Black, place red tape (or label) on it.**
6. Connect the White wire to the Neutral (N) bus lug located to the top right of the circuit breaker assembly.
7. Connect the stranded copper ground wire (Earth Ground) to the grounding bar, located inside the Transfer Switch Box.
8. The backup generator plug is a standard 30 A Eaglelock type for a backup generator, but it is not used for normal operation.

4.2.6 AC Inverter Considerations

The maximum wattage for all battery-backed IP equipment in the enclosure is 125 Watts. Plug all IP equipment that requires battery-backup into the four AC inverter-backed plugs located at the rear of the enclosure. AC inverter loading directly affects the battery life.

4.2.7 Alarm Terminations

All alarms have been pre-wired at the factory; no customer wiring is necessary. If customized alarm wiring is necessary, refer to the documentation package that comes with the components.

All Tempest system alarms are connected via a punchdown "66 block" from the local alarm-sending unit. A system controller can provide a central point for all external alarm lead connections.

The type of alarm input required by the alarm-sending unit determines how the alarm contacts are configured and wired, i.e., form "A," "B," or "C" wired for ground sending, battery sending, loop closure, loop open, etc. Some system control panels require jumpers to be moved to configure the alarm contacts as form "A" or "B."

For detailed alarm termination information, see the Argus Technologies Ltd. TE17 Outdoor Instruction Manual.

4.2.8 Testing and Commissioning

For detailed enclosure testing and commissioning information, see the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

4.2.9 Warranty and Repair Information

For detailed enclosure warranty and repair information, see the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

4.2.10 Factory Service Information

For detailed enclosure factory service information, see the Argus Technologies Ltd. Te17 Outdoor Enclosure Manual.

4.3 Connecting the TGB

Figure 4-5 is a block diagram that summarize the connection scheme.

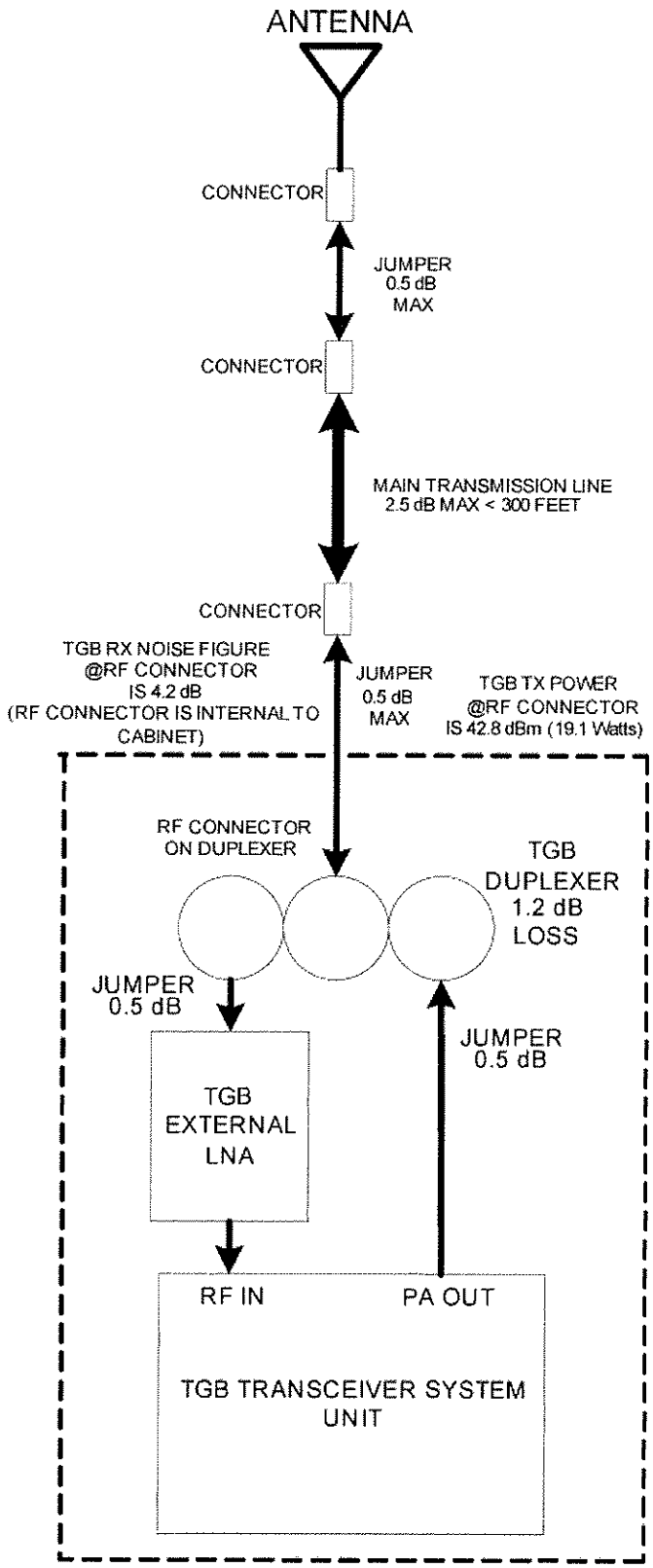


Figure 4-5: Outdoor Enclosure, RF Interconnect and Loss Budget Detail

RF coax should enter the enclosure either through the bottom of the riser, or through the boot at the bottom side of the riser, and should be routed up through the riser and through the other boot. A 6-foot coax jumper is supplied for connection to the duplexer. The coax jumper can be routed down through the boot instead for connection to the antenna coax in the riser. Either way, the ground jumper from the lightning arrestor must be routed to the master ground bar (see Section 4.4.2), The TGB connections are all the same as the indoor TGB setup, except that an extra internet connection is required. The extra internet connection, which must be connected and assigned an IP address, is to the power system. See Chapter 3 for the indoor connections.

4.4 Enclosure Grounding

An enclosure that is not properly grounded can present an electrical hazard. See Appendix A for grounding specifications.

4.4.1 Ground Strap

A tower ground system of appropriate size must be routed to the cabinet and enter either through the bottom of the riser, or through the boot situated at the bottom side of the riser, usually where the RF cable enters the enclosure. Route the ground cable through a rubber boot in the floor of the cabinet and connect it to the master ground bar, located at the lower right of the enclosure inside the front door. The absolute minimum tower ground cable size is #6 stranded, but #2 or larger is preferred.

4.4.2 Coax Arrestor

All incoming lines must (DSL, RF, etc.) must be properly lightning suppressed and have #6 or better ground jumpers attached to the cabinet master ground bar from the lightning arrestors. The enclosure does not come supplied with this equipment as it varies depending on installation.

Figure 4-6 illustrates the outdoor TGB grounding scheme.

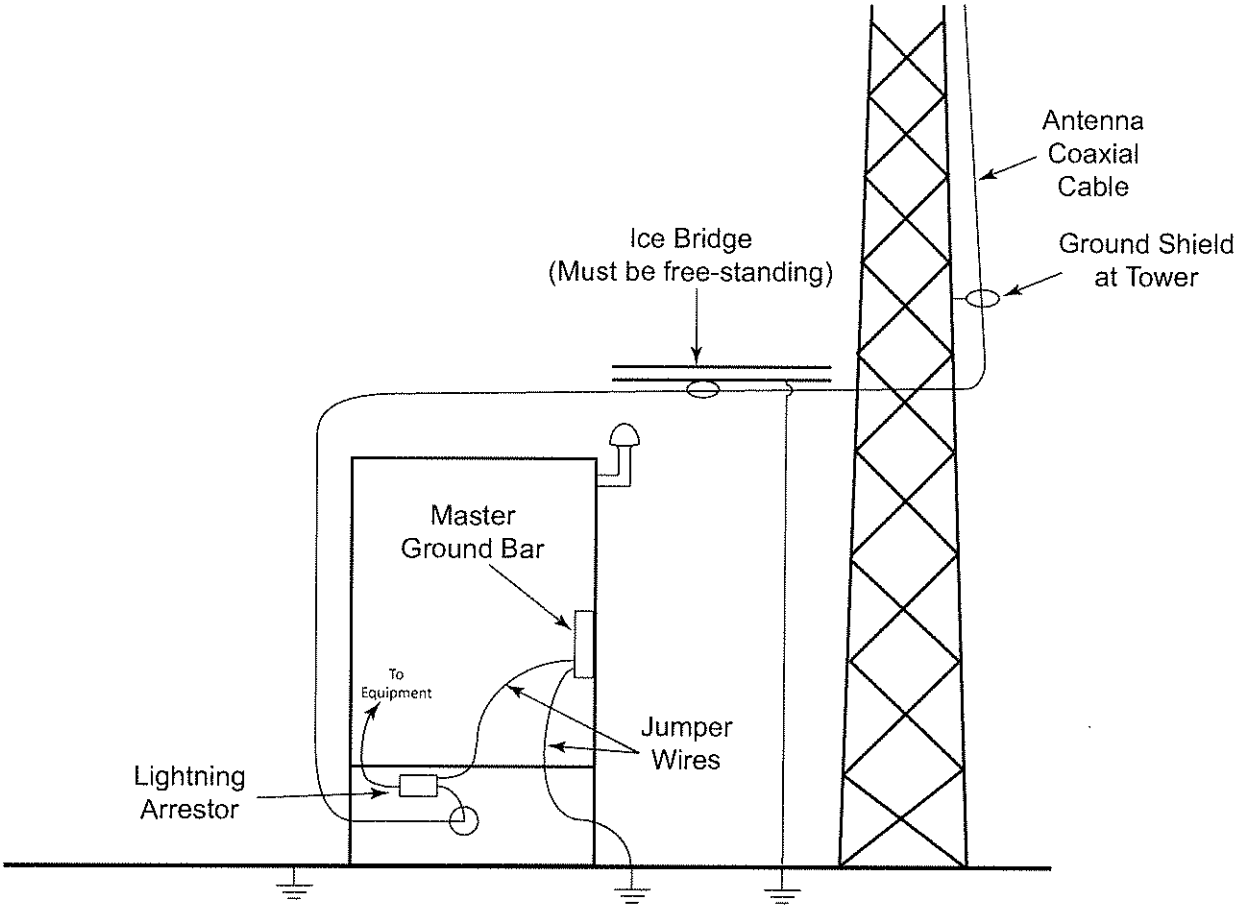


Figure 4-6: Outdoor TGB Grounding Scheme

4.5 Internet Connections

There are two Internet-connected pieces of equipment within the enclosure: the TGB and the power system. The most straightforward method of connection is to provide two IP addresses; however, other techniques can be used, such as port-forwarding with a router, which allows only one IP address to be used. The power system is a standard web browser interface, and uses standard web browser access methods. The enclosure is not supplied with IP equipment because it varies depending on installation. Sensus equipment provides two RJ-45 standard Ethernet jacks. See Section 5.3 for instructions on setting the power system IP address.

⚠	Sensus must have continuing remote access to the power system. Updates and other changes to the power system, as well as monitoring and management, can only be performed by Sensus at this time. Therefore, if the power system access is placed behind a private network, there must be a provision made to give Sensus access to the power system.

4.6 Enclosure Security

To lock the cabinet so the pinned hex key cannot be used to open the door requires up to seven padlocks. An eighth padlock can be used to secure the Generator Transfer Switch Box, if desired.

4.7 Air Conditioning Setup

4.7.1 Cabinet Thermostat Settings

The Cabinet alarm and thermostat settings are factory-set to the following:

1. **High Temperature Alarm Thermostat**: 40°C.
2. **Low Temperature Alarm Thermostat**: 5°C.
3. **Aux Fan Control Thermostat**: 35°C.
4. **Heater Thermostat**: 50°F.

Sensus recommends that you adjust the settings to your individual requirements. A small screwdriver is required to make the adjustments.

4.7.2 Air Conditioner Unit Settings

The Air Conditioner unit has several settings that may be changed. The values shown in the procedure below are the factory default values. Change them as necessary. Gain access to the Air Conditioning unit control panel by removing the two screws in the outside of the front door securing the access cover.

1. Close the Air Conditioner Breaker, #5 on the Internal AC Breaker Panel.
2. Pull out the Air Conditioner front door switch to power the A/C unit.
3. The Air Conditioner display should briefly show the software version, then the ambient temperature.
4. Enter the Air Conditioner access code (factory default is **2223**).
5. If successful, the display should show three moving small zeros.
6. Press Select. The Set Temp Hi Setpoint light should be on.
7. Press the Up/Down arrow to set the A/C Hi Setpoint to 77°F.
8. Press Select. The Set Temp Lo Setpoint light should be on (ignore this setting).
9. Press Select. The Set Alarm Hi Setpoint light should be on.
10. Press the Up/Down arrow to set the A/C Hi Alarm to 135°F.
11. Press Select. The Set Alarm Lo Setpoint light should be on.
12. Press the Up/Down arrow to set the A/C Lo Alarm to 34°F.
13. Press Select. The display should read All.
14. Press Select. The display should read On. Change if necessary with Up/Down.
15. Press Select. The display should read Aud.
16. Press Select. The display should read Off. Change if necessary with Up/Down.
17. Press Select. The display should read -F-. Change if necessary with Up/Down.

18. Press Select. The display should read PIN.
19. Press 1. The display should read -4.
20. Press 2 three times; each time the display should increment the number shown from 1.
21. Press 3. The display should read -4-.
22. Press Select. The display should read FIL.
23. Press Select. The display should read 0.0. Change if necessary with Up/Down.
24. Press Select. The display should read Add.
25. Press Select. The display should read 0.0. Change if necessary with Up/Down.
26. Press Select. The display should return to three moving small zeros.
27. Step though all settings with Select to verify the accuracy of your settings.
28. When finished, press Exit. The display should return to the ambient temperature.
29. The air conditioner may be turned off by pushing the door switch in to its normal position.

4.7.3 Test Air Conditioner Temperature Alarm

Power up the Air Conditioner unit by pulling out the Air Conditioner door switch. Using a heat gun or hairdryer, heat the Air Conditioner unit temperature sensor somewhat above 135°F. The Air Conditioner temperature sensor is located in the center of the return air duct on the door, and may be identified as a small black epoxy coated bead on a two-conductor cable. Verify that this bead is not in physical contact with any part of the enclosure.

Heating the sensor above 135°F should cause the TGB Transceiver Alarm light #8 to illuminate. Do not overheat the sensor. Recheck the ambient temperature display for accuracy after running this test.

4.8 Air Conditioner Routine Maintenance

4.8.1 Air Conditioner Checklist

- Ensure that the sensor bead is in the return airstream and not touching anything.
- Ensure that the external air filter is properly in place.
- Ensure that when the compressor starts, there are no unusual vibrations, rattles, or noises.
- Ensure that the Air Conditioner starts/stops when front door is closed/opened.

4.8.2 Emergency Fan Testing and Checklist

1. Activate the Emergency Fans with the Aux. Control Thermostat: verify that both fans are spinning and the louvers are free and opening (top and bottom set).
2. Check for proper airflow.
3. Check that the filter(s) are properly in place and assembled correctly.
4. Check that the insect screens are installed at the outside air openings.
5. Check for any unusual noises from the fan bearings.
6. Recheck the thermostat setting if disturbed.
7. Check to be absolutely certain that the Emergency Fans are connected before shipping.

5 Power-Up, Configuration, and Power-Down

5.1 Powering Up the Indoor TGB and Transceiver

1. Locate the power supply/battery charger (top shelf, blue unit, left side), and place the Standby/ Charge switch in the "Charge" position. The shelf pulls out for easy access.
2. Close the battery breaker, located on the front of the top shelf, right side, behind safety guard.
3. Turn on the AC power switch on the power strip.
4. Observe the power supply indicator lights, either the "Bulk" or "Absorption" lights should be on at this time, depending on state of battery charge.
5. Turn on the TGB transceiver by closing the white power switch on the front of the unit.
6. The TGB transceiver should execute the boot sequence:
    - All LEDs on the CPC cards will turn on.
    - The text "Bt" will appear in the alpha displays on the CPC cards.
    - The boot sequence will continue until all CPC card lights extinguish except the green OK LEDs and the alpha numeric displays will read their current CPC card channel assignments. The RF card will also show green LEDs for the OK and RX LOCK indicators.
    - If the above indications do not happen (i.e. Steady Red or Yellow LEDs are noted at the end of the boot up sequence or the TGB "hangs up" for some reason, contact Operations or Engineering for assistance.
    - If Red "Trip" LEDs on the CPC cards flash intermittently, this is OK. The TGB is receiving messages.
    - If the alpha displays blink on the CPC cards (2 minute rate), this is OK; it is showing that the CPC channel processors have not received a message in the last two minutes.
    - The TX and TX LOCK indicators on the front panel may blink if the TGB transmits.

5.2 Powering Up the Outdoor TGB and Transceiver

1. Verify that all breakers in the breaker panel (left side, interior) are on. These include:
    - 2 Rectfier breakers
    - Air conditioner
    - Heat
    - Convenience outlets (AC outlets)
    - Inverter
    - DC controller
    - TGB transceiver
    - 2 DC battery string breakers
2. Verify that the disconnects at each battery string are connected
3. Verify that the TGB transceiver switch is on.
4. In the exterior generator transfer switch panel, close the Main AC breaker.

5. The TGB transceiver should execute the boot sequence:
    - All LEDs on the CPC cards will turn on.
    - The text "Bt" will appear in the alpha displays on the CPC cards.
    - The boot sequence will continue until all CPC card lights extinguish except the green OK LEDs and the alpha numeric displays will read their current CPC card channel assignments. The RF card will also show green LEDs for the OK and RX LOCK indicators.
    - If the above indications do not happen (i.e. Steady Red or Yellow LEDs are noted at the end of the boot up sequence or the TGB "hangs up" for some reason, contact Operations or Engineering for assistance.
    - If Red "Trip" LEDs on the CPC cards flash intermittently, this is OK. The TGB is receiving messages.
    - If the alpha displays blink on the CPC cards (2 minute rate), this is OK; it is showing that the CPC channel processors have not received a message in the last two minutes.
    - The TX and TX LOCK indicators on the front panel may blink if the TGB transmits.

5.3 Setting the Outdoor Power System IP Address

If the power system remote IP address has not been set, you must set it now.

The power controller is equipped with an LCD touch screen. Using the black rubber end of the pen/stylus provided with the enclosure, set the IP address of the power system using the following procedure:

1. Touch the arrow at the lower left of the screen.
2. Select Login.
3. Tap the initial default password, tap Accept.
4. Close the box that appears confirming access (tap X).
5. Scroll down in the list until **Communications** is visible.
6. Tap Communications to open it.
7. Tap IP Address to open it.
8. Uncheck Obtain IP Address Automatically.
9. Tap the first Octet in the IP address to change it.
10. Tap in the number for the first Octet in the IP address, tap the Checkmark to enter.
11. Continue with the next 3 Octets in the IP address.
12. Scroll down to **Subnet Mask**.
13. Use the same procedure to enter the 4 Octets of the Subnet Mask (if required).
14. Scroll down to **Gateway**.
15. Use the same procedure to enter the 4 Octets of the Gateway (if required).
16. Tap the Checkmark to close the IP address entry screen.
17. Tap Option.
18. Select Save.
19. Close any resulting dialog box (tap X).
20. Tap Option.

21. Select Logout.
22. Touch the arrow at the lower left of the screen again.
23. Select Reset.
24. Confirm Accept.
25. When prompted, select Reset Controller.

After the controller reboots, the new IP address should be available for use on the network.

You may now login with the PC using Internet Explorer pointed to the correct IP address just now set in the controller. Use your first name as the User, and the default password.

NOTE	On ad-hoc networks not connected to the Internet, it is usually not necessary to set a Subnet Mask (so long as all are configured the same) or Gateway. The first 2 octets must be the same for all computers on ad-hoc networks. Suggested: 10.10.X.X or 192.168.X.X

NOTE	Only one operator may be logged in at a time, including the LCD screen. Logout before attempting to log in using a different method or location.

5.4 Running TGBSETUP

1. Log on to the TGB as described in Appendix B.
2. Type tgbsetup at the # prompt and hit Enter.
   The TGB Setup menu should appear as shown below:

```
    Sensus Metering Systems  -  TGB Setup

 1. Set Site Name.
 2. Set Connection Type.
 3. Set TGB Type.
 4. Set IP address information.
 5. Set dialup phone numbers.
 6. Set login name, remotehost name, and password.
 7. Set Receive channels.
 8. Set NC IP address. (outgoing messages and reports)
 9. Set NC TX IP address. (incoming commands)
 10. Set the RF time ping expiration.
 11. Set receiver site ID number.
 12. Set the local time zone.
 13. Configure GPS synchronized transmitter options.
 14. Configure dithered transmitter options.
 15. Set/Review everything.
 16. Quit.

Enter your selection:
```

   - To select menu items, type the number of the item you wish to set and hit Enter.
   - You may set and review all configuration information by selecting item 15 Set/Review everything on the menu. This procedure will utilize this option.
   - If you only wish to change one item, select the number of that item on the menu and hit Enter.

3. Enter 15.
   The utility will display the current site name, then will prompt you to enter the TGB site name, as shown below:

```
The site name is a pronouncable name that the site will be identified by.
It is usually the street name that the TGB is on or near, or a nearby
landmark.  In a small town that is never likely to have more than one
TGB, it may be the name of the town.


Do not confuse the site name with the login name, which you can set
elsewhere in this program.  They may or may not be the same.

The site name is currently set to: TestRack29


Enter the site name:


To keep the current site name, you can simply hit 'enter'.
```

4. Enter the site name listed on the Sensus Tower Gateway Base Station Site Configuration Sheet.
   In all option screens, you can hit the Enter key to keep the option as is and move to the next option.

The next screen allows you to enter the type of wired link over which the TGB connects to the Network Controller (NC).

```
Here we set the type of wired link the TGB has back to the NC.

It is currently set to: ethernet

Simply hit <enter> to leave it unchanged.

   1 - Single POTS - I specify my IP.

   2 - Single POTS - Host assigns IP and requires chat script (Southern Star).

   3 - Dual POTS.

   4 - Ethernet.


   Enter your selection:
```

5. Type in the number corresponding to the type of wired link listed on the Site Configuration Sheet. The TGB type screen is displayed, as shown below:

```
The TGB type changes the behavior of the alarm monitor, as
well as localizing various other labels in the user
interfaces related to the local TGB hardware.
Currently, this TGB is configured as: INDOOR.

The options are INDOOR = 0, and OUTDOOR = 1.

To keep the current type, you can simply hit 'enter'.

Enter the tgb type as an integer:
```

6. Enter 0 for Indoor or 1 for Outdoor.
   The IP address information screen is displayed:

```
Now, set the IP address of this TGB.
Obtain the correct IP address from the administrator of the TAN
Where this particular TGB is destined to go.


The IP address is currently set to: 172.17.115.161

Enter the IP address:

Simply hit <enter> to leave it unchanged.
```

7. Enter the IP address for this TGB as shown on the Site Configuration Sheet.
8. Similarly, in the next several screens, enter the gateway address, the broadcast address, the network address, and the netmask. Except in unusual cases, the network address should be **172.0.0.0**.

9. The dialup phone numbers screen is displayed next.

```
Now we set the phone numbers.  We will set two of them for dual POTS
operation.  If this is to be a single POTS installation, please set both
numbers anyway and simply make them the same.
Enter the phone number exactly as it must be dialed, with any necessary
area codes, prefixes, etc.  There may NOT be any SPACES in the number
but most typical phone number punctuation is permissible.
For example, this is valid: 1(800)5551212, as is 1-800-555-1212,
as is 18005551212, as is 5551212 (if no area code is required, for example).
A comma will cause a pause in dialing, usefull when a '9' must be dialed
fot an outside line.  (e.g. 9,1-800-555-1212)
Note that in dual POTS configs, both phone numbers are often the same.

Phone number 1 is set to: 8980815
Phone number 2 is set to: 8980815

Enter phone number 1:

Simply hit <enter> to leave the number the same.
```

10. Enter the phone numbers as shown on the Site Configuration Sheet for this installation. If this is a single POTS installation, make the second phone number the same as the first.
    - Enter the first phone number.
    - Enter the second phone number.

The next screens set the remote host name, the login name, and the password.

```
Here we will set three things, the name of the 'remote host' that this TGB
dials into, the 'login name' that this TGB uses as it's userid on the
remote host, and the password that this TGB gives to login to the remote
host.  This part is irrelivent to co-located TGB's and may be skipped if
this will be a co-located (with an NC) TGB.
NOTE: If you change the login name, you MUST reset the password.
If you do not change the login name, you will not be prompted for a password.

The remote host name is currently: sstar

Enter the new remote host name:

Simply hit <enter> to leave it the same.
```

11. Enter the remote host name as provided on the Site Configuration Sheet for this installation.
12. Enter the new login name. If you enter a new login name, you must enter a new password. However, if you skip the login name by pressing Enter, you will not be prompted for a new password.
13. Enter the password.
    The Receiver Channels screen is displayed to set the ten channel numbers corresponding to the CPC slots.

```
Each frequency that the TGB can receive is assigned a channel number.
Ten channel numbers must be assigned, corrisponding to each CPC slot
Each channel number must fall within the range of 0 - 15, skipping
or duplicating numbers IS permitted, however.



Current channel assignments: 4 10 14 10 4 4 4 4 4 4

Enter the frequency for slot 0:


Simply hit <enter> to leave any channel number the same.
```

It is very important that these numbers match those on the Sensus Tower Gateway Base Station Site Configuration Sheet. If you enter these numbers incorrectly, the TGB will not receive correctly.

14. Enter the frequency for slot 0. The application will prompt for each frequency in order, after you hit **Enter**.
The NC server IP Address screen is displayed. This screen configures the IP address and port of the NC server to which the TGB will send its received messages and status reports.

```
Now, set the IP address of this TGB.
Obtain the correct IP address from the administrator of the TAN
Where this particular TGB is destined to go.


The IP address is currently set to: 172.17.115.161

Enter the IP address:

Simply hit <enter> to leave it unchanged.
```

15. Enter the IP address of the NC server as shown on the Site Configuration Sheet.
The application will prompt you for the NC server IP port.

16. Enter the IP port as shown on the Site Configuration Sheet.
The TX IP Address screen is displayed. This screen configures the IP address and port of the NC server from which the TGB will receive commands to be transmitted.

```
This configures the IP address and port of the NC server from which this
TGB will receive commands to be transmitted. This is the socket for all
data that is transmitted from the NC to the TGB.

The IP address is currently set to: 74.231.25.155

Enter the NC's IP address:

Simply hit <enter> to leave it unchanged.
```

17. Enter the TX IP address of the NC server as shown on the Site Configuration Sheet.
The application will prompt you for the TX IP port.

18. Enter the TX IP port of the NC server as shown on the Site Configuration Sheet.
The Ping Expiration screen is displayed. This screen sets the interval of time, in seconds, between RF ping broadcast messages. The default value is 900 seconds. Acceptable values are from 30 to 2000000000.

```
The time ping expiration defines the interval of time in seconds
between RF time ping broadcast messages. The default value is
900 seconds. Accepted values are between 30 to 2000000000.

The time ping expiration is currently set to 900 seconds.

To keep the expiration time, you can simply hit 'enter'.

Enter the time ping expiration:
```

19. Enter the time ping expiration as shown on the Site Configuration Sheet.
The Receiver Site ID Number screen is displayed.

```
The Receiver Number is an integer number that is totally unique for
every TGB on the planet.

The Receiver Number is currently set to: 29

Enter the Receiver Number:

Simply hit <enter> to leave it unchanged.
```

20. Enter the Receiver Number for the TGB you are installing, as shown on the Station Site Configuration Sheet.
The Local Time Zone screen is displayed.

21. Enter the number corresponding to the local time zone in which the installed TGB resides.
    The system requests the signed GMT offset for your location. This offset is only used as part of the on-air timesync message. Do not consider DST considerations; DST is handled by the endpoints.
22. Enter the GMT offset.
    The GPS synchronized transmitter options screen is displayed. This setting defines whether the TGB will operate in dithered (0) or synchronized (1) mode. A GPS device must be present to support synchronized transmissions.

```
This option defines whether this TGB will operate in dithered
or synchronized mode. A GPS device must be present to support
synchronized transmissions.
This TGB is currently in DITHERED mode.
To keep the current mode, you can simply hit 'enter'.

Enter 1 to enable synchronized mode, or 0 otherwise:
```

23. Enter 1 to enable synchronized mode, or 0 for dithered mode.
    If you enter 1, the system requests you to specify the time slot the TGB will occupy when it is transmitting in synchronized mode.

If your TGB operating system is **080222r1** or earlier, and you wish to use dithered mode, you must enter 1, even if the program already lists dithered mode as the selection. If you do not enter 1 and just hit Enter, the TGB will default to Synchronized mode and the TGB may not transmit. This is the only selection where hitting Enter will not maintain the current selection.

```
This option specifies which time slot this tgb will occupy when
it is transmitting in synchronized mode. There are six slots
within each second. Please choose a value from 0 to 5.
This TGB is currently in slot 2.

To keep the current slot, you can simply hit 'enter'.
Enter the time slot:
```

24. Enter a value from 0 to 5.
25. If you enter 0 in Step 22, the system requests the TGBs dithered transmitter options. These options define the transmit behavior when the TGB is in dithered mode. There are separate timers for ack (acknowledge) and command transmissions, each defined by an upper and lower value from which a timer value is randomly selected. When the timer expires, a quantum of messages is transmitted together.
26. Enter, in order:
    - Ack Quantum
    - Command Quantum
    - Ack Timer Lower
    - Ack Timer Upper
    - Command Timer Lower
    - Command Timer Upper

27. The screen returns to the TGB Setup menu. You can run through the setup to review your settings by typing 15 at the prompt and hitting Enter. Hitting Enter at each one of the prompts in the review screens, without inputting information, allows you to review the setting without changing the setting. When you have finished, you are returned to the Task Selection screen as shown above.
28. Type **16** and hit Enter to exit the setup program.
29. When the # prompt appears, reboot the TGB (so it accepts the information you have just entered) by typing reboot at the # prompt and hitting Enter.
    The TGB will now reboot; when it finishes, you may login for other tasks or remove the serial cable from the diagnostic port and exit PuTTY.

5.5 Power Off Procedure

5.5.1 Halting Transceiver Operations

This procedure must be followed any time you are powering down a TGB. Failure to follow the procedure may result in damage or data loss.

1. Connect a serial cable from the PC (with communications program *TeraTerm*, *PuTTY*, or *Hyperterminal*) COM port to the Diagnostic Port on the front of the transceiver.
   See Appendix B.
2. Run the communications program to establish communications with the transceiver and log on to the TGB as described in Appendix B.
3. Type halt and hit Enter to stop all TGB processes.
   Wait until the system notifies you that it is safe to proceed before going to the next step.

5.5.2 Indoor TGB Power Off Procedure

1. Follow the procedure in Section 5.5.1 to stop the transceiver operations.
2. Turn the TGB Chassis Power switch to the OFF position.
3. Open the Battery Breaker, then turn off the AC power switch on the TGB rack power strip.

5.5.3 Outdoor TGB Power Off Procedure

The controller should be shut down any time the power system is to be powered off completely. Not doing so can result in lost log entries or other problems. Halt the TGB transceiver, if running, before powering off the system.

5.5.3.1 Shutdown Sequence (From PC)

1. Follow the procedure in Section 5.5.1 to stop the transceiver operations.
2. Select Controller.
3. Select Reset.
4. When prompted by IE, click OK.
5. The controller will shutdown; power off **must** be performed while the dialog box is still displayed. Do not power off until this box appears as the controller is defragmenting its files and disk corruption could occur.
6. Do not select Reset, as the controller will reset instead of remaining shut down.

5.5.3.2 Shutdown Sequence (Front Panel)

1. Follow the procedure in Section 3. to stop the transceiver operations.
2. Tap Option.
3. Select Logout.
4. Touch the arrow at the lower left of the screen again.
5. Select Reset.
6. Confirm Accept.
7. Wait until the Reset Controller? dialog box appears, but do not select. Power off instead. Do not power off until this box appears as the controller is defragmenting its files and disk corruption could occur.

5.5.3.3 Power Off

1. Open breakers for Battery String 1 (CB3) and Battery String 2 (CB4).
2. Open breakers 1 & 2 (Rectifier Line Power) on the Internal AC Breaker Panel.
3. Verify that the entire enclosure powers down, including the controller.

Appendix A Grounding Specifications

A.1 Minimum Requirements

The purpose of this specification is to establish minimum requirements for grounding which will provide a measure of personnel and equipment protection. Protective measures to prevent equipment damage and personnel hazards against lightning will incorporate system grounding and bonding using good RF practices.

A.2 Coax and Transmission Line Grounding

At antenna tower locations, installers must attach a minimum of three lightning protection grounding kits to each coaxial line used at the site. Where vertical cable runs on towers exceed 200 feet, a grounding kit should be installed at 100 foot intervals. These grounding kits will be terminated onto the master ground bar when available. All connections to the master ground bar or the tower structure will be clean and free of any oxidation to insure a low resistance connection. Each coax run will have a PolyPhaser (gas tube type), or equivalent, lightning arrestor installed onto the coax near the cable entrance to the communications shelter or room. These are the preferred types and are believed to be the best lightning arrestors presently available. Each of these arrestors are effective in limiting the amount of lightning energy that can be transferred to the equipment via the inner conductor of the coax or transmission line.

A.3 Equipment Grounding

Each equipment rack or equipment cabinet will be grounded to a site ground via the inner building halo ground. In the case of communications shelters, the equipment enclosures will be attached in the same manner to this system "Halo" ground. Attachments from the equipment cabinets and racks to the internal ground halo are made using number 6 (or larger) stranded copper wire. Connections from these enclosures to the halo ground will be made using the shortest path length to diminish inductance.

A.4 Summary

The standards set forth in this specification are the minimum requirements to ensure equipment and personnel safety in the case of lightning strikes. Good grounding practices will also provide some measure of RF shielding from outside interference which could hamper the proper operation of the TGB system.

Appendix B Logging on to the TGB

Sensus suggests logging in with either Tera Term Pro or PuTTY.

B.1 Tera Term

1. Download the *Tera Term Pro* program to your PC, if it is not already installed on your machine. The program is available free from a number of internet sites.
2. Connect a straight-through DB9 (Male) to DB9 (female) cable to the **Diagnostic Port** on the front of the transceiver. See Figure B-1 for the Diagnostic Port location.

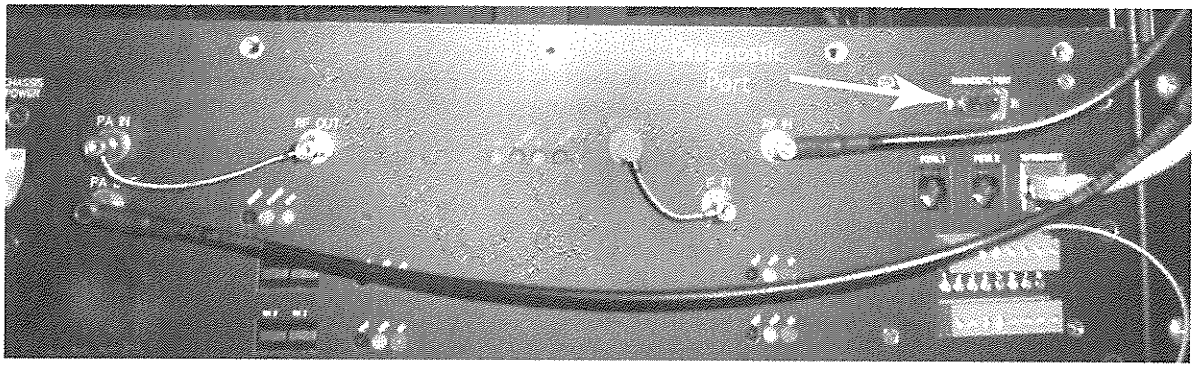
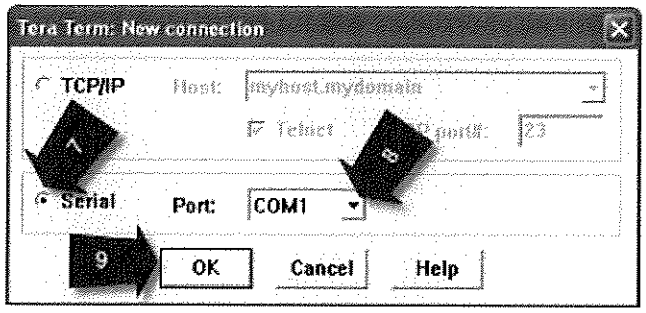


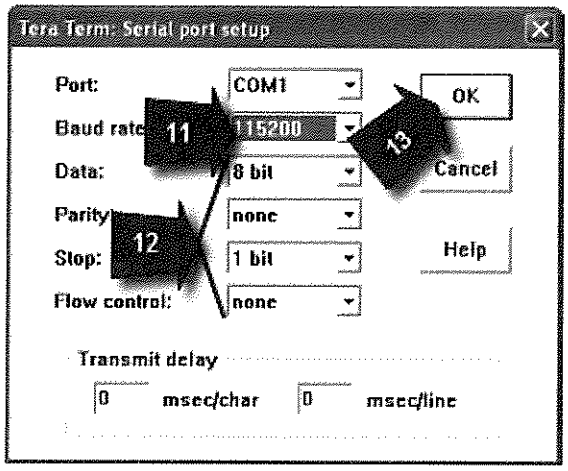
Figure B-1: Location of Diagnostic Port on TGB

3. Connect the other end of the cable to your PC.
4. Turn on the TGB.
5. Double-click the *Tera Term Pro* icon in the directory you installed it in (you may want to make a desktop shortcut to the program at this time).
6. The is notTTsohetScreen is displayed.

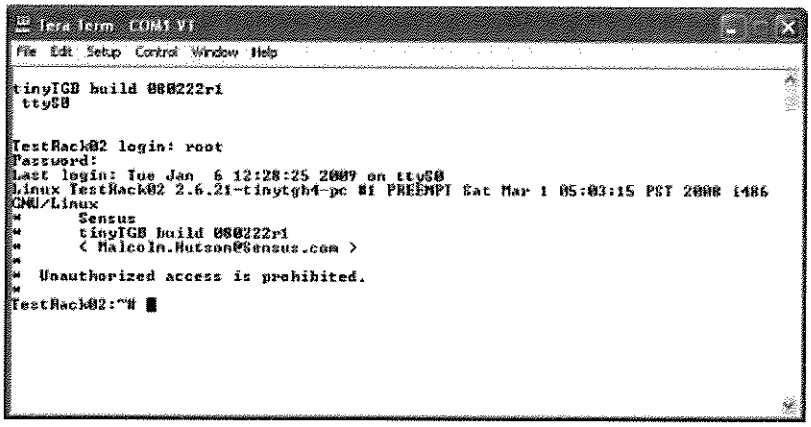


7. Select the Serial radio button as the Connection Type.
8. In the Serial Line field, select the COM port you are using.
9. Click the OK button.
   The VT screen is displayed.

10. From the Setup menu, select the Serial Port command.
    The Serial port setup window is displayed.

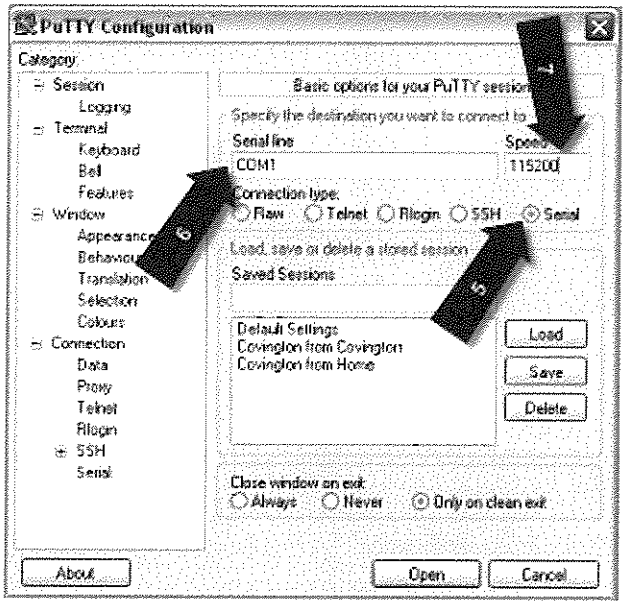


11. In the Baud rate field, select 115200.
12. Verify the following settings and change if necessary:
    - Data: 8 bit
    - Parity: none
    - Stop: 1 bit
    - Flow control: none
13. Click the OK button.
14. At the TGB login prompt, type root. The name of your Rack may vary.
    - The name in front of the login prompt will vary depending on how your particular TGB has been set up.
    - If you have not just turned on the TGB, hitting the enter key on the PC keyboard will just return the login prompt as shown above.
15. Type the system password when the TGB returns the password prompt, then hit the Enter key
    The password does not echo on the screen.
    The screen should look as below showing successful TGB login.



B.2 PuTTY

1. Using the PC, download the *PuTTY* program via the following internet link, if not already installed on your machine: http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
2. Download the latest version exe file for your Windows operating system to a convenient directory on the PC.
3. Double-click the *putty*.exe icon in the directory you installed it in (you may want to make a desktop shortcut to the program at this time). *Tera Term* could also be used.
4. The PuTTY Configuration screen is displayed.



5. Select the Serial radio button as the Connection Type.
6. In the Serial Line field, enter the COM port you are using
7. In the Speed field, type 115200.

8. Connect a straight through DB9 (Male) to DB9 (female) cable to the **Diagnostic Port** on the front of the transceiver. See Figure B-1 for the Diagnostic Port location.

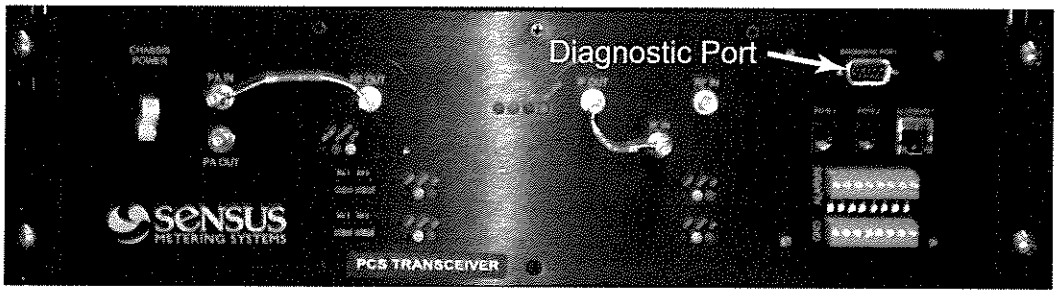
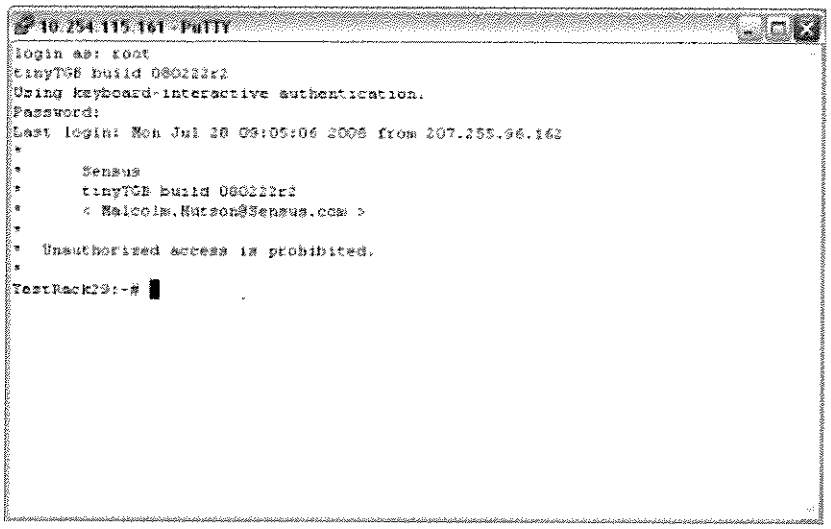


Figure B-2: Location of Diagnostic Port on TGB

9. Connect the other end of the cable to your PC or Laptop computer.
10. Turn on the TGB (If off).
11. Click the OK button in the *Putty* window.
12. At the TGB login prompt, type root.
    - The name in front of the login prompt will vary depending on how your particular TGB has been set up.
    - If you have not just turned on the TGB, hitting the enter key on the PC keyboard will just return the login prompt as shown above.
13. Type the password when the TGB returns the password prompt, then hit the Enter key
    The password does not echo on the screen.
    The screen should look as below showing successful TGB login.



You are now at the TGB Linux command prompt and ready to perform TGB setup and programming tasks as described in the following section.

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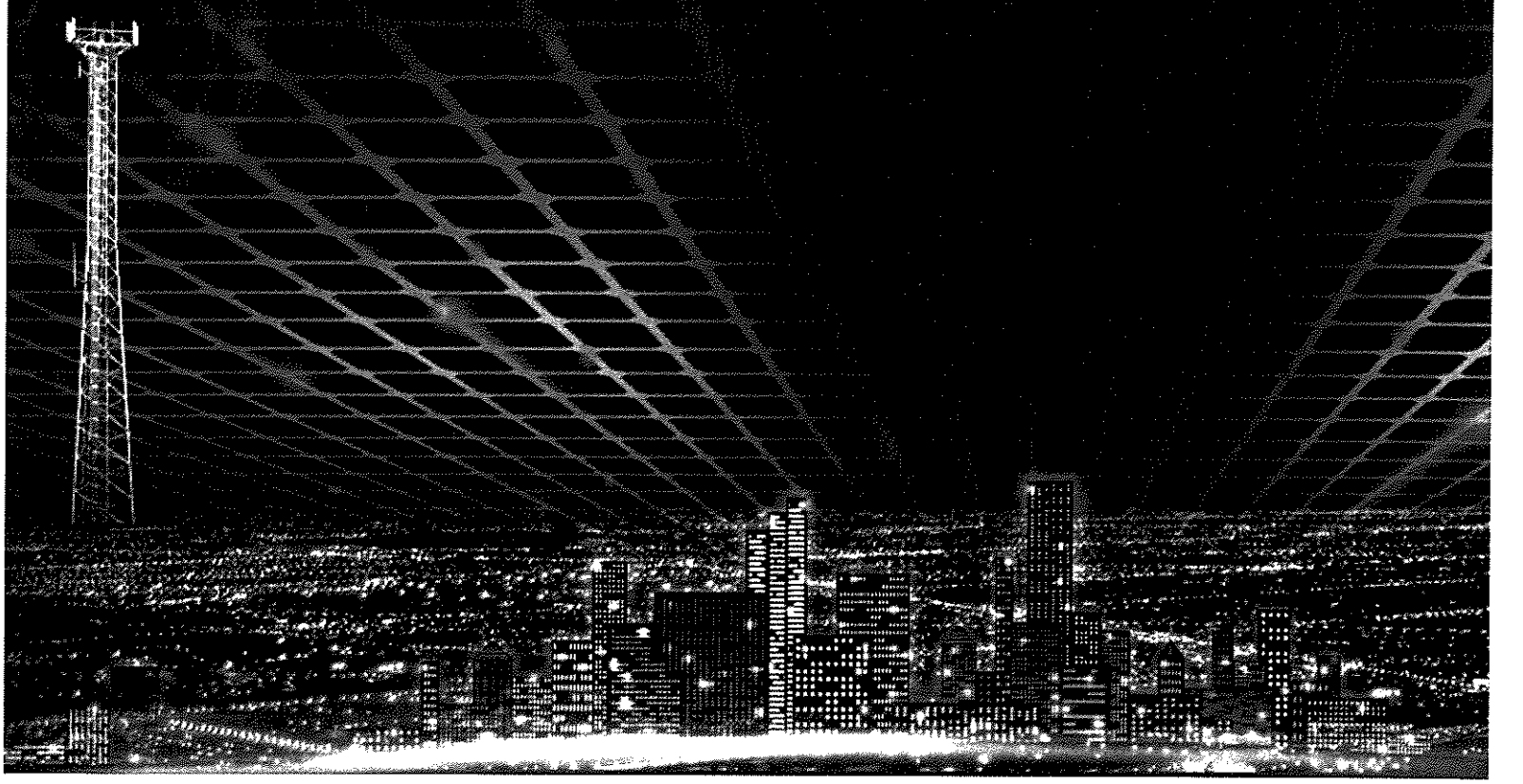
sensus

FlexNet

Tower Gateway Base Station Maintenance and Upgrade

Revision 2



Revisions

Rev No.	Date	Description
Rev 1	4/10/2009	Initial Release
Rev 2	4/13/2009	Revised Chapter 3 to include upgrades after 080222. Revised Section 3.2, transfer for connection direct to TGB with upgrade files residing on your PC. Must use Hyper Terminal instead of Terra Term due to a bug in Terra Term.

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1 Introduction

1.1 Scope

This manual describes the procedures for TGB maintenance and firmware upgrades.

1.2 Manual Conventions

File names are shown in italics, for example, *build080222-complete.tba*.

Commands you must type and responses from an application are shown in bold courier, for example: **`mount`**

Please note that all commands to be typed are shown with the Linux prompt, #, at the beginning of the line. Do not type the #.

Keys you press or screen command you click are shown in bold Arial Narrow; for example, press **Enter**.

1.3 Required Equipment and Software

You must have a window-based PC with a connection to the TGB. For a direct connection, your PC must be equipped with an RS-232 serial port (COM port) capable of 115,200 bps, a serial cable, and a terminal program capable of emulating a VT100 terminal. The preferred emulation program is *PuTTy*.

If you are connected directly to the TGB and the upgrade files reside on your PC, you will need *TerraTerm* to transfer the files.

You may also connect to the TGB remotely through its internet connection. You must know the specific address of the TGB.

1.4 Build File Structure

The build name is structured as ***Build#r#***, where ***Build#*** is the release date of the build (***yymmdd***), and ***r#*** is the revision number of the build.

1.5 Required Files

If you are upgrading from build061015 to build080222, the files required for this update are *tgbupdate* and *build080222-complete.tba*.

Build080222 contains a new application, *tgbupdate*, which will automate subsequent upgrade processes.

If you are upgrading to a build higher than 080222, the only file required is *buildxxxxxx-complete.tba*.

2 TGB Maintenance

Tower Gateway Base stations (TGBs) are low maintenance and occasional checkups will ensure optimal performance.

2.1 Initial Checkup

Sensus recommends scheduling an initial checkup six months after installation and thereafter at six month intervals. TGBs located in harsh, dusty environments should have initial service scheduled three months after installation and at three month intervals thereafter.

2.2 Scheduled Maintenance

Following the initial visit, the TGB should be checked, at minimum, as outlined above. However the following factors may shorten the length of time between service visits:

1. The maintenance required on the initial visit;
2. The TGB's environmental conditions; and
3. Existing utility policies for equipment maintenance.

Utilities should develop their own TGB scheduled maintenance policy based on their assessment of these conditions.

2.3 Indoor TGBs

1. To ensure compliance with FCC requirements, verify that copies of the FCC License and TGB Commissioning Document are located at the TGB site. See the *TGB Verification and Certification Manual* for a copy of the Commissioning Document. Printed copies should be stored in a water-tight bag; electronic copies may be stored at the site on a USB-style "thumb" drive.
2. Check transceiver fan filters and clean, if necessary, with a high-power vacuum cleaner. Do not disassemble the fan assemblies. For stubborn cases, take off the transceiver's top cover and use compressed air to blow dirt back through the filter, and then vacuum. Be sure to remove any dirt or debris that may have been forced into the transceiver component areas with compressed air before reinstalling the top cover.
3. Check fans for smooth operation. There are three fans: two in the transceiver and one in the battery charger. Fans exhibiting bearing noise should be checked on a more frequent basis thereafter to ensure trouble-free operation. Fans with excessive bearing noise should be scheduled for replacement. Note: dependable operation of the battery charger fan is most critical. Fan failure will result in the charger overheating and shutting down; the "Failure" light will illuminate if the charger overheats.
4. Check batteries for corrosion on the terminals or other anomalous conditions including leaking acid or loose battery bolts. Gel batteries cannot tolerate acid leakage and will result in a loss of recombination pressure. Schedule replacement of any battery exhibiting signs of acid leakage. Batteries have an anticipated minimum life of five years.
5. Ensure the latest firmware is installed on the transceiver and that warning lights are not illuminated. Information on the latest firmware is available at www.sensus.com

6. Miscellaneous checks:
   - Tighten loose bolts/screws.
   - Confirm that RF cabling is securely attached.
   - Verify wiring integrity especially any damage to wire coatings caused by rodents.
   - Look for signs of water intrusion, etc.
   - Visually inspect the antenna with binoculars to ensure secure mounting and/or the presence of other antennas added since installation.
7. Schedule the next service visit based on the observations and anticipated conditions.

2.4 Outdoor TGBs

1. To ensure compliance with FCC requirements, verify that copies of the FCC License and TGB Commissioning Document are located at the TGB site. Printed copies should be stored in a water-tight bag; electronic copies may be stored at the site on a USB-style "thumb" drive.
2. Check transceiver fan filters and clean if necessary with a high-power vacuum cleaner. Do not disassemble the fan assemblies. For stubborn cases, take off the transceiver's top cover and use compressed air to blow dirt back through the filter, and then vacuum. Be sure to remove any dirt or debris that may have been forced into the transceiver component areas with compressed air before reinstalling the top cover.
3. Check the Emergency Intake and Exhaust Fan Filters located on the rear door. These filters are only used if the emergency fan system runs. Replace excessively dirty intake filters with a standard commercial coated polyester type filter; clean the exhaust filter if necessary. Determine the appropriate schedule to clean or replace these filters based on the site's environment as well as any use of the emergency backup power system since the last checkup.
4. Check and clean the Air Conditioner Condenser Intake filter (located outside of unit); the TGB will issue an alarm if this filter becomes clogged and condenser temperatures rise above 170°F. The condenser fan should run any time the A/C compressor is running.
5. Check all fans for smooth operation. There are five fans: two in the transceiver, one air conditioner evaporator blower fan, and two emergency fans. Fans demonstrating bearing noise should be checked on a more frequent basis thereafter to ensure trouble-free operation. Fans with excessive bearing noise should be scheduled for replacement.
6. To activate the emergency fans, adjust the thermostat, located at the upper portion of the cabinet left side wall, until the fans begin to operate. NOTE: Reset the thermostat to 40°C (104°F) after checking for proper operation. Verify operation of the air conditioner blower fan by pulling out the A/C door switch located at the lower right side of the front door area.
7. Check batteries for corrosion on the terminals or other anomalous conditions, including leaking acid or loose battery bolts. Gel (black) or AGM (red) Batteries cannot tolerate acid leakage, which will result in a loss of recombination pressure. Schedule replacement of any battery exhibiting signs of acid leakage.

Note: Some systems are fitted with an acid collection system; any acid in this system is normal.

Note: outdoor units automatically test (run down to 10%) and recompute their own battery capacity. (Black [Alpha] batteries are tested every six (6) months; red [Enersys] batteries, every four (4) months) Log into the power controller remotely (not the transceiver) every 6 months to 1 year to ensure the computed capacity is at least 80%. Sensus guarantees an eight hour minimum run time for batteries with a computed capacity of 80% or greater. Batteries falling below 80% capacity are warranted; contact Sensus support for more information and assistance.

8. Check for any alarms on the outdoor power system display and resolve if necessary. Contact Sensus to help with alarm explanation/resolution if needed.
9. Miscellaneous checks:
    - Tighten loose bolts/screws.
    - Confirm that RF and electrical ground cables are securely attached.
    - Reconnect the Emergency Fan system, if the rear door was removed.
    - Verify wiring integrity especially any damage to wire coatings by rodents or insects.
    - Look for signs of water intrusion.
    - Check the integrity of the GPS antenna seal (if equipped), etc.
10. Schedule the next service visit based on the observations and anticipated conditions.

2.5 Warehoused TGBs

Maintaining adequate battery charge is very important. Failure to do so can result in permanent loss of battery capacity.

- Temperature-controlled environment:
    - Indoor units: recharge batteries every six months.
    - Outdoor units: recharge batteries every twelve months.
- Non temperature-controlled environments will require charging more often.
- TGBs should not be stored in outside supply yards with direct sunlight as internal case temperatures can reach 180°F or more and discharge the batteries quickly.

2.6 Maintenance Record

Refer to document **AMI-453**, Tower Gateway Base Station Maintenance Sheet. It shows the maintenance requirements and contains a TGB Maintenance Record for your use.

3 Upgrading and Verifying

3.1 Pre-Upgrade Notes

1. The upgrade will abort if the TGB does not have Build 061015 (any revision) currently installed.
2. The upgrade script will stop the TGB daemons automatically during the upgrade process.
3. You must have approximately 75 Mb of free space to perform the upgrade. However, the final disk space required may only be 30 Mb or less, depending no how much deprecated data is deleted.

   To check free space use the command:
   # df --si
   The screen should look similar to the following:

```
ut_software_tgb:~# df --si
Filesystem             Size   Used  Avail Use% Mounted on
rootfs                 497M   337M   135M  72% /
/dev/root              497M   337M   135M  72% /
tmpfs                   32M      0    32M   0% /dev/shm
ut_software_tgb:~#
```

   The Avail (Available) column on the /dev/root row shows the available free space.

4. If you are adding a new Compact Flash (CF) card as part of this upgrade, the physical hardware CF card must be installed onto the motherboad prior to running the upgrade. You must power down the TGB to insert the card.
   The CF card is **not** required for this upgrade.
5. Build 080222 includes a dithered transmitter daemon and the new synchronized transmitter daemon. By default, the dithered transmitter daemon is used. The synchronized transmitter requires a GPS device.
   A GPS device is **not** required for this upgrade.
6. Build 080222 upgrade will install ntpd to manage the system time from NTP and the GPS, if present. **Do not use *ntpdate* or *ctstimesync* to update the system clock. Remove any calls to *ntpdate* or *ctstimesync* from all of your crontabs.**
7. Review the Release Notes before performing the upgrade procedure. Build 080222 release notes are presented in Appendix A. Build 090204 release notes are in .

3.2 Upgrade Procedure

In the upgrade procedures, the following terms must be replaced:

`TGBIP`—replace with the IP address of your TGB

`NCIP`—replace with the IP address of your NC/RNI

`buildxxxxxx.tba`—replace with the name of your TBA update archive, such as `build080222r2.tba`.

`NCPATH`—replace with the file path to your TBA on the NC
If the TBA is in your home directory, replace NOPATH with a tilde (~).

`USER`—replace with your username on the NC.

1. Transfer *tgbupdate* and *tgbupdatefile.tba* to `/root` on the target TGB.
   There are five possible ways to transfer the update files to the TGB, depending on how you are connected and where the files reside:

   a. Connected directly to the TGB with a serial cable and the files reside on the NC:

      1. Use *PuTTY* or *Tera Term* to connect to the TGB.
         Connect with the following configuration:
         - 115200 baud
         - 8 bit data
         - no parity
         - 1 stop bit
         - no flow control
      2. When you are connected, hit `Enter` a few times until the login appears.
      3. Enter the user name and password for the TGB.
      4. Use the built-in utility scp (secure copy) to copy the file from the NC to the TGB over the internet. At the system prompt, type (hitting `Enter` after each command):
         ```
         cd /root
         scp USER@NCIP:NCPATH/buildxxxxxx.tba
         ```

   b. Connected directly to the TGB with a serial cable and the files reside on your PC (this is the least preferred method due to the extended file download time, which could be as much as one hour):

      1. You must use *Hyper Terminal* to connect to the TGB. You do not need a null modem adaptor.
      2. Start *Hyper Terminal.*
      3. In the **Connection Description** dialog box, assign a name to your configuration, then click the **OK** button.
      4. In the **Connect To** dialog box, select the **Com** port you are using, and click the **OK** box.
      5. In the **COM Properties** box, select the following:
         - Bits per second: 115200
         - Data bits: 8
         - Parity: None
         - Stop bits: 1
         - Flow control: None

6. Click the **OK** box to establish the connection to the TGB.
7. When you are connected, hit **Enter** a few times until the login appears.
8. Enter the user name and password for the TGB.
9. You will be using the program **rz**, which listens for encoded files via the serial connection, to transfer files from your PC to the TGB. At the system prompt, type:
   `cd /root`
   `rz`
10. On *Hyper Terminal*, select the **Transfer** menu and select **Send File**.
11. In the **Send File** dialog box, browse for the *buldxxxxxx.tb*a file on your PC, select **Zmodem**in the protocol window, then click the **Send** button.
    The *rz* program should automatically close when the transfer is complete.

c. Connected to the TGB remotely and the files reside on the NC:

1. Use *PuTTY* to connect to the TGB.
   Connect with the following configuration:
   - 115200 baud
   - 8 bit data, no parity
   - 1 stop bit
   - no flow control.
2. When you are connected, hit **Enter** a few times until the login appears.
3. Enter the user name and password for the TGB.
4. Use the built-in utility scp (secure copy) to copy the file from the NC to the TGB over the internet. At the system prompt, type (hitting **Enter** after each command):
   `cd /root`
   `scp USER@NCIP:NCPATH/buildxxxxxx.tba`

d. Connected to the TGB remotely and the files reside on your PC:
You must run *pcps* to transfer the files.

1. Open a command prompt on your PC by clicking **Start>Run**.
2. Type `cmd` and click **OK**.
3. To run pcps, it must be on your path or in your current working directory.
   Add the path to PuTTY by typing (note the colon, semi-colon, and percent signs):
   `cd c:\path\to\puTTY\;%PATH%`.
4. Change the directory to where the TBA file is located on your PC:
   `cd c:\path\to\TBA\file`.
5. Transfer the file by typing (note the colon and tilde):
   `pscp buildxxxxxx.tba root@TGBIP:~`
6. Use *PuTTY* to connect to the TGB.
   Connect with the following configuration:
   - 115200 baud
   - 8 bit data
   - no parity
   - 1 stop bit
   - no flow control.

e. Connected to the NC remotely and the files reside on the NC:

1. Use *PuTTY* to connect to the TGB.
   Connect with the following configuration:
   - 115200 baud
   - 8 bit data
   - no parity
   - 1 stop bit
   - no flow control.
2. When you are connected, hit **Enter** a few times until the login appears.
3. Enter the user name and password for the TGB.
4. Change to the directory where the TBA is stored by typing `cd`.
5. Use *scp* to transfer the files by typing (note the colon and tilde):
   ```
   scp buildxxxxxx.tba root@TGBIP:~
   ssh root@TGBIP
   cd /root
   ```

2. If you were logged into the TGB with an application other, than *PuTTy*, log in with *PuTTy* now.
3. If you are upgrading from Build 061015 to 080222, execute the following commands to launch the upgrade:

   ```
   cd /root
   chmod +x tgbupdate
   ./buildxxxxxx.tba
   ```

4. For all subsequent upgrades, such as 080222 to 090331, execute the following commands to launch the upgrade:

   ```
   cd /root
   tgbupdate buildxxxxxx.tba
   ```

5. The *tgbupdate* utility will begin extracting the archived files to a temporary location. This may take a few minutes.
6. The upgrade will confirm that certain dependencies of the new build have been met. If there is an error regarding prior dependencies for this upgrade, you will be notified at this point. If the upgrade exits here, no changes have been made, and you may safely start the TGB daemons.
7. Review the upgrade warnings. Answer **yes** to continue.
8. Follow the on-screen instructions. There will be several prompts during the upgrade process:

   a. At the beginning, you will be asked whether to incorporate a Compact Flash external drive. Answer **Y** only if a new CF card has already been installed.
   ```
   Do you want to install a Compact Flash card as part of this update?
   [Y/N]: Y
   ```

   You will also be asked if you want to include the GPS receiver as part of the update. Answer **Y** only if you currently have a GPS board installed in the TGB.
   ```
   Do you want to install a GPS receiver as part of this update?
   [Y/N]: Y
   ```

   b. During the package upgrades, you will be asked several questions, depending on your ocnfiguration and selections. These may include:

- Do you wish to retain the old version?
- Does the TGB use PPP dialog to connect to the NC?
- Do you make custom changes to the syslog?

Answer these questions as your requirements dictate.

c. After upgrading glibc, the system will ask if you want to restart certain services. Even though it lists ssh, answer Y.
```
Do you wish to restart services? [Y?N]: Y
```

9. If the upgrade halts at any point during the install process, do not reboot the TGB or restart the daemons. A script file logging the installation can be found at /root/build080222-complete.tba.script. Please email this file to your Project Manager for support.

10. The install process is not completed until the TGB is rebooted. DO NOT try to restart the daemons before rebooting. Several key things related to the NTP and GPS setup occur during the next startup. It is important that during the next reboot, the TGB is connected to the internet to initialize the clock before starting NTP. If no internet access is available and the clock is significantly incorrect, NTP may not be able to slew the clock towards the correct time. **See the Section 3c** for manual NTP adjustments in the **Verification section of this document**.

11. Restart the TGB with the following command:
```
# shutdown -r now
```

12. After reboot, complete the verification steps outlined in Section 3.3.

3.3 Verification Procedure

This procedure is to be completed **in addition** to the standard verification techniques.

3.3.1 Settings

Review every entry in *tgbsetup*. If this is an upgrade, confirm that all settings were transferred correctly. There are some new options for configuring transmitter behavior. The TGB will operate in dithered mode by default. In previous builds, the local time zone of a TGB has only affected user interfaces and has not had any bearing on meter or timestamp data. In this new build, the SetTime broadcast has been appended to provide the current GMT offset to endpoint devices. This offset is gathered from the current time zone on the TGB. It is imperative that the time zone be properly configured with *tgbsetup*.

3.3.2 Kernal Version

After the TGB restart, verify that the kernal version has been successfully updated by issuing the following command:

```
# uname -r
```

The result should be as shown below:

```
2.6.21-tinytgb4-pc
```

The 4 will vary depending on the upgrade version.

3.3.3 GPS Tests

These tests apply only if the GPS hardware has been installed. If you do not have a GPS device, skip to the next section. These tests require that a GPS antenna is installed and is placed in a suitable position for satellite acquisition.

1. Test the serial connection to the GPS device by printing the raw GPS data:
   ```
   # cat /dev/gps0
   ```

   The result should appear similar to the screen shown below:

   ```
   $GPGGA,181453.0,3026.650,N,09005.358,W,1,08,1.15,-00008,M,-026,M,,*43
   $GPRMC,181453.0,A,3026.650,N,09005.358,W,000.00,000.0,130808,02.0,E*76
   $GPGGA,181454.0,3026.650,N,09005.358,W,1,08,1.15,-00008,M,-026,M,,*44
   $GPRMC,181454.0,A,3026.650,N,09005.358,W,000.00,000.0,130808,02.0,E*71
   $GPGGA,181455.0,3026.650,N,09005.358,W,1,08,1.15,-00008,M,-026,M,,*45
   $GPRMC,181455.0,A,3026.650,N,09005.358,W,000.00,000.0,130808,02.0,E*70
   ```

   To stop the output, type **Ctrl-C**. The lines should alternate between **GPGGA** and **GPRMC**, appearing in pairs once per second.

2. To test the 1PPS (1 Pulse Per Second) signal, use the *ppstest* utility. The TGB daemons should be stopped before this test:
   ```
   # tgbprog stop
   # ppstest
   ```

The result should look similar to the screen shown below:

```
found PPS source #0 "serial11" on "/dev/ttyS11"
ok, found 1 source(s), now start fetching data...
source 0 - assert 1202971505.000054909, sequence: 26580 - clear
      0.0000000000, sequence: 0
source 0 - assert 1202971506.000055349, sequence: 28561 - clear
      0.0000000000, sequence: 0
```

To stop the output, type **Ctrl-C**. The output should print one assert line per second. If the output reads **assert failed** or **timed out**, there is a fatal error.
Remember to restart the daemons:
 # tgbprog start

3. Test the NTP offset and jitter with ntpq. It may be necessary to wait several minutes before NTP begins entraining the sources.
 # ntpq -c pe 127.0.0.1
Your screen should look similar to the screen shown below:

```
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
 LOCAL(0)        .LOCL.          10 l   53   64  377    0.000    0.000   0.015
*GPS_NMEA(0)     .NAL.            0 l    -   16  377    0.000    0.139   0.024
+130.126.24.44   128.174.38.133   2 u   14   64  377   48.124   -0.024  28.765
+130.126.24.24   140.142.16.34    2 u   39   64  377   48.116   -0.506   2.444
```

NOTE

If a GPS has been installed:

a. GPS_NMEA(0) should have an asterisk in front of it, as shown above. The asterisk indicates NTP's preferred source.

b. The delay for GPS_NMEA(0) should be 0.00, and the jitter should usually be 0.015. The magnitude of the offset should be less than 1.0.

You can repeat this command every five seconds by using the watch utility:
 # watch -n 5 ntpq -c pe 127.0.0.1

If the system time does not converge, the system clock may be too far from correct for NTP to adjust the system clock. There are three options available:

a. If the TGB has internet access, the *ntpinit* utility may be called to re-initialize NTP using a public NTP server:

#ntpinit

b. If a local network NTP server is available, ntpinit may be called with the IP of the local NTP server:

 # ntpinit -s *LOCALIP*

c. If no NTP servers are available, the following command allows you to manually enter a wall clock time in the format **MMDDhhmm** where **MM** is a two-digit month, **DD** is a two digit day, **hh** is a two-digit hour, and **mm** is a two digit minute. This date must be accurate.

 # ntpinit -d *MMDDhhmm*

3.3.4 Logging

Examine the output from the following logs. User the **q** key to exit. You can scroll with the arrow keys, searching for errors, which should be obvious.

```
# less +G /opt/tgbprogs/log/cts.log
```

```
# less +G /var/log/lsyslog
```

3.3.5 External Storage

If a Compact Flash card was installed during the upgrade, issue the following command to confirm that it has been properly mounted:

```
# mount
```

```
rootfs on / type rootfs (rw)
/dev/root on / type ext3 (rw,noatime,data=ordered)
proc on /proc type proc (rw)
sysfs on /sys type sysfs (rw)
devpts on /dev/pts type devpts (rw)
tmpfs on /dev/shm type tmpfs (rw)
/dev/hdb1 on /opt/tgbprogs/log type ext3 (rw,noatime,data=ordered)
/dev/hdb2 on /opt/tgbprogs/diskspools type ext 3 (rw, noatime, data = ordered)
```

The output should be exactly as shown above. If there was an error with the CF card, the lines beginning with **/dev/hdb1** and **/dev/hdb2** would not be present.

Appendix A Build 080222 Release Notes

A.1 Linux Package Upgrades

A.1.1 Kernel

This build updates the Linux kernel from version *2.6.15-tinytgb* to version *2.6.21-tinytgb4-pc*. This hardened kernel allows sub-millisecond accuracy interrupts from a GPS receiver with 1PPS (one pulse-per-second) output. Support for snmp, netfilter, and iptables was added.

A.1.2 Other Packages

- Upgrading *libc6* from *2.3.2.ds1-22* to *2.3.6.ds1-13*
- Adding *libsepol1 1.14-2*
- Adding *libselinux1 1.32-3*
- Upgrading *coreutils* from *5.2.1-2* to *5.97-5.3*
- Adding lsb-base *3.1-23.1*
- Adding *libssl0.9.8 0.9.8c-4*
- Adding *readline-common 5.2-2*
- Upgrading *libncurses5 from 5.4-4 to 5.5-5*
- Adding *libreadline5 5.2-2*
- Upgrading *perl-base* from *5.8.4-8sarge3* to *5.8.8-7*
- Adding *libgdbm3 1.8.3-3*
- Adding *libdb4.4 4.4.20-8*
- Adding *perl 5.8.8-7*
- Adding *perl-modules 5.8.8-7*
- Adding *ntp 4.2.2.p4+dfsg-2*
- Upgrading *setserial* from *2.17-40* to *2.17-43*
- Adding *libparted1.7-1 1.7.1-5.1*
- Adding *parted 1.7.1-5.1*
- Adding *lrzsz 0.12.21-4.1*
- Adding *libsensors3 2.10.1-3*
- Adding *libsnmp-base 5.2.3-7etch2*
- Adding *libsysfs2_2.1.0-1*
- Adding *snmp 5.2.3-7etch2*
- Adding *snmpd 5.2.3-7etch2_i386.deb*
- Adding *libnet1 1.1.2.1-2*
- Adding *tcptraceroute 1.5beta6-1*
- Updating *iptables* from *1.2.11-10* to *1.3.6.0debian1-5*

A.1.3 New ntpd Time Synchronization

The TGB will now use *ntpd* to synchronize its system clock. The *ntpd* daemon will be responsible for aggregating all time sources including the traditional NTP network time from internet time servers as well as data from a locally installed GPS receiver. *ntpd* uses a very sophisticated algorithm to slowly

slew the clock to the correct time. After the clock drift has been entrained, *ntpd* can also correct clock drift reasonably well even when no time sources are available. Using the old *ntpdate* command will confuse *ntpd* and may have very negative effects. **For this reason, do not use *ntpdate* on any TGB that is running *ntpd*. Remove all *crontab* entries that call *ntpdate* or *ctstimesync*.**

A.2 New Hardware Support

A.2.1 GPS Receiver

The TGB software now supports the addition of a GPS receiver with 1PPS (one pulse-per-second) output. This is an optional hardware addition for this update; GPS is not required. The GPS receiver with 1PPS will allow a specially modified version of NTP to synchronize the Linux host clock to sub-millisecond accuracy. Additionally, the new modified kernel will provide interrupts to user-space programs on the 1PPS pulses to facilitate the transmitter synchronization.

A.2.2 Compact Flash Storage

During an upgrade to this build, you may optionally install a Compact Flash storage device. Integrating into the new file system layout, the Compact Flash card will store logs and data spools. It will significantly extend the recording time of a TGB without network uplink to the NC.

A.2.3 General Purpose Timer

This build will install a kernel module that allows us to use an onboard high resolution timer, called the general purpose timer (GPT). This will be used by the synchronized transmitter daemon to accurately queue messages.

A.3 Daemon Code Changes

A.3.1 Code Review / Beautification

The entire TGB code has been reviewed and scrutinized. Additional error handling has been added, especially for sockets, pipes, and file descriptors. Deprecated functions have been removed. All magic numbers and strings have been made constants.

A.3.2 Managed Updates

A utility named *tgbupdate* has been included with this build that will facilitate cleaner managed installs.

A.3.3 File System Layout

This build introduces a new file system layout, similar to that on the NC. All TGB software, configurations, logs, and data files are now stored beneath the `/opt/tgbprogs/` directory.

`/opt/tgbprogs/etc`	Configuration Files
`/opt/tgbprogs/log`	Log Files
`/opt/tgbprogs/bin`	Standard Binary Executables
`/opt/tgbprogs/lib`	Libraries
`/opt/tgbprogs/sbin`	Secure Binary Executables
`/opt/tgbprogs/diskspools`	Spool Files
`/opt/tgbprogs/firmware`	Receiver Firmware
`/opt/tgbprogs/tmp`	Temporary Files
`/opt/tgbprogs/run`	PID and Version Files

A.3.4 New tgbrfsetup

This build includes the first release of *tgbrfsetup*. The *tgbrfsetup* utility gives a terminal interface for configuring the transmitter card. Previously, modifying these settings required a Windows computer onsite to directly connect to the TGB. The utility can also be used to read back the current settings for diagnosis and verification. The *tgbrfsetup* utility is password protected. See the TGBRFSETUP User Guide, ATGTM40001 for specific instructions.

A.3.5 New GPS Synchronized Transmitter

With the new kernel and GPS receiver, TGBs with this build have the option to run the standard dithered transmitter (by default), or the new synchronized transmitter. A synchronized TGB will be assigned one of 6 time slots per second, and will only transmit during that specific window. Thus no neighboring TGB's will transmit at the same time. GPS health is constantly monitored; when the health is less than optimal, the daemons automatically revert to dithered behavior. They will resume synchronized transmissions when the GPS is healthy again.

Additionally, this transmitter supports outbound message priorities that can be assigned by the NC. See the GPS Synchronized Transmitter documentation for specific implementation details.

A.3.6 Instrumentation

The TGB daemons have been instrumented with an extensive list of counters to facilitate run-time debugging with the tgbstatus utility. These counters will allow an operator to assess the current behavior and health of a running TGB for routine monitoring and for error analysis. See the TGB Instrumentation documentation for more information on how to use these counters.

A.3.7 Logs and File Handling

Several new logging options have been added to aide in debugging. Severe errors will now appear in syslog as well. Additionally, smarter file handling will prevent crashes when disks become full

A.3.8 Meter Time Sync Changes

This build includes several changes to the way time sync messages are sent.

Time sync messages will be scheduled so that they do not occur within 15 seconds of any multiple of 15 minutes. This will prevent meters from jumping across time intervals.

Time sync messages that are commanded by the NC or a tool such as *netEPX* will automatically be updated to the TGB's current time just before transmission (there is a way to override this).

The daemons will monitor the estimated error in the TGB's local clock as provided by NTP. Time syncs (commanded and automatic) will only be sent if the estimated error is less than a determined threshold.

A.3.9 Extensive New Monitoring Capabilities

Several new upstream data monitoring messages have been added. The TGB will now automatically report the following, in addition to its existing reporting:

- GPS, GPT, and NTP status
- Installation status
- Operational status
- NTP data
- pll frequency
- pll offset
- maximum time error
- estimated time error
- Analog voltages and status flags on the transmitter card
- VFwdPA, VRefPA, A5VRaw, A5VRF, VTPA, A9V, A33OCXO, AM5V, peakdet, temperature, lockdet
- Message queue loads for smarter routing
- Number of waiting commands
- Number of waiting acks
- Priority queue status
- TGB build and revision versions
- Configuration data pertaining to the synchronization
- Last time a 1PPS pulse was received
- TGB enclosure type

Appendix B Build 090204 Release Notes

B.1 Scope

This appendix summarizes the changes made from TGB Build 080222r1 to TGB Build 090294. This build is equivalent to and replaces build 080222r2. This list is not cumulative; see previous appendices as well.

B.2 New ntpd Time Synchronization

Since the initial 080222 build, the TGB will now use *ntpd* to synchronize its system clock. The ntpd daemon will be responsible for aggregating all time sources including the traditional NTP network time from internet time servers as well as data from a locally installed GPS receiver. ntpd uses a very sophisticated algorithm to slowly slew the clock to the correct time. After the clock drift has been entrained, ntpd can also correct clock drift reasonably well even when no time sources are available. Using the old ntpdate command will confuse ntpd and may have very negative effects. *For this reason, do not use ntpdate on any TGB that is running ntpd. Remove all crontab entries that call ntpdate or ctstimesync.*

The Build 080222 Upgrade Instructions document mentions that the correct time must be manually updated on some TGBs at least once. During its first initialization, the ntpd daemon will automatically skip the time forward to the correct time if needed. However, it will not skip the time backward because this would create logs that go backwards. It corrects this type of fast clock by slowing the clock until the system clock is correct. If the clock is too far forward, ntpd will give up because this process of slowing the clock would take inordinately too long or would require the system clock to be fudged to an impractically slow rate. For this reason, it is good practice to manually update the time and initialize ntpd at least once with the ntpinit script as described in the Upgrade Instructions.

B.3 Changes

B.3.1 Linux Package Upgrades

- Adding sudo 1.6.8p12-4
- Upgrading tzdata from 2007b-1 to 2008e-1etch3
- Upgrading linux from 2.6.21-tinytgb4-pc to 2.6.21-tinytgb5-pc
  - This upgrade includes a patch for the correct handling of leap seconds.

B.3.2 Linux Configuration

- syslog.conf
  - Removing redundant logging
  - Adding LOCAL5 as tgbprogs.log for use by the TGB daemons
  - The installer asks for confirmation before backing up and replacing this file

B.3.3 TGB Daemons

- tgbrfsetup 2.4:
  - The tgbrfsetup utility no longer requires the administrator password to view the current settings of the transmitter.
  - Passwords are only required to modify the settings

- Added a third panel to parse and display the current configuration of the transmit frequencies in the channel map. Raw values are translated into actual frequencies and any formatting errors are reported.

- alarmmon 0.15:
  - Reports version during startup
  - Reports detailed alarm status messages to syslog
  - Corrected log messages with regard to the door tamper alarms on outdoor TGB units (bug #1216)
  - Build version reporting corrected
  - CPC firmware versions are now reported in the hourly message
  - Fixed a bug where a file handle was not closed (bug #3480)
- recevparse 0.30:
  - Reports version during startup
  - Removed unused signals sent to tgbrfxmit
  - Fixed a logging bug in ctsdevice
  - Corrected small bug where an index we used as a sentinel value causing index zero to not be handled correctly.
  - The recv module no longer checks for duplicate acks when in synchronized mode. Functionality moved to tgbrfxmit_sync inside its priority queues.
  - Tested for support of double density reduced and double density extended message types.
- tgbcmd 0.11:
  - Reports version during startup
  - Better logging
- tgbmenu 2.4:
  - Added the Sync window (option 'y') to display critical statuses of the GPS, GPT, PPS, and NTP. Data includes estimated clock drift, maximum possible clock drift, satellite visibility count, GPS fix, latitude and longitude, altitude, and transmit synchronization status. Any errors states having to do with time or transmit synchronization are displayed here.
  - Tweaked labels to make them more intuitive
  - Support for displaying double density (DD) reduced and double density extended messages.
  - Added new logging option for priority queue observation
- tgbsetup 0.10:
  - Improved dialog to distinguish the purposes of the two MCTS IP addresses and ports.
  - Fixed a bug that caused transmit synchronization to be enabled if the section was skipped by not entering a new value.
  - Allows configuration of multiple slot occupancy
  - Dialogs now have one space between the first character and the border frame. Some terminals display the border with alphabetic characters, adding them to the first word.
- tgbreporter 0.12:
  - Reports version during startup
  - Now reads in several GPS monitoring statistics from NTP logs.
  - Implemented a more thorough method of assessing NTP health.
  - NTP errors reported to the NC and tgbmenu are more specific.

- tgbsup 1.6:
  - Reports version during startup
  - Fixed several unchecked closes on a handle to the real time clock in cases where the RTC may not have been open.
  - Checks that the assigned receiver number is valid.
- tgbrfxmit_sync 2.2.8:
  - Reports version to syslog during startup
  - Reports time ping interval, receiver number, time ping channel, all 15 transmit channels and their resulting frequencies, TCXO correction, time zone offset, and transmitter firmware version to syslog
  - Transmit synchronization is now multi-threaded. For slots starting at 500ms or later, a child thread processes off-air tasks while the parent thread blocks on the GPT as normal.
  - Priority queue is now queried during the off-air computation to pre-buffer the message.
  - Fixed a bug in the GPT timer code that caused the GPT to be less precise.
  - GPT backup mode (in case of GPS failure) refined to tighter tolerances.
  - Lots of refinement of the code between the block on the 1PPS signal and the actual transmit. Transmit time tolerance lowered to within 1 ms.
  - Checks for duplicate acks in its local priority queues.
  - Changes to the priority queue to allow a multiple results within one query
  - Corrected a bug where acks where incorrectly classified as commands in the counter data
  - Real-time process priority can be enabled by file configuration
- tgbrfxmit_dith 1.8.5:
  - Reports version to syslog during startup
  - Reports time ping interval, receiver number, time ping channel, quantums, ack and command dithers, all 15 transmit channels and their resulting frequencies, TCXO correction, time zone offset, and transmitter firmware version to syslog
- tgbstatus 0.9.10:
  - CPC firmware versions are now printed in the receiver section.
  - GPS / GPT / NTP statuses added.
  - Added option 'O' to print the operationflags variable.
  - Added new stats flags for tgbrfxmit_sync
- pipe2nc 0.21:
  - Reports version to syslog during startup
  - Fix for a bug where pipe2nc pipe could get lost when an NC reboots.
- tgbxmitsup 2.1:
  - Reports version to syslog during startup
  - Reports priority queue weights to syslog

B.3.4 Firmware

The upgrade adds new firmware files, but no CPC firmware changes are automatically made during the install. Use the *cpc* utility to manage loaded firmware.

- Double Density Demod
  - New on-air message format
  - Supports DD extended and DD reduced

  - filename: demod_dd_8_2.hex
- Priority Demod
  - filename: demod_priority_7_211.hex

B.3.5 Scripts

- AlarmScript.sh
  - Corrected a log path error
- ntpstat:
  - Polls ntpq for NTP kernel information and parses raw GPS serial data.
  - Stores the data for use by tgbreporter.
  - Smarter handling of GPS serial devices.
- ntpinit:
  - Manually specified the path to ntpdate.
- crontab:
  - Removing defunct entries in crontab that have been commented for several releases.
- setserial:
  - Fixes a bug encountered in some GPS serial setups that caused a conflict between the modem and the GPS device.
- tgbupdate:
  - For all installs launched with tgbupdate, a script of the session is created in the user's home directory to aid in diagnosis and debugging.
- install-gps:
  - Changes to repair broken GPS installs
  - Better dialogs
- install-cfcard:
  - Smarter to handle re-initialization of CF cards.
- install-build080222r2:
  - The main installer scripts have been updated for this release.
  - Several prompts have been made significantly more descriptive.
  - For several system configuration updates where an Administrator may have already customized the system such as crontabs, syslog, and NTP configurations, the installer will now ask if it should replace or skip the individual file. If it replaces a configuration, a backup will be made in the user's home directory.
  - The update of the ppp scripts is more intelligent. If the user has already corrected or customized the ppp scripts, the update can be skipped.
  - The installer will also correct mishandled GPS installations and reconfigure them appropriately. Prompts for the GPS are much more verbose to reduce their ambiguity.
  - The user is now given the option to delete previous versions of TGB daemons during an update to conserve disk space.

Appendix C Build 090331 Release Notes

C.1 Scope

This appendix summarizes the changes made from TGB Build 090204 to TGB Build 090331. This list is not cumulative; see previous appendices as well.

C.2 Notes

This build is a small build update with critical bug fixes. This replaces build 090204. Build 090204 should no longer be used.

C.3 Changes

C.3.1 TGB Daemons

- tgbrfsetup 2.5:
  - TGB serial number is printed in the title to aid during technical support.
- recevparse 0.31:
  - Corrected a critical bug that could prevent proper spooling of meter data on TGB systems with large compact flash cards.
- tgbsetup 0.11:
  - TGB serial number is printed in the title to aid during technical support.
- tgbrfxmit_sync 2.2.9:
  - Variable length payload length for cooked commands to support new longer encrypted commands.
- tgbrfxmit_dith 1.8.6:
  - Variable length payload length for cooked commands to support new longer encrypted commands.

C.3.2 Scripts

- AlarmScript.sh
  - Corrected an error that could prevent the standby daemon from safely stopping the daemons during a low battery voltage condition.

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C.6 Sensus Meter / MIU Compatibility

Manufacturer	**AMI Compatible register model**	**Degree of compatibility** 1-No prog. req'd. 2-Routine prog. of MIU or meter req'd 3-Different MIU req'd 4-Technically feasible, non-routine modification (describe) 5-Infeasible	**Functionality** 1-All features operational 2-Some functions inoperable (describe)	**Support** 2-Supported, no effect on warranties 3-Warranties voided
AMCO	Absolute Encoder	1-Elster "blue dial"	1- limited to 6-wheel operation by mfg.	2
Badger	ADE	1	1- Limited to 6-wheel operation by mfg.	2
Hersey	Translator	4- Technically feasible. Will require cross agreement with vendor and verifcation testing to assure long-term interoperability	1- Limited to 6-wheel operation by mfg.	3- warranties voided pending approval
Neptune	E-coder	1- Meters must be in Pro-Read protocol	1- Limited to 6-wheel operation by mfg.	2
Neptune	Pro-Read	1- Meters must be in Pro-Read protocol	1- Limited to 6-wheel operation by mfg.	2
Sensus	ICE	1	1	2
Sensus "Emulators" **MasterMeter** **Actaris**	Other	4- Technically feasible. Will require cross agreement with vendor and verifcation testing to assure long-term interoperability	1- Limited to 6-wheel operation by mfg	2- warranties voided pending approval

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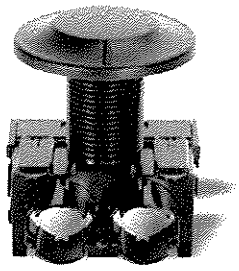
C.7 High Level AMI System Description and Architecture

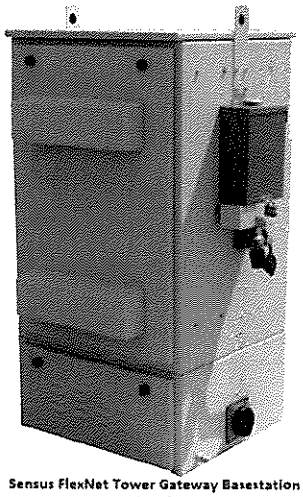
FlexNet is a field proven, multi-application AMI network built on open standards. FlexNet is the only AMI system on the market which operates on Primary Use, FCC licensed spectrum. This Primary Use spectrum offers a number of key benefits, including lower risk, lower in-band noise, higher transmit power, greater flexibility in collector deployment and lower long term and system operating costs. Sensus has deployed more than 200 FlexNet systems across North America to date.

The FlexNet AMI system uses three main components:

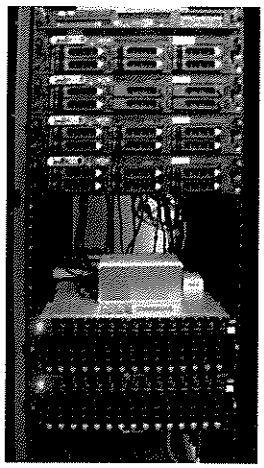
- The water transceiver or SmartPoint (connected to each water meter)
- The Tower Gateway Basestations (TGBs) ("collectors" or "DCUs")
- The Head End Computer or Regional Network Interface (RNI)



Sensus S20M2 Pit Set SmartPoint



Sensus FlexNet Tower Gateway Basestation (TGB)



Sensus FlexNet Regional Network Interface (RNI)

Figure 1: Necessary Components of FlexNet Solution

FlexNet System Design

FlexNet utilizes a single-tier "Star" network topology which features redundant, overlapping coverage from a network of Tower Gateway Basestation (TGB) receivers. The system is extremely powerful and reliable without being complicated or difficult to maintain. The FlexNet system design minimizes the number of data collection points, which in turn dramatically lowers long term system maintenance and backhaul costs.

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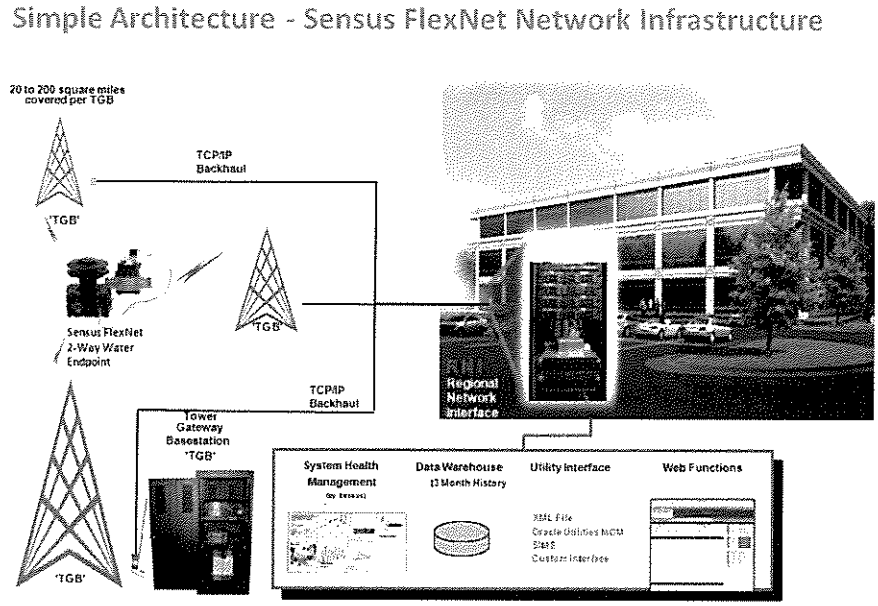

Figure 2: FlexNet System Architecture

Highest Power Endpoints – Overlapping Coverage

The FlexNet system also provides the best available signal reliability by utilizing Primary Use Licensed FCC frequencies, which allows double the transmit power (2 Watts) of any other system on the market. This also ensures that fewer data collection devices will be required, while still maintaining excellent reliability.

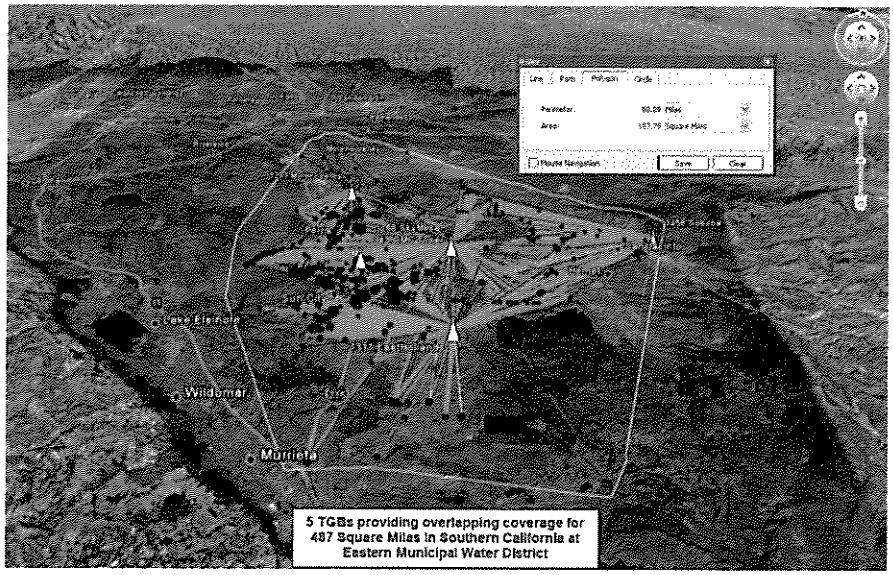

Figure 3: FlexNet provides overlapping coverage

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Multiple Transmission Modes

FlexNet SmartPoints can take advantage of three different transmission modes, which improves transmission success in any difficult to read locations, while minimizing the number of data collection points required throughout the service area.

- **Normal Mode:** 2 Watt transmission using the normal transmit frequency at normal data rate
- **Buddy Mode:** 2 Watt transmission using the alternate transmit frequency at normal data rate. Can take advantage of any repeaters installed in the area (none planned for ABCWUA)
- **Boost Mode:** 2 Watt transmission at ½ data rate. This can double or triple the range from the FlexNet SmartPoint

FlexNet SmartPoints will typically use a mix of the 3 modes above to provide the best transmission throughput while requiring the smallest number of data collection points. All transmission modes are covered under the twenty (20) year nationally published SmartPoint warranty.

All other systems on the market offer only one transmission mode. If an endpoint is not received, other systems must install additional collectors to improve performance. Sensus FlexNet SmartPoints, however, can be tuned to different modes (over the air) to improve signal propagation in weaker areas, which can eliminate the need for additional fixed base infrastructure. This flexibility is one of the hallmarks of the Sensus FlexNet system, and give the utility much greater flexibility in where collection infrastructure location.

Multiple Communications Channels

The FlexNet system uses dedicated communications channels for different message types. This improves overall system throughput, while increasing reliability and capacity of the network. This becomes important during two-way operation and for delivering other system functionality, such as SCADA or delivering data directly to in-home displays.

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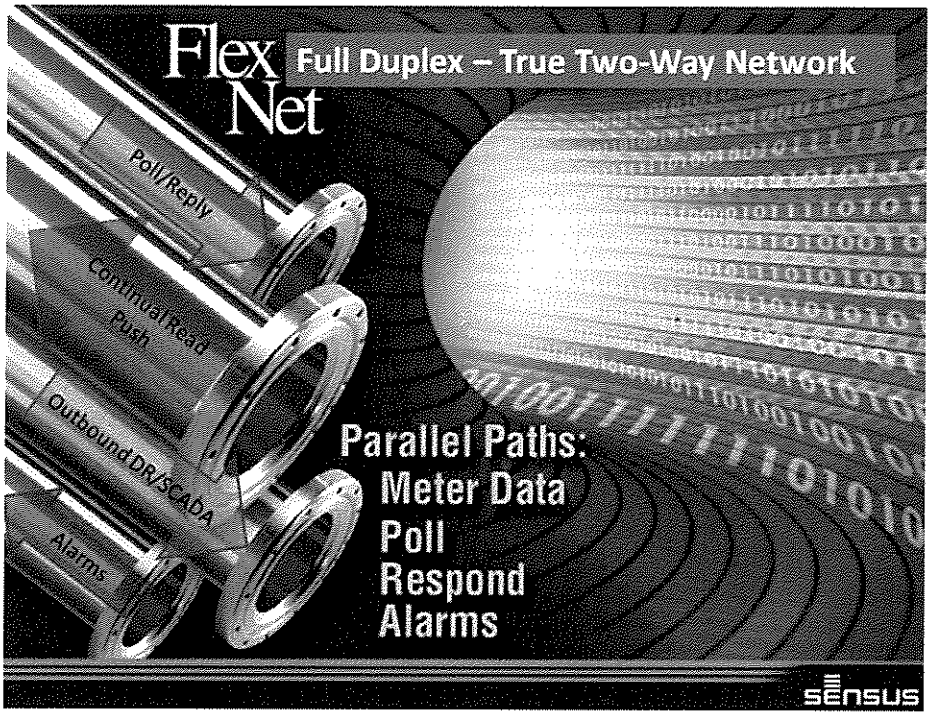

Figure 4: FlexNet is a Full Duplex Solution

The Benefits to ABCWUA Include:

- FlexNet is an Open Standards, Multi-Application AMI network that does far more than deliver meter readings
- Far fewer data collectors to install, monitor and maintain over the system lifetime
- Dramatically lower long term system operating costs
- The best system reliability – ***field proven*** across more than 200 FlexNet deployments in North America (170+ Water)
- Most current reading data delivered every 4 to 5 hours without user intervention (lowest reading latency)
- True hourly reading (24 readings per day) with a 20 year nationally published battery warranty
- True on-demand readings via two-way network architecture

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C.8 Sensus Project Management Overview

In this section, Sensus presents its overall project management solution for ABCWUA. Each Area that ABCWUA has specified in the RFP will be implemented in similar fashions. Note that this is an end-to-end view of project management. Per proposal section 3.0, Sensus understands that the initial deployment would be for an RNI system only.

We present the following overviews:

Section 1	**Sensus Project Management Overview**
Section 2	**Sensus Project Management Services**
Section 3	**Sensus Project Management Criteria**
Section 4	**Sensus Project Management Phased Activity**
Section 5	**Project Management Team**
Section 6	**Conclusion**

1. Sensus Project Management Overview

Sensus executes every project in a holistic manner, with a focus on safety, timeliness, and accuracy. Our Operations and Deployment plans are based upon best practices gained from our experience performing meter changes and AMI conversions for gas, water, and electricity utilities nationwide.

Lifecycle Support: AMI Customer & Technical Services

As provided in the contractual agreement Sensus will provide support to ABCWUA throughout the program lifecycle. The Project Management team is responsible for managing installation, commissioning, and ABCWUA acceptance of the system. Upon acceptance, the project team transitions support to Sensus' AMI Technical Services.

AMI Technical Services is staffed to provide 24/7 technical support for the system through the warranty period and on an annual maintenance contract basis. Upon

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contacting customer support notifications are sent to appropriate individuals for problem resolution depending on the Service Level Agreement (SLA) attendant to the Agreement. Communication back to the originator of an issue is then logged through customer support to track progress and ensure final resolution.

Sensus' Customer Services staff acts as a single point-of-contact and provides standard service support from 8:00 AM Eastern Time to 7:00 PM Eastern Time. Support is available via a toll-free number and on-site support is available as required. For customers who require additional support, we can provide custom support services under an extended service contract.

Customer Training: Sensus University

Sensus is committed to providing the best possible customer service to ABCWUA. Part of this is providing the FlexNet product and system level training. Sensus University is a dedicated AMI training facility located in our headquarters in Raleigh, NC. The center includes a 20-person training room and has an operating TGB and endpoints. FlexNet training sessions are held on a scheduled basis.

Additional Support

All program, customer and training documentation will be supplied and kept up to date during the program lifecycle. Sensus provides an annual software maintenance program with a release schedule and updates. Training for new releases and products will be provided if required.

2. Sensus Project Management Services

Sensus will provide project management services in accordance with the legal agreement between the parties which may include coordination and support to the customer utility as outlined below.

Project Management Services include:

- Pre-deployment planning and customer review meetings
- Project schedule development
- Project coordination with Sensus' supply chain and all subcontractors to include facilitating equipment order placement and fulfillment
- Tower site preparation (electrical, mechanical, communications)
- Tower Gateway Base Station (TGB) installation and commissioning
- Regional Network Interface (RNI) installation and commissioning
- Commissioning of the Communication link between the TGB and RNI
- Testing of the data transfer to the customer billing system
- RNI/MDM account setup

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- Training sessions for installers and FlexWare system operators. (At Sensus discretion, training may be offsite or offered at Sensus' facilities).
- Facilitate customer acceptance testing of the FlexNet system (phased acceptance) in accordance with the mutually developed Customer Acceptance Test (CAP) Plan.

3. Sensus Project Management Criteria

All projects will be deployed as per the agreed upon criteria outlined in the Sensus Statement of Work (SOW) and / or Contract / Agreement.

A summary of the criteria is listed below:

- The PM will coordinate the Sensus system acceptance test with the customer according to the criteria identified and agreed upon in the CAP for each milestone of the project.
- The PM will manage commissioning, optimization and acceptance of the project by phase or site. A phase or site is defined as a specific geographically bounded area or meter quantity by route, district, trip or area of such proportion that the advantages of the FlexNet system of network devices and buddy meters can function properly to support good systems performance.
- As each phase/site is deployed, the customer accepts that phase or site and thereby assumes all future systems optimization, maintenance, equipment replacements, etc.
- As provided for in the contract Sensus' Technical Services team is available to assist with training for troubleshooting system issues.

4. Sensus Project Management Phased Activity

Sensus will work closely with ABCWUA to establish the installation project plan, project deliverables, accountabilities, communications planning, and project acceptance. We utilize our standard operational philosophy and approach through to Project Acceptance and Closure, combining the benefits of best practices and local management. Our approach ensures day-to-day supervision and ongoing coordination at the highest levels within Sensus.

Note that items in blue are for future planning purposes only; however, project management services are included with this proposal.

Phased activity highlights include:

Project Award Notification

- Assemble Project Packet
  - Purchase Order
  - Contract and Addendums

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- System Design Documents
- Propagation Study
- Project Related Sales Information
- Customer and Sensus Contact Information

Pre-Deployment Planning

- Preliminary Setup & Planning
  - Develop / refine Scope of Project
  - Document Deliverables in a time phased matrix
  - Prop Study Validation
  - Assume lead times for tower lease agreements
  - Develop TGB Installation Scope of Work
  - Review & Adjust Network Design
  - Internal Project Meetings with Manufacturing & IT PM
  - Review Equipment Orders with Purchasing
  - Define Preliminary Schedule

Pre-Deployment Planning

- Customer Kick-Off Meeting
  - Review Project Installation Process
  - Discuss Deployment Plan & Schedule
  - Understand Customer Expectations
  - Discuss Billing System Interface
  - Review System Acceptance Criteria
  - Agree to Training Requirements

Network Deployment

- Coordinate
  - Install Antenna's & Coax Cables on Towers
  - Install TGB's at Tower Base - (1 – Week per Tower)
  - Establish Link to Head-End RNI
  - DSL, GPRS Modem, VSAT, Dedicated Line

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RNI Deployment

- Coordinate
  - Install RNI in Customer's Data Center
  - Establish Network Communications to TGBs
  - Establish Remote Access Thru Firewall for Tech Support
  - Establish User Accounts
  - Establish Data Exchange with Customer Billing System

Installer Training

- Train Installers on:
  - Handheld Operation
  - Proper Endpoint Installation
  - Proper Documentation of Work Orders
  - Verification of Endpoint Activation
  - Troubleshooting Endpoint Issues
  - Safety & Security

End Point Installation

- Customer or Contractor Installs Endpoints
- Sensus is Responsible for:
  - Delivering Product to Match Install Schedule
  - Monitoring System Read Performance
  - Establish eRMA Process

System Optimization

- Evaluate network performance
- Identify gaps in network coverage
- Run acceptance test

System Acceptance Test

- Criteria development
- System Hardware Installed
- Performance Testing

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5. Sensus Project Management Team

Sensus will assign a lead Project Manager and support team to manage the deployment of ABCWUA network. The following diagram, resume, and job descriptions outline the core project team members:

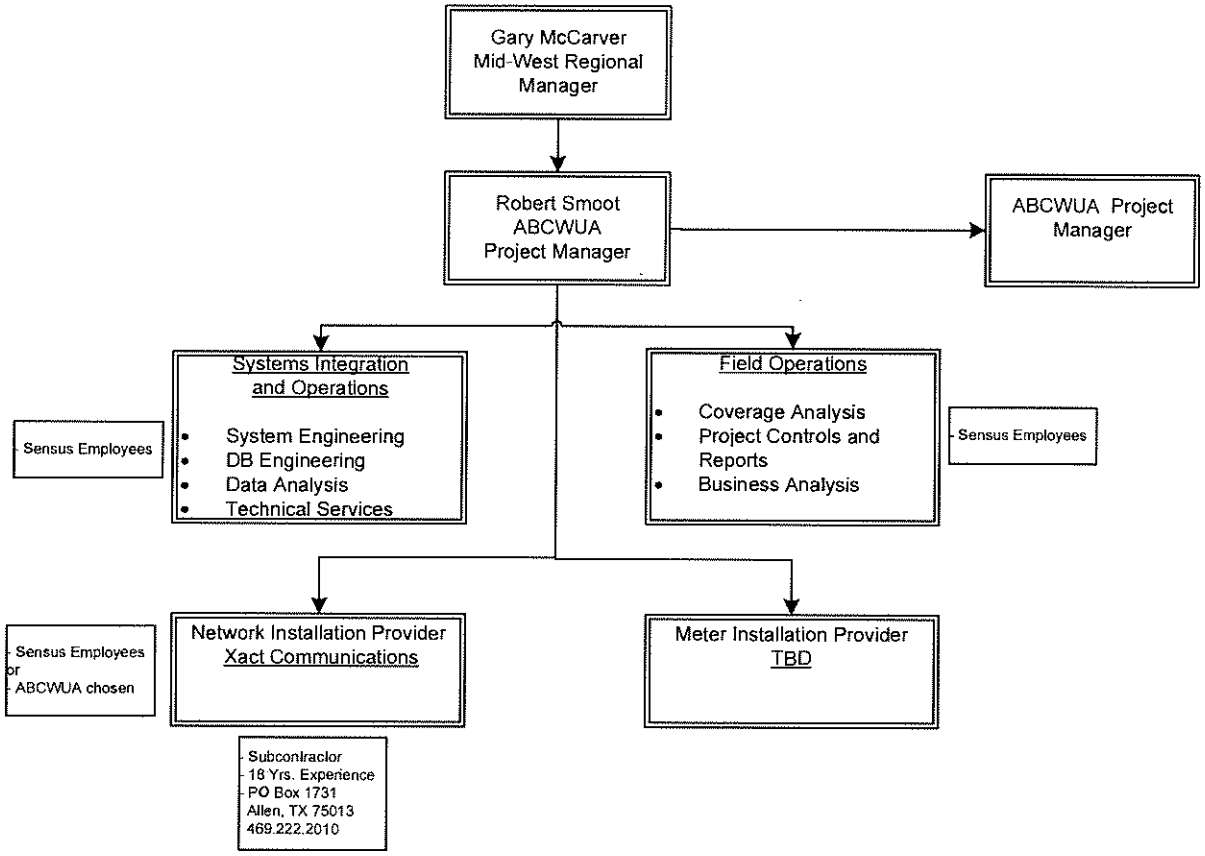

Figure 1: Sensus Project Management Team

Gary L. McCarver, Midwest Regional Manager

Experience & Background

Gary McCarver is an AMI Deployment Regional Manager having the overall responsibility for project management of AMI deployments; including AMI field studies; AMI system deployment; AMI system training and field services across 15 states in the Mid-West. Additionally, he is responsible for the building customer relationships during end-point field installation, operation, maintenance and customer training of the AMI networks.

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Prior to becoming an AMI deployment PM, Gary was a Senior Project Manager at Itron, Inc. In this capacity, Gary was responsible for the overall project management of Itron water, gas and electric AMR technologies. He has an extensive background in large system deployment exclusively in the communications and utility sectors.

Mr. McCarver has over 20 years of combined project and program management experience, in high-technology products with such firms as Sprint, Computer Network Technologies and Itron, Inc. He has held positions in sales support, system engineering, program management and project management. His program management experience includes successfully managing major AMR programs in excess of $50M.

Professional Experience

2008 – Present, Sensus USA, AMI Regional Manager Midwest

- Responsible for overseeing Project Management efforts for Sensus' AMI, Gas, Water and Electric businesses within a 15 State region.
- Assist with the development and implementation of business processes to allow Sensus to manage AMI project deployments.
- Setup Project Management positions to align with the Midwest Regional Gas, Water and Electric Sales Managers.
- Developed business relationships with installation contractors, acquiring project quotes, negotiating contracts and managing sub-contractor activities throughout the planning and execution phases of all projects. These business partnerships expand Sensus' ability to offer complete technology solutions to AMI customers.

Gary McCarver has served as PM for the following Sensus utility accounts: Atmos Energy, Cleco Home Area Networking Pilot, Pensacola Gas and Olathe Water AMI

- (1995 – 2008) Itron Project Management, Senior Project Manager
- (1990 – 1995) Sprint, Project Manager

Education: University of Phoenix, BSIT (52 hours with a GPA of 3.92)

Additional training includes Project Management Institute (PMP) & the Stanford University Project Management Certification (SCPM)

Robert Smoot, Project Manager

Experience and Background

Robert Smoot is an AMI Deployment Project Manager for the South – Central region having the overall responsibility for project management of AMI deployments. Responsibilities include AMI field studies; AMI system deployment; AMI system training and field services. Additionally, he is responsible for the building customer relationships

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during end-point field installation, operation, maintenance and customer training of the AMI networks.

Prior to becoming an AMI deployment PM, Robert was a Senior Project Manager with United Metering. In this capacity, Robert was responsible for the overall project management of AMR installation drive-by systems for water project deployments. Robert also worked with Enron Energy Services where he managed electric AMR projects for accounts in Phoenix, Arizona and throughout the state university system in California.

Robert has in excess of 20 years of combined project management experience involving various AMR and AMI products and technologies. His project management experience includes successfully managing major multi-million dollar AMR deployments as well as managing project related costs timely deliveries involving AMR/AMI deployments.

Duties and Responsibilities:

The Project Manager is responsible for overall planning and execution of FlexNet pilot and deployment projects employing generally accepted PMP and Sensus processes. This position will also be responsible for business planning, customer interface, sub contracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel and coordinate the activities of corporate, sub-contractor and customer personnel assigned to the project.
- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance.
- Will develop topics for and conducts routine meetings with customers, project reviews with corporate headquarters and special meetings as necessary.

Pre Requisites:

- Bachelor's Degree in Business, Construction, Engineering, Computer Science, or equivalent;
- Project Management experience in large scale activities, managing multi-person teams;
- PMP certification a plus;
- Experience managing and tracking project budgets;

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- Strong problem solving and analytical skills are essential;
- Excellent interpersonal communications and presentation skills are essential as this role involves direct customer liaison and interaction with Sensus employees, contractors and functional department heads;
- The ability to work under pressure and provide high quality solutions to problems; must be able to work independently and function well as part of a team;
- Must be completely literate with all MS Suite applications, general computer skills, able to type efficiently, develop MS Power Point Presentations, Spreadsheets, Graphs and Analyses of project related information.

Deployment Manager (for ABCWUA, this will be the Project Manager)

Duties and Responsibilities:

The Network Deployment Manager is responsible for overall planning, coordination and support for the installation of FlexNet system components including Tower Gateway Base Stations TGBs), FlexNet Network Portal, FNPs), and other network devices employing generally accepted commercial practices and Sensus processes. Also included is the systems optimization for all network and metering components requiring field visits to various locations throughout the service area. This position is also responsible for the deployment planning, customer interface, and coordinating the utilities resources, sub contractors and Sensus employees for the network deployment, optimization, systems acceptance testing, and customer acceptance.

- Will interact with office and field staff of the customer organization, supervise on-site Sensus personnel and coordinate the activities of corporate, sub-contractor and customer personnel assigned to the project.
- Will help develop and adhere to cost, quality, and schedule parameters. The installation, maintenance and performance of the network must be developed in accordance with the utility's schedule for economic justification of the project and Sensus business plans.
- Will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance.
- Will provide reports and participate in routine meetings with the customers, project reviews with corporate headquarters and special meetings as necessary.

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Pre Requisites:

- Bachelor's Degree in Electrical Engineering, Business, Construction, Engineering, or equivalent;
- Expert use of tools such as Map Info, Planet EV and other GIS mapping tools.
- Working knowledge and ability with SQL and Data base querying and structure.
- Experience in large scale activities, managing multi-person teams.
- Strong problem solving and analytical skills are essential.
- Excellent interpersonal communications and presentation skills are essential as this role involves direct customer liaison and interaction with Sensus employees, contractors and functional department heads.
- The ability to work under pressure and provide high quality solutions to problems; must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, Power Point, Excel Spreadsheets, Access, Visio and other of project related information.
- Experience in WAN and LAN networking technologies and protocols.

Kevin McCullor, IT Project Manager

Experience and Background

Kevin McCullor is an AMI Integration Technology Project Manager providing monitoring and management of the RNI and field related equipment.

Prior to becoming a member of Sensus I was employed as a Senior Systems Engineer with a Nationwide Paging provider. I was responsible for the development and maintenance of a statistics collection and forecasting platform. This platform assisted executive is discussion making and reducing overall cost of operation of the entire company.

Mr. McCullor started as a Field Engineer and through his vast knowledge of the industry became one of the most trusted in his department. Mr. McCullor brings a solid understanding of RF and IT issues. He has been managing project both large and small for more than 10 years.

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Duties and Responsibilities:

- Monitor and manage the health of the FlexNet system and its components. Provide performance analysis and direct the optimization of the system using standard tools available in the FlexNet system and as provided for in the customer utility, third party contractors or Sensus field optimization processes and/or systems.
- Compile FlexNet project status reports, coordinate project schedules, manage technical project meetings, and identify and resolve technical problems. Identify and analyze systems requirements and define project scope, requirements, and deliverables. Coordinate technical project activities and ensure all project phases are documented appropriately.
- Provide expert judgment and analysis for the design, development and implementation of technical products and systems. Resolve highly complex technical issues and conduct advanced research. Recommend alterations to development and design to improve quality of products and/or procedures.
- Develop, implement, and monitor information systems policies and controls to ensure data accuracy, security, and regulatory compliance. Review reports of computer and hardware equipment production, malfunction, and maintenance to determine and address problems.
- Aid in the design and development of hardware equipment and systems and/or redesign of existing systems as needed to fulfill the needs of customers. Responsibilities also include providing equipment functionality and capability reports to the sales force, and acting as technical liaison to the sales team.
- Rely on extensive experience and judgment to plan and accomplish goals. Perform a variety of complex tasks. May lead and direct the work of others. A wide degree of creativity and latitude is expected.

Qualifications:

Minimum requirements for this position include:

- A bachelor's or master's degree in area of specialty (engineering or computer sciences)
- 5-8 years of experience in the AMR, AMI or utilities or related technical field
- Superior communication and interpersonal skills
- Excellent analytical skills
- Entry to mid level Perl and/or Unix shell scripting
- Mid level Unix and Windows OS experience

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- Mid level SQL experience (MS SQL, Postgres SQL, Oracle)
- Solid understanding of basic telecommunications concepts (ping, ssh, telnet, ftp, traceroute, etc.)
- Good troubleshooting skills
- Know project management methodology, a PMP certification is a plus
- Be able to deal with multiple projects concurrently
- Ability to communicate with internal and external customers under stressful environments.

RF Engineer/Technician

Duties and Responsibilities:

The FlexNet Network Deployment Technician is responsible for assisting in the interpretation and implementation of the RF network plan, overseeing and/or certifying network equipment installation work, performing and/or overseeing network equipment maintenance, and ensuring the overall system performance of the FlexNet system components including Tower Gateway Base Stations TGBs), FlexNet Network Portals, (FNPs), FlexNet Remote Portals (FRPs) and other network devices employing generally accepted commercial practices and Sensus processes. Inherent in these responsibilities is the overall systems optimization for network and metering components requiring field visits to various locations throughout the service area.

This Technician is responsible for:

- Serving as the interface between and among the Sensus RF Network Planning and Propagation Group, installation contractors, the utility and tower site owners in implementing the network plan, optimization, systems acceptance testing, and customer acceptance.
- Scheduling and conducting periodic reviews and imposing scheduled maintenance and operational tests to ensure system performance.
- Performing site visits to network equipment sites to determine feasibility of use and extent of equipment installation requirements.
- Providing reports and participating in routine meetings with the utility, contractors, and corporate headquarters for project reviews and special meetings as necessary.
- Reviewing system reports for network/meter failures.
- Coordinating and taking action to enhance meter read performance.
- Recommending or performing over-the-air refinements to meters
- Recommending meter change-outs for customers to improve performance

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- Maintaining daily/weekly/monthly maintenance plans and logs and prepare Key Performance Indicators (KPIs)
- Performing preventive maintenance of network components
- Following and enforcing all corporate and safety and professional standards.

Pre Requisites:

- Associates degree preferred. Minimum of a high school diploma. Preferred Trade school education in electric or gas or water industry. Prior utility experience a plus.
- Experience with or ability to learn mapping applications such as Planet EV, Map Info, and other GIS mapping tools for use in network planning and maintenance as well as systems optimization
- Must possess and maintain a valid driver's license and drive to field sites in a safe manner.
- Must be able to work wearing safety equipment and follow all Sensus, Customer and industry standard safety practices.
- Working knowledge and ability with SQL and Data base querying and structure.
- Strong problem solving and analytical skills are essential.
- Excellent interpersonal communications and presentation skills are essential as this role involves direct customer liaison and interaction with Sensus employees, contractors and functional department heads.
- The ability to work under pressure and provide high quality solutions to problems; must be able to work independently and function well as part of a team.
- Must be completely literate with all MS Office suite applications, general computer skills, able to type efficiently, develop MS Project, Power Point, Excel Spreadsheets, Access, Visio and use other project related customized computer software and hand held computing tools.
- Experience with WAN and LAN networking technologies and protocols

6. Conclusion

Top to bottom, Sensus AMI provides a comprehensive Customer Service Delivery & Support program to ensure we meet our customers' objectives and exceed expectations. Sensus offers one integrated AMI solution, supported by full turnkey project management and IT integration to enable our customers to maximize the full AMI system benefits in a shorter timeframe while also protecting your investment from any potential hidden costs.

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The Sensus Guarantee

I. General Product Coverage

Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: http://na.sensus.com/TC/TermsConditions.pdf.

II. SR® II 5/8", 3/4" & 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II meter will perform to at least AWWA Repair Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter	1,000,000 gallons	3,000,000 gallons

III. SR® 5/8", 3/4" & 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4" and 1" SR meter will perform to at least AWWA Repair Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

Repair Meter Accuracy	
5/8" SR Meter	1,500,000 gallons
3/4" SR Meter	2,250,000 gallons
1" SR Meter	3,000,000 gallons

IV. SR® 1-1/2" & 2" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2" and 2" SR meter will perform to at least AWWA Repair Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

Repair Meter Accuracy	
1-1/2" SR Meter	5,000,000 gallons
2" SR Meter	8,000,000 gallons

V. PMM, PMX 5/8", 3/4", 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4", and 1" PMM & PMX meter will perform to at least AWWA Repair Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

Repair Meter Accuracy	
5/8" PMM, PMX Meter	1,500,000 gallons
3/4" PMM, PMX Meter	2,000,000 gallons
1" PMM, PMX Meter	3,000,000 gallons

VI. PMM, PMX 1-1/2", 2" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2", and 2" PMM & PMX meter will perform to at least AWWA Repair Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

Repair Meter Accuracy	
1-1/2" PMM, PMX Meter	5,000,000 gallons
2" PMM, PMX Meter	8,000,000 gallons

VII. Maincase...

of the SR, SR II, PMM and PMX meters are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. EnviroBrass II and E-coated maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

VIII. Sensus "W" Turbo Meters, SRH Compound Meters, Propeller Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment.

IX. Sensus OMNI ™ Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment.

X. Sensus Registers...

are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repair Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 2" SR, SR II, PMM, Standard Registers	25 years
5/8" thru 2" SR, SR II, PMM, Encoder Registers	10 years
Electronic Communication Index (ECI)	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for: "W" Turbo, SRH Compounds and Propeller Meters	1 year
OMNI Register with Battery	10 years

XI. Sensus Electric Meters...

are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment. Spare parts and components are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment.

Repaired or refurbished equipment repaired by Sensus is warranted to be free from defects in material and workmanship for ninety (90) days from the date of Sensus shipment or for the time remaining on the original warranty period, whichever is longer.

XII. AMR and FlexNet™ AMI Interface Devices...

are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPad	10 years
RadioRead® MXU shipped after April 1, 2003 and Batteries	20 years*
Act-Pak®™ Instrumentation	1 year
TouchRead® Coupler and AMR Equipment	1 year
FlexNet Water or Gas SmartPoint™ Modules and Batteries	20 years*
Tower Gateway Base Station	1 year
FlexNet Network Portal	1 year
iConA and FlexNet Electricity SmartPoints Module	1 year

* Based on four transmissions per day. Sensus will repair or replace a non-performing RadioRead® MXU shipped after April 1, 2003 and Batteries and/or FlexNet Water or Gas SmartPoint Modules and Batteries at no cost for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list prices in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	21<	100%

Note: Software supplied and licensed by Sensus is warranted according to the terms of the applicable software license agreement. Sensus warrants that network and monitoring services shall be performed in a professional and workmanlike manner.

XIII. Return...

Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either repair or replace the product, provided the Customer (i) returns the product to the location designated by Sensus within the warranty period; and (ii) prepays the freight costs both to and from such location.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. Sensus SmartPoints modules and MXU's returned must be affixed with a completed return evaluation label. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

THE FOREGOING REMEDIES ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF THE PRODUCTS, SERVICES OR LICENSED SOFTWARE TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

XIII. Limits of Guarantee...

This Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. Furthermore, this Limited Warranty does not apply to products which have been: installed improperly or in non-recommended installations; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; converted; altered; damaged; read by equipment not approved by Sensus; subjected to misuse, improper storage, care, maintenance, or improper periodic testing.

SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR (I) ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, NOR (II) ANY REVENUE LOST BY CUSTOMER, IRRESPECTIVE WHETHER SUCH LOST REVENUE IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE, NOR (III) DAMAGES ARISING FROM MAINCASE OR BOTTOM PLATE BREAKAGE CAUSED BY FREEZING TEMPERATURES, WATER HAMMER CONDITIONS, OR EXCESSIVE WATER PRESSURE, WHETHER CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE. THIS LIMITATION APPLIES WHETHER THE CAUSE OF ACTION ARISES IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), IN CONTRACT, UNDER STATUTE OR OTHERWISE. THIS LIMITATION OF LIABILITY IS A FUNDAMENTAL INDUCEMENT TO SENSUS SELLING THE PRODUCTS. IT SHALL APPLY UNCONDITIONALLY AND IN ALL RESPECTS. IT SHALL BE INTERPRETED BROADLY TO GIVE SENSUS THE MAXIMUM PROTECTION PERMITTED UNDER LAW.

XV. No Implied Warranties...

THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. THE CUSTOMER ASSUMES SOLE RESPONSIBILITY FOR DETERMINING THAT THE PRODUCTS, SERVICES AND SOFTWARE LICENSES PURCHASED ARE SUITABLE FOR THEIR INTENDED APPLICATION AND USE.

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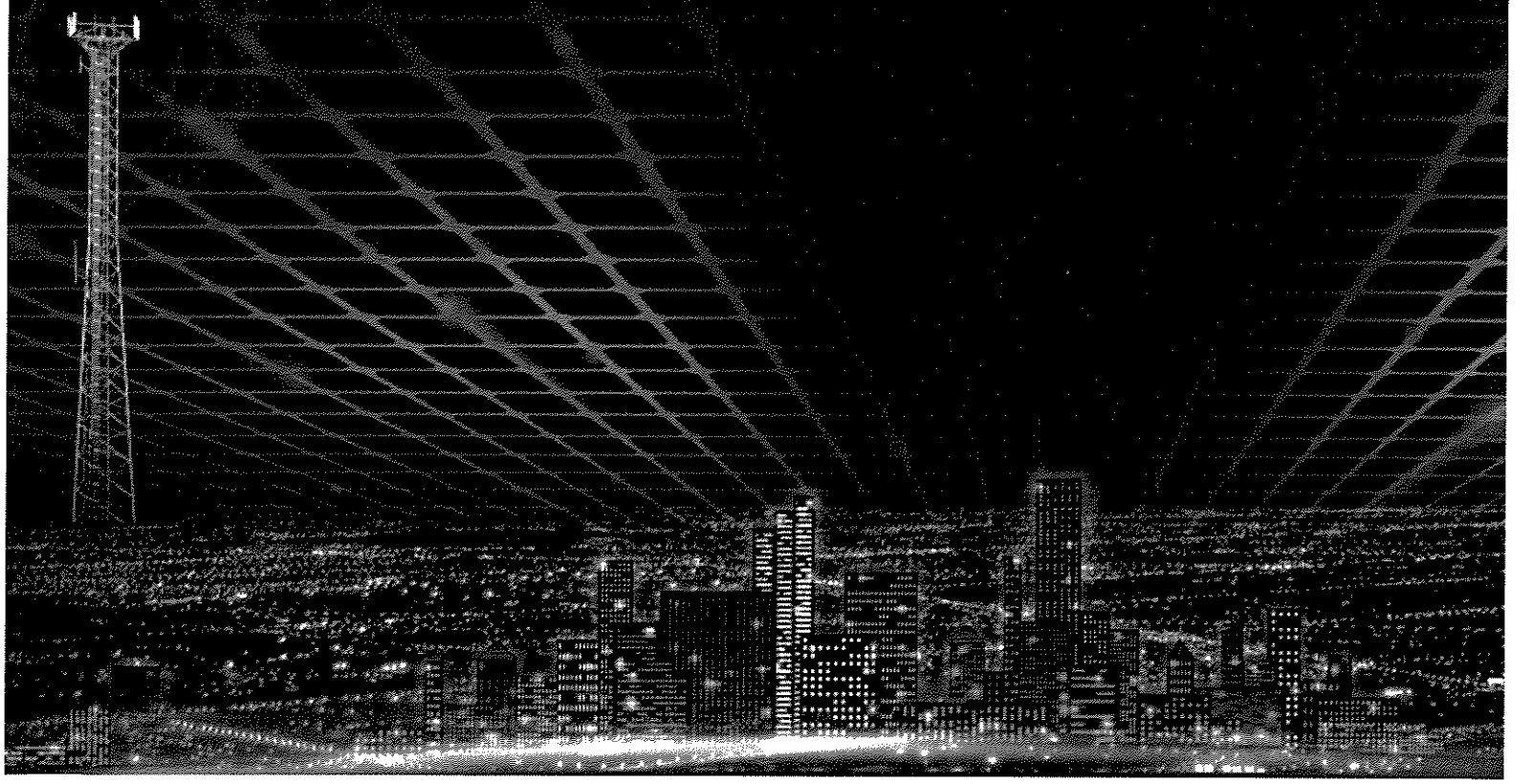
Tower Gateway Base Station Installation

Revision 4



Revisions

Rev No.	Date	Description
Rev 0	11/07/2007	Initial Release
Rev 1	12/03/2007	Added Section 4.4, Antennas Not Installed on Leased Tower Space Added explanatory paragraph before Table 2-1. Added FCNormal frequencies to Table 2-1. Added Section 7.2 Powering up the Outdoor TGB. Added Priority Mode and Double Density Mode to Section A.1. Added frequencies for Part 90, NBPCS, MAS1, and MAS2 to RF Input and RF Output frequency specs.
Rev 2	3/2008	Added cabling and mounting information for GPS add-on. Added Section 4.6 GPS Antenna. Modified Figure 5-9 for GPS TNC connection. Modified Section 5.2 Required Materials to include GPS cables. Modified Step 3 of Section 5.5 for GPS connection. Chapter 6 was re-written due to updated information from Argus Technologies, Ltd.
Rev 3	2/6/2009	Removed chapters not directly involved with installation: FlexNet AMI Overview, TGB Operating Frequencies, and Specifications were moved to TGB Technical Manual. Pre-installation Guidelines was moved to TGB Pre-Installation Planning. Firmware Update was moved to TGB Upgrades.FlexNet Network Portal has its own manual. Specific Added coax arrestor diagrams to the installation chapters. Power-Up and Configuration chapter re-written. Added Grounding Specs, Appendix A. Added IP Address procedure of Outdoor Enclosure power system.
Rev 4	8/02/2010	Moved "Outdoor Power Off Procedure to Chapter 5, Section 5.6; Chapter 5 renamed Power-Up, Configuration, and Power-Down; added Section 5.5, Indoor TGB Power Off Procedure; added Section 5.7 Halting Transceiver Operations.

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1 Introduction

1.1 About the Manual

This manual provides the instructions for installing and powering up the indoor and outdoor TGBs (Tower Gateway Base Stations).

This manual is one in a series of manuals for the TGBs. The other manuals are:

- TGB Pre-Installation Planning Guide
- TGB Technical Manual
- TGB Verification and Certification Manual
- TGB Maintenance and Upgrade Manual
- TGB Troubleshooting Guide

It is assumed that the requirements detailed in the TGB Pre-Installation Planning Guide have been accomplished and that a completed Tower Gateway Base Station Configuration Sheet is available from your Sensus Project Manager.

1.2 Cautions and Warnings

	An improperly grounded enclosure presents an electrical hazard. See Appendix A for grounding specifications.

	Electrical service to the outdoor cabinet should be installed by a licensed electrician in accordance with local codes. A dedicated grounding system is required for grounding the AC panel. See Te17 Outdoor Enclosure Manual for grounding termination details.

	Verify electrical codes prior to installation. Codes may vary and contain specific conduit and wire sizes for connection to the AC load center. Connection to utility power must be approved by the local utility before installing the power supply.

	Sensus must have continuing remote access to the power system. Updates and other changes to the power system, as well as monitoring and management, can only be performed by Sensus at this time. Therefore, if the power system access is placed behind a private network, there must be a provision made to give Sensus access to the power system.

2 Antenna Installation

2.1 Overview

This chapter provides information for the installation of common TGB antennas. See the TGB Technical Manual, Chapter 4, for typical antenna data sheets and specifications

2.2 TGB Antenna Installation

2.2.1 Antenna Height

The height of the installed antenna will normally be selected based on propagation studies. If a propagation study is not available for some reason, the antenna height should be greater than 100 feet at a minimum. Antenna heights above 350 feet (unless mounted on buildings, etc) are not recommended without feedback from Sensus Engineering due to constraints that include antenna down tilt, null fill, and pattern.

2.2.2 Antenna Mounting

If at all possible, mount the antenna at the top of the structure it will be attached to providing for an unobstructed path in all directions from the antenna. Tower structure parallel to the antenna that is within 50 feet of the antenna will affect the antenna pattern and thus the desired coverage of the system.

If it is not feasible to mount the antenna at the top of the structure, try to place the antenna on the side of the structure that gives an unobstructed "view" of the largest population of endpoints to be installed.

If for some reason, the antenna must be mounted so that the coax connector on the antenna "points up", you will need to specify an antenna with an "inverted pattern". If this issue occurs, you must contact Sensus Engineering for assistance.

If the structure is a building or water tower, and if the antenna is required to be omni-directional, and mounting the antenna so that is has an unobstructed 360° "view" is impractical or impossible, you must contact Sensus Engineering for assistance.

If a population of endpoints are at a long distance from the tower the antenna may work better mounted on the side of the tower that provides an unobstructed view to the "long range" endpoints. This approach may place the tower between the largest number of endpoints and the antenna, but the antenna loss that is caused by the tower "shading" the antenna will be applied to the endpoints with the largest signal strength arriving at the antenna.

2.2.3 Antenna Connection

This section provides specifications for the RF path from the antenna to the TGB for all installations.

Coaxial Cable Type	
Coaxial Cable Type:	Andrew LDF Series Heliax
RF Jumpers for Antenna and TGB Connections to Main Cable	
Coaxial Cable for Indoor Jumpers:	½ Inch Andrew LDF4-50A (or Times Microwave LMR400)
Coaxial Cable for Outdoor Jumpers (1):	½ Inch Andrew LDF4-50A
Standard Jumper Length:	6 Feet (Each Jumper)
Maximum Jumper Length:	10 Feet (One Jumper)
Combined Jumper Length:	20 Feet (Both Jumpers)
Combined Jumper Loss (With Connectors):	1 dB

(1) As an alternative for this connection ½ Inch Hardline May Be Used In Lieu Of Heliax

Main RF Transmission Line to Antenna		
Transmission Line Type	**Coax Length**	**Maximum Loss**
Andrew LDF5-50A, 7/8"	0 to 200 Feet	2.4 dB @ 200 Feet
Andrew LDF6-50, 1-1/4"	200 to 300 Feet	2.5 dB @ 300 Feet
Andrew LDF7-50A, 1-5/8"	300 Feet +	0.725 dB per 100 Feet
Connector Loss (All Transmission Line Types)		0.5 dB Maximum

Maximum Loss from TGB RF Connector to Antenna (for less than or equal to a 300-foot transmission line run inclusive of connectors and transmission line)	
RF Jumpers + Connectors	1.0 dB
Transmission Line + Connectors	3.0 dB
Total	4.0 dB

NOTE	• Lower loss Heliax cable may be substituted on run lengths greater than those specified for a given diameter if the maximum loss of the transmission line is equal to or less than that specified originally for that diameter at the maximum length. • Endeavor to use the shortest jumper cable lengths as possible.

Other Conditions and Requirements on Coaxial Cable Installations:

- Press to fit and crimped coaxial connectors are not allowed.
- Coaxial connectors must mechanically attach using screw threaded mating and torqued to manufacturers specifications.
- Coaxial connectors must be waterproof.
- Antenna connection of coaxial connector from cable must be waterproof and weatherproof.

See the TGB Technical Manual for data sheets detailing the coaxial cables and connectors.

2.3 Antennas Not Installed on Leased Tower Space

NOTE	Some of the text and graphics used in this section are copied from on-line sources including the FCC web site. All credit is given to that source for the content that is presented here.

2.3.1 Overview

This section discusses several issues of concern when it is desired to install a TGB at a location that is not owned by a tower leasing company. It is assumed that the issues discussed will have already been addressed if a leased tower site is used.

The Antenna Structure Registration program allows the FCC to fulfill its statutory duty to require the painting and lighting of antenna structures that may pose a hazard to air navigation. The FCC accomplishes this task by requiring owners of antenna structures that meet the criteria for notification to the Federal Aviation Administration (FAA) to register with the FCC. Upon registration, and based on the recommendation of the FAA, the FCC will require the structure to be painted and lighted as necessary to make it conspicuous to aircraft. Not all structures require registration—only those that meet the registration criteria outlined below. Additionally, not all registered structures are assigned painting and lighting.

Regardless of who determines that registration is required, the *owner* is responsible for ensuring that all provided information is correct.

2.3.2 Registration Criteria

Most antenna structures that are taller than 60.96 meters (200 feet) above ground level (HAAT) or that may interfere with the flight path of a nearby airport must be *cleared* by the Federal Aviation Administration (FAA) and **registered** with the FCC.

Unless specifically exempted, FAA notification and FCC registration are required for:

- Any construction or alteration of more than 60.96 meters (200 feet) in height above ground level at its site.
- Any construction or alteration of greater height than an imaginary surface extending outward and upward at one of the following slopes:
  - 100 to 1 for a horizontal distance of 6.10 kilometers (20,000 feet) from the nearest point of the nearest runway of each specified airport with at least one runway more than 0.98 kilometers (3,200 feet) in actual length, excluding heliports;
  - 50 to 1 for a horizontal distance of 3.05 kilometers (10,000 feet) from the nearest point of the nearest runway of each specified airport with its longest runway no more than 0.98 kilometers (3,200 feet) in actual length, excluding heliports; and,
  - 25 to 1 for a horizontal distance of 1.52 kilometers (5,000 feet) from the nearest point of the nearest landing and takeoff area of each heliport at a specified airport.
- Any construction or alteration that would be in an instrument approach area and available information indicates it might exceed an obstruction standard of the FAA. In this case, the FAA would specifically ask you to file a notification -- you would then be required to register the structure.
- Any construction or alteration on a specified airport.

The following types of antenna structures are exempt from the FAA notification requirements and FCC registration requirements:

- Any antenna structure that would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height, and would be located in the congested area of a city, town or settlement where it is evident beyond all reasonable doubt that the structure so shielded will not adversely affect safety in air navigation.
- Any antenna structure of 6.10 meters (20 feet) or less in height except one that would increase the height of another antenna structure. Examples of this "20 foot rule" are shown below.
- Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device, of a type approved by the FAA, the location and height of which is fixed by its function.

The onus of registration lies with the structure *owner*, not the land owner the structure is placed upon, owner of the antenna, owner of the TGB, etc. This requirement places the responsibility on whoever *owns* the pole, tower, or other free-standing structure that the antenna mounts upon (buildings are handled differently, see below).

In many cases, the utility company will allow us to mount antennas on power poles or in some cases, erect purpose specific poles that are used exclusively for antenna mounting. It is our responsibility, to our customers (the utility companies), to inform them of these requirements and safeguard our customers against any federal issues if they arise. This is most important if we are mounting antennas on power poles close to airports or helipads.

The graphics below were copied from the FCC web site and show various scenarios that require registration with the FAA and FCC, and some that do not. These examples are only valid if the installation is far from an airport; if you are close to an airport or helipad, see Sections 2.3.4 and 2.3.5.

2.3.3 Examples

Example 1: Antenna structures mounted on man-made structures:

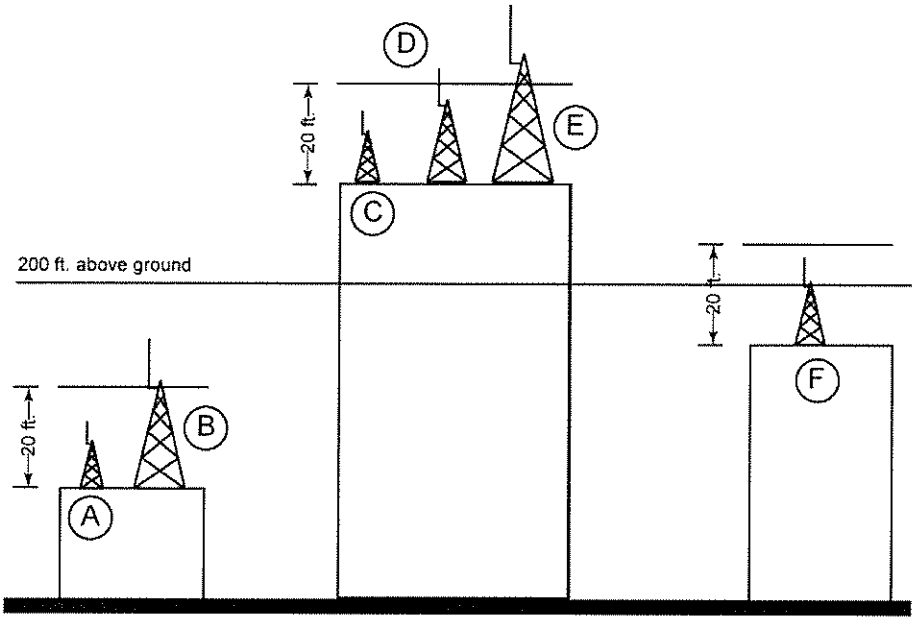

Figure 2-1: Antennas Mounted on Man-Made Structures

NOTE	In order to simplify this example, we have assumed that the antenna structures are far from an airport. The same principles, however, hold true when substituting the "imaginary surface" for the 60.96 meter (200 foot) line shown in the example if you are close to an airport and using the TOWAIR program.

(A) and (B)—Registration is not required. Neither of these antenna structures exceeds 60.96 meters (200 feet) above ground.

(C)—Registration is not required. Although the tip of the structure is more than 60.96 meters (200 feet) above ground, the structure meets the 6.1 meter (20 foot) exception.

(D)—Registration **IS REQUIRED**. Although the structure itself does not exceed 6.1 meters (20 feet) above the building, the tip of the antenna mounted on the structure exceeds 6.1 meters (20 feet) above the building.

(E)—Registration **IS REQUIRED**. The structure clearly exceeds 6.1 meters (20 feet) above the building.

(F)—Registration is not required. Although the antenna structure causes the overall height of the building to exceed 60.96 meters (200 feet) above ground, the antenna structure meets the 6.1 meter (20 foot exception). (Note -- the building owner would be responsible for notifying the FAA concerning the overall height of the building. This action would not affect the antenna structure.)

NOTE	The building owner would be responsible for notifying the FAA concerning the overall height of the building. This action would not affect the antenna structure.

Example 2: Free-standing antenna structures:

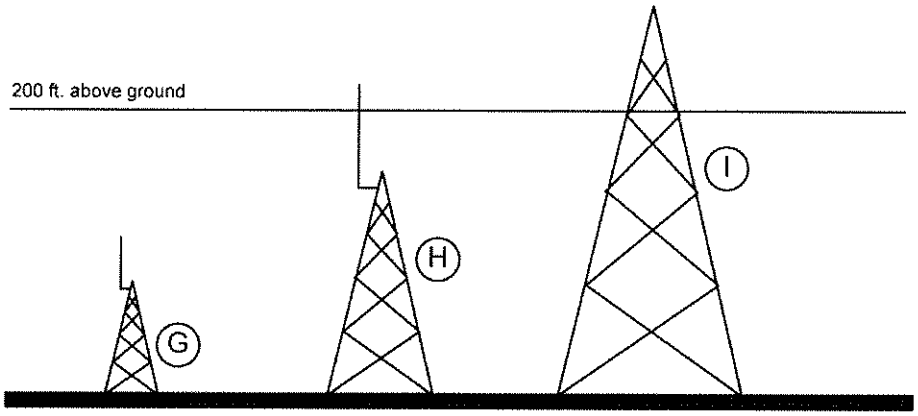

Figure 2-2: Free-Standing Antennas

NOTE	In order to simplify this example, we have assumed that the antenna structures are far from an airport.The same principles, however, hold true when substituting the "imaginary surface" for the 60.96 meter (200 foot) line shown in the example.

(G)—Registration is not required. The structure does not exceed 60.96 meters (200 feet) above ground.

(H)—Registration **IS REQUIRED**. Although the structure itself does not exceed 60.96 meters (200 feet) above ground, the antenna mounted on the top causes the overall height of the structure to exceed 60.96 meters (200 feet).

(I)—Registration **IS REQUIRED**. The structure clearly exceeds 60.96 meters (200 feet) above ground.

2.3.4 Determining a Specified Airport

The following airports are "specified airports" for purposes of determining whether an antenna structure meets the registration criteria:

- A public use airport listed in the Airport Directory of the current Aeronautical Information Manual or in either the Alaska or Pacific Airman's Guide and Chart Supplement.
- An airport under construction that is the subject of a notice or proposal on file with the FAA, and except for military airports, it is clearly indicated that the airport will be available for public use.
- An airport that is operated by an armed force of the United States.

2.3.5 Calculating the Specified Airport Slope Line

To determine whether a structure penetrates the imaginary line extending outward and upward from the nearest point of the nearest airport runway, you may use the FCC's on-line Landing Facility Slope Calculation program (TOWAIR). The link to TOWAIR is provided below in case the imbedded hyperlink is not available in this document:

http://wireless2.fcc.gov/UlsApp/AsrSearch/towairSearch.jsp

TOWAIR, which uses FAA-supplied airport data, may be queried based on a specific set of coordinates, elevation and overall height criteria. When reviewing licensing applications to determine whether a proposed site is located on a structure that requires registration, the FCC will use the TOWAIR calculations. Therefore, if TOWAIR indicates that registration is required but you believe otherwise, you should be prepared to submit appropriate documentation in conjunction with any licensing activity at the site. Alternately, you may wish to register the structure in question.

It is a good idea, for ALL installations, to use the TOWAIR program and the coordinates of the intended antenna site to make ensure that you are in compliance.

2.3.6 Registering a Site

The best procedure to register a site is to call Sensus Operations and consult with the Frequency Coordinator to assist you with the process of registering a site.

If you wish to proceed yourself, the FCC site below has a link at the bottom of the page taking you through the steps necessary to register with the FAA and then with the FCC to comply with these requirements:

http://wireless.fcc.gov/antenna/index.htm?job=about_getting_started

2.3.7 Other Site Registration Issues

There may be other registration and permission issues to be addressed when installing an antenna in areas of the US and Canada.

Certain municipalities, states, and other governing entities may require extensive interaction and approval when a new antenna is installed. It is probably best to inquire with the utility first to see if there are any issues, but that may not always yield a complete response.

Certain lands are considered sacred by many entities, including Hawaiian and other Native American peoples. When operating in those areas, strict attention to their requests and requirements must be considered.

The FCC has a web page which allows one to address these issues on a case-by-case basis. It is suggested that such endeavors for Sensus be coordinated through our Operations Department using our Frequency Coordinator.

The web site does have substantial information about these issues and is a suggested read to anyone who is engaged with installing and maintaining Sensus FlexNet systems. The link is:

http://wireless.fcc.gov/outreach/index.htm?job=tower_notification

2.3.8 Conclusion

This section is not intended to be an exhaustive treatment of the plethora of issues you may encounter when installing an antenna which is not on a leased tower or managed by a tower company.

It is our responsibility to make sure that any antenna installations we perform, whether they be on the top of a power pole, building, or other free standing structure, adhere to all governmental requirements.

2.4 TGB Antenna Validation

Once complete, all antenna installations must be measured to confirm a combined VSWR of no less than 2.0:1 for the antenna and coax cable system that connects the antenna to the TGB.

The type of antenna, antenna height, and antenna mounting must be confirmed for proper operation by drive testing the system and comparing the results to the propagation study.

2.5 GPS Antenna

A Trimble Bullet III GPS antenna is supplied with the TGB. The antenna is mounted to a pole with a standard 3/4" NPT pipe thread mount. Sensus does not supply the mounting pole or cables.

The antenna is an active GPS antenna with a 35 dB preamp; the required 5 VDC is supplied from the TGB.

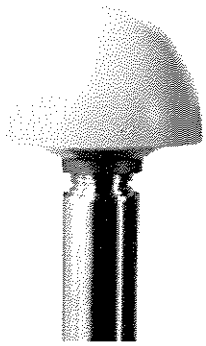

Figure 2-3: Trimble Bullet III GPS Antenna

For outdoor installations, the antenna is shipped pre-mounted and connected. No assembly is required.

For indoor installations, see Section 3.2 for cable requirements; see Figure 3-9 for cable routing, grounding, and coax arrestor installation. The cable for indoor installations is not included by Sensus.

3 Installing the Indoor TGB

3.1 Overview

These TGB installation instructions assume the TGB Rack Assembly will be installed indoors in an environmentally-controlled space. If a suitable building is not available, a Sensus-approved TGB outdoor enclosure may be used, as discussed in Chapter 4.

NOTE	The TGB rack assembly photographs shown are typical, and the installation instructions in this section are also typical for a USMobility site. Be certain to follow the installation instructions for the particular TGB assembly you are installing.

The TGB indoor installation consists of a standard 19" equipment rack with a battery-backed DC power system, ancillary equipment, transceiver unit, and connecting cables.

Connectors on the top of the TGB rack are provided for External RF in and out connections, GPS antenna connections, serial data connection, and an Ethernet IP data connection. A standard 120-volt AC power cord exits the rear at the bottom of the rack.

3.2 Required Materials

1 TGB Transceiver Enclosure & Rack Assembly equipped with all hardware needed for installation as specified by Operations or Engineering. (LNA, Duplexer, Diversity Switch, Flexnet Co-Location Hardware, etc).

1 LMR-400 N-Male to N-Male RF or LDF4-50A (Andrew) Heliax, ½ inch diameter, N-Male to N-Male transmission/reception cable. The cable length must not exceed 10 feet. USAMO installations will require an additional LMR-195 SMA to SMA jumper cable.

1 **For GPS antenna connection:** Up to 100 feet of LMR-195 coaxial cable. For lengths from 100 to 300 feet, use LMR-400. Both ends of cables must have TNC male connectors. These cables are not available from Sensus.

1 Network Communications Cable (Depends on network connection specified):

- **For internet communications:** Ethernet Cable, standard CAT-5 RJ-45 to RJ-45.
- **For USAMO Satellite communications:** Ethernet Cable, standard CAT-5 RJ-45 to RJ-45. 10base2 to 10baseT adapter with coaxial cable. Inquire for availability from Sensus.
- **For installations with telephone line communications only:** Standard telephone connection cable with RJ-11 connectors on both ends. A telephone surge arrestor must be installed at the Telco end of the cable.

1 Ground strap—#4 flat strap or #6 or better stranded cable—#4 or #2 preferred.

1 Coax Arrestor (not supplied by Sensus Metering Systems Inc.)

3.3 Required Tools and Equipment

Basic Field Installer's Tool Kit—No special tools are required for installation. A SMA wrench may be useful. A multimeter will likely be required should power system diagnostics be necessary. The site's transmission line, surge suppressor, antenna, and associated gear are assumed to be properly installed and previously checked for proper operation. Diagnostic gear and procedures for troubleshooting the receive/transmit chain are not covered in this document.

Laptop computer—equipped with a RS-232 serial port (COM port) capable of 115,200 bps, serial cable, and a terminal program capable of emulating a VT100 terminal, like Tera Term Pro.

Sensus Handheld Field Tool (optional)—Provides an easy way to check for proper basic reception/ transmission from the transceiver.

NOTE	The Sensus Handheld Field Tool only provides a basic check and is not a guarantee of proper antenna operation.

3.4 Tower Gateway Base Station Rack Assembly

Figure 3-1 shows the TGB Rack Assembly for a USAMO indoor installation.

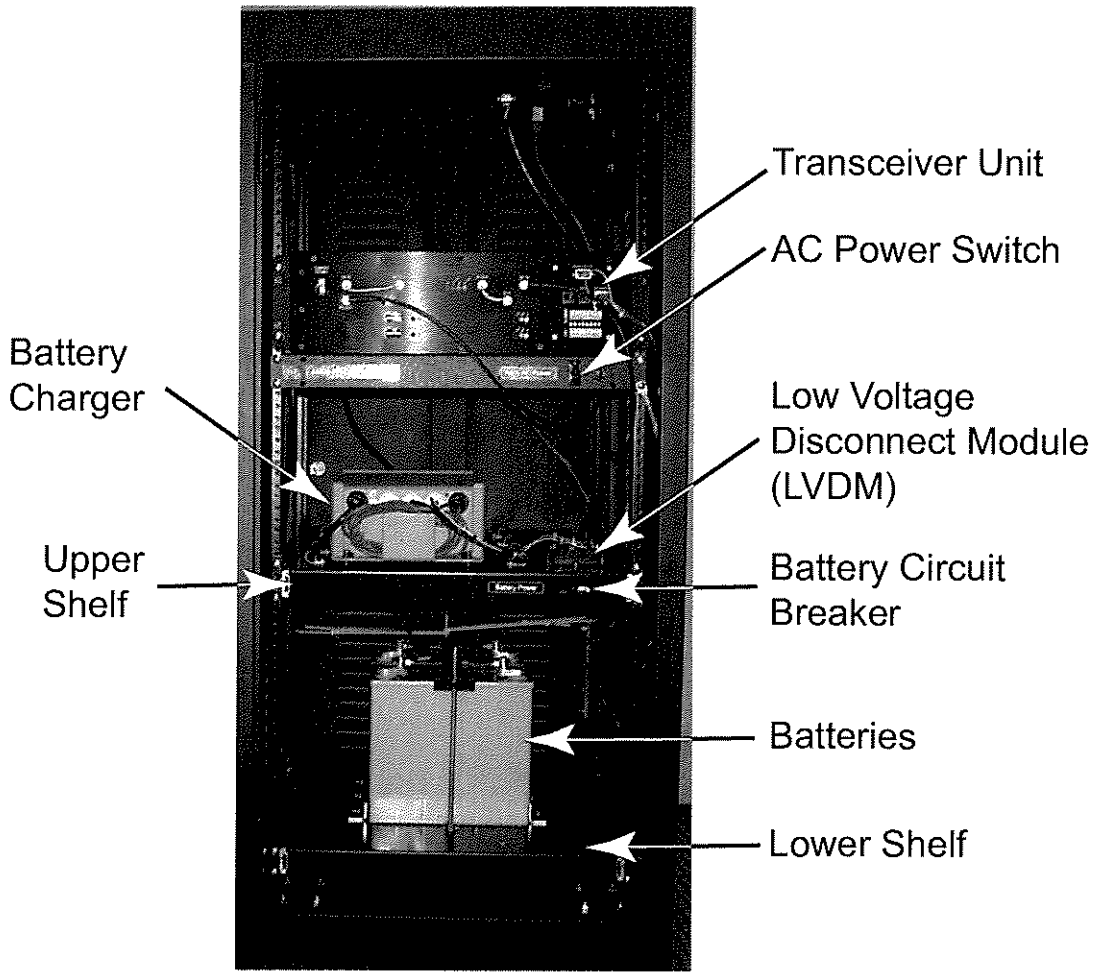

Figure 3-1: TGB USAMO Rack Assembly

The TGB Rack Assembly for a stand-alone indoor installation contains an LNA (Low Noise Amplifier) and a duplexer. For USAMO sites, the LNA and duplexer are provided by the USAMO facility. For details about the rack equipment, see the TGB Technical Manual.

3.5 Connecting the TGB Rack

Figure 3-2 to Figure 3-6 are block diagrams that summarize the various connection schemes.

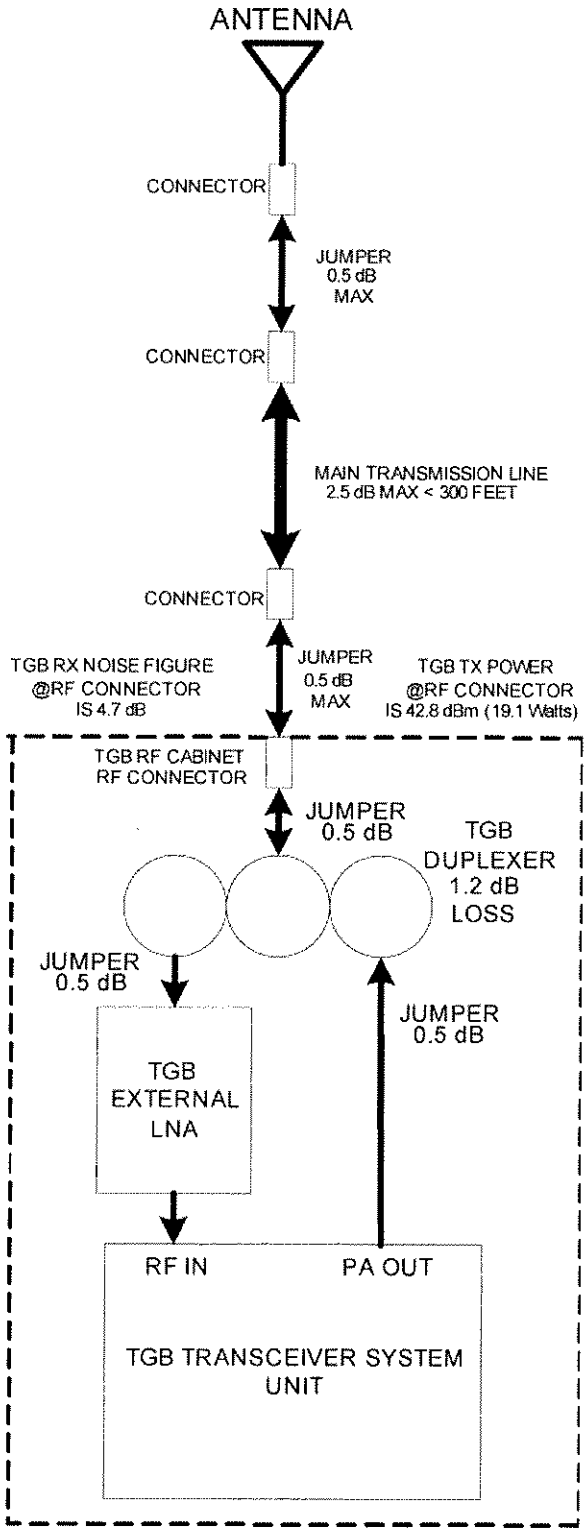

Figure 3-2: Indoor Enclosure, RF Interconnect and Los Budget Detail: Stand Alone Installation

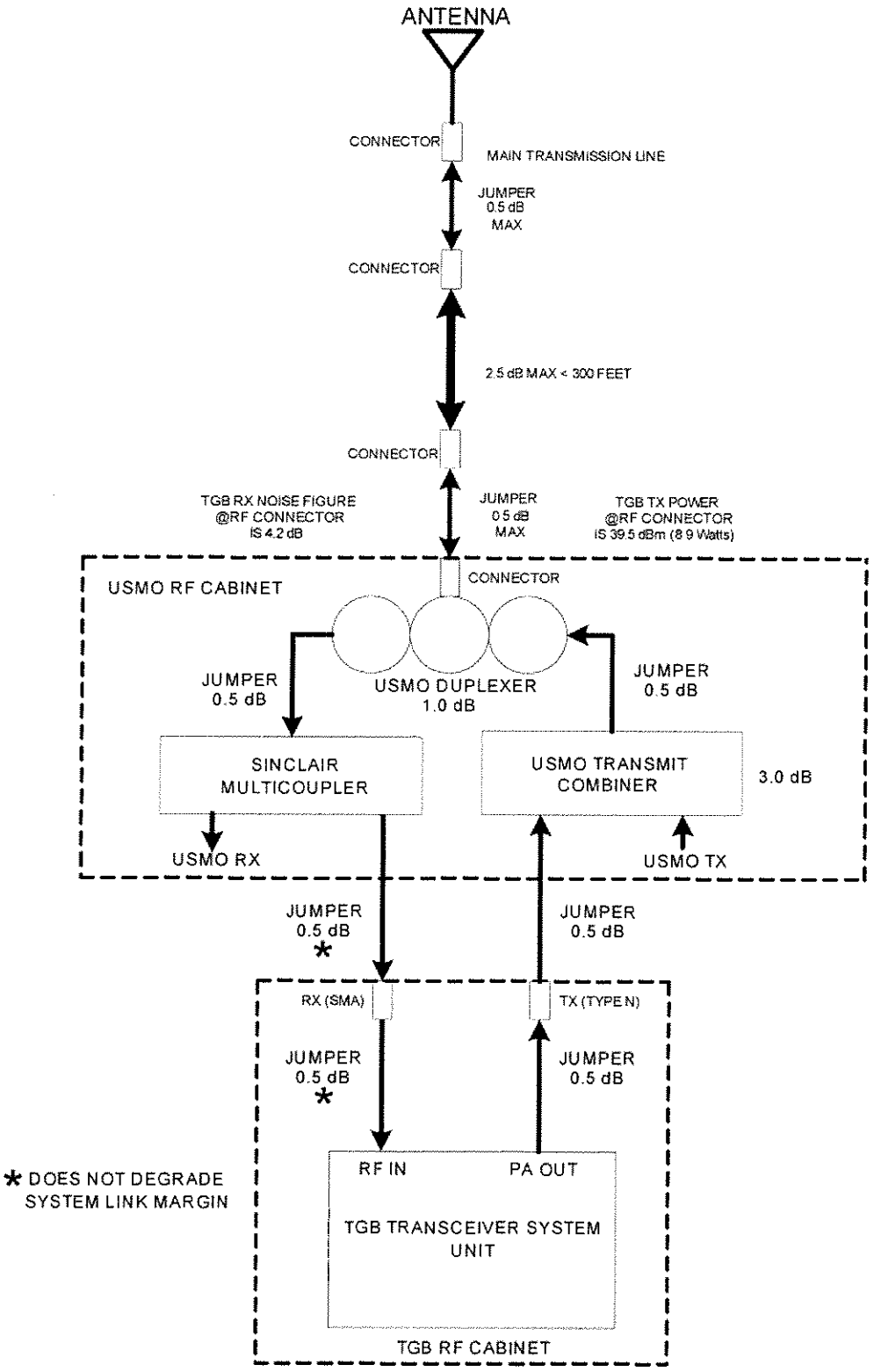

Figure 3-3: Indoor Enclosure, RF Interconnect and Loss Budget Detail USAMO Installation

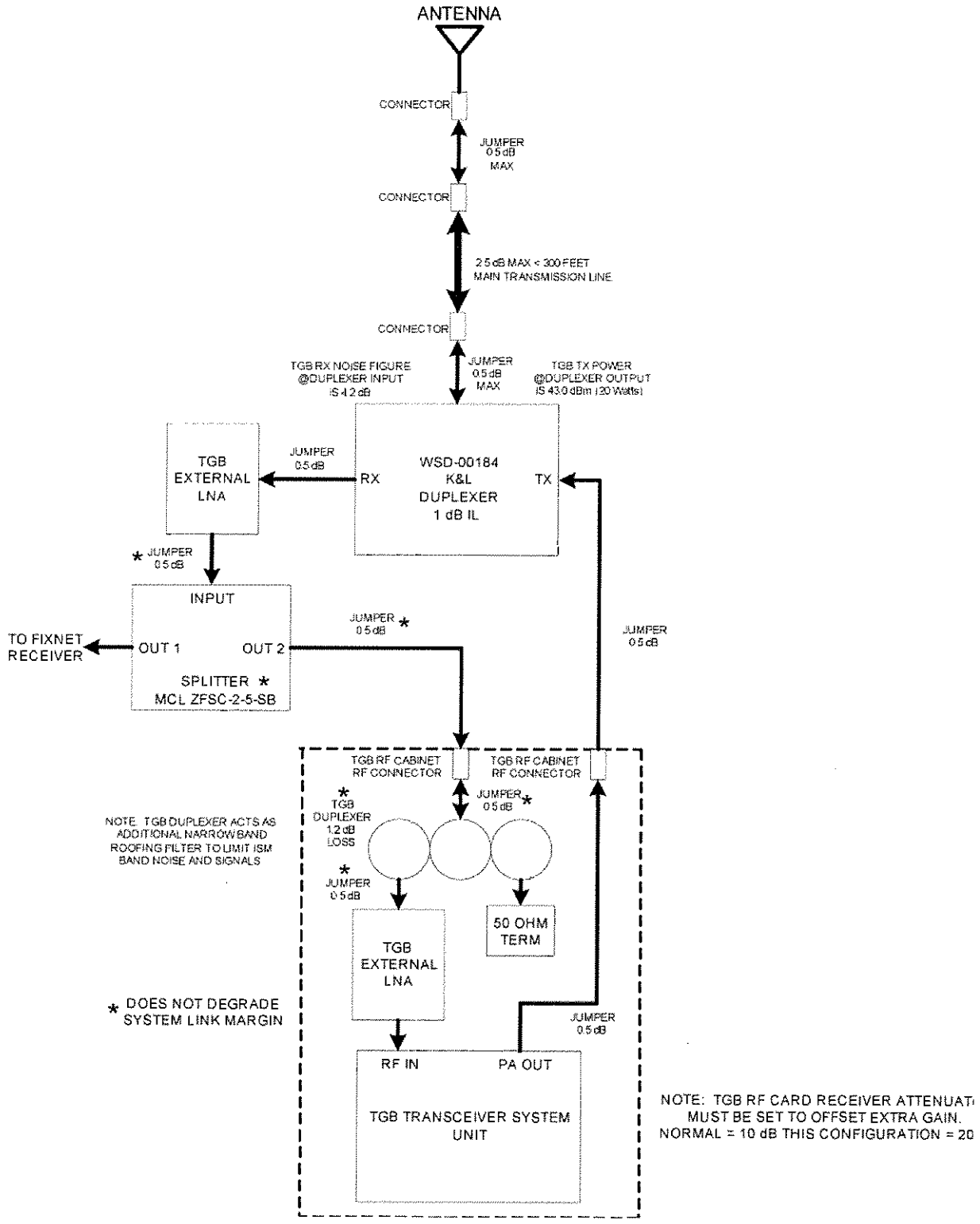

Figure 3-4: Indoor/Outdoor Enclosure Co-Located with FixNet System, RF Interconnect and Loss Budget Detail: Stand Alone Installation

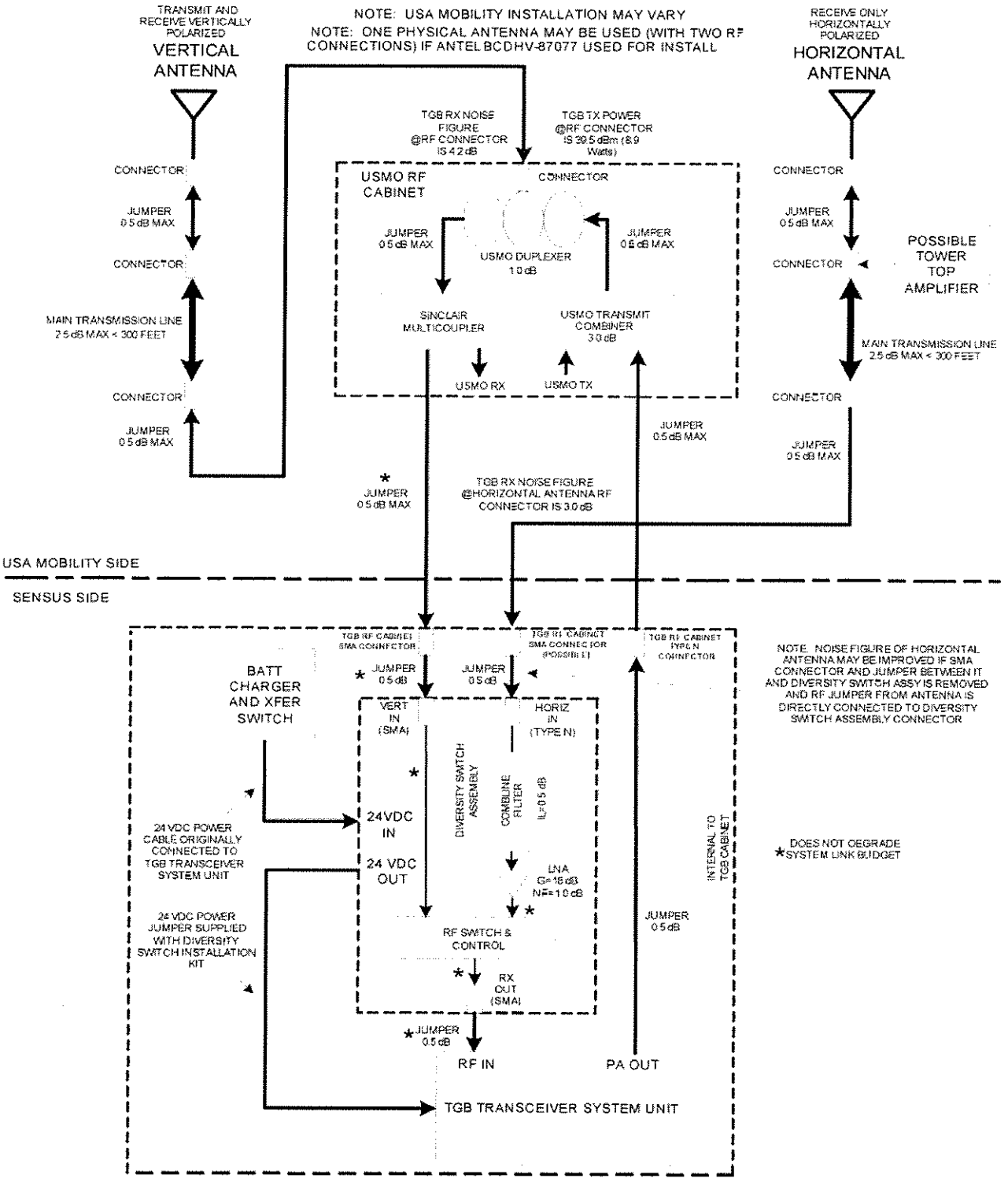

Figure 3-5: Indoor/Outdoor Enclosure with Diversity Switch, RF Interconnect and Loss Budget Detail: USMAO Installation

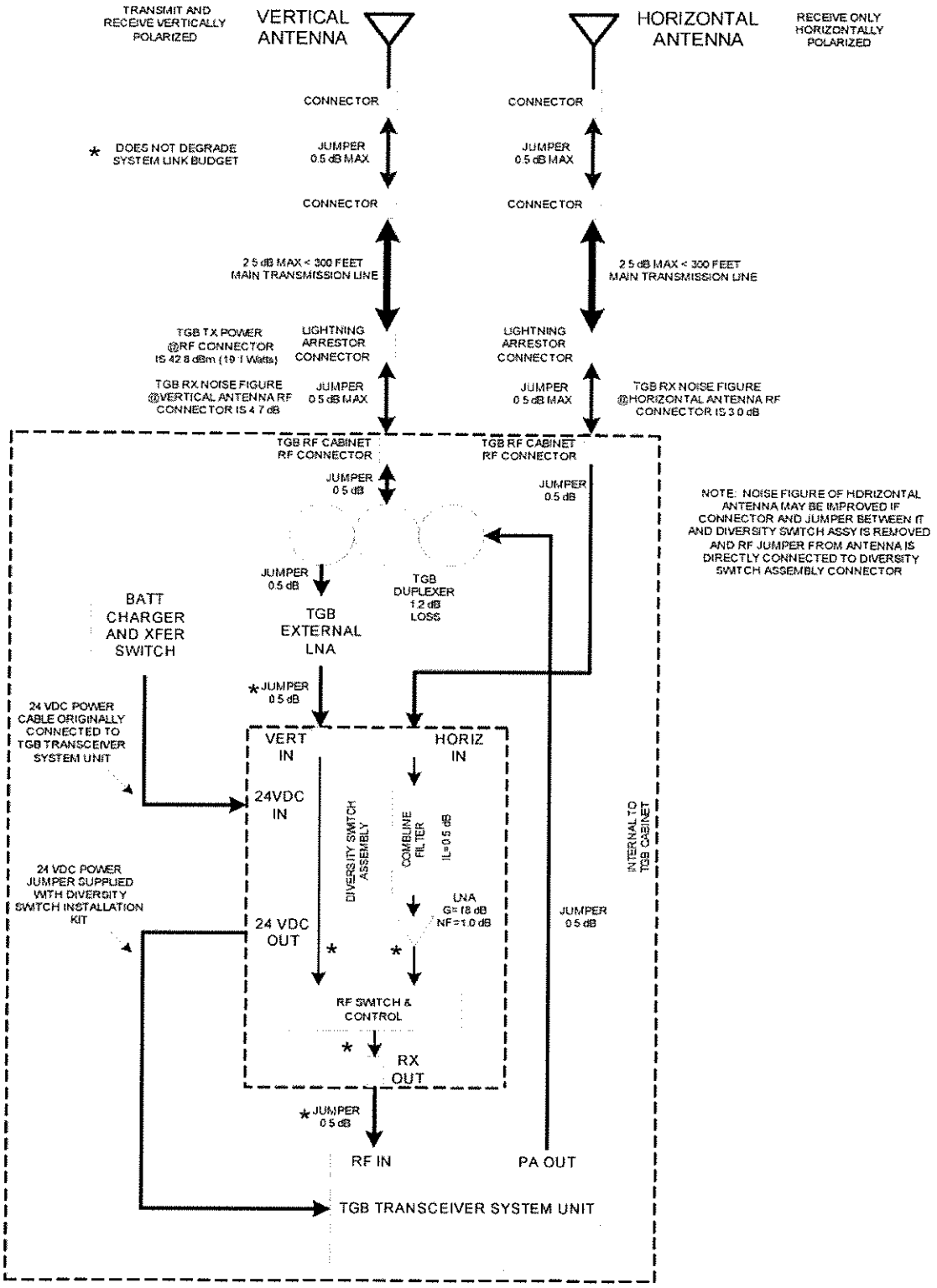

Figure 3-6: Indoor/Outdoor Enclosure with Diversity Switch, RF Interconnect and Loss Budget Detail: Stand Alone Installation

Follow this procedure to connect the TGB:

1. Unpack TGB rack from crate. Cables, if requested, are packaged separately in most cases. Keys for the rack will be included in the crate, usually taped to the rack.
2. Position the rack in desired location, untie AC cord from the side of the unit, and route to standard 120V wall plug. Unit may be plugged in at this time.
    - Some installations may require a 3-prong extension cord.
    - DO NOT connect unit in any way that will prevent grounding.
    - If extension cord is used, insure that the extension cord will handle the specified current draw of the equipment rack.
    - See Figure 3-7. Connect RF Transmit/Receive jumper cable(s) using Type N connector LMR-400, LDF4-50A Heliax or SMA to SMA LMR195 as shown below.
    - **For standard indoor enclosure, non-USAMO installations** connect the Type N jumper cable from the N-connector at the top of the enclosure to the antenna coax. The enclosure connector is usually labeled "RF OUT" but in fact is used both for reception and transmission in these installations.
    - **For standard indoor enclosure, USAMO installations** connect the jumper cable from the N-connector at the top of the enclosure to the input of the USAMO transmitter combiner. This connector is labeled "RF OUT". Connect the SMA jumper cable between the SMA jack on the enclosure marked "RF IN" and the proper output of the USAMO receiver multi coupler in the USAMO rack.
    - **For all other installation types** install antenna system jumpers as specified in the installation specifications for the unit you are installing.
3. Connect the GPS cable. Using the LMR-195 or LMR-400 cable, connect the cable from the TNC connector at the top of the rack to the GPS antenna.
4. Connect the Ethernet cable. Using a standard CAT-5 Ethernet jumper cable.
    - **For existing internet or DSL modem installations** connect to the RJ-45 connector at the top of the rack and route to the building internet connection or DSL modem.
    - **For USAMO satellite modem installations connect** to the RJ-45 connector to the satellite modem directly or using a 10base2 to 10baseT adapter if needed.
5. Connect the ground strap. In buildings equipped with a halo ground, it is always desirable to attach a copper strap to the ground bar at the lower left rear of the unit. 4" Flat strap may be routed under the rear door and attached to the bar with short 10-32 screws.

Figure 3-7 shows the connection locations on the TGB enclosure.

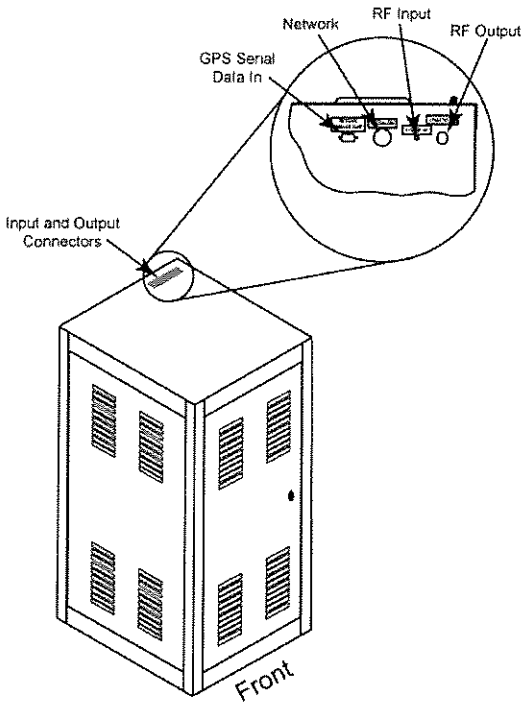

Figure 3-7: TGB Cabinet Cable Connections

3.6 Enclosure Grounding

	An improperly grounded enclosure presents an electrical hazard. See Appendix A for grounding specifications.

3.6.1 Ground Strap

Connect a #4 flat strap or #2 stranded copper cable from the TGB ground bus bar to the building ground. If using the flat strap, you can run the strap through the bottom of the door opening; for stranded cable, use a knock-out on the adjacent corner of the power knock-out in the cabinet or route through the bottom of the cabinet.

3.6.2 Coax Arrestor

A coax arrestor must be installed, preferably where the antenna coax enters the building, nearest the entrance ground bar.

Figure 3-8 shows the grounding scheme for the indoor TGB installation.

Figure 3-9 shows the grounding scheme for the indoor TGB GPS installation.

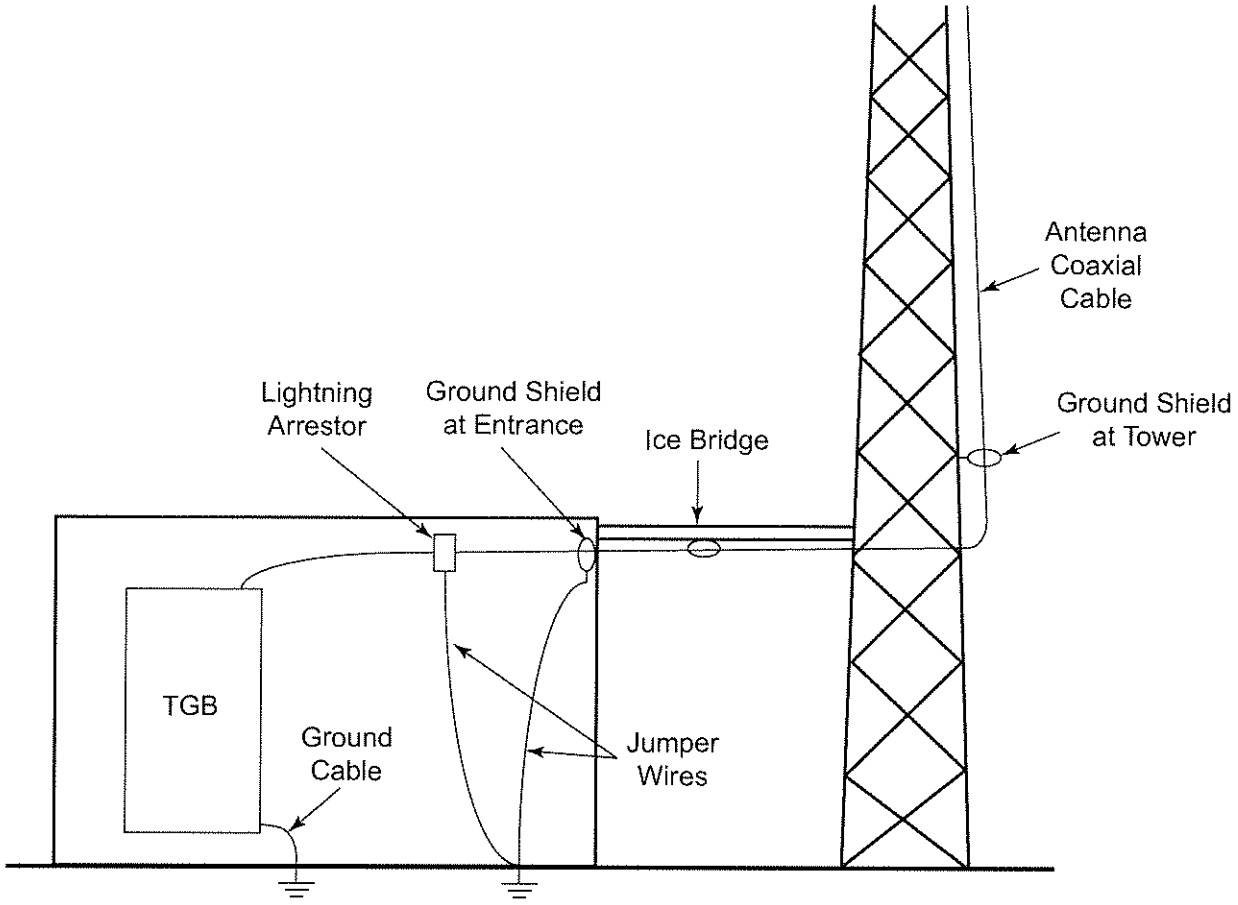

Figure 3-8: Indoor TGB Grounding Scheme.

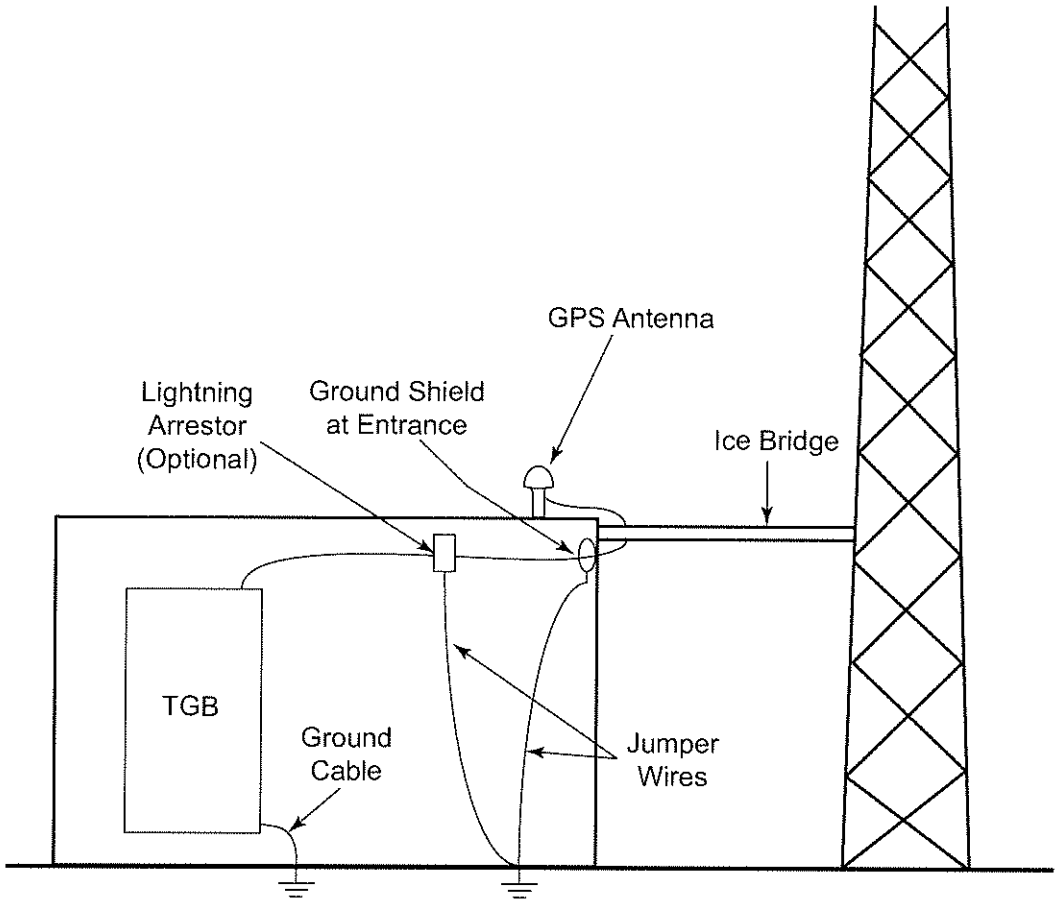

Figure 3-9: Indoor TGB GPS Grounding Scheme

4 Installing the Outdoor TGB

TGB Outdoor enclosures are specified when indoor locations are not available at the selected tower site. Outdoor TGB enclosures are Argus Technologies Tempest Te17 units, that are battery backed-up, provide 24-Volt DC power to the TGB and ancillary equipment, provide 120-Volt inverter-backed power to other ancillary equipment, and are designed to protect the transceiver and ancillary equipment against harsh environmental conditions found anywhere inside the U.S. (except Alaska), or Southern Canada. The Te17 unit employed by Sensus is a customized enclosure.

4.1 General

The Argus Tempest® Te17 provides a modular enclosure solution, designed for a wide range of outdoor power applications that can be configured as a stand-alone single bay unit, or expanded to two or more enclosures. The Argus Technologies Ltd. Te17 Outdoor Enclosure Manual, 057-024-B2 Revision A, details the Te17 for use as an outdoor modular wireless equipment enclosure. Figure 4-1 shows the front and side of the enclosure and Figure 4-2 shows the rear of the enclosure.

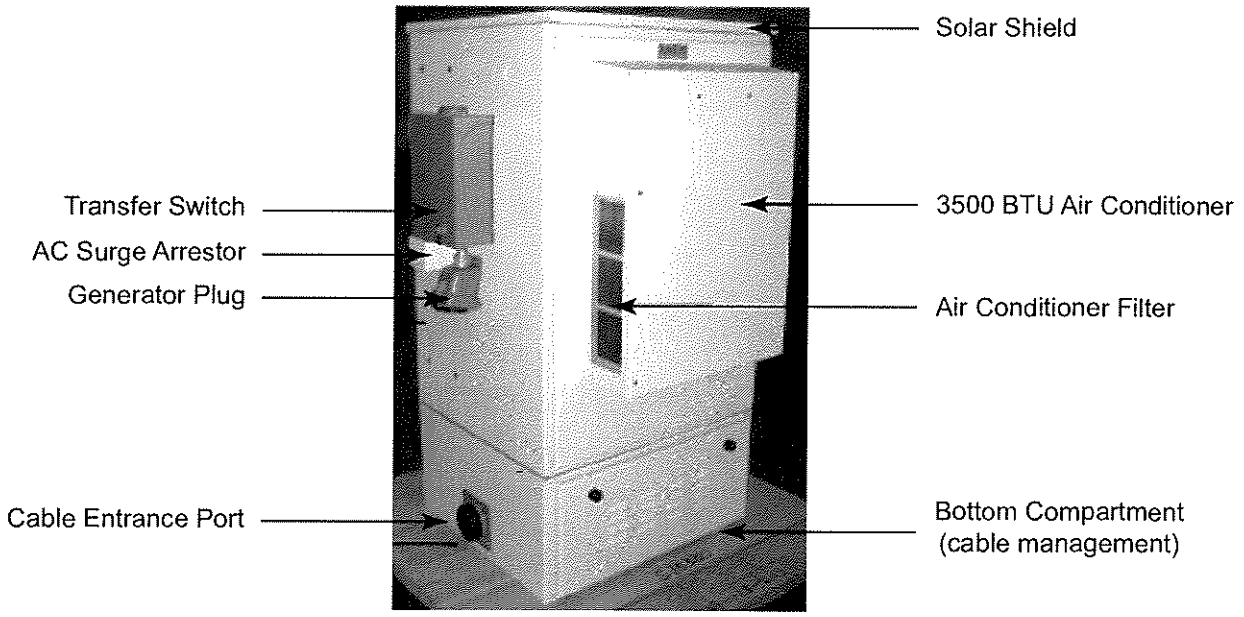

Figure 4-1: Te17 Enclosure Front and Side Features

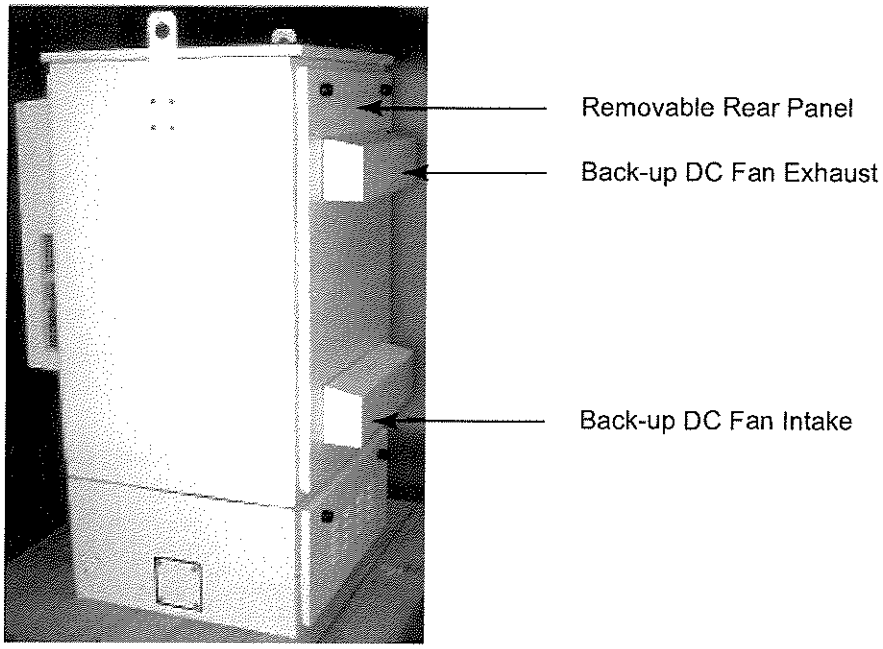

Figure 4-2: Te17 Enclosure Rear Features

4.2 Site Considerations

The information in this section is intended as a guideline only; there may be site-specific requirements and other factors that will require individual attention, such as regulatory jurisdictional codes and construction covenants.

4.2.1 Site Selection

The Te17 has been designed as an outdoor power equipment enclosure. The most common installations are expected to be:

- A concrete slab on grade,
- A steel platform, or
- An existing structure (i.e. rooftop).

The supporting structure must be designed to support a fully configured enclosure. This will require a concrete slab and any existing structures to be properly reinforced to support the floor loading. In addition, the mounting site must be designed and installed in accordance with local building practices and codes.

Site consideration should include the following:

- Areas that may receive hot air exhaust from neighboring buildings or structures should be avoided;
- any areas with architectural controls or environmental restrictions should be known;
- areas prone to flooding should be avoided; and
- a proper grounding system must be installed.

Exhibit C
Prices

EXHIBIT

C

EXHIBIT

C-1

C-2

C-3

C-4

Pricing Summary - ABCWUA
Hardware Pricing

***Note:** Volume pricing listed below shall apply to quantities listed on a single purchase order, accompanied by a shipping schedule specifying full order delivery within 12 calendar months. If shipping schedule is altered to reduce overall quantities, the appropriate volume price shall apply to TOTAL quantities delivered in any such 12 month period.*

Network Infrastructure		**Volume Pricing**		
Item	**Qty 0-2,499**	**2,500 - 9,999**	**10,000 - 24,999**	**25,000+**
Basestation (TGB)	$59,000.00	N/A	N/A	N/A
Metro	$42,500.00	N/A	N/A	N/A
Remote (FRP)	$10,000.00	N/A	N/A	N/A
Echo (Repeater)	$4,000.00	N/A	N/A	N/A
Basestation Installation (each site)	$6,000.00	N/A	N/A	N/A
SmartPoints				
Item	**Qty 0-2,499**	**2,500 - 9,999**	**10,000 - 24,999**	**25,000+**
520M2 Single Port	$98.00	$96.00	$94.00	$92.00
520 M2 Dual Port	$104.00	$102.00	$100.00	$98.00
Adapter Cable (Nicor/Itron to TR/PL)	$15	$14	$13	$12
Meter Registers (Sensus TR/PL)				
Item	**Qty 0-2,499**	**2,500 - 9,999**	**10,000 - 24,999**	**25,000+**
5/8" SR TR/PL Register (cuft) less housing 6'W	$56.40	$53.58	$50.90	$48.36
3/4" SR TR/PL Register (cuft) less housing 6'W	$56.40	$53.58	$50.90	$48.36
1" SR TR/PL Register (cuft) less housing 6'W	$56.40	$53.58	$50.90	$48.36
1.5" SR TR/PL Register (cuft) less housing 6'W	$56.40	$53.58	$50.90	$48.36
2.0" SR TR/PL Register (cuft) less housing 6'W	$56.40	$53.58	$50.90	$48.36
SRH Cmpd TR/PL Register (cuft) less housing 20'W	$147.26	$132.53		
W-Turbo TR/PL Register (cuft) less housing 20'W	$147.26	$132.53		

Payment Terms: *All services provided by Sensus under this Agreement shall be invoiced monthly in orrears. The Water Authority shall pay Invoices within thirty (30) days of receipt. All meters, modules, TGBs and any other equipment or other goods provide under this Agreement shall be invoiced upon delivery by Sensus to the Water Authority or the installation subcontractor, as the case moy be. The Water authority shall pay such Invoices within thirty (30) days of such delivery. Property in all meters, modules, TGBs and ony other equipment or other goods shall poss from Sensus to the Water Authority upon such delivery. All late payments by the Water Authority shall bear interest at 15% per annum.*

Annual CPI Escalation: *Utility shall pay for all goods and services rendered by Sensus hereunder at the prices set forth in Exhibit C. The pricing in Exhibit C shall remain firm until April 1, 2012. Starting on April 1, 2012 ("Trigger Date"), and on each anniversary of the Trigger Date. Thereafter, the pricing in Exhibit C shall automatically adjust to equal the summation of (i) the omount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediotely preceding year (which product shall not be less than zero, such that the pricing in Exhibit C cannot decrease under this section). The CPI will be calculated utilizing the CPI published the month prior to the anniversary of the trigger date compared to the equivalent month from one year earlier to determine the escalation. For example, if the Trigger Date occurs in October 2012, the CPI will be calculated by comparing September 2012 and September 2011 figures. "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All items Less Food and Energy" for the US. City Average for All items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index.*

Pricing Summary - ABCWUA
Scada Devices and Software

Item	Model Number	Price each	Description
T866 MicroRTU	T866-FLX-FRP	$1,599.00	FRP enclosure - Blade antenna - 120VAC Control Power
RTM II Modbus	MOD-RTMII-FLX	$999.00	For internal mount in IED enclosure - 2VDC control power supplied by IED - no antenna
RTM II Modbus	MOD-RTMII-FLX-NMT	$1,199.00	NAMA3R non metallic enclosure - 120VAC 12 VDC power supply - dual band blade antenna
SCADA-Xchange Software:			
DNP over Serial or DNP over TCP/IP			
Pricing for 100 to 200 devices:			
Installation		($1,750 per day)	
One time License Fee		$12,000	
Maintenance and Operations Sup		$3,500 per year	
Training		($1,500 per day plus expenses)	
PowerVista Software (hosted) for 100 to 200 devices:			
One time license		$79,500	
Installation/Set-up		$52,500	
Training (required)		$7,000	
Time and materials		($1,750 per day)	
consulting/integration		($1,750 per day)	
Maintenance per year			
Tier I (business hours)		$15,900	
-or-			
Tier II (24/7)		$27,880	

1 License per site (site is defined as a SCADA/DMS system or physical address).

2 Setup PowerVista and SCADA Xchange servers, configure software, setup cellular network VPN link, setup FlexNet RNI link, confiuration support of initial Telemetric devices to SCADA-Xchange, acceptance testing at customer site, document configuration for customer SCADA/IT departments. Travel Expense will be billed at cost.

3 Estimated 4 days on site. Travel expense will be billed at cost.

4 Invoiced in per day increments, travel expenses and materials invoiced at cost.

5 Includes monitoring and support of PowerVista, SCADA-Xchange servers, and wireless connections during hours of Mon-Friday 7am-6pm MST. Requires VPN connection to servers at customer site and certain privileges assigned to authorized Telemetric support personnel. Includes upgrades to latest PowerVista and SCADA Xchange releases.

6 Adds monitoring of PowerVista, SCADA-Xchange servers, and wireless connections 24x7x365. Includes restart of servers, applications and/or network services at system level. Requires VPN connection to servers at customer site and certain policy to contact support personnel.

Payment Terms: *All services provided by Sensus under this Agreement shall be invoiced monthly in arrears. The Water Authority shall pay Invoices within thirty (30) days of receipt. All meters, modules, TGBs and any other equipment or other goods provide under this Agreement shall be invoiced upon delivery by Sensus to the Water Authority or the installation subcontractor, as the case may be. The Water authority shall pay such Invoices within thirty (30) days of such delivery. Property in all meters, modules, TGBs and any other equipment or other goods shall pass from Sensus to the Water Authority upon such delivery. All late payments by the Water Authority shall bear interest at 15% per annum.*

Annual CPI Escalation: *Utility shall pay for all goods and services rendered by Sensus hereunder at the prices set forth in Exhibit C. The pricing in Exhibit C shall remain firm until April 1, 2012. Starting on April 1, 2012 ("Trigger Date"), and on each anniversary of the Trigger Date. Thereafter, the pricing in Exhibit C shall automatically adjust to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding year (which product shall not be less than zero, such that the pricing in Exhibit C cannot decrease under this section). The CPI will be calculated utilizing the CPI published the month prior to the anniversary of the trigger date compared to the equivalent month from one year earlier to determine the escalation. For example, if the Trigger Date occurs in October 2012, the CPI will be calculated by comparing September 2012 and September 2011 figures. "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All items Less Food and Energy" for the US. City Average for All items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index.*

Pricing Summary - ABCWUA
Services Pricing

Service	Phase 1 PILOT (up to 320 hours)	Additional (per day)
Sensus Project Manager	**$30,000**	$1,750
Sensus IT Lead	**$30,000**	$1,750
Travel (Not to Exceed)	**$35,000**	N/A
Training (beyond Pilot - per person)	**included**	$1,750
System Integration (beyond Flat File for Data Historian, per Hosting Agreement)	**Daily flat file only - included**	$1,750

Meter Surveys and SmartPoint Installation

Service	Per Meter
Meter survey work (Pre-construction)	$10
FlexNet Endpoint Installation	$65
Register Replacement	$9
Confined Space Entry Adder (additional each)	$85

***Payment** Terms: All services provided by Sensus under this Agreement sholl be invoiced monthly in arreors. The Water Authority shall pay Invoices within thirty (30) days of receipt. All meters, modules, TGBs and ony other equipment or other goods provide under this Agreement shall be invoiced upon delivery by Sensus to the Water Authority or the installotion subcontractor, as the case may be. The Water authority shall poy such Invoices within thirty (30) days of such delivery. Property in all meters, modules, TGBs ond any other equipment or other goods shall pass from Sensus to the Woter Authority upon such delivery. All late payments by the Water Authority shall bear interest at 15% per annum.*

Annual CPI Escalation: *Utility shall pay for all goods and services rendered by Sensus hereunder at the prices set forth in Exhibit C. The pricing in Exhibit C shall remain firm until April 1, 2012. Starting on April 1, 2012 ("Trigger Date"), and on each anniversary of the Trigger Date. Thereafter, the pricing in Exhibit C shall automatically adjust to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding year (which product shall not be less than zero, such that the pricing in Exhibit C cannot decrease under this section). The CPI will be calculated utilizing the CPI published the month prior to the anniversary of the trigger date compared to the equivalent month from one year earlier to determine the escalation. For example, if the Trigger Date occurs in October 2012, the CPI will be calculated by comparing September 2012 and September 2011 figures. "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All items Less Food and Energy" for the US. City Average for All items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index.*

Pricing Summary - ABCWUA
Annual Costs

RNI Hosting

		Deployment Size			
Item	**PILOT (up to 10K)**	**Up to 50K**	**50K - 100K**	**100K - 150K**	**Up to 200K**
Monthly RNI Hosting Fees	**$5,193**	$6,039	$8,756	$10,190	$11,624
Annual RNI Hosting Fees	**$62,316**	$72,468	$105,072	$122,280	$139,488

Network Operations Support (Applies to Sensus Hosted and Utility Hosted Model)

		Deployment Size			
Item	**PILOT (up to 10K)**	**Up to 50K**	**50K - 100K**	**100K - 150K**	**Up to 200K**
Monthly Network Operations	**$1,000**	$3,167	$4,584	$5,667	$6,667
Annual Network Operations	**$12,000**	$38,000	$55,000	$68,000	$80,000

Network Backhaul

Item	Per Site	
Network Hardware per site	**$1,040**	(estimated)
Monthly Backhaul per site	**$105**	(estimated)

Payment Terms: *All services provided by Sensus under this Agreement shall be invoiced monthly in arrears. The Water Authority shall pay Invoices within thirty (30) days of receipt. All meters, modules, TGBs and any other equipment or other goods provide under this Agreement shall be invoiced upon delivery by Sensus to the Water Authority or the installation subcontractor, as the case may be. The Water authority shall pay such Invoices within thirty (30) days of such delivery. Property in all meters, modules, TGBs and any other equipment or other goods shall pass from Sensus to the Water Authority upon such delivery. All late payments by the Water Authority shall bear interest at 15% per annum.*

Annual CPI Escalation: *Utility shall pay for all goods and services rendered by Sensus hereunder at the prices set forth in Exhibit C. The pricing in Exhibit C shall remain firm until April 1, 2012. Starting on April 1, 2012 ("Trigger Date"), and on each anniversary of the Trigger Date. Thereafter, the pricing in Exhibit C shall automatically adjust to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increase in CPI during the immediately preceding year (which product sholl not be less than zero, such that the pricing in Exhibit C cannot decrease under this section). The CPI will be calculated utilizing the CPI published the month prior to the anniversary of the trigger date compared to the equivalent month from one year earlier to determine the escalation. For example, if the Trigger Date occurs in October 2012, the CPI will be calculated by comparing September 2012 and September 2011 figures. "CPI" means the United States Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U) "All items Less Food and Energy" for the US. City Average for All items, 1982-84 = 100, not seasonally adjusted, or substantially similar succeeding index.*

Software - RNI
Sensus Hosted RNI Model

	Hosting for Pilot	Hosting for up to 50,000	Hosting for Over 50k and up to 100k	Hosting for Over 100k and up to 150k	Hosting for Full Deployment Up To 200k
Software License Fee	Included	Included	Included	Included	Included
RNI Software Annual Support and Maintenance	Included	Included	Included	Included	Included
RNI Third Party Software Licenses	OS and DB licenses included in Hosting Fee	OS and DB licenses included in Hosting Fee	OS and DB licenses included in Hosting Fee	OS and DB licenses included in Hosting Fee	OS and DB licenses included in Hosting Fee
Red Hat Linux 3 Year License	Included	Included	Included	Included	Included
Bundled 3rd Party Software	Included	Included	Included	Included	Included
RNI Dedicated Hardware	Included	Included	Included	Included	Included
Software Updates	All Major and Minor Software Updates	All Major and Minor Software Updates	All Major and Minor Software Updates	All Major and Minor Software Updates	All Major and Minor Software Updates
RNI Disaster Recovery	Included	Included	Included	Included	Included
Total Sensus RNI Fees	$62,316 (per year) Two (2) Year Term	$72,468 (per year) Three (3) year term	$105,072 (per year) Three (3) year term	$122,280 (per year) Three (3) year term	$139,488 (per year) Three (3) year term
Total Monthly Fees (Hosted RNI)	$5,193/mo Two (2) Year Term	$6,039/mo (3 year term)	$8,756/mo (3 year term)	$10,190/mo (3 year term)	$11,624/mo (3 Year Term)
Hosting Includes server hardware refresh every 3 years	3 year Hardware Refresh Included	3 year Hardware Refresh Included	3 year Hardware Refresh Included	3 year Hardware Refresh Included	3 year Hardware Refresh Included

Payment Terms: *All services provided by Sensus under this Agreement shall be invoiced monthly in arrears. The Water Authority shall pay Invoices within thirty (30) days of receipt. All meters, modules, TGBs and any other equipment ar other goods provide under this Agreement shall be invoiced upon delivery by Sensus to the Water Authority or the installation subcontractor, as the case may be. The Water authority shall pay such Invoices within thirty (30) days of such delivery. Property in all meters, modules, TGBs and any other equipment or other goods shall pass from Sensus to the Woter Authority upon such delivery. All late payments by the Water Authority shall bear interest at 15% per annum.*

Annual CPI Escalation: *Utility sholl pay far all goods and services rendered by Sensus hereunder at the prices set forth in Exhibit C. The pricing in Exhibit C shall remain firm until April 1, 2012. Starting on April 1, 2012 ("Trigger Date"), and on each anniversary of the Trigger Date. Thereafter, the pricing in Exhibit C shall outomatically adjust to equal the summation of (i) the amount charged for such pricing component during the immediately preceding year ("Base Amount"); plus (ii) the product of the Base Amount multiplied by the percentage rate of increose in CPI during the immediately preceding year (which product shall not be less than zero, such that the pricing in Exhibit C cannot decrease under this section). The CPI will be calculated utilizing the CPI published the month prior to the anniversary of the trigger date campared to the equivalent month from one year earlier to determine the escalation. For example, if the Trigger Date occurs in October 2012, the CPI will be calculated by comparing September 2012 and September 2011 figures. "CPI" means the United States Bureau of Labar Statistics Consumer Price Index far All Urban Consumers (CPI-U) "All items Less Food and Energy" for the US. City Average for All items, 1982-84 = 100, not seasonally adjusted, ar substantially similar succeeding index.*

Exhibit D
Warranty

EXHIBIT

D

G-500-R12

Sensus Limited Warranty

I. General Product Coverage

Sensus USA Inc. ("Sensus") warrants its products and parts to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment and as set forth below. All products are sold to customer ("Customer") pursuant to Sensus' Terms of Sale, available at: http://na.sensus.com/TC/TermsConditions.pdf.

II. SR II® 5/8", 3/4" & 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for five (5) years from the date of Sensus shipment or until the registration shown below, whichever occurs first. Sensus further warrants that the SR II meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	New Meter Accuracy	Repair Meter Accuracy
5/8" SR II Meter	500,000 gallons	1,500,000 gallons
3/4" SR II Meter	750,000 gallons	2,250,000 gallons
1" SR II Meter	1,000,000 gallons	3,000,000 gallons

III. SR® 5/8", 3/4" & 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4" and 1" SR meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
5/8" SR Meter	1,500,000 gallons
3/4" SR Meter	2,250,000 gallons
1" SR Meter	3,000,000 gallons

IV. SR 1-1/2" & 2" and accu-RTM...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2" and 2" SR and accu-RTM meter will perform to at least AWWA Repaired Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
1-1/2" SR & accu-RTM Meter	5,000,000 gallons
2" SR & accu-RTM Meter	8,000,000 gallons

V. PMM® 5/8", 3/4", 1" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 5/8", 3/4", and 1" PMM meter will perform to at least AWWA Repaired Meter Accuracy Standards for fifteen (15) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
5/8" PMM	1,500,000 gallons
3/4" PMM	2,000,000 gallons
1" PMM	3,000,000 gallons

VI. PMM 1-1/2", 2" Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment. Sensus further warrants that the 1-1/2", and 2" PMM meter will perform to at least AWWA Repaired Meter Accuracy Standards for ten (10) years from the date of Sensus shipment or until the registration shown below, whichever occurs first:

	Repair Meter Accuracy
1-1/2" PMM	5,000,000 gallons
2" PMM	8,000,000 gallons

VII. iPERL™ Water Management Systems...

that register water flow are warranted to perform to the accuracy levels set forth in the iPERL Water Management System Data Sheet (IPL-110), available at www.sensus.com/iperl or by request from 1-800-METER-IT, for twenty (20) years from the date of Sensus shipment. The iPERL System warranty does not include the external housing.

VIII. Maincase...

of the SR, SR II and PMM in both standard and low lead alloy meters are warranted to be free from defects in material and workmanship for twenty-five (25) years from the date of Sensus shipment. Composite and E-coated maincases will be free from defects in material and workmanship for fifteen (15) years from the date of Sensus shipment.

IX. Sensus "W" Series Turbo Meters, OMNI™ Meters and Propeller Meters...

are warranted to perform to AWWA New Meter Accuracy Standards for one (1) year from the date of Sensus shipment.

X. Sensus accuMAG™ Meters...

are warranted to be free from defects in material and workmanship, under normal use and service, for 18 months from the date of Sensus shipment or 12 months from startup, whichever occurs first.

XI. Sensus Registers...

are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the periods stated below or until the applicable registration for AWWA Repaired Meter Accuracy Standards, as set forth above, are surpassed, whichever occurs first:

5/8" thru 2" SR, SR II, PMM, Standard Registers	25 years
5/8" thru 2" SR, SR II, PMM, Encoder Registers	10 years
Electronic Communication Index (ECI)	10 years
All HSPU, IMP Contactor, R.E.R. Elec. ROFI	1 year
Standard and Encoder Registers for: "W" Turbo and Propeller Meters	1 year
OMNI Register with Battery	10 years

XII. Sensus Electric Meters...

are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment. Spare parts and components are warranted to be free from defects in material and workmanship for one (1) year from the date of Sensus shipment. Repaired or refurbished equipment repaired by Sensus is warranted to be free from defects in material and workmanship for ninety (90)

SENSUS

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Sensus Limited Warranty

days from the date of Sensus shipment or for the time remaining on the original warranty period, whichever is longer.

XIII. Batteries, iPERL System Components, AMR and FlexNet™ System AMI Interface Devices...

are warranted to be free from defects in material and workmanship from the date of Sensus shipment for the period stated below:

Electronic TouchPad	10 years
RadioRead® MXU (Model 505C, 510R or 520R) and Batteries	20 years*
Act-Pak® Instrumentation	1 year
TouchRead® Coupler and AMR Equipment	1 year
FlexNet Water or Gas SmartPoint™ Modules and Batteries	20 years*
Tower Gateway Base Station	1 year
FlexNet Network Portal	1 year
iCanA and FlexNet Electricity SmartPoint Module	1 year
iPERL System Battery and iPERL System Components	20 years*

* Sensus will repair or replace non-performing:

- RadioRead® MXU (Model 505C, 510R and 520R) and Batteries,
- FlexNet Water or Gas SmartPoint Modules (configured to the factory setting of six transmissions per day) and batteries,
- iPERL System Batteries, and/or the iPERL System flowtube, the flow sensing and data processing assemblies, and the register ("iPERL System Components")

at no cost for the first ten (10) years from the date of Sensus shipment, and for the remaining ten (10) years, at a prorated percentage, applied towards the published list prices in effect for the year product is accepted by Sensus under warranty conditions according to the following schedule:

Years	Replacement Price	Years	Replacement Price
1 – 10	0%	16	55%
11	30%	17	60%
12	35%	18	65%
13	40%	19	70%
14	45%	20	75%
15	50%	>20	100%

Note: Software supplied and licensed by Sensus is warranted according to the terms of the applicable software license agreement. Sensus warrants that network and monitoring services shall be performed in a professional and workmanlike manner.

XIV. Return...

Sensus' obligation, and Customer's exclusive remedy, under this Sensus Limited Warranty is, at Sensus' option, to either repair or replace the product, provided the Customer (i) returns the product to the location designated by Sensus within the warranty period; and (ii) prepays the freight costs both to and from such location.

The return of products for warranty claims must follow Sensus' Returned Materials Authorization (RMA) procedures. Water meter returns must include documentation of the Customer's test results. Test results must be obtained according to AWWA standards and must specify the meter serial number. The test results will not be valid if the meter is found to contain foreign materials. If Customer chooses not to test a Sensus water meter prior to returning it to Sensus, Sensus will repair or replace the meter, at Sensus' option, after the meter has been tested by Sensus. The Customer will be charged Sensus' then current testing fee. Sensus SmartPoints modules and MXU's returned must be affixed with a completed return evaluation label. For all returns, Sensus reserves the right to request meter reading records by serial number to validate warranty claims.

THE FOREGOING REMEDIES ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES FOR THE FAILURE OF THE PRODUCTS, SERVICES OR LICENSED SOFTWARE TO CONFORM TO THEIR RESPECTIVE WARRANTIES.

XV. Limits of Warranty...

This Limited Warranty does not include costs for removal or installation of products, or costs for replacement labor or materials, which are the responsibility of the Customer. Furthermore, this Limited Warranty does not apply to products which have been: installed improperly or in non-recommended installations; tampered with; modified or repaired with parts or assemblies not certified in writing by Sensus, including without limitation, communication parts and assemblies; converted; altered; damaged; read by equipment not approved by Sensus; subjected to misuse, improper storage, care, maintenance, or improper periodic testing.

SENSUS' LIABILITY SHALL BE LIMITED TO DIRECT DAMAGES. SENSUS SHALL NOT BE LIABLE FOR (I) ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, NOR (II) ANY REVENUE LOST BY CUSTOMER, IRRESPECTIVE WHETHER SUCH LOST REVENUE IS CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE, NOR (III) DAMAGES ARISING FROM MAINCASE OR BOTTOM PLATE BREAKAGE CAUSED BY FREEZING TEMPERATURES, WATER HAMMER CONDITIONS, OR EXCESSIVE WATER PRESSURE, WHETHER CATEGORIZED AS DIRECT DAMAGES OR OTHERWISE. THIS LIMITATION APPLIES WHETHER THE CAUSE OF ACTION ARISES IN TORT (INCLUDING NEGLIGENCE OR STRICT LIABILITY), IN CONTRACT, UNDER STATUTE OR OTHERWISE. THIS LIMITATION OF LIABILITY IS A FUNDAMENTAL INDUCEMENT TO SENSUS SELLING THE PRODUCTS. IT SHALL APPLY UNCONDITIONALLY AND IN ALL RESPECTS. IT SHALL BE INTERPRETED BROADLY TO GIVE SENSUS THE MAXIMUM PROTECTION PERMITTED UNDER LAW.

XVI. No Implied Warranties...

THE WARRANTIES SET FORTH IN THIS SENSUS LIMITED WARRANTY ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. THE CUSTOMER ASSUMES SOLE RESPONSIBILITY FOR DETERMINING THAT THE PRODUCTS, SERVICES AND SOFTWARE LICENSES PURCHASED ARE SUITABLE FOR THEIR INTENDED APPLICATION AND USE.

SENSUS

8601 Six Forks Road, Suite 700
Raleigh, NC 27615
1-800-638-3748
h2oinfo@sensus.com

Exhibit E
Software License

EXHIBIT

E

Exhibit E – Software License

Part I: Software License for WATER AUTHORITY-Hosted RNI Model

a. "***Intellectual Property***" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto.

b. "***Software***" means the Sensus software listed below in Part III under the heading "Sensus Software List" and any Updates and purchased Upgrades to such software. "Software" includes both the FlexWare Software and the FlexServer Software.

c. "***Software Maintenance Fee***" means the Software Annual Support & Maintenance fee to be paid by WATER AUTHORITY to Sensus during the Term as set forth in **Exhibit C**.

d. "***System Support Fee***" means the Network Operations Support fee to be paid by WATER AUTHORITY to Sensus during the Term as set forth in **Exhibit C**.

e. "***Updates***" means a patch that follows the nomenclature put forth by Sensus that complies to the "Z" release of the patch process. The nomenclature describes "X" as the Major release; "Y" as the Minor release and "Z" as the patch or maintenance release to either a Major or Minor release. These "Z" patch releases of the FlexWare Software correct processing errors and other faults and defects found in the last two previous minor or major releases of the FlexWare Software. An update is provided to the WATER AUTHORITY as part of the software maintenance and subject to payment of the Software Maintenance Fee.

f. "***Upgrades***" means all modifications, revisions, additions, or alterations of the FlexWare Software that represent minor or major releases of new versions of the FlexWare Software which constitute a significant improvement in functionality or architecture of the FlexWare Software. An upgrade to the currently installed system to a major or minor release as put forth by the Sensus nomenclature would constitute an increase in either the major "X" or minor "Y" release of the software (X.Y.Z) An upgrade to either of these release types provides additional features and functions above and beyond what is currently installed and will be subject to payment of additional fees to be specified by Sensus.

1. Software License, Third Party Software, Software Maintenance and System Support.

a. Sensus hereby grants to WATER AUTHORITY for the fees outlined in **Exhibit C**, a limited, nonexclusive, non-transferable, royalty-bearing license (the "Software License") to use the Software solely for the purposes of reading its' own meters and communicating with its HAN Devices in accordance with this Agreement in the Service Territory during the Term (the "Permitted Use"). The Software License is personal to WATER AUTHORITY and is nonsublicenseable to Affiliates or other third parties. WATER AUTHORITY shall have no rights to the Software other than those granted in this Section. WATER AUTHORITY shall not use the Software other than for the Permitted Use.

b. The Software License shall commence on the Effective Date and shall terminate immediately when the Agreement to which it annexed expires or is earlier terminated for any reason, or if WATER AUTHORITY fails to pay the Network Operation Support Fee or uses the Software other than for the Permitted Use.

c. Except as expressly authorized in accordance with the Permitted Use, WATER AUTHORITY shall not (and shall not attempt to): (a) use, copy, adapt, translate, publish, display, sublicense, rent, lease, lend, transfer or distribute the Software, related documentation, or any copy thereof; (b) improve, enhance, revise, modify or make any other derivatives of the Software, related documentation or any copy or part thereof. WATER AUTHORITY shall not reverse assemble, reverse compile, reverse engineer or otherwise translate or decode the Software or any part thereof, or any copy thereof. Sensus' suppliers of software and documentation (or any part thereof) are beneficiaries of this provision. WATER AUTHORITY shall not destroy, remove or otherwise alter any proprietary notices (including, but not limited to, copyright notices) on the Software or related documentation, or any copy thereof, and agrees to reproduce any such notice(s) on any copy thereof it makes pursuant to this License.

d. WATER AUTHORITY shall ensure that only WATER AUTHORITY employees who need access to the Software for WATER AUTHORITY to obtain the benefits of this Agreement may access it.

e. In addition to the Software, Sensus shall provide WATER AUTHORITY with the open source software listed below in Part III under the heading "Bundled third Party Software" (the "Bundled Third Party Software"). WATER AUTHORITY acknowledges that the Bundled Third Party Software is subject to various rights and restrictions in favor of or imposed by the licensors thereof and that its use of the Bundled Third Party software is subject to all such rights and restrictions. Sensus provides no warranty, indemnity nor support of or in relation to such third party software.

f. Part III below contains, under the heading "Non-Bundled Third Party Software", certain third party software that WATER AUTHORITY must license directly from third party licensors in order to operate the FlexNet System ("Non-Bundled Third Party Software"). Sensus provides no warranty, indemnity nor support of or in relation to such third party software. All such rights and obligations are a matter strictly between WATER AUTHORITY and the relevant third party licensors.

g. Upon the termination of the Software License, all rights of the WATER AUTHORITY to use the Software shall immediately cease and WATER AUTHORITY shall promptly remove and return to Sensus all copies of the Software and any related documentation and shall instruct all its employees that further use of the Software is prohibited.

h. For so long as the WATER AUTHORITY pays the Software Maintenance Fees, Sensus shall provide the customer with ongoing software Updates and patches. Upgrades are not included hereunder and shall be priced separately.

i. For so long as the WATER AUTHORITY pays the Network Operations Support Fee,, Sensus shall provide the customer with available firmware updates to the TGB(s) and Sensus FlexNet endpoints, and remote telephone support and troubleshooting of the system as specified in Sensus' "Standard Customer Support Program and Procedures".

j. Sensus and/or its supplier (as applicable) shall own all right, title, and interest in and to the Intelléctual Property associated with the Software and related documentation. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Sensus by virtue of this Agreement or otherwise, and instead vests in WATER AUTHORITY, WATER AUTHORITY agrees to grant and assign and hereby does grant and assign to Sensus all right, title, and interest that WATER AUTHORITY may have in and to such Intellectual Property.

k. Sensus will maintain compatibility with only the two previous releases of major or minor software of the current software system. If the customer requires support for versions that are

beyond the two previous versions, WATER AUTHORITY will have to pay a fee for consultation to address the current issues or pay for the Upgrade to a supported version of the system software.

l. To the maximum extent permitted by law, the Parties agree that the Uniform Computer Information Transaction Act as enacted by any state shall not apply, in whole or in part, to this Agreement.

Part II: Software License for Sensus-Hosted RNI Model

g. "***FlexWare™ Software***" means the Sensus software listed in Part III under the heading "FlexWare™ Software List" and any Updates and purchased Upgrades to such software.

h. "***Intellectual Property***" means patents and patent applications, inventions (whether patentable or not), trademarks, service marks, trade dress, copyrights, trade secrets, know-how, data rights, specifications, maskwork rights, moral rights, author's rights, and other intellectual property rights, as may exist now or hereafter come into existence, and all renewals and extensions thereof, regardless of whether any of such rights arise under the laws of the United States or of any other state, country or jurisdiction, any registrations or applications thereof, and all goodwill pertinent thereto.

i. "***Software***" means the Sensus software listed in Part III under the heading "Sensus Software List" and any Updates and purchased Upgrades to such software. "Software" includes both the FlexWare Software and the FlexServer Software.

j. ***"RNI Hosting Fees"*** means the periodic hosting fees to be paid by WATER AUTHORITY to Sensus during the Term as set forth in **Exhibit C**.

k. "***Updates***" means a patch that follows the nomenclature put forth by Sensus that complies to the "Z" release of the patch process. The nomenclature describes "X" as the Major release; "Y" as the Minor release and "Z" as the patch or maintenance release to either a Major or Minor release. These "Z" patch releases of the FlexWare Software correct processing errors and other faults and defects found in the last two previous minor or major releases of the FlexWare Software. An update is provided to the WATER AUTHORITY as part of the Exhibit H hosting agreement and subject to payment of the RNI Hosting Fees.

l. "***Upgrades***" means all modifications, revisions, additions, or alterations of the FlexWare Software that represent minor or major releases of new versions of the FlexWare Software which constitute a significant improvement in functionality or architecture of the FlexWare Software. An upgrade to the currently installed system to a major or minor release as put forth by the Sensus nomenclature would constitute an increase in either the major "X" or minor "Y" release of the software (X.Y.Z) An upgrade to either of these release types provides additional features and functions above and beyond what is currently installed. An upgrade is provided to the WATER AUTHORITY as part of the Exhibit H hosting agreement and subject to payment of the RNI Hosting Fees.

1. Software License, Third Party Software, Software Maintenance and System Support.

m. Sensus hereby grants to WATER AUTHORITY for the fees outlined in **Exhibit C**, a limited, nonexclusive, non-transferable, royalty-bearing license (the "Software License") to use the Software solely for the purposes of reading its' own meters and communicating with its HAN Devices in accordance with this Agreement in the Service Territory during the Term (the "Permitted Use"). The Software License is personal to WATER AUTHORITY and is

nonsublicenseable to Affiliates or other third parties. WATER AUTHORITY shall have no rights to the Software other than those granted in this Section. WATER AUTHORITY shall not use the Software other than for the Permitted Use.

n. The Software License shall commence on the Effective Date and shall terminate immediately when the Agreement to which this is annexed expires or is earlier terminated for any reason or if WATER AUTHORITY fails to pay the Network Operation Support Fee or uses the Software other than for the Permitted Use.

o. Except as expressly authorized in accordance with the Permitted Use, WATER AUTHORITY shall not (and shall not attempt to): (a) use, copy, adapt, translate, publish, display, sublicense, rent, lease, lend, transfer or distribute the Software, related documentation, or any copy thereof; (b) improve, enhance, revise, modify or make any other derivatives of the Software, related documentation or any copy or part thereof. WATER AUTHORITY shall not reverse assemble, reverse compile, reverse engineer or otherwise translate or decode the Software or any part thereof, or any copy thereof. Sensus' suppliers of software and documentation (or any part thereof) are beneficiaries of this provision. WATER AUTHORITY shall not destroy, remove or otherwise alter any proprietary notices (including, but not limited to, copyright notices) on the Software or related documentation, or any copy thereof, and agrees to reproduce any such notice(s) on any copy thereof it makes pursuant to this License.

p. WATER AUTHORITY shall ensure that only WATER AUTHORITY employees who need access to the Software for WATER AUTHORITY to obtain the benefits of this Agreement may access it.

q. In addition to the Software, Sensus shall provide WATER AUTHORITY with the open source software listed in Part III under the heading "Bundled third Party Software" (the "Bundled Third Party Software"). WATER AUTHORITY acknowledges that the Bundled Third Party Software is subject to various rights and restrictions in favor of or imposed by the licensors thereof and that Sensus' use of the Bundled Third Party software is subject to all such rights and restrictions.

r. Part III below contains, under the heading "Non-Bundled Third Party Software", certain third party software that Sensus must license directly from third party licensors in order to host the FlexNet System ("Non-Bundled Third Party Software").

s. Upon the termination of the Software License, all rights of the WATER AUTHORITY to use the Software shall immediately cease and Sensus shall promptly remove WATER AUTHORITY access to the Software and WATER AUTHORITY shall return any related documentation and shall instruct all its employees that further use of the Software is prohibited.

t. For so long as the WATER AUTHORITY pays the RNI Hosting Fees, Sensus shall provide the customer with the Hosting Services as documented in Exhibit H. For so long as the WATER AUTHORITY pays the Network Operations Support Fee,, Sensus shall provide the customer with available firmware updates to the TGB(s) and Sensus FlexNet endpoints, and remote telephone support and troubleshooting of the system as specified in Sensus' "Standard Customer Support Program and Procedures".

u. Sensus and/or its supplier (as applicable) shall own all right, title, and interest in and to the Intellectual Property associated with the Software and related documentation. To the extent, if any, that any ownership interest in and to such Intellectual Property does not automatically vest in Sensus by virtue of this Agreement or otherwise, and instead vests in WATER AUTHORITY, WATER AUTHORITY agrees to grant and assign and hereby does grant and

assign to Sensus all right, title, and interest that WATER AUTHORITY may have in and to such Intellectual Property.

v. To the maximum extent permitted by law, the Parties agree that the Uniform Computer Information Transaction Act as enacted by any state shall not apply, in whole or in part, to this Agreement.

Part III: Sensus Software List

FlexWare Software List		
	Software	***Version***
FLEXWARE™ SOFTWARE LIST	Sensus RNI	Version 3.0
	TGB Software	Version 100120

THIRD PARTY SOFTWARE		
	Software	***Version***
BUNDLED THIRD PARTY SOFTWARE	Apache Tomcat	Version 5.5.23
	Geos	Version 2.2.3-1
	Java	Version 1.6.20
	JMS/Active MQ	Version 5.4
	Ntpd	Version 3.9
	Open LDAP	Version 2.3.43-3
	Open SSH	Version 4.4
	Open SSL	Version 0.9.8e-7
	Perl	Version 5.8.8
	PostgreSQL	Version 8.4
	Spring Framework	Version 2.5.6
	Apache HTTP Server	Version 2.2.3
	copSSH	Version 2.1.0
	cURL	Version 7.15.5-2
	PostGIS	Version 1.3.5-1
	Sarissa	Version 0.9.7.1
	ImageMagick	Version 6.2.8.0-4
	Ghostscript	Version 8.15.2-9.4
NON-BUNDLED THIRD PARTY SOFTWARE	Microsoft SQL database	
	Oracle database (option)	11g
	MS Windows Server 2008	Enterprise Edition (64 bit installation)
	RedHat Linux	RedHat Enterprise Linux AS 5.5 Premium Edition
	Big Brother or HP Open View	Version 3.1 Version 7.51 or newer
	Red Gate SQL Backup or Veritas Netbackup	Standard Edition Version 6.0 or newer
	Google Earth	Version 4.1 or newer

Exhibit F
Spectrum

EXHIBIT

F

EXHIBIT F Spectrum

a. Contractor shall cause its subsidiary, Sensus Spectrum LLC (called "Licensor" in this Exhibit F) to grant to Water Authority (called "Licensee" in this Exhibit F) a limited, non exclusive, revocable right to use (each a "License") the radio frequency pair 901.125 and 940.125 (collectively, the "Licensed Frequency") in the Service Territory, and Licensor will retain a right to use and sublease the Licensed Frequency on a secondary basis.

b. For each License, the Parties intend to be granted hereunder, the Parties agree to cooperate and submit to the Federal Communications Commission ("FCC") an application for a "Long Term *De Facto* Transfer Lease," as such term is defined by the FCC. Each License granted hereunder shall become effective the date the FCC approves the Parties' respective application. Once the FCC has approved the Parties' application for a Long Term *De Facto* Transfer Lease for a given License, no further instrument need be executed by the Parties for the License to be effective, and the License shall be governed by the terms of this Agreement and the rules and regulations of the FCC with respect to a Long Term *De Facto* Transfer Lease.

c. Licensee is authorized to use each Licensed Frequency for the sole purpose of data transmission for advanced metering applications. Licensee is prohibited from transmitting voice communications over a Licensed Frequency.

d. Licensee is authorized to transmit or receive over each Licensed Frequency using only the AMI System purchased from Contractor hereunder, and only in accordance with Licensor's product specifications for such AMI System, and Licensee is prohibited from transmitting or receiving over each Licensed Frequency using another vendor's equipment, except third party endpoints that incorporate FlexNet technology under license or other agreement between Contractor and such third party provider.

e. Licensee is authorized to use the Licensed Frequency solely for its own internal business purposes and is prohibited from reselling, subleasing or sublicensing the Licensed Frequency.

f. Unless terminated earlier in accordance with paragraph (g), below, the term of each License made hereunder shall be co-terminus with the term of the KNKV203 license (the "FCC License") under authority of which Licensor authorizes use of the Licensed Frequency.

g. Each License shall terminate; (i) three months after Licensee ceases to transmit over the Authorized Frequency licensed by the License in question, or three months after Licensee ceases to transmit over the Licensed Frequency utilizing the AMI System purchased from Contractor; (ii) upon termination of the Agreement to which this Exhibit F is attached; (iii) upon the termination or expiration of the FCC License under which the License is granted; or (iv) if the FCC License is revoked, cancelled, terminated, or otherwise ceases to be in effect, the respective License(s) granted under such FCC License shall terminate and Licensee has no further authority to transmit under such License.

h. Pursuant to 47 C.F.R. § 1.9030(c); (i) Licensee assumes primary responsibility for the operation of its AMI System and for complying with the Federal Communications Act of 1934, as amended, 47 U.S.C. § 151 *et seq.* (the "Communications Act"), and applicable rules and regulations of the FCC, including the Commission's forfeiture provisions, provided that Licensor shall hold harmless and indemnify Licensee for any such forfeiture imposed solely as a result of Licensee's operation in full compliance with the terms of this Agreement; (ii) Licensee is responsible for interacting with the FCC regarding the Licensed Spectrum, including the filing of any applications or notifications, provided that Licensee hereby retains

Licensor as Licensee's agent in submitting and prosecuting the Long Term *De Facto* Transfer Lease application; (iii) Licensee shall maintain accurate information on file pursuant to FCC rules (see 47 C.F.R. § 1.65); and (iv) Licensee shall retain on file a copy of this Agreement and each Long Term *De Facto* Transfer Lease application and FCC grant thereof, and make the same available upon request by the FCC.

i. Licensee shall report to Licensor promptly, and in no event later than 72 hours afterward, any incident where Licensee experiences harmful interference, receives a complaint or other notice of having caused harmful interference, or receives any type of communication from the FCC or other government agency regarding radio frequency transmission. In such an event, Licensor will use commercially reasonable efforts to help resolve the situation.

j. The annual fee payable by Licensee to Licensor under the Agreement to which this Exhibit F is annexed includes the monthly consideration for the Licenses. This license will terminate if the annual fee is not paid.

k. Pursuant to 47 C.F.R. § 1.9040; (i) Licensee shall comply at all times with the Communications Act and applicable FCC rules, and the respective License and/or this Agreement may be terminated if Licensee fails to so comply; and (ii) Licensee acknowledges that neither Licensee nor Licensor owns the Licensed Frequencies, the Licensed Frequencies are the property of the United States of America, and a License is not an assignment, sale or transfer of the respective Licensed Frequency.

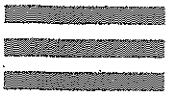
l. Licensee represents and warrants that it would be eligible to hold the respective FCC License, including without limitation that Licensee is not an agent of a foreign government and Licensee is not subject to a denial of federal benefits.

m. Licensor is responsible for maintaining the FCC License(s) pursuant to which the Licenses are granted, including without limitation notifying the FCC of the satisfaction of construction and service requirements, paying any applicable regulatory fees and timely applying for renewal.

Exhibit G
Scope of Work

EXHIBIT

G



SENSUS

The Measure of the Future

Exhibit G

ABCWUA FlexNet Pilot Contract Statement of Work

1. Overall AMI Network Requirements

This section provides the overall provisions regarding the design and build of the AMI network.

Sensus Responsibilities

1. Sensus shall design, plan, deliver, install, and provision an AMI network with all necessary network equipment hardware, software and firmware to meet the ABCWUA pilot requirements.

2. Sensus shall provide services for Project Management to plan, deliver, install, provision and perform Systems Acceptance Testing (SAT) on the AMI network.

3. Sensus shall provide services for Project Management assistance to provide training, testing, and documentation for the FlexNet system.

4. Sensus shall provide Project Management services to provide training and general oversight of subcontractor installer (UPA). Sensus will also provide training to ABCWUA on SmartPoint installation and troubleshooting.

5. Sensus shall provide detailed guidance to ABCWUA on required site preparation for installation of AMI network Basestations.

6. Sensus shall provide all licenses that are needed for Company to use the AMI network hardware, firmware, software, and radio frequency spectrums.

7. Sensus shall perform site surveys at any specified Basestation sites, and provide detailed Scope of Work for site preparation work to be performed by ABCWUA.

8. Sensus shall be responsible for connecting and testing the backhaul communications between the AMI network Basestations and the Sensus RNI Head-end data collection system.

9. Sensus shall cause its subcontract installer (UPA) to install the ABCWUA SmartPoints according to Sensus factory guidelines and ABCWUA specifications and guidelines.

10. Sensus shall direct and oversee the subcontractor installer (UPA) on the installation of FlexNet SmartPoints and any meter or register replacements ordered by ABCWUA to meet specified contract timelines.

11. Sensus shall provide field verification of all network equipment.

12. Sensus shall identify any additional or unique tools required for installation and field testing of network equipment and communications.

13. Under the RNI Hosting Agreement, Sensus shall monitor the processes and services running on the Network.

14. Sensus shall facilitate ABCWUA access to, and provide training on, AMI network diagnostic information and applications collected and presented by the network.

15. Sensus shall provide detailed reports to ABCWUA on any equipment that is DOA.

ABCWUA Responsibilities

1. ABCWUA shall identify and make available ABCWUA-owned properties suitable for FlexNet Basestation installation.

2. ABCWUA shall provide suitable support structure (tower, pole, water tank railing, etc.) for FlexNet Basestation antenna and coaxial cable at ABCWUA owned Basestation sites. (Sensus will clearly define all required work at each selected site after performing site surveys at proposed sites).

3. ABCWUA shall identify and place orders with appropriate vendors for any registers, meters or other equipment ABCWUA wishes to install as part of the pilot meter population.

4. ABCWUA shall provide support to the AMI network design (site selection) and installation activities. A single point of contact (ABCWUA Project Manager) is recommended to facilitate communication with Sensus and Sensus subcontractor project management personnel.

   4.1. ABCWUA Project Manager should be prepared to:

      4.1.1. Oversee any AMI network Basestation site preparation required at ABCWUA owned Basestation sites (i.e. required power drops, outdoor cabinet foundation construction, Basestation antenna mast preparation, etc). Sensus shall clearly identify all required Basestation site preparation after final Basestation sites are mutually agreed upon by Sensus and ABCWUA, and site surveys have been performed.

      4.1.2. Facilitate and coordinate access to ABCWUA-owned Basestation sites for AMI network Basestation installation and follow-up visits.

4.1.3. Participate in regular planning meetings with Sensus and Sensus subcontractor Project Managers.

4.1.4. Coordinate phasing and scheduling of SmartPoint installation and/or any other register or meter replacements per ABCWUA requirements.

4.1.5. Coordinate and communicate with Sensus, subcontractor installer (UPA) and ABCWUA stakeholders on AMI network progress and requirements.

4.1.6. Coordinate with ABCWUA personnel and Sensus Project Manager to schedule AMI network training with ABCWUA staff.

5. ABCWUA shall regularly monitor and validate the AMI network performance using reports and diagnostic software tools provided with the system, and notify Sensus of any perceived issues as they arise.

2. Sensus Network Planning and Design

This activity involves the planning and designing of the appropriate AMI network infrastructure to meet the performance requirements.

Sensus Responsibilities

1. Sensus shall provide a comprehensive network deployment plan which will identify the locations for installing field network devices and the timetable for their installation in a way that supports the ABCWUA Deployment Plan.

2. Sensus and ABCWUA shall jointly make the final selection of the Basestation locations.

   2.1. Sensus shall provide ABCWUA with Scope of Work for Basestation or Echo installation on each site located on UTLITY property.

3. Sensus shall be fully responsible for the Network design. Sensus shall incorporate requested modifications from ABCWUA as mutually agreed, and will declare any changes to expected performance or cost that result from ABCWUA requested modifications.

4. Sensus shall design the AMI network such that sufficient Basestation network devices will be deployed to meet the requirements specified in the contract.

   4.1. Sensus shall develop a network propagation analysis and network plan to support the proposed FlexNet network.

   4.2. Sensus shall use the Sensus Air Model to validate meter density issues and validate the overall network design.

5. Sensus shall perform the necessary network optimization to achieve the performance requirements mutually agreed upon by Sensus and ABCWUA.

6. Sensus shall identify network coverage gaps and shortfalls, either temporary or systemic, if any.

7. Sensus shall explain the specific challenges at specific metering and network locations where gaps are anticipated.

ABCWUA Responsibilities

1. ABCWUA shall provide Sensus a territory map, a list of meter locations, and a list of available locations suitable for Basestation installation.

2. ABCWUA shall review the proposed FlexNet Network Design and can request modifications and clarifications if necessary.

3. ABCWUA shall review Scope of Work for each Basestation or Echo installation on ABCWUA owned sites, and shall approve or reject proposed Scope of Work for each site.

   3.1. If Scope of Work is rejected, ABCWUA shall provide explanation and/or alternate proposed Scope.

3. ABCWUA Deployment Plan

The ABCWUA deployment plan shall identify each geographic area of the deployment, the specific locations of meters (street addresses and/or lat/long if available) estimated in that area, and the estimated date of implementation in that area.

4. Network Installation and Provisioning

This section describes the overall installation and provisioning of the appropriate AMI network infrastructure. Installation will include the full range of activities necessary to plan, install, initialize, and verify the network devices, in a manner that ensures network communication performance and reliability requirements are met.

Sensus Responsibilities

1. Sensus shall provide the following installation related services:

   1.1. AMI Network Basestation device deployment activity planning and coordination.

   1.2. Installation of all network equipment and connections to power supply and network backhaul.

1.3. RNI Head End installation at Sensus Data Center under the terms of the FlexNet RNI Hosting Agreement (Exhibit H).

1.4. SmartPoint transmitter installation at pilot water meter locations (performed by Sensus subcontractor (UPA)).

1.5. Register and/or meter retrofit work specified by ABCWUA for the pilot meter population (performed by Sensus subcontractor (UPA)).

2. Sensus shall take responsibility for Basestation site survey work, and clearly define all Basestation and/or repeater site preparation work required by ABCWUA.

3. Sensus shall perform physical placement and installation of all AMI network equipment necessary for ABCWUA network performance.

4. Sensus shall ensure that all AMI network equipment installed on ABCWUA infrastructure adheres to engineering and safety standards of ABCWUA.

5. Sensus shall provision the system including configuration and loading of data needed to ensure all AMI network equipment and installed endpoint devices are properly registered in the Sensus RNI head-end system.

6. Sensus may use third party contractors for installation or maintenance of AMI network equipment with the following provisions:

6.1. Sensus shall be responsible for any charges incurred for these activities.

6.2. Sensus shall take full responsibility for work and network performance.

7. Sensus shall provide TCP/IP network backhaul connection at all Basestation sites. One (1) static IP address is required at each Basestation site for indoor cabinets, and two (2) static IP addresses are required for outdoor Basestation cabinets.

ABCWUA Responsibilities

1. ABCWUA shall identify and make available ABCWUA-owned or other properties suitable for FlexNet Basestation installation.

2. ABCWUA shall facilitate access to Basestation sites for site surveys and network hardware installation.

2.1. ABCWUA shall secure access for all structures or buildings at Basestation sites that are NOT owned by the ABCWUA for the purposes of Basestation installation and periodic maintenance of AMI network equipment.

3. ABCWUA shall provide suitable structure at Basestation sites for FlexNet Basestation antenna installation.

4. ABCWUA shall provide sufficient area and foundation to install outdoor Basestation cabinet at Basestation sites (if outdoor cabinet is required).

   4.1. Should an outdoor cabinet be required at the TGB site, this foundation will consist of a concrete pad or sufficient area for support structure designed to support at least 600 lbs per square foot.

5. ABCWUA shall provide a ground field at each Basestation site for grounding of the Basestation cabinet and antenna. Sensus shall provide detailed guidance to ABCWUA on ground field requirements at each Basestation site.

6. ABCWUA shall provide an AC power source for the Basestation cabinet at each Basestation site.

   6.1. Indoor Basestation cabinets require a 120 VAC, 20 Amp power source.

   6.2. Outdoor (NEMA-4) TGB cabinets require a 240 VAC, 30 Amp power source to support on-board climate control equipment.

7. ABCWUA shall provide power for the Basestation cabinet should be located within 1 foot of the desired location of the Basestation cabinet.

8. ABCWUA shall provide padlocks for any outdoor Basestation cabinets if required for security purposes. Basestations can be secured by using up to seven (7) padlocks per unit.

9. ABCWUA shall provide any required permits for installation of network devices at Basestation sites selected.

6. Regional Network Interface (RNI) Installation

1. Sensus shall be responsible installing and commissioning the Regional Network Interface (RNI) at the Sensus data center under the terms of the RNI Hosting Agreement (Exhibit H).
2. Sensus shall be responsible for all supplies, software and licenses needed for RNI installation and operation, under the terms of the RNI Hosting Agreement (Exhibit H).

7. Purchasing and Fulfillment

Order Placement

1. ABCWUA shall place firm purchase orders for products, licenses, installation, professional services and project management services for the pilot.
2. ABCWUA shall place firm purchase orders with 70 calendar days lead time in accordance with the deployment plan. Sensus shall fulfill the orders to arrive via surface shipment within

70 calendar days of ABCWUA purchase order date. Sensus and ABCWUA shall work together to accommodate changes in the deployment plan.

Sensus Acceptance and Verification of Orders

1. Sensus shall be responsible to receive and acknowledge ABCWUA orders.
2. Sensus shall be responsible to verify that the order has been scheduled for production and will be available for the ABCWUA when needed.
3. Sensus shall manufacture and deliver the meters, SmartPoints and, all network components, making all necessary components available to meet the ABCWUA's meter and network deployment schedule.

8. Network and Regional Network Interface (RNI) Operation

Sensus Responsibilities

Sensus shall:

1. Monitor the FlexNet AMI network, including the RNI and all network components, under the terms of the Sensus RNI Hosting Agreement (Exhibit H).
2. Ensure all data within the RNI is maintained available and online for at least 60 days.
3. Provide software and training for the Sensus Route Manager Software ("MDM") for use by ABCWUA. This software provides basic route management, reporting and analytic functionality for up to 50,000 services.
4. Provide resource and preventative maintenance monitoring using Sensus network and equipment diagnostics events, analyze the day to day performance of the network, identify issues, and initiate corrective actions under the terms of the RNI Hosting Agreement (Exhibit H).
5. Manage ongoing data capacity to set the appropriate modes of operation in each meter in order to manage reliability, the number of meters and meter types served, and overall meter message throughput.
6. Periodically monitor in-band and adjacent channels for RF obstruction, notifying ABCWUA and the FCC if such obstructions are found or indicated by a degradation of network performance.
7. Provide Disaster Recovery solution via data replication to a fault tolerant data center within one business day or less under the terms of the RNI Hosting Agreement (Exhibit H).
8. Provide remote SmartPoint firmware maintenance under the terms of the RNI Hosting Agreement (Exhibit H).
9. Provide technical support through the Sensus project management team and/or Sensus Technical Services during local business hours.

10. Maintain TCP/IP backhaul connection and any related TCP/IP networking equipment (routers, hubs, etc.) at Basestation sites under the terms of the RNI Hosting Agreement (Exhibit H). Backhaul connections shall have the specified number of static IP addresses, and be capable of delivering data collected by the FlexNet Basestations to the FlexNet Regional Network Interface (RNI) hosted off site by Sensus.
11. Provide technical support to ABCWUA from centralized customer support center organization. Support Phone Number: 1-800-638-3748 option 2
12. Provide Network Monitoring of RNI Servers, FlexNet Basestations, Remotes and other network equipment under the terms of the RNI Hosting agreement. Network monitoring excludes individual endpoint monitoring, except for daily reports provided to ABCWUA under the terms of the RNI Hosting Agreement (Exhibit H).

ABCWUA Responsibilities

ABCWUA Shall:

1. Receive the daily reading file from the Sensus-hosted RNI via FTP or similar, and import this data file into the ABCWUA Data Historian system as needed for billing and other purposes.
2. Pay all RNI hosting fees under the terms of the RNI Hosting Agreement (Exhibit H).
3. Pay Sensus for network hardware and monthly charges required to maintain TCP/IP network backhaul communications from each Basestation site.
    a. Alternately, ABCWUA may provide TCP/IP network backhaul at Basestation sites as long as backhaul solution meets minimum FlexNet system requirements.
4. Provide Sensus at least 120 days notice if terminating RNI server hosting agreement, and shall upon termination of RNI server hosting agreement:
    a. Purchase all required RNI server hardware and software to operate the FlexNet system (server hardware. Operating Systems, Database software, Bundled 3rd Party applications).
    b. Pay any fees to configure RNI servers locally at ABCWUA Data Center. Sensus will charge a flat rate of $1,750 per day (plus any applicable expenses) for server configuration work at ABCWUA premises.
    c. Assume all management of RNI servers, including network performance monitoring and Basestation monitoring.

9. Meter, Register and SmartPoint Installation

This section describes responsibilities associated with Meter, Register and SmartPoint installation. This installation work is typically performed in groups or phases that are clearly defined, and can be installed and tested according to Systems Acceptance Test (SAT) criteria in a defined time period.

Sensus Responsibilities

1. Sensus shall cause its subcontract installer (UPA) to install the ABCWUA pilot SmartPoints according to Sensus factory guidelines and ABCWUA specifications and guidelines.
2. Sensus shall direct and oversee the subcontractor installer (UPA) on the installation of FlexNet SmartPoints, meter or register retrofits ordered by ABCWUA to meet specified contract timelines.
3. Sensus shall provide weekly reports to ABCWUA on meter, register and SmartPoint installation status.
4. Sensus and subcontractor installer (UPA) shall provide quality assurance on installation work performed.
5. Sensus and subcontractor installer (UPA) shall troubleshoot any non-performing SmartPoint locations prior to Systems Acceptance Testing (SAT) to identify any installation issues or other problems.
6. Sensus and/or subcontractor installer (UPA) shall notify ABCWUA of any locations that are not available for installation. This may include, but is not limited to:
   6.1. Meters that cannot be located.
   6.2. Meters behind locked gates or in locked buildings that are not readily accessible during scheduled installation hours.
   6.3. Meters that cannot be safely accessed using appropriate industry, subcontractor or ABCWUA safety guidelines.
7. Sensus subcontractor installer (UPA) shall notify ABCWUA of locations that require a change order to the original Scope of Work. Examples of potential change orders may include:
   7.1. Locations requiring confined space entry not identified in original scope.
   7.2. Locations requiring meter or register replacement or modification that are not identified in original project scope.
   7.3. Locations with broken pipes, valves or other equipment required to properly service the meters or perform required work.
   7.4. Meter boxes or lids that cannot be modified to accept SmartPoints per Sensus installation guidelines.
8. Sensus shall ensure that the meter group or route meets all Systems Acceptance Test criteria mutually agreed upon by ABCWUA and Sensus in the project contract before turning the meter group or route over to ABCWUA as complete.
9. Sensus shall provide SmartPoint, register and meter installation and troubleshooting training to ABCWUA to ensure that ABCWUA personnel can effectively manage long-term troubleshooting and maintenance of the meter and SmartPoint population.

ABCWUA Responsibilities

1. ABCWUA shall identify and place orders with appropriate vendors for any registers, meters or other equipment ABCWUA wishes to install as part of the pilot meter population.

2. ABCWUA shall coordinate with Sensus and subcontractor installer (UPA) to establish the SmartPoint installation phases, schedules, shipment quantities, and overall project timeline.
3. ABCWUA shall participate in the development of, and clearly communicate any required installation guidelines for, SmartPoints, registers and meters at ABCWUA customer locations. This may include providing standard ABCWUA meter engineering specifications, as well as communicating any other guidelines that Sensus or the subcontractor installer (UPA) are expected to follow while performing field work on ABCWUA customer premises.
4. ABCWUA shall coordinate with Sensus and subcontractor installer (UPA) to help define quality assurance criteria for installation of equipment at ABCWUA customer meter locations.
5. After accepting a route or meter group as complete (according to mutually agreed upon Systems Acceptance Testing (SAT) criteria for the project), ABCWUA shall assume long-term maintenance and troubleshooting on accepted meter groups.

10. Field Validation and Systems Acceptance Testing (SAT)

This section describes responsibilities related to Systems Acceptance Testing (SAT) for the FlexNet network.

Sensus Responsibilities

1. Sensus shall clearly define Systems Acceptance Testing (SAT) criteria prior to system installation. Sensus and ABCWUA should mutually agree upon SAT criteria which will become part of the network contract.
2. SENSUS and ABCWUA shall work in good faith to complete the pilot Systems Acceptance Testing no later than thirty (30) days after commencement of testing.
3. Sensus shall ensure that the pilot meter population identified by ABCWUA meets or exceeds this SAT criteria prior to releasing a meter group or route to ABCWUA for long-term maintenance.
4. Sensus shall provide training on SmartPoint troubleshooting to adequately prepare ABCWUA to assume long-term maintenance of meter population after system acceptance.
5. Sensus technical support and subject matter experts shall be available to ABCWUA for consultation on long-term system and SmartPoint maintenance and troubleshooting per the terms of the Software and Network Operations Maintenance contracts.

ABCWUA Responsibilities

1. ABCWUA shall review and mutually agree with Sensus upon the Systems Acceptance Testing (SAT) criteria for the pilot deployment.

2. ABCWUA shall promptly review Systems Acceptance Test (SAT) results delivered by Sensus after completion of network and SmartPoint installation of the pilot meter population.

3. ABCWUA shall promptly give written notice of pilot meter population acceptance after reviewing and verifying Systems Acceptance Testing results.

4. After accepting a meter group or route, ABCWUA shall assume responsibility for long-term maintenance and troubleshooting of the accepted meter population(s).

11. Network Operations and Maintenance

This section describes responsibilities associated with Sensus warranty and maintenance services needed to maintain optimal AMI network performance as designed. Network Operations also includes FCC License maintenance, network component parts, and hardware technical support.

Sensus Responsibilities

Sensus shall:

1. Provide network and TGB and RNI monitoring and trouble ticket generation as part of the RNI Hosting agreement.

2. Provide "second response" resources for site visits and troubleshooting of Basestations and other network infrastructure components. (Excludes SmartPoints in phases that have been approved by ABCWUA).

3. Provide components to repair Basestation or other FlexNet network equipment if required.

4. Provide the use of the required licensed FCC spectrum.

5. Assure compliance with FCC regulations and regulatory matters.

6. Provide all warranty obligations of network component hardware as required per the agreement between the companies.

7. Provide software and/or firmware updates as required to Regional Network Interface (RNI) and Basestation collectors as part of the RNI Hosting agreement.

8. Manage all planned network outages (if required for regular maintenance or upgrades) to meet the system availability requirements.

ABCWUA Responsibilities

1. ABCWUA shall pay Network Operations Support fees according to network contract.

2. ABCWUA shall report to Sensus any network problems as soon as possible after discovery.

3. ABCWUA shall review Root Cause Analysis findings provided by Sensus and approve mitigation strategy.

4. ABCWUA shall manage warranty returns for AMI SmartPoint devices, registers or meters if required. The Sensus RMA process is outlined below in this document.

5. ABCWUA shall provide "first responder" labor for Basestation maintenance or troubleshooting, if required.

6. ABCWUA is responsible for all labor costs associated with Basestation relocation, repair, or component replacement.

7. ABCWUA shall provide labor for standard periodic Basestation maintenance procedures, such as cleaning air filter and checking cable connections. Detailed maintenance procedures can be found in document ***AMR-453 Basestation Maintenance.***

12. Training of ABCWUA Staff

This section describes responsibilities associated with training ABCWUA staff and contractors.

Sensus Responsibilities

1. Sensus shall provide an integrated training plan for ABCWUA approval at the beginning of system deployment.

    1.1. The training plan shall include training for different functional areas (e.g. system administrator, system developer, field engineers, SmartPoint troubleshooting, etc.), and specify the type of training (e.g. classroom, field, on the job, etc.) and duration of training.

    1.2. The training plan shall include recommendations on ABCWUA personnel to be trained in each functional area.

    1.3. The training plan shall include recommendations on prerequisite knowledge and experience of trainees in each functional area.

2. Sensus shall provide training on the administration, management, and operations of the integrated AMI system.

    2.1. Sensus shall provide a paper copy and a digital copy of all training manuals in MS-Office and/or Acrobat Reader PDF formats.

    2.2. Sensus shall give ABCWUA rights to copy and distribute all training manuals for internal ABCWUA use.

ABCWUA Responsibilities

1. ABCWUA shall provide training facilities and locations, etc. to facilitate the training of ABCWUA personnel to monitor and use the FlexNet network.

2. ABCWUA shall schedule appropriate personnel for training and distribute training documents to training participants.

13. Technical Documentation

This section summarizes the documentation requirements.

Sensus Responsibilities

1. Sensus shall provide documents, including:

   1.1. User Manuals, describing the functions of the FlexNet modules and/or meters, communications network equipment and head-end system.

   1.2. Application Guides, describing the processes and steps for performing each of head-end applications.

   1.3. FlexNet System Administration Manuals, including user account management, levels of authority, backup and restore procedures, troubleshooting procedures, etc.

   1.4. Database Management System Manuals, including data load, incremental update, data errors and troubleshooting guide, data backup and restore procedures for the AMI head-end system.

   1.5. Configuration Manuals for meters, communications network equipment, and head-end system.

2. Sensus shall provide ABCWUA with one hard copy and one digital media DVD copy.

   2.1. The digital copy shall be in common Microsoft Office and Acrobat Reader PDF formats.

   2.2. Sensus will give ABCWUA the right to make and distribute paper and digital copies of all documentations for internal ABCWUA use.

3. Sensus shall provide ABCWUA new or updates to the documentations as they become available.

ABCWUA Responsibilities

1. ABCWUA shall make and distribute paper and digital copies of documentations for internal ABCWUA use as needed.

2. ABCWUA shall maintain the copies of the appropriate documentation versions that match the then existing system installations and configurations.

14. On-line Order Tracking

Sensus shall provide access to a Web-Based, on-line order tracking system for purposes of permitting ABCWUA to view status of open orders and shipments of Sensus equipment. The content of the tracking system will be updated at least weekly.

15. Sensus Project Management

This section describes the overall project management responsibilities associated with developing and deploying the AMI system and endpoints.

Sensus Responsibilities

1. Sensus shall provide inputs to ABCWUA Program Management Office (PMO) as needed for finalizing and maintaining the program management plan.

2. Sensus shall provide ABCWUA updates to project issues, action items and resolutions for keeping the issue/action item log up to date

3. Sensus shall assist ABCWUA in coordinating the project activities associated with deploying the FlexNet system, including FlexNet Basestations, FlexNet SmartPoint installation, and any AMI network system testing and verification.

4. Sensus shall analyze the impacts of scope changes on Sensus projects.

5. Sensus shall provide consultation to ABCWUA on quality issues and improvement opportunities as needed.

6. Sensus shall provide monthly data on AMI system performance (from endpoint devices to head-end) and service level performance.

7. Sensus shall assist ABCWUA in managing risks and dependencies throughout the Sensus project lifecycle.

8. Sensus Project Manager

    8.1. Sensus shall provide Sensus project management resources as mutually agreed during the deployment period to meet the deployment schedule.

    8.2. Sensus shall provide qualified and competent project managers (PM) who pass standard ABCWUA background checks.

8.3. The Sensus Project Manager will perform the following duties and responsibilities:

8.3.1. The Project Manager is responsible for overall planning and execution of FlexNet pilot project, employing generally accepted project management processes. This position will also be responsible for business planning, customer interface, sub contracts, and network deployment, optimization, systems acceptance testing, and customer acceptance.

8.3.2. The PM will interact with all levels of the customer organization (field to executive level), supervise on-site Sensus personnel and coordinate the activities of corporate, sub-contractor and customer personnel assigned to the project.

8.3.3. The PM will schedule and conduct periodic reviews and impose scheduled maintenance and operational tests to ensure system performance.

8.3.4. The PM will develop topics for and conducts routine meetings with customers, project reviews with corporate headquarters and special meetings as necessary.

8.4. The Sensus Project Manager will require the following qualifications:

8.4.1. Bachelor's Degree in Business, Construction, Engineering, Computer Science, or equivalent;

8.4.2. Project Management experience in large scale activities, managing multi-person teams.

8.4.3. PMP certification preferred

8.4.4. Experience managing and tracking project budgets;

8.4.5. Strong problem solving and analytical skills are essential;

8.4.6. Excellent interpersonal communications and presentation skills are essential as this role involves direct customer liaison and interaction with Sensus employees, contractors and functional department heads;

8.4.7. The ability to work under pressure and provide high quality solutions to problems; must be able to work independently and function well as part of a team.

8.4.8. Completely literate with all MS Suite applications, general computer skills, able to type efficiently, develop MS Power Point Presentations, Spreadsheets, Graphs and Analyses of project related information.

ABCWUA Responsibilities

1. ABCWUA shall develop and maintain the overall program management plan with inputs from Sensus, installer subcontractor (UPA) and other ABCWUA suppliers.

2. ABCWUA shall consolidate status reports inputs from Sensus to develop monthly program status reports and maintain the overall program schedules.

3. ABCWUA shall coordinate the management of all project scopes within the AMI program.

4. ABCWUA shall consolidate assessments from all parties and analyze the impacts of scope changes on all projects within the AMI program.

5. ABCWUA shall provide support to the AMI network design and installation activities. A single point of contact (ABCWUA Project Manager) is recommended to facilitate communication with Sensus and Sensus subcontractor Project Management personnel.

6. ABCWUA Project Manager should be prepared to:

   6.1. Oversee any AMI network Basestation site preparation required at Basestation sites (i.e. required power drops, TCP/IP network backhaul, outdoor cabinet foundation construction, Basestation antenna mast preparation, etc). Sensus shall clearly identify all required Basestation site preparation after final Basestation sites are mutually agreed upon by Sensus and ABCWUA.

   6.2. Facilitate and coordinate access to ABCWUA owned Basestation sites for AMI network Basestation installation and follow-up visits.

   6.3. Participate in regular planning meetings with Sensus and Sensus installation subcontractor Project Managers.

   6.4. Coordinate phasing and scheduling of installation of SmartPoints and/or any other register or meter replacements or retrofits per ABCWUA requirements.

   6.5. Coordinate and communicate with other ABCWUA stakeholders on AMI network progress and requirements.

   6.6. Coordinate with ABCWUA personnel and Sensus Project Manager to schedule AMI network training with ABCWUA staff.

16. Sensus Subject Matter Experts

Sensus shall provide ABCWUA with reasonable, ongoing, no-charge access to Sensus subject matter experts to assist the project team with ongoing technology issues and provide training and updates regarding metrology, RF networking, and RNI systems.

The Measure of the Future

Sensus RMA Process

RMA Process for Network Hardware

The process for obtaining an RMA for Basestations, Remotes, Metros and Echoes is as follows:

1. Call Sensus Technical Services (800-638-3748, Option 2) and initiate a support ticket.
    a. A Request Tracker number will be generated by the responding technician/specialist, even if the problem has already been diagnosed or confirmed by personnel other than Sensus Technical Services.
2. On call-back, Technical Services or RMA Specialist will confirm all necessary equipment troubleshooting steps have been performed in the field and, if necessary, approve the product for return.
3. If a return is needed, the support engineer will forward this request to RMA specialist who will initiate a Return Material Authorization (RMA) and provide the necessary forms to the customer/PM/Sales via email.
    a. The Request Tracker number should be indicated on the RMA paperwork.
    b. The RMA shall include a detailed description of the failure or problem, and troubleshooting attempted.
    c. Returned TGBs should include a copy of the TGB commissioning data sheet (only for transceiver, and LNA/Duplexer issues) kept at the TGB location, indicating installation parameters, measurements taken per attached form.
    d. RMA Specialist will supply an expected replacement ship date or time to repair. Alternatively, the online tracking system will list ship information with RMA number as P.O. Number.

NOTE: Product shipped that has not completed the process will be held in a "do not process" disposition until the RMA process has been completed.

RMA Process for FlexNet SmartPoints, Registers or Meters

The process for obtaining an RMA for FlexNet SmartPoints, Registers or Meters is as follows:

1. Call Sensus technical services (1-800-638-3748, Option 2) to confirm that all appropriate troubleshooting procedures have been performed in the field.
2. If a return is needed, the support engineer will forward this request to RMA specialist who will initiate a Return Material Authorization (RMA) number, and provide the necessary forms to the customer/PM/Sales via email.
3. The RMA number should be indicated on the RMA paperwork.
4. The RMA shall include a detailed description of the failure or problem, and troubleshooting attempted.

SENSUS

The Measure of the Future

FlexNet System Acceptance Testing (SAT) Criteria

A. Basestation Acceptance Test

Before beginning Basestation Acceptance Testing, the RNI and applicable Basestation will be installed in the locations defined in the propagation study. At least twenty SmartPoints will be purchased by ABCWUA and installed by SENSUS' subcontractor near the Basestation, such that the SmartPoints can be read by the Basestation, as shown in the propagation study.

Within thirty (30) days after the RNI and the applicable Basestation and SmartPoints are installed, the parties shall begin the Basestation Acceptance Test. SENSUS and ABCWUA shall work in good faith to complete Basestation Acceptance Test no later than thirty (30) days after commencement of testing.

A Basestation has passed the Basestation Acceptance Test once any fifteen SmartPoints send readings that pass through the applicable Basestation and register on the RNI. Once fifteen SmartPoint readings pass through the applicable Basestation and register on the RNI, that Basestation has successfully completed the Basestation Acceptance Test ("Basestation Acceptance").

This process shall continue until all Basestations have successfully completed Basestation Acceptance Testing. Once the Basestations have successfully completed the Basestation Acceptance Test ("Complete Basestation Acceptance"), the SENSUS shall promptly issue written notice. .

B. Regional Network Interface (RNI) Acceptance Test

Sensus will install the RNI in Sensus' data center as part of the RNI Hosting agreement entered into by Sensus and ABCWUA.

Sensus will deliver a daily reading file via FTP or other available method to ABCWUA as mutually agreed upon in the Hosting contract.

Sensus will train and demonstrate the use of the RNI web interfaces, alarms, and diagnostic tools for ABCWUA personnel as specified in the Training Plan provided at the beginning of system deployment.

Once installation, integration, and training are complete, and the Basestation acceptance test has validated successful operation of the RNI with the Basestation network, the RNI will have successfully passed the RNI Acceptance Test.

C. FlexNet System Acceptance Test

1. Purpose

The objective of FlexNet System Acceptance Testing is to verify that the FlexNet System operates and meets or exceeds the criteria set forth in this exhibit. ABCWUA may choose to waive any of the testing below if it believes such testing is unnecessary. Should any testing be waived, the FlexNet System shall be deemed to have passed the waived test.

2. SmartPoints

SmartPoints will be purchased by ABCWUA pursuant to terms and conditions in separate purchase orders between the parties.

After ABCWUA purchases the SmartPoints, SENSUS shall:

(a) Install or hire an installation contractor to properly install all SmartPoints in the meter groups or routes specified by ABCWUA in the contract

(b) Ensure that all SmartPoints shall be installed in accord with SENSUS' factory guidelines and within applicable ABCWUA specifications and guidelines.

(c) Coordinate with ABCWUA and contractor to establish a SmartPoint installation schedule, shipment quantities, and overall project timeline.

(d) Be responsible for quality assurance for SENSUS's personnel and/or the installation contractor's personnel as it relates to the proper installation of the SmartPoints.

(e) Visit and troubleshoot SmartPoints that are not reporting into the FlexNet System. Investigate any non-reporting SmartPoint to ensure there are no cut wires, improper installations, improper programming and resolve all data entry errors in the FlexNet System.

3. Pilot Acceptance Test

The objective of Pilot Acceptance Test is to verify that the FlexNet System, when actually installed in a geographical project area, will operate and meet or exceed the criteria set forth below. This test is intended to provide incremental acceptance of discretely defined geographical areas and populations of meters so that, once accepted, responsibility for operations, maintenance and support transfer solely to ABCWUA. Once Pilot Acceptance Testing is successfully completed, ABCWUA will be able to commence operations of that portion of the System and shall be responsible for maintenance and support of that portion of the FlexNet System transfer to ABCWUA in accordance with the provisions of this Agreement as further described below.

Before beginning Pilot Acceptance Testing, the RNI, and Basestations identified in the propagation study must be installed in the locations defined in the final propagation study, and the daily data file delivery to ABCWUA must be tested, complete and operational. Additionally, all Pilot SmartPoints must be installed (except for the SmartPoints determined to be inaccessible or otherwise un-installable as provided in Agreement).

When the Pilot SmartPoints are installed, (known as the "Pilot Deployment Date"), and able to read consistently through the network for fourteen (14) calendar days, the parties shall begin the Pilot Acceptance Test on the Pilot SmartPoints. Such testing shall commence within sixty (60) days of the Pilot Deployment Date. SENSUS and ABCWUA shall work in good faith to complete the Pilot Acceptance Test no later than thirty (30) days after commencement of testing.

The Pilot Acceptance Test is achieved when Pilot Read Success equals or exceeds 98.5% during a three day Billing Window.

Pilot Read Success = ((Pilot SmartPoints successfully read / (number of available Pilot SmartPoints registered on the FlexNet System)).

Pilot Read Success shall not include "Unavailable SmartPoints". An "Unavailable SmartPoint" is a SmartPoint that is unavailable for any of the following reasons:

i. Tampered Meters – meters or distribution assets that have been modified by unauthorized personnel rendering the meter incapable of providing usage readings from that meter.

ii. Failed Register – the meter register is not responding to a read message.

iii. Cut Wire – the wire and all associated components connecting the SmartPoint to the meter register is cut in some way causing the radio to not be able to read the register.

iv. Broken TouchCoupler – the TouchCoupler is damaged by intentional or unintentional acts.

v. Broken Clip – the clip that holds the TouchCoupler into the radio package housing is broken and the unit can not complete the inductive electrical connection.

vi. Improper installation of the TouchCoupler – the TouchCoupler is not pushed all the way into the housing clip causing the unit to not be able to complete the inductive electrical connection.

vii. Unit not installed through the pit lid – the unit is not installed with the antenna positioned through the pit lid and properly secured with the retaining nut. The radio unit must also be securely attached to the antenna section.

viii. Radio unit not securely attached to the Antenna unit – The water-proof SmartPoint housing is not properly installed and secured to the antenna unit.

ix. Damaged antenna – the unit's antenna is damaged by intentional or unintentional acts.

x. Damaged radio package – the unit's waterproof radio package is damaged by intentional or unintentional acts.

xi. Database errors – the unit is removed from the system but not updated in the database. Still shown as in the system when in fact has been removed.

xii. Phantom Units – the unit is removed from the field but is still transmitting and being heard by the system.

If Pilot Read Success is equal or greater than 98.5%, then the FlexNet system has successfully passed Pilot Acceptance Test, and ABCWUA shall promptly issue written notice of acceptance.

DEFINITIONS

The definitions set forth below shall apply for the purposes of this Agreement.

1. "***AMI***" or "***AMI System***" means the integrated Sensus Advanced Metering Infrastructure technology and Services consisting of FlexNet, Approved Meters, installation tools, Licensed Software, AMI Equipment, Network Equipment, RNI, TGB and related components.
2. "***FlexNet SmartPoints***" means collectively any FlexNet communicating device intended to transmit meter reading and other information as appropriate from water, gas or electricity meters.
3. "***Billing Window***" means, with respect to the three or four day period beginning one or two days prior to, and ending two days following, the ABCWUA's preferred billing day for a particular meter.
4. "***Available Meter***" means an installed FlexNet Meter or installed SmartPoint satisfying all of the following criteria:
    a. it functions properly is not damaged or failed or an Unavailable Meter during the Billing Window;
    b. it is serviced by a FlexNet Basestation or Echo that has not been subjected to a power failure greater than eight (8) continuous hours during the Billing Window;
    c. neither it, nor the Basestation, Echo or any other network equipment that serves that meter has been affected by a Force Majeure Event;
    d. interference or jamming of the Radio Spectrum is not preventing or interfering with radio communication to or from a SmartPoint, provided that Sensus is diligently working to effect a cure and provides a weekly status report;
    e. it is installed in a mutually agreed upon coverage area of the ABCWUA as defined in the final propagation study;
    f. it has not been reported to the applicable ABCWUA under Sensus' or the ABCWUA's preventive maintenance or trouble ticket generation service, unless the parties agree that the reason for the report was resolved before the Billing Window opened or that the meter is functioning normally;
    g. its functioning or performance has not been adversely affected by a failure of the SmartPoint installation team to perform its obligations or tasks for which it is responsible, or to properly maintain network equipment owned by the ABCWUA;
    h. its functioning or performance has not been adversely affected by a failure or

insufficiency of the backhaul telecommunications network of the ABCWUA used for communications among the components of the Sensus Network; and

i. It is installed in compliance with the procedures and specifications approved by and provided to the ABCWUA in writing by Sensus.

5. "***FlexNet™***" means the system comprised of the Sensus Network and the approved SmartPoints in service in the Territory with customers of Affiliated Utilities, including back-end hardware and Licensed Software. The back-end hardware consists of the RNI hardware and TGB hardware.
6. "***ECHO***" or "***Repeater***" means a pole mounted unit with simple store and forward capability that communicates directly to a TGB.
7. "***Regional Network Interface***" or "***RNI***" refers to the Sensus Head End AMI Servers consisting of equipment and FlexWare software used to gather, store and report data collected from SmartPoints and TGBs that are part of the Sensus Network. The FlexWare software operates on the RNI.
8. "***Basestation***" or "***TGB***" refers to the FlexNet collector station, which consists of hardware, firmware and software installed at a tower site and used to communicate via radio with the FlexNet SmartPoints and via TCP/IP (Ethernet) with the RNI.
9. "***Basestation Site***" means a site on a reservoir property, radio tower, building, or elsewhere where a FlexNet Basestation is located or intended to be installed.
10. "***Tower Site Lease***" means a lease, license or other right to use or occupy all or a portion of a Tower Site for a FlexNet Basestation.
11. "***Unavailable Meters***" include, but are not limited to the following::
    a. Tampered Meters – sockets, meters or distribution assets that have been modified by unauthorized personnel rendering the meter incapable of providing usage readings from that meter.
    b. Failed Register – the meter register is not responding to a read message.
    c. Cut Wire – the wire and all associated components connecting the SmartPoint to the meter register is cut in some way causing the radio to not be able to read the register.
    d. Broken TouchCoupler – the TouchCoupler is damaged by intentional or unintentional acts.
    e. Broken Clip – the clip that holds the TouchCoupler into the radio package housing is broken and the unit can not complete the inductive electrical

connection.

f. Improper installation of the TouchCoupler – the TouchCoupler is not pushed all the way into the housing clip causing the unit to not be able to complete the inductive electrical connection.
g. Unit not installed through the pit lid – the unit is not installed with the antenna positioned through the pit lid and properly secured with the retaining nut. The radio unit must also be securely attached to the antenna section.
h. Radio unit not securely attached to the Antenna unit – The water-proof SmartPoint housing is not properly installed and secured to the antenna unit.
i. Damaged antenna – the unit's antenna is damaged by intentional or unintentional acts.
j. Damaged radio package – the unit's waterproof radio package is damaged by intentional or unintentional acts.
k. Database errors – the unit is removed from the system but not updated in the database. Still shown as in the system when in fact has been removed.
l. Phantom Units – the unit is removed from the system but is still transmitting and being heard by the system.

12. "***Unread Meters***" means any Available Meter that is not read by the FlexNet Network.
13. "***FlexWare***"™ software, developed by Sensus USA, is the software utilized in the RNI to decrypt the data from meters, filter the data by application, and route the data appropriately to the ABCWUA customer. FlexWare™ includes the software in all of the RNI components
14. "***SmartPoint***" is a printed circuit board that provides an AMI endpoint the ability to acquire data from its connected meter and transmit the data to AMI collection devices located at AMI towers. SmartPoints are mounted either integral to the meter or remotely depending upon meter type and manufacturer.
15. "***TouchCoupler***" is an inductive coupler connection from a Sensus water register to the Sensus SmartPoint unit.
16. "***Register***" is a mechanical or electronic device attached to a water meter designed to capture meter consumption.

Exhibit H
RNI Hosting Scope of Work

Exhibit H

FlexNet RNI Server Hosting

I. Description of Services

This Exhibit H contains the details of the hosting services that Sensus shall provide to ABCWUA for the pricing set forth in Exhibit C.

A. "**Hosting Services**" means only the following services:

1. Use of RNI hardware located at Sensus' or a third party's data center facility (as determined by Sensus) that is necessary to operate the FlexNet AMI System.
2. Providing minor and major updates and upgrades to latest Sensus FlexWare Software releases;
    i. Sensus shall notify ABCWUA of any planned updates to network hardware (Basestation, Remotes, Echoes, etc.). ABCWUA shall approve all updates prior to update initiation.
    ii. Sensus shall notify ABCWUA of any planned downtime of the network infrastructure, including RNI servers, Basestations, Echoes, Remotes, Etc.
3. Providing certain third party software required to operate the RNI (specifically, Microsoft SQL server, Microsoft Windows Server, Red Hat Linux OS, and other Bundled Software);
4. Providing Web portal access to the Hosted FlexNet software applications for ABCWUA.
5. Submitting a "**Daily Reading File**" in Standard File Format containing hourly consumption reads and all available alarms collected by the AMI System, including exception reports, such as zero consumption reads and non-responding meters.
6. 24x7x365 server and network monitoring and trouble ticket generation, advanced security monitoring and preventative maintenance monitoring using diagnostic software tools. Sensus will also notify ABCWUA if a trouble ticket is generated by the Hosting Center.
7. Providing sixty (60) days of historical data available on the RNI and on the Storage Area Network (SAN). Secure, off-site vaulting of encrypted backup tapes containing one year of history is available for audit purposes.
8. Sensus route manager MDM software is also provided (for up to 50,000 services) for basic reporting, route processing and querying functionality.

9. TCP/IP backhaul (GPRS Cellular or other) at each Basestation Site.
10. Telephone support consistent with ***Sensus Standard Customer Support Program and Procedures*** document.
11. Remote SmartPoint firmware maintenance.

B. "**Hosting Services**" does not include any of the following services:

1. Normal periodic processing of accounts or readings for ABCWUA billing system for billing or other analysis purposes (other than daily file delivery).
2. Field labor to troubleshoot any FlexNet SmartPoints in the field in meter populations that have been previously accepted via the mutually agreed upon Systems Acceptance Testing (SAT) criteria.
3. First response labor to troubleshoot Basestation, repeater or other network equipment.
4. Parts or labor required to repair damage to any network equipment that is the result Force Majeure events, such as disaster, destruction or vandalism.
5. ABCWUA understands that the Sensus route manager MDM application is limited to 50,000 or fewer services, and agrees to incorporate an enterprise MDMS (or other suitable solution) to manage reading data when system size exceeds 50,000 services.

II. Further Agreements

A. Hosted-Access Use of the FlexNet Applications

1. Sensus agrees to provide ABCWUA use of the Applications by making the Applications available to ABCWUA by itself (or through a contractor) hosting the Applications on computers owned or controlled by Sensus (or its contractors) and offering ABCWUA access to the hosted Applications via Internet connection (i.e., Hosted-Access use). Sensus endeavors to maintain an average System Uptime rate of at least ninety-five percent (95%) of Targeted Hours of Operation (THO).
2. "**Targeted Hours of Operation**" (or, "THO") means the time Sensus endeavors to keep the Application(s) made available by Sensus on a Hosted-Access available for actual access and use by ABCWUA, such time being 24 hours per day, 7 days per week, with the exception of Scheduled Downtime.
3. "**Supported Hours of Operation**" (or, "SHO") means the Hours of Operation (HO) during which Support services generally will be available to ABCWUA. Generally, SHO will be Monday – Friday from 8:00 AM to 6:00 PM (Eastern time). During SHO, telephone Support available to ABCWUA from Sensus will be accessed by the ABCWUA dialing 800-638-3748, Option 2.

4. "**System Uptime**" means the time during THO (excluding Scheduled Downtime and any downtime due to causes not within Sensus' reasonable control – e.g., power outages due to storms or natural disaster), as measured by Sensus, during which access to the Applications is available for access and use by ABCWUA (normally measured on a monthly basis).
5. **Downtime.**
   "**Scheduled Downtime**" means the time during which access to the Applications, as measured by Sensus, is not operable for use by Hosted-Access Licensees due to planned system maintenance notified to ABCWUA (via email or otherwise) at least 72 (seventy-two) hours in advance of commencement of the scheduled maintenance, normally measured on a monthly basis.
   "**Un-Scheduled Downtime**" means the time, other than Scheduled Downtime, during which the Applications, as measured by Sensus, is not available for access and use by ABCWUA (e.g., due to a need for unplanned maintenance or repair), normally measured on a monthly basis.
6. **System Priorities**
   In the event emergencies, dangerous conditions and other exceptional circumstances arise or continue during THO, Sensus shall be entitled to perform during THO such analysis, testing, repair, maintenance, re-setting and other servicing of the hardware, cabling, networks, software and other devices, materials and systems through which access to and/or use of the Applications by ABCWUA is made available (the "Host Systems") as Sensus in its good faith discretion determines is necessary or advisable to prevent, remedy, mitigate or otherwise address actual or potential harm, interruption, loss, threat, security or like concerns as to any of the Host Systems or the availability or ABCWUA of the Applications to ABCWUA ("Emergency Work"). Sensus shall endeavor to provide advance notice of such Emergency Work to ABCWUA when practicable, depending on the circumstances.
7. "**System Availability Performance**" means the percentage of THO for a given calendar month during which the Applications are deemed available for access and use (via the Host Systems) by ABCWUA, calculated by striking a fraction whereby the System Uptime for such month is the numerator and the total amount of THO time for that month is the denominator.
8. **Host Site-Security and Environmentals**
   Although Sensus reserves the right to change such security arrangements, ABCWUA acknowledges the following current arrangements regarding physical access to and support of the primary hardware components of the Host Systems:
   - Access to the computer room(s) in which the hardware is installed is accessible only to authorized individuals.
   - Power infrastructure includes one or more UPS devices and diesel generators or other alternative power for back-up electrical power.
   - Air-conditioning facilities (for humidity and temperature controls) are provided in or for such computer room(s) and can be monitored and adjusted for humidity and temperature settings and control. Such air systems are supported by redundant, back-up and/or switch-over environmental units.

- Such electrical and A/C systems are monitored on an ongoing basis and personnel are available to respond to system emergencies (if any) in real time.
- Data circuits are available via multiple providers and diverse paths, giving access redundancy.

B. **Responsibilities of ABCWUA**

1. ABCWUA shall pay all hosting fees according to pricing schedule provided in General Terms and Conditions.
2. ABCWUA may not (i) carelessly, knowingly, intentionally or maliciously threaten, disrupt, harm, abuse or interfere with the Applications, Host Systems or any of their functionality, performance, security or integrity, nor attempt to do so, (ii) impersonate any person or entity, including, but not limited to, Sensus, a Sensus employee or another user, or (iii) forge, falsify, disguise or otherwise manipulate any identification information associated with ABCWUA's access to or use of the Applications.
3. the provisioning, compatibility, operation, security, support, and maintenance of ABCWUA's Local Area Network and of all hardware, software, network equipment, network connections, network routers, firewall protection, desktop environment, printers, computing devices and other devices, material and information necessary to ABCWUA's access to and use of the Applications as hosted and made available by Sensus ("Licensee Systems") are exclusively the responsibility of ABCWUA. ABCWUA is also responsible, in particular, for correctly configuring and maintaining (i) the desktop environment used by ABCWUA to access the Applications hosted by Sensus and (ii) ABCWUA's network router and firewall (should those be in place) to allow data to flow between the ABCWUA's Systems and Sensus' Host Systems in a secure manner via the public Internet.
4. Each of UTLITY's Authorized Users will receive a username and password upon completion of the applicable Sensus registration process. Such usernames and passwords will allow Authorized Users to access the Applications. ABCWUA shall be solely responsible for maintaining the security and confidentiality of each user ID and password pair associated with ABCWUA's account, and Sensus will not be liable for any loss, damage or liability arising from ABCWUA's account or any user ID and password pairs associated with ABCWUA. ABCWUA is fully responsible for all acts and omissions that occur through the use of ABCWUA's account and any of such user ID and password pairs. ABCWUA agrees (i) not to allow any third party (nor any person who is not an Authorized User registered with Sensus) to have any access to, benefit from or use of ABCWUA's account or any of such user ID and password pairs at any time, (ii) to notify Sensus immediately of any actual or suspected unauthorized use of ABCWUA's account

or any of such user ID and password pairs, or any other breach or suspected breach of security, restricted use or confidentiality, and (iii) to take the Sensus-recommended steps to log out from and otherwise exit the Applications and Host Systems at the end of each session. ABCWUA agrees that Sensus shall be entitled to rely, without inquiry, upon any access to, or any information provided through access to, the Applications through ABCWUA's account, account ID, usernames or passwords.

C. **Backups**

Sensus performs the following back-up operation(s) regarding the "**ABCWUA Database**" (i.e., database of customer data):

BACKUP	DESCRIPTION	TIMING	RETENTION PERIOD
Daily Database Copy	Daily copy of Licensee Database (of customer data)	Daily or Nightly	60 Days
Fallback Copy	A snap-shot copy of the Application Database, made before certain material changes to the Application(s) or the Application Database	As needed	60 Days

D. **Data Restoration**

The time required to restore data files associated with ABCWUA's use of the Application from a backup copy will vary substantially depending on a number of factors, including, but not limited to, the severity of any corruption and whether the tapes or storage media are on-site or have to be retrieved. Sensus shall use commercially reasonable efforts to restore any such files upon ABCWUA's request (except for disaster-recovery situations, which are addressed separately below).

E. **Disaster Recovery**

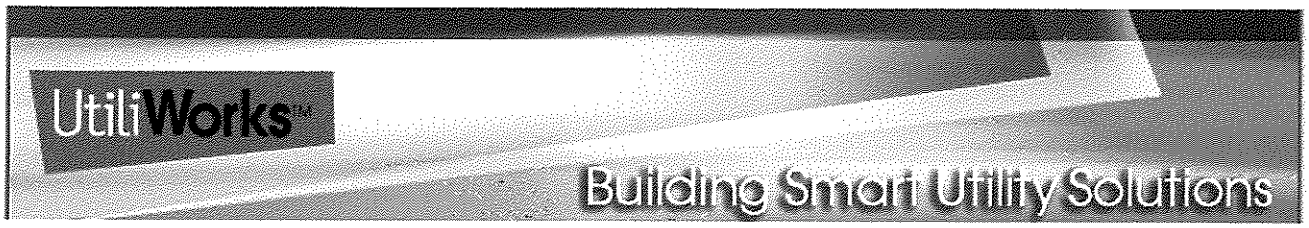
In the case of a disaster or loss of access to or use of the Application(s), Sensus' obligation will be to use commercially reasonable efforts to restore operations at the same location or at a different location within 24 Hours. ABCWUA acknowledges and agrees that such an event may result in partial or degraded service when restored. The pre-disaster/loss level of service shall be restored as a soon as commercially reasonable.

F. **Internet Performance**

Sensus will not be responsible for any deterioration of performance attributable to latencies in the public Internet. ABCWUA expressly acknowledges and agrees that Sensus does not and cannot control the flow of data to or from Sensus' networks and other portions of the Internet, and that such flow depends in part on the performance of Internet services provided or controlled by third parties, and that at times, actions or inactions of such third parties can impair or disrupt data transmitted through, and/or ABCWUA's connections to, the Internet (or portions thereof). Although Sensus will use commercially reasonable efforts to take actions Sensus may deem appropriate to mitigate the effects of any such events, Sensus cannot guarantee that such events will not occur. Accordingly, Sensus disclaims any and all liability resulting from or relating to such events.

G. **Response Times Objectives**

Please refer to ***Sensus Standard Customer Support Program and Procedures*** for response time and support objectives.



Key Features

- Business Process Effectiveness
- Organizational Focus and Alignment
- Infrastructure Evaluation
- Industry Best Practices
- Financial Performance
- Management Practices
- Technology Readiness
- Customer Insights

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For Utility Self-Assessments - Use the Right Tool

Click here to download the Utiliworks Insight Webinar.

Utiliworks Insight is a performance improvement tool for water and electric utilities. Insight utilizes web-based technology and a set of established industry best practices to assist the utility in learning about their current reality related to infrastructure, processes and behaviors.

Designed by Utiliworks Consulting, Utiliworks Insight integrates over 20 years of industry knowledge and management expertise. Insight operates on the Neurametrics platform - a powerful analysis and data presentation engine.

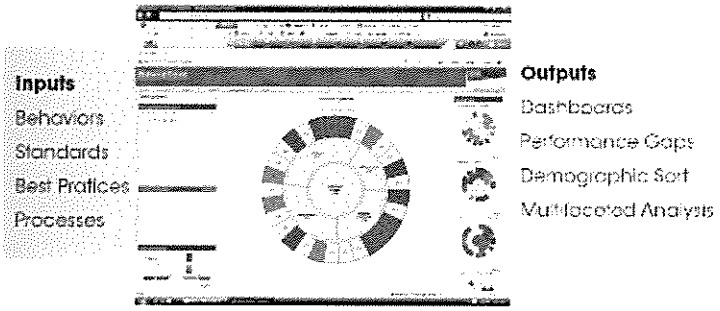
Click here to download the Utiliworks Insight brochure.

To Find the Answers You Need - Ask the Right Questions

Utiliworks Insight reveals behavioral data from the web-based surveys that are taken by an audience of executives, managers, front line personnel and customers. The surveys are recorded anonymously to encourage honest and accurate responses.

A unique software engine is used to interpret and present the data from the survey results using an array of user-friendly charts, graphs and other forums. Utiliworks Insight allows utilities to:

- Evaluate performance
- Determine improvement opportunities
- Identify long-term business risks
- Understand specific performance gaps
- Recognize workforce productivity based on direct employee input



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