DISTRICT All

100407

VILLAGE OF LOMBARD
REQUEST FOR BOARD OF TRUSTEES ACTION
For Inclusion on Board Agenda
Bids and Proposals

TO : President and Village Board of Trustees

FROM : David A. Hulseberg, Village Manager

DATE : July 30, 2010 Agenda Date August 19, 2010

TITLE : FY2011 Automated Meter Replacement Program - Bid Waiver

SUBMITTED BY: Carl S. Goldsmith, Director of Public Works CJ

RESULTS:
Date Bids Were Published _____ Bidding Closed _____
Total Number of Bids Received _____
Total Number of Bidders Meeting Specifications _____

Bid Security Required	_____ Yes	_____ No
Performance Bond Required	_____ Yes	_____ No
Were Any Bids Withdrawn	_____ Yes	_____ No
Explanation:		
Waiver of Bids Requested?	X Yes	_____ No
If yes, explain:		
Award Recommended to Lowest Responsible Bidder?	_____ Yes	_____ No

If no, explain: Purchase from manufacturer's authorized distributor.

FISCAL IMPACT:
Engineer's estimate/budget estimate $3,600,000.00
Amount of Award $1,736,044.42

BACKGROUND/RECOMMENDATION:
Waive bids and award a contract to HD Supply Waterworks, Ltd for the installation of water meters and automated meter reading equipment in commercial and multi-family accounts.

Has Recommended Bidder Worked for Village Previously	X Yes	___ No
If yes, was quality of work acceptable	X Yes	___ No
Was item bid in accordance with Public Act 85-1295?	___ Yes	X No
Waiver of bids - Public Act 85-1295 does not apply	X Yes	

REVIEW (as needed):
Village Attorney XX _____ Date _____
Finance Director XX Timothy J. Sexton Date 8/4/10
Village Manager XX David A. Hulseberg Date 8-4-10

NOTE: All materials must be submitted to and approved by the Village Manager's Office by 4:30 pm, Wednesday, prior to the Board Agenda distribution.

July 20, 2010

TO: Village President and Board of Trustees

THROUGH: David A. Hulseberg, Village Manager

FROM: Carl S. Goldsmith, Director of Public Works

SUBJECT: Automated Meter Replacement Program

BACKGROUND

The reading of water meters is a crucial Village function. The work involves visiting every water meter once every other month and recording the reading. Over the years there have been technological improvements that have made the process more efficient and more accurate. The Village of Lombard has implemented technologies in the past as a means of insuring the accuracy of the data used for the purposes of billing. The current practice of using touch pads to take readings provides accuracy, but requires the same level of effort and manpower as a meter reader writing down readings along the route. The Village is looking to improve upon the accuracy and efficiency of the collection process and the customer service.

To accomplish improving the efficiency of the reading process, staff developed a plan to replace the water meters and touch pads with a fully automated system; commonly referred to as Automated Meter Infrastructure (AMI). The AMI system uses fixed point antennas and smart-points (MXU) attached to each meter to have a two-way means of communicating data (readings) to the Village. The MXUs attach to the current touch-pad to reduce the time and cost of installation. This data is then inputted automatically into the Village's billing system.

The Village staff has held several meetings with the Public Works Committee to discuss the AMI program, including the joint CIP meeting with the Village Board. At the direction of the Village Board, the FY 2011-2020 CIP contains $3,600,000 in FY 2011 and $3,600,000 in FY 2012 for the Water Meter Replacement Program.

As the staff began the process of developing the specifications for the AMI project, a more detailed analysis of the current meters was conducted. This led to a change in the proposed scope of the project and timing of replacement. The staff presented the modified project scope to the Public Works Committee at the May 2010 meeting. The revised program takes into account the efficiency of the meters based upon industry standards. Based upon the analysis, it was determined that the small meters (<1" or less) were operating within the respective range. The large meters (>1½") were found to be operating outside the industry standards and not properly recording the flow. As a result of the analysis, staff recommended the following actions to the Public Works Committee:

- Proceed with the installation of the infrastructure (backbone) of the system in FY 2011 based upon further propagation studies by the selected manufacturer.
- Proceed with the installation of automated fixed point hardware for all multi-family and commercial accounts in FY 2011
- Shift the implementation and the associated costs of the fixed point system for single family residential units to FY 2016 and continue to monitor the performance of the meters through the meter testing program.

The Public Works Committee concurred with the staff recommendation and requested the staff bring back a formal proposal for the purchase and installation of a fixed point automated meter reading system from the chosen vendor.

Since the direction was given by the Committee, the staff met with several vendors of fixed point remote reading systems and has determined that the Sensus FlexNet system is the best application for the Village of Lombard. The Village has a long standing relationship with Sensus and can capitalize on the reuse of approximately 1,000 current small meters that have been recently installed, which will ultimately reduce the Village's costs for the project. The FlexNet system has been successfully integrated with the Village's billing system (HTE). Furthermore, the FlexNet system provides a two-way communication that can provide a multitude of unforeseen benefits to the customer and Village. The Village, in conjunction with Sensus Meters and HD Supply has conducted a test of the Sensus FlexNet system through the installation of 21 MXU devices. Throughout the week of testing, the system had 100% reading accuracy.

The Village has received a proposal from HD Supply for the replacement of the commercial and multi-family meters, installation of two tower base stations for collection, installation of a server and software, as well as programming devices and training. The proposal is in the amount of $1,736,044.42. This proposal includes the installation of iPERL meters for small meter application. The iPERL is 100% lead-free with no moving parts and maintains its accuracy over a 20-year lifetime. The system provides AMI connectivity and 14 conditions, diagnostic and lifetime alarms allows for quick resolution to issues experienced in the field. The proposal also includes the installation of Omni C2 meters for the large meter application. The Omni C2 meter is one of the most technologically advanced large water meter on the market today. The meter uses a new Floating Ball Technology (FBT) that employs an impeller with a ball design which makes the impeller weightless in the water line. The technology enables the impeller to begin moving with very little water flow or force through the meter. The result is that OMNI has an extended flow range with better low flow sensitivity, down to 1/10 of a gallon, as well as the ability to capture extended high flow rates - all with virtually no wear.

HD Supply also furnished the Village with two "Alternate" proposals that effect only the 1½" meters. Alternate "A" includes the installation of Sensus PMM meters. The PMM meters are less sensitive than the Omni C2 at the low flow. The low flow captures flow of less than 1 gallon per minute and represents 13% of flow in residential applications, including multi-family applications. As the 1½" meters represent 38% of multi-family applications, we would be installing a product that would not be providing the greatest ability to register and record water at

the time of installation. The proposal with the PMM meters is $1,402,907.42. Alternate "A" provides a cost savings to the Village of $197,948.00.

The Alternate "B" includes the on-site recalibration/cleaning/conversion of the existing Sensus/Rockwell SR meters. While the reuse of the existing bodies would yield a cost savings to the Village of $213,710.00, these meters provide no greater accuracy at the low flow than the PMM meters. As a result, staff is recommending that the Village proceed with the base bid, which includes the installation of Omni C2 meters for 1½" meter applications.

An item that is not included in the proposal from HD Supply is the backhaul system for data collection. The Village is responsible for the means of transmitting the readings (signal) from the towers to the interface at the Village Hall. Several methods have been explored; such as cellular phone signal, installation of Wi-Fi network and other wireless modes of communication. The Village's IT Department is looking into the establishment of a municipal wireless network to connect facilities and vehicles without the need for a wireless card that require monthly service change. At this time, they are not complete with their evaluation of options. As such, the staff is recommending the use of cellular connectivity for data transmission and at such time when the Village network is available, switching over to that means of transmission.

The Village has looked at the return on investment (ROI) relative to the meter replacement program for commercial accounts. Village staff has worked with Sensus Meter to develop a ROI schedule for the replacement of commercial meters. The analysis provided for a ROI of 4.9 years based upon lost revenue of $260,492.31 in FY 2011. The analysis also indicates that the Village would generate additional revenue of $4.1 million dollars over a 15 year period.

It is important to note that whether the Village moved towards a fully automated AMI system or continued to use touch pads for the readings, the commercial and multi-family meters are in need of replacement based upon the operational efficiency. The cost for the MXU (fixed point) is $118.00/unit versus $15.00/unit for the touch pad. The cost difference between touchpad and remote read is broken down below:

	Touchpad	MXU
Cost per Unit	$15.00	$118.00
Commercial & Multi-family units	1,539	1,539
UNIT PRICE EXTENDED	$23,085.00	$181,602.00
Regional Network Interface	$0	$30,500.00
Sensus FlexNet Tower Gateway	$0	$130,000.00
Meter Reading Contract (.75/read x 6)	$6,925.50	$0
15 YEAR COST COMPARISON	$126,967.50	$342,102.00

While the cost over 15 years is greater by installing the AMI system, there are significant benefits in customer service as well as the potential to move to monthly billings, which will improve the Village's cash flow. Additionally, the ability to track usage more frequently will allow the billings from DuPage Water Commission to track more consistently with the Village's monthly billing cycles. The ability to track leaks and assist customers with problems has been an objective of the Village Board for many years.

Staff has included the following material for your consideration:

- The base proposal from HD Supply, along with the alternate proposals.
- The ROI analysis for the commercial meters
- A copy of the PowerPoint presentation from the March 2010 PWC meeting

STAFF RECOMMENDATION

The staff and the Public Works Committee recommend that the Village Board of Trustees accept the base bid proposal from HD Supply Waterworks, LTD in the amount of $1,736,044.42 for the purchase and installation of water meters and the FlexNet system for commercial and multi-family customers.

VILLAGE OF LOMBARD

SPECIFICATION & CONTRACT DOCUMENT NUMBER PWU-1101

FOR

FY2011 Automated Meter Replacement Project

Obtain information from and submit proposal to:

Carl S. Goldsmith
Director of Public Works
Village of Lombard
255 E. Wilson Avenue
Lombard, Illinois 60148
(630) 620-5700

Note: This cover sheet is an integral part of the contract documents and is, as are all of the following documents, part of any contract executed between the Village of Lombard and any successful bidder. Do not detach any portion of this document. Invalidation may result.

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GENERAL TERMS, CONDITIONS & INSTRUCTIONS

SUBLETTING OF CONTRACT

No contract awarded by the Village of Lombard shall be assigned or any part sub-contracted without the written consent of the Director of Public Works. In no case shall such consent relieve the successful bidder from his obligation or change the terms of the contract.

GUARANTEES AND WARRANTIES

All guarantees and warranties from the manufacturers shall be furnished by the Contractor and shall be delivered to the Director of Public Works before final payment on the contract is made. The Contractor warrants to the Owner that materials and equipment furnished under the contract will be of good quality and new, unless otherwise required or permitted by the contract documents, and that the work will be free from defects in material and workmanship for one year from the date of issuance of the final payment by Owner and any deficiencies shall be corrected by the Contractor under this warranty immediately upon notification from the owner.

In deciding to proceed with the selected products and Contractor, the Village relied upon the FlexNet Propagation Analysis Option 1 performed by Sensus Metering Systems, and the May 2010 pilot project performed by HD Waterworks, which indicated satisfactory performance of the proposed system with the installation of only two (2) tower gateway base stations (TGB). The Contractor shall supply a fully operational two-way automated meter reading system and shall, at its own expense, add any and all additional infrastructure, devices or materials needed for the fully operational two-way automated meter reading system. A fully operational two-way automated meter reading system is defined as the Owner as being able to receive and query water meter readings for all commercial and multi-family customers within the Owner's water system, as of June 1, 2010, via the Sensus FlexNet System.

INSPECTIONS

The Village shall have the right to inspect any material, component equipment, supplies, services, or completed work specified herein before acceptance. Any of said items not complying with these specifications are subject to rejection at the option of the Village. Any items rejected shall be removed from the premises of the Village and/or replaced at the entire expense of the successful bidder.

TAXES

The Village is exempt, by law, from paying the following taxes: Federal Excise Tax, Illinois Retailer's Occupation Tax, Use Tax and Municipal Retailers' Occupation Tax on materials and services purchased by the Village of Lombard. A copy of the Village Tax-Exempt letter will be provided to the successful bidder when requested.

OTHER CONTRACTOR RESPONSIBILITIES

The contractor shall be responsible for complying with all applicable Federal, State, County and Village laws and regulations in the performance of the contract.

CONTRACT BOND

The contractor must furnish and pay for a satisfactory Contract Bond in the amount of one hundred percent (100%) of the contract sum. Said Bond shall be in a form acceptable to the Village, shall be deposited with the Village at the time of execution of the contract and shall provide that they shall not terminate on completion of the work, but shall be reduced to ten percent (10%) of the contract sum upon completion of the work for a period of one (1) year to cover the one (1) year guaranty and maintenance period. Execution of any contract by the Village is contingent upon the provision of the required Bond by the contractor.

PREVAILING WAGES

The Village of Lombard requires all contractors (and any subcontractors) bidding on Village projects to comply with the Illinois Prevailing Wage Act, 820 ILCS 130/1 et seq., as applicable to the particular contract. Prevailing wage rate updates can be obtained by calling the Illinois Department of Labor at (312) 793-2914, or writing to the Illinois Department of Labor at: 310 S. Michigan Avenue, 10th Floor, Chicago, Illinois 60604, or calling the Lombard Village Hall at (630) 620-5700.

Note: On August 10, 2005, Public Act 94-0515 amended the Prevailing Wage Act by requiring the contractor and each subcontractor participating on public works projects to submit monthly a certified payroll to the public body in charge of the project.

INSURANCE

(A) During the term of the contract, the contractor shall provide the following types of insurance in not less than the specified amounts:

1. Commercial General Liability - $1,000,000.00 per occurrence, $2,000,000.00 aggregate;

2. Auto Liability - Combined Single Limit Amount of $1,000,000.00 on any contractor owned, and/or hired, and/or non-owned motor vehicles engaged in operations within the scope of this contract;

3. Professional Liability - $1,000,000.00 (Required only where contracts are for professional services);

4. Workers Compensation - Statutory; Employers Liability $1,000,000.00 (the policy shall include a 'waiver of subrogation'); and

5. Umbrella Coverage - $1,000,000.00

(B) The aforementioned insurance requirements shall be fulfilled by the contractor by maintaining insurance policies which name the Village, its officers, agents, employees, representatives and assigns as additional insureds (except on policies for professional liability). Such insurance shall be primary with respect to any insurance or self-insurance programs covering the Village, its officers, agents, employees, representatives and assigns. The contractor shall furnish to the Village satisfactory proof of coverage by a reliable company or companies, before commencing any work. Such proof shall consist of certificates executed by the respective insurance companies and filed with the Village together with executed copies of an Additional Insured Endorsement (Insurance Form CG2010 - 1985 version). Said certificates shall contain a clause to the effect that, for the duration of the contract, the insurance policy shall be canceled, expired or changed so as to the amount of coverage only after written notification 30 days in advance has been given to the Village.

(C) The contractor shall require subcontractors, if any, not protected under the contractor's policies, to take out and maintain insurance of the same nature in amounts, and under the same terms, as required of the contractor.

INDEMNIFICATION

The contractor shall indemnify, defend and save harmless the Village of Lombard, its officers, agents, employees, representatives and assigns, from lawsuits, actions, costs (including attorneys' fees), claims or liabilities of any character, including, as allowed by law, liabilities incurred due to joint negligence of the Village and the contractor, brought because of any injuries or damages received or sustained by any person, persons, or property on account of any act or omission, neglect or misconduct of said contractor, its officers, agents and/or employees arising out of, or in performance of any of the provisions of the contract, including any claims or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act" or any other law, ordinance, order or decree. In connection with any such claims, lawsuits, actions or liabilities, the Village of Lombard, its officers, agents, employees, representatives and their assigns shall have the right to defense counsel of their choice. The contractor shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, lawsuits, actions or liabilities.

VENUE

The parties hereto agree that for purposes of any lawsuit(s) between them concerning the contract, its enforcement, or the subject matter thereof, venue shall be in DuPage County, Illinois, and the laws of the State of Illinois shall govern the cause of action.

PARTIAL PAYMENTS AND RETAINAGE

The Project Manager shall submit a partial payment estimate not more than once each month upon approval by the Village Board of Trustees and approval of the Contractor's affidavit and partial waiver(s) of lien. Subsequent pay estimates will not be processed until partial waivers

have been received and approved for all previous pay estimates. Retainage will not be deposited under any trust agreement. Mobilization will not be paid.

ACCEPTANCE AND FINAL PAYMENT.

Any payment, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract or the contract bond.

SPECIFIC TERMS, CONDITIONS & INSTRUCTIONS FOR FY 2011 AUTOMATED METER REPLACEMENT PROJECT

BACKGROUND

The Village of Lombard currently uses the touchpad meter reading technology to read approximately 12,700 residential, commercial and multi-family water meters on a bi-monthly basis. The FY 2011 Automated Meter Replacement Project will install the backbone of the automated meter reading system, commonly referred to as advanced meter infrastructure (AMI), replace all commercial and multi-family water meters and convert all commercial and multi-family meter accounts to the AMI technology. Approximately 1000 residential accounts will also be converted from touchpad read to AMI through the installation of a smartpoint on the existing touchpad.

A project team evaluated several AMI systems. Three vendors were asked to perform a propagation study to determine the infrastructure needed to read all of the meters in the Village. The Village received a proposal from the vendor that met the criteria set forth by the project team: use existing Village structures for antennae, minimize the number of repeaters, two-way reading system and install the smartpoint on the outside of the building. The Village merged the Vendor's proposal into this Contract Document.

VILLAGE OF LOMBARD

CONTRACT DOCUMENT NUMBER PWU-1101

This agreement is made this 19th day of August, 2010, by and between, and shall be binding upon, the Village of Lombard, an Illinois municipal Corporation hereinafter referred to as (the "Village") and HD Supply Waterworks, Ltd. hereinafter referred to as (the "Contractor").

Witnesseth That in consideration of the mutual promises of the parties delineated in the Contract Documents, and herein, the Contractor agrees to sell and install and the Village agrees to pay for the following described items and the installation of the same as set forth in the Contract Documents:

FY 2011 Automated Meter Replacement Project
Appendix A: HD Waterworks Proposal Dated June 11, 2010
Appendix B: Village of Lombard FlexNet Propagation Analysis
Appendix C: Sensus/Customer FlexNet Deployment Project Responsibilities Statement of Work (SOW)
Appendix D: FlexNet Statement of Work Reference Chart
Appendix E: FlexNet Customer Acceptance Plan
Appendix F: Sensus FlexNet Annual Maintenance Agreement

1. This Contract shall embrace and include all of the applicable Contract Documents listed below as if attached hereto or repeated herein:

   a. Specification and Contract Document no. PWU-1101 for FY 2011 Automated Meter Replacement Project, consisting of the following:

      i) Cover Sheet

      ii) Table of Contents

      iii) General Terms, Conditions and Instructions

      iv) Specific Terms, Conditions and Instructions

   b. The Contractor's Proposal Dated June 11, 2010

   c. Required Contract Bond and Certificate of Insurance

2. The Village agrees to pay, and the Contractor agrees to accept as full payment for the items, and installation of the same, which are the subject matter of this Contract the total sum of $1,736,044.42 paid in accordance with the provisions of the Local Government Prompt Payment Act and the provisions of the Contract Documents.

3. Risk of loss, destruction or damage of or to goods under this Contract shall be on contractor until installation and acceptance of the goods by the Village.

4. Contractor shall not delegate the duties involved in the performance of the installation services which are the subject matter of this Contract without the written approval of the Village.

5. The Contractor represents and warrants that it will comply with all applicable Federal, State and local laws concerning prevailing wage rates regarding installation services provided under this Contract and all Federal, state and local laws concerning equal employment opportunities.

6. The Contractor shall deliver the goods under this Contract by November 15, 2010, and shall complete installation by February 15, 2010. Time is of the essence of this Contract and Contractor agrees to achieve completion within the Contract time by all proper and appropriate means including working overtime without additional compensation.

7. In executing this Contract, Contractor agrees that it has examined the site of the work and the conditions existing therein, has examined the Contract Documents and taken and compared field measurements and conditions with those Documents.

8. This Contract represents the entire agreement between the parties and may not be modified without the written approval of both parties.

9. Where the terms of this Contract conflict with the provisions of the Contract Documents, the Contract Documents shall be binding.

IN WITNESS WHEREOF, the Village of Lombard, Illinois by William J. Mueller, Village President, and the Contractor have hereunto set their hands this 19th day of August, 2010.

If an individual or partnership, all individual names of each partner shall be signed or if a corporation, an officer duly authorized shall sign here:

Accepted this ___day of _____, 20__.

Individual or Partnership _____ Corporation _____

_____ _____
By Position/Title

_____ _____
By Position/Title

_____
Print Company Name

THE VILLAGE OF LOMBARD, ILLINOIS
Accepted this 19th day of August, 2010.

_____
William J. Mueller
Village President

Attest:

_____
Brigitte O'Brien
Village Clerk

VILLAGE OF LOMBARD

CONTRACT BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____, a company organized under the laws of the State of _____ and licensed to do business in the State of Illinois as Principal and _____, a corporation organized and existing under the laws of the State of _____, with authority to do business in the State of Illinois, as Surety, are now held and firmly bound unto the Village of Lombard, State of Illinois in the penal sum of _____dollars ($_____) lawful money of the United States, well and truly to be paid unto said Village for the payment of which we bind ourselves, our successors and assigns, jointly, severally, and firmly by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH that whereas the said Principal has entered into a written contract with the Village of Lombard, acting through the President and Board of Trustees of said Village, dated August 19, 2010, for the construction of the work designated:

FY 2011 Automated Meter Replacement Project

in Lombard, Illinois, which contract is hereby referred to and made a part hereof as if written herein at length, and whereby the said Principal has promised and agreed to perform said work in accordance with the terms of said contract, and has promised to pay all sums of money due for any labor, materials, apparatus, fixtures or machinery furnished to such Principal for the purpose of performing such work, and has further agreed to guaranty and maintain said work for a one (1) year period following final payment to such Principal, and has further agreed to pay all direct and indirect damages to any person, firm, company, or corporation suffered or sustained on account of the performance of such work during the time thereof and until such work is completed and accepted; and has further agreed that this bond shall inure to the benefit of any person, firm, company or corporation from whom any such labor, materials, apparatus, fixtures or machinery was so furnished and that suit may be maintained on such bond by any such person, firm, company or corporation for the recovery of any such money.

NOW, THEREFORE, if the said Principal shall well and truly perform said work in accordance with the terms of said contract and shall pay all sums of money due or to become due for any labor, materials, apparatus, fixtures or machinery furnished to him for the purpose of constructing such work and shall commence and complete the work within the time prescribed in said contract, and shall pay and discharge all damages, direct and indirect, that may be suffered or sustained on account of such work during the time of the performance thereof and until the said work shall have been accepted, and shall hold the Village of Lombard and its officers, agents and employees, harmless on account of any such damages, and shall in all respects fully and faithfully comply with all the provisions, conditions, and requirements of said contract, then upon the final payment by the Village to said Principal under said contract, the amount of this bond shall be reduced to ten percent (10%) of the amount set forth on the first page hereof for a period of one (1) year; otherwise to remain in full force and effect.

NOW, THEREFORE, if the said Principal shall well and truly perform said guaranty and maintenance work in accordance with the terms of said contract for said one (1) year period after final payment and shall pay all sums of money due or to become due for any labor, materials, apparatus, fixtures or machinery furnished to him for the purpose of performing such guaranty and maintenance work and shall commence and complete the guaranty and maintenance work within the time prescribed in said contract, and shall pay and discharge all damages, direct and indirect, that may be suffered or sustained on account of such guaranty and maintenance work during the time of the performance thereof and until the said guaranty and maintenance work shall have been accepted, and shall hold the Village of Lombard and its officers, agents and employees, harmless on account of any such damages, and shall in all respects fully and faithfully comply with all the provisions, conditions, and requirements of said contract, then this obligation to be void; otherwise to remain in full force and effect.

APPROVED this 19th day of August, 2010.

VILLAGE OF LOMBARD

BY: _____
Village President

ATTEST:

_____
Village Clerk

IN WITNESS WHEREOF, We have duly executed the foregoing Obligation this ____ day of _____, 2010.

PRINCIPAL:

_____

BY: _____

ATTEST:

_____

SURETY: _____

BY: _____
(Title)

BY: _____
Attorney in Fact

BY: _____

(SEAL)

Exhibit "A"

CONTRACTOR'S CERTIFICATION:

Contract Execution

_____(Name of Contractor), having submitted a bid/proposal on a contract for FY 2011 Automated Meter Replacement Project to the Village of Lombard, hereby certifies that said contractor is not barred from bidding on the aforementioned contract as a result of a violation of either Section 33E-3 or 33E-4 of Article 33E of the Illinois Criminal Code or of any similar statute of another state or of a federal statute containing the same or similar elements.

By: _____
Authorized Agent of Contractor

Subscribed and sworn to
before me this _____
day of _____, 2010.

_____
Notary Public

Exhibit "B"

CONTRACTOR'S CERTIFICATION:

Sexual Harassment Policy

_____, having submitted a bid/proposal for FY 2011 Automated Meter Replacement Project, to the Village of Lombard, hereby certifies that said contractor has a written sexual harassment policy in place in full compliance with 775 ILCS 5/2-105(A) (4).

By: _____
Authorized Agent of Contractor

Subscribed and sworn to
before me this _____
day of _____, 2010.

_____
Notary Public

Exhibit "C"

CONTRACTOR'S CERTIFICATION:

Illinois Department of Revenue - Tax Compliance

_____, having submitted a bid/proposal for FY 2011 Automated Meter Replacement Project, to the Village of Lombard, hereby certifies that said contractor is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, or if it is:

a. it is contesting its liability for the tax or the amount of tax in accordance with procedures established by the appropriate Revenue Act; or

b. it has entered into an agreement with the Department of Revenue for payment of all taxes due and is currently in compliance with that agreement.

By: _____
Authorized Agent of Contractor

Subscribed and sworn to
before me this _____
day of _____, 2010.

_____
Notary Public

Exhibit "D"

CERTIFICATION OF CONTRACTOR c174E
FHA Rules, 49 CFR 382

_____hereby certifies that it is in full compliance with the
[Company Name]
Federal Highway Administration Rules on Controlled Substances and Alcohol Use and Testing, 49 CFR 382 et.seq.,and that _____
[name of employee/driver or "all employee drivers"]
is/are currently participating in a drug and alcohol testing program pursuant to the aforementioned rules.

_____
[Company Name]

By: _____

Its: _____

SUBSCRIBED AND SWORN TO
before me this day
of _____, 2010.

_____
NOTARY PUBLIC

Exhibit "E"

ADDITIONAL INSURED ENDORSEMENT

Name of Insurer:
Named Insured:
Policy Number:
Policy Period:
Endors. Effective Date:

This endorsement modifies coverage provided under the following:

Commercial General Liability
Coverage Part

Name of Individuals or Organization:

WHO IS AN INSURED section of the policy/coverage document is amended to include as an insured, the individuals or organization shown above, but only with respect to liability "arising out of your work".

For purposes of this endorsement, "arising out of your work" shall mean:

1. Liability the Additional Insured may incur resulting from the actions of a contractor it hires.
2. Liability the Additional Insured may incur for negligence in the supervision of the Named Insured Contractors work.
3. Liability the Additional Insured may incur for failure to maintain safe worksite conditions.
4. Liability the Additional Insured may incur due to joint negligence of the Named Insured Contractor and the Additional Insured.

Appendix "A"
HD Waterworks Proposal

220 South Westgate Drive
Carol Stream, IL 60188

t 630.665.1800
f 630.665.1887

June 11, 2010

Village of Lombard
Village Hall
255 E. Wilson Ave.
Lombard, Illinois 60148

Attn: Mrs. Angela Podesta –Utilities Superintendent

Subject: Proposal for Supplying and Installation of New Water Meters and Sensus FlexNet Automatic Meter Reading System.

In response to your request, we have enclosed descriptive literature and quote as follows:

ITEM #	DESCRIPTION	APPROXIMATE QTY	UNIT PRICE	TOTAL AMOUNT
	5/8" Sensus Water Meters			
1.	5/8" x 1/2" New Sensus iPERL Water Meters with Solid State Register, 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	295	$ 316.00 ea. net	$ 93,220.00
	3/4" Sensus Water Meter			
2.	3/4" New Sensus Model iPERL Water Meters with Solid State Register, 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	343	$ 329.00 ea. net	$ 112,847.00

1" Sensus Water Meter

3.	1" New Sensus Model iPERL Water Meters with Solid State Register, 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	192	$ 365.00 ea. net	$ 70,080.00

1-1/2" Sensus Water Meter

4.	1-1/2" New Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register, Model 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	284	$ 1,302.00 ea. net	$ 369,768.00

2" Sensus Water Meter

5.	2" New Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register, Model 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	239	$ 1,463.00 ea. net	$ 349,657.00

3" Sensus Water Meter

6.	3" New Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register, Model 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	119	$ 2,036.00 ea. net	$ 242,284.00

4" Sensus Water Meter

7.	4" New Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register, Model 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	61	$ 3,210.00 ea. net	$ 195,810.00

6" Sensus Water Meter

8.	6" New Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register, Model 510M TouchCoupler MXU (Meter Transceiver Unit) including installation	6	$ 5,340.00 ea. net	$ 32,040.00
9.	New Sensus Model 510M TouchCoupler MXU (Meter Transceiver Unit)	1000	$ 118.00 ea. net	$ 118,000.00

SCRAP METER CREDIT ALLOWANCE

DESCRIPTION	APPROXIMATE QTY	UNIT PRICE	TOTAL AMOUNT
5/8" scrap meter credit	295	$ 2.50 cr.	($ 737.50)
3/4" scrap meter credit	343	$ 3.00 cr.	($ 1,029.00)
1" scrap meter credit	192	$ 6.00 cr.	($ 1,152.00)
1-1/2" scrap meter credit	284	$ 11.50 cr.	($ 3,266.00)
2" scrap meter credit	239	$ 33.32 cr.	($ 7,963.48)
3" scrap meter credit	119	$ 47.60 cr.	($ 5,664.40)
4" scrap meter credit	61	$ 115.20 cr.	($ 7,027.20)
6" scrap meter credit	6	$ 139.50 cr.	($ 837.00)

***NOTE**: Scrap allowance is for brass meters only. We offer no allowance for plastic or cast iron water meters.*

Please Note: All installations include replacing the existing meter, installing new Sensus FlexNet radio transceiver on the exterior of the structure utilizing existing wire, programming radio transceiver, and recording all data for Village use/input.

In addition to the above, we offer the following **add-on prices** if needed;

Supply & Install new meter wire (only if existing is not usable)	$30.00 ea net
Filler spool for 3" thru 6" meters if required	$120.00 ea net

HD Supply Waterworks, Ltd., through it's sub-contractor, would be responsible for plumbing failure due to installation, except for non-functioning shut-off valves. We offer valve replacement at customer expense at the following price schedule:

3/4" ball valve including installation	$ 130.00 ea. net
1" ball valve including installation	$ 140.00 ea. net
1-1/2" ball valve including installation	$ 278.00 ea. net
2" ball valve including installation	$ 317.00 ea. net
3" gate valve including installation	$ 944.00 ea. net
4" gate valve including installation	$1,028.00 ea. net
6" gate valve including installation	$1,175.00 ea. net
Plumbing modification Labor Only	$ 105.00 per hour

INDIVIDUAL LINE ITEM PRICES

5/8" x 1/2" **New** Sensus iPERL Water Meters with Solid State Register.	$ 107.00 ea. net
3/4" **New** Sensus iPERL Water Meters with Solid State Register.	$ 120.00 ea. net
1" **New** Sensus iPERL Water Meters with Solid State Register.	$ 156.00 ea. net
1-1/2" **New** Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register.	$ 960.00 ea. net
2" **New** Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register.	$ 1,107.00 ea. net
3" **New** Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register.	$ 1,402.00 ea. net
4" **New** Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register.	$ 2,435.00 ea. net
6" **New** Sensus Omni C2 Water Meter with Integral Strainer and Solid State Register.	$ 4,207.00 ea. net
Model 510M TouchCoupler MXU (Meter Transceiver Unit).	$ 118.00 ea. net

Sensus FlexNet (Fixed Network) Reading Equipment and Software

ITEM #	DESCRIPTION	APPROXIMATE QTY	UNIT PRICE	TOTAL AMOUNT
10.	Sensus 3096+ TouchReader	2	$ No Charge	$ No Charge
11.	Intermec CN 50 Programmer	1	$ 2,325.00 ea.net	$ 2,325.00
12.	Sensus FlexNet Tower Gateway Base Station (TGB) Model E2000	2	$ 65,000.00 ea. net	$ 130,000.00

13.	Sensus FlexNet Regional Network Interface (RNI) Model 2000 including (MDM) software	1	$30,500.00 ea. net	$ 30,500.00
14.	Contract Bond based on estimated grand total			$ 17,189.00

ESTIMATED GRAND TOTAL **$1,736,044.42**
(Includes scrap credit noted above)

Pricing includes installation, project management, startup and 2 days onsite training.

Pricing includes one (1) complete programming package for each TGB purchase.

One programming package includes: AR5501 with GPS receiver, command Link, charging stand and AutoRead software.

Pricing and installation does not include communication link between (TGB) to (RNI).

Standard one (1) year warranty on parts and labor. Annually renewable Extended warranties and software support available upon request. (Software support $1,320.00 annually) (TGB extended warranty $3,000.00 annually).

Please Note:
Quantities are estimated based on best available information. Final billing and payment will be based on actual quantities, size and type of meters installed. Unit prices by size and description will remain firm for one (1) year from notification to proceed.

Please find enclosed detailed Radio Frequency propagation study indicating the maximum fixed network infrastructure investment for the Village of Lombard.

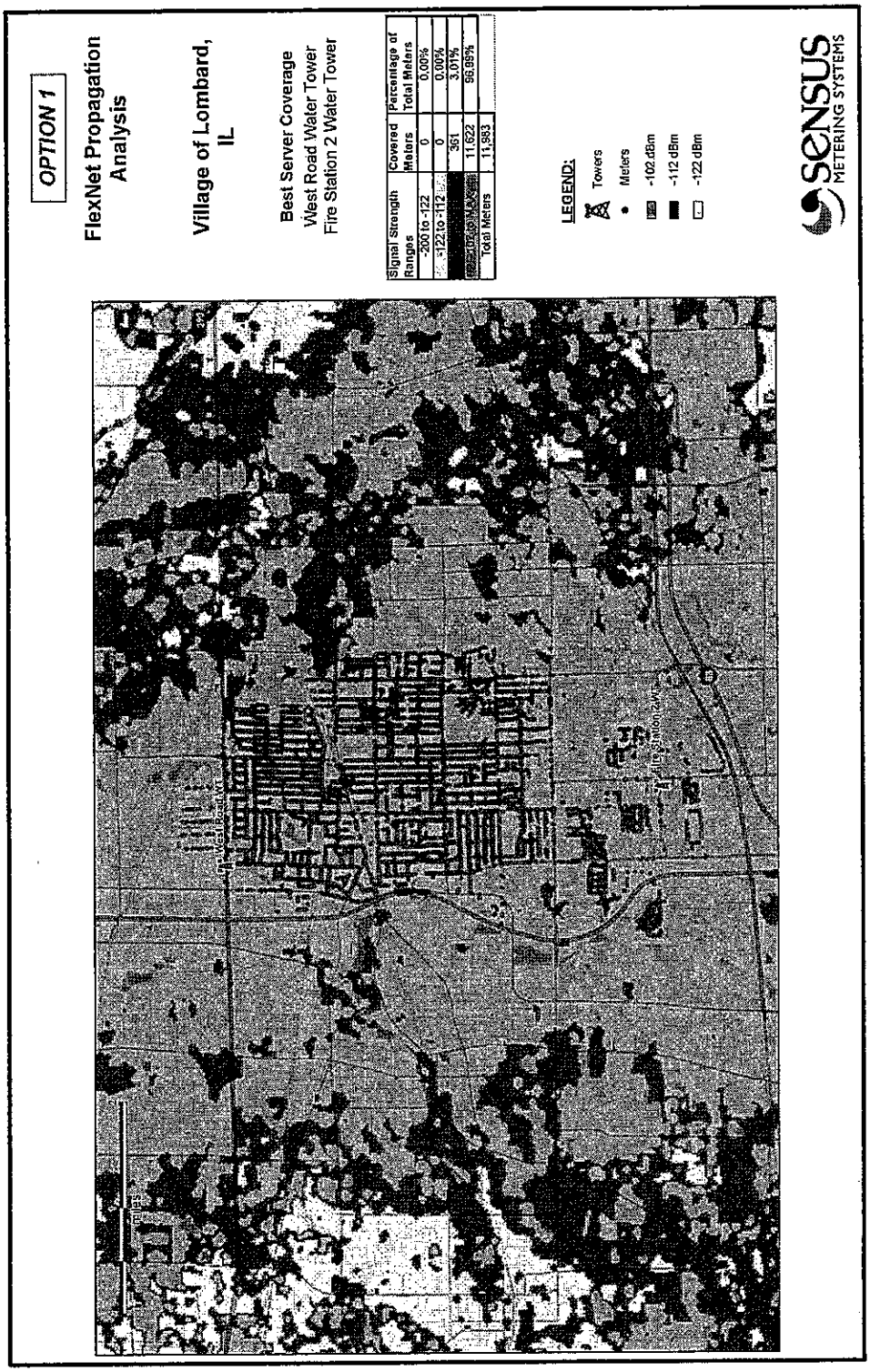
All HD Supply Waterworks, Ltd. meter installers are plumbers who are licensed in the State of Illinois.

We offer full freight allowed. Delivery can be made from stock to eight (8) weeks from receipt of your purchase order. Our terms of payment are net thirty (30) days.

We project completion of the project within six (6) months from notification to proceed. We sincerely appreciate your inquiry and trust our product, prices and service will meet with your favorable approval.

Rob Capps
Territory Manager

Appendix "B"
Village of Lombard FlexNet Propagation Analysis



Appendix "C"
Sensus/Customer FlexNet Deployment Project Responsibilites Document
Statement of Work (SOW)

SENSUS

Print Form

Sensus/Customer FlexNet Deployment Project Responsibilities Document Statement of Work (SOW)

To: All Sensus Sales Channels/Project Managers

The information on the following pages pertain to items that are specific to both Sensus and the end Customer with regards to responsibilities for a FlexNet system deployment.

SENSUS

Date: _____

To: _____

FROM: Sensus

SUBJECT: Statement of Work

This document is designed to assist the customer with the planning and installation of the Sensus FlexNet Advanced Metering Infrastructure (AMI) system. For illustrative purposes, an architectural diagram is provided below that depicts equipment to be installed at the Tower Gateway Basestation (TGB) site and the customer site which will typically house the Regional Network Interface (RNI). In addition, the following pages provide details pertaining to responsibilities for both Sensus and the _____ during the planning, installation and commissioning of the FlexNet system.

Customer Name

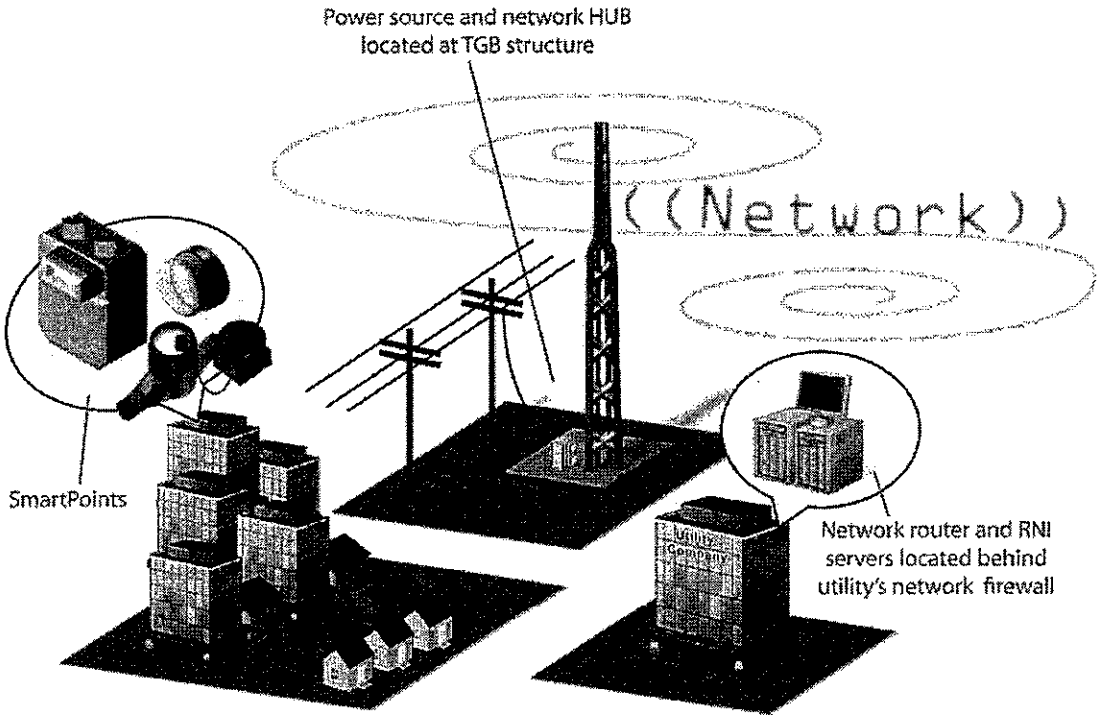


Diagram 1 - TGB/RNI

SENSUS

General Responsibilities:

Sensus will:

1. Provide a project manager to coordinate all FlexNet installation activities with the customer and be the main contact point between the customer and Sensus during deployment. The project manager will also coordinate all installation activities with the Sensus field engineers and contract installation crews hired by Sensus to install any equipment that is the responsibility of Sensus.
2. Conduct a propagation study to determine the locations best suited for installation of the TGB's and to ensure proper communications with end point transmitters and the RNI.
3. Hire a qualified installation contractor to install the TGB equipment and run all data and power cables between the antennae and the TGB. TGB's are available as indoor units and outdoor units.
4. Commission the RNI hardware and software and provide training to operate the software and manage the RNI to identified personnel at the customer location.

The Customer will:

1. The Customer will provide a key point of contact *customer project manager name here*, contact information, for project management activities to work with the Sensus project manager to help facilitate a timely installation of the FlexNet system.
2. The Customer will be responsible to provide the network infrastructure in the Power and RNI Location areas in Diagram 1, including network cabling and power identified in blue in Diagram 1.
3. The Customer will be responsible for monthly fees associated with the network access for all sites where network access is needed.
4. The Customer will be responsible to provide communications link (high speed DSL is preferred) between the Regional Network Interface (RNI) and TGB.
5. The Customer will purchase any routers, hubs, mounting equipment, uninterruptible power supply and/or security equipment needed to connect the RNI to the customer's internal network.

SENSUS

RNI Responsibilities:

Sensus will:

1. The RNI consists of two servers which have mounting hardware and can be installed into a standard rack or rack cabinet. If the customer has a suitable rack cabinet with adequate space then Sensus can install the hardware if desired on the customers rack. Each server requires 1 rack space (3 rack spaces would be needed to accommodate ancillary equipment) The customer will instruct Sensus as to the desired location for the RNI installation.
2. Supply and configure the RNI hardware and data management software necessary to operate on the RNI hardware.
3. Stage all Software and configure the RNI hardware for operation with the FlexNet network.
4. Install the RNI hardware, test, and verify proper network connectivity to access the TGB.

The Customer will:

1. Purchase all needed FlexNet (RNI) computer equipment.
2. Provide a location for the RNI Servers, typically in the IT room which will host the data management software.
3. Provide a cabinet to house the servers when rack space is not available.
4. Provide the network cabling from servers to a Network router.
5. Be responsible for fees associated with acquiring and maintaining the static IP addresses needed to access network equipment located at the TGB site.
6. Provide the necessary static IP addresses for the FlexNet system components.
7. Be responsible to provide a power source for the RNI hardware equipment.
8. Be responsible to secure a suitable contractor to connect the data management software to the billing system to allow for data to be imported for billing purposes.
9. Allow a minimum of thirty (30) to forty-five (45) days from the time the TGB, RNI and sufficient endpoints have been operational before requiring that data be used for billing purposes.
10. Be responsible to provide any necessary equipment should the utility require system backup.
11. Be responsible to perform system backup on a regular basis as recommended by Sensus.
12. Be responsible to assure that the servers provided for the FlexWare application are provided for the exclusive use of FlexNet. Customer cannot add, and/or delete applications within the FlexWare software or the servers that house the software without the written approval of Sensus.
13. Provide remote network access to the FlexNet (RNI) computer and TGB network by authorized Sensus AMR Technical Services personnel for the purpose of performing system maintenance, troubleshooting and system monitoring (If the customer prefers, they can require that Sensus personnel coordinate with them to have a remote login port opened only during the period Sensus requires access).

SENSUS

TGB Site Responsibilities:

Sensus will:

1. The TGB is available in two configurations, indoor unit and outdoor unit. The configuration for this project is: *to be completed per project*
2. Sensus will make all data and power terminal, and antennae connections at the TGB Cabinet, this includes the connection from the power source (supplied by the customer), connection of the CAT 5 data line (supplied by the customer) from the network access point at the site.
3. Sensus will provide all bracketing needed to mount the antennae at the site.
4. Mount the TGB cabinet (if needed) to the structure provided and identified by the customer.
5. Sensus will provide all strapping hardware needed to run the data and power cables from the base of the TGB site to the antennae if needed.
6. Sensus will provide the TGB and antennae sufficient to receive meter data and provide the meter data to the RNI via the network connection provided by the customer.
7. Sensus will identify and hire a qualified installation team to install the TGB equipment and make final end connections to the equipment.
8. Sensus will have access to a ground field (supplied by customer) to properly ground the TGB and antenna equipment.
9. Sensus will not be held responsible for damage to any interior or exterior coatings on water tanks that results from welding of antenna mounts to those tanks. Parties will mutually agree to the scope of work prior to the installation.

The Customer will:

1. Be responsible to provide an area at the TGB site for installation if the TGB is installed at a customer provided site.
2. Be responsible to provide a 120 VAC power source to the TGB. All necessary electric requirements which will include 120 VAC Non GFI receptacles to be located within 1 foot of the final location of the TGB installation. If trenching of the power line is needed, the Customer will be responsible to provide the necessary trenching, conduit, and cabling needed to supply power from the power source outlet to the base station cabinet. All electrical equipment will be installed in accordance with local codes.
3. Be responsible to provide network access at the site where the TGB is located. Customer should consult with Sensus representative regarding the available options for network connections between TGB and RNI.
4. Be responsible to provide any conduit and/or trenching required to provide cabling requirements from the tower site to within 1 foot of the TGB installation.
5. Be responsible to provide CAT 5 UV and weather resistant network cable from the network service provider access link to the cabinet.
6. Be responsible to provide any conduit or trenching needed to run the data cable to the TGB. Customer is responsible to assure that data cable is located within 1 foot of the final location of the TGB.
7. Be responsible to provide padlocks at TGB location for security purposes.
8. Be responsible to provide sufficient foundation to secure the outdoor cabinet should an outdoor cabinet be required to house the TGB. This foundation will consist of a concrete pad or steel structure that is designed to hold 600 lbs per square inch.
9. Be responsible to provide 240 VAC of power to the TGB unit should an outdoor cabinet be required. Receptacles to be located within 1foot of the final location of the TGB installation. If trenching of the power line is needed, the Customer will be responsible to provide the necessary trenching, conduit, and cabling needed to supply power from the power source outlet to the base station cabinet. All electrical equipment will be installed in accordance with local codes.
10. Be responsible for installing grounding material at the location of the TGB installation. At a minimum, the material should consist of # 4 or #2 stranded copper wire which will connect to the TGB.
11. Customer will be responsible for proper ground field at the TGB site and Sensus will have access to this ground field to properly ground the TGB and antenna equipment.
12. Customer will be responsible for getting access/permission to any structure that is not owned by the customer.

SENSUS

Repeater Site Responsibilities:

Sensus will: *Insert quantities if needed*

1. Sensus will provide up to _____ Repeaters with mounting brackets for the installation.
2. Sensus will install the Repeater units and ancillary equipment necessary to a structure as needed.
3. Sensus will identify and hire a qualified installation team to install the Repeater equipment and make final end connections to the equipment.
4. Sensus will identify the optimum location to install the repeaters and communicate those locations to the customer.
5. Repeater locations will be identified only after sufficient TGB's and endpoints have been installed and it is apparent that additional infrastructure in the form of Repeaters is required to optimize system performance.

The Customer will:

1. Be responsible to provide a 120 VAC power source and cable run, in compliance with local code, to the point where each Repeater will be installed. These boxes can be installed on top of poles, buildings, etc. For such cable runs, 18 AWG UV and weather resistant power cable for runs less than 470 ft. and 16 AWG for runs less than 750 ft. are needed.
2. Be responsible to initiate, coordinate and acquire authorization for installation crews to climb poles, buildings and other structures necessary to safely affix cable runs as needed for the installation of the Repeaters.
3. Be responsible to provide adequate electricity to the Repeater locations and is responsible for any and all recurring electricity charges for Repeater operations.
4. Be responsible for on-going maintenance and support of the equipment after completion of the Sensus installation and acceptance phase.

SENSUS

End Points & Field Installation Responsibilities:

The Customer will:

1. Be responsible to purchase end points, transmitters.
2. Be responsible to install or hire an installation contractor to install all end points transmitters to be used in the system.
3. Be responsible for quality assurance for their personnel and/or an installation contractor as it relates to proper installation of Sensus SmartPoints.
4. Be responsible to visit and troubleshoot endpoints that are not reporting into the system. Investigate any non-reporting SmartPoints to ensure that there are no cut wires, improper installations, improper programming and resolve all data entry errors in the system.
5. Be responsible to assign an internal and/or installation contractor SmartPoint installation auditor to ensure installation work is correct. Sensus will train this individual to properly identify and correct any known problems in the field. This individual will be the primary contact to troubleshoot, identify and correct non reporting SmartPoints and installation errors.
6. Once the installer has completed troubleshooting of installation issues, Sensus will investigate the remaining endpoints to identify and fix any coverage issues.
7. Be required to coordinate with Sensus to establish the SmartPoint installation schedule, shipment quantities, and overall project timeline.
8. Be responsible to rent or purchase handheld programming devices in sufficient quantities to meet the demands of the installers.

Miscellaneous Responsibilities:

The Customer will:

1. Be responsible for the payment of any taxes, renewal, regulatory or license fees associated with the network hardware and software.
2. Be responsible for applying for and purchasing any needed work permits.

SENSUS

IN WITNESS WHEREOF, the parties have caused their authorized representatives to execute this Agreement as of the date first set out above.

SENSUS

Signature:_____

Name:_____

Title:_____

Date:_____

_____
Customer Name Here

Signature:_____

Name:_____

Title:_____

Date:_____

Distributor Organization

Signature:_____

Name:_____

Title:_____

Date:_____

Please check one of the following:

○ Document signed with no additions and or deletions

○ Customer requested changes. See attached "Sensus FlexNet Change Order Form"

SENSUS

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 Utility'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 TGB or FNP that has not been subjected to a power failure greater than eight (8) continuous hours during the Billing Window;
    c) neither it, nor the TGB, FNP 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 Utility as defined in the final propagation study;
    f) it has not been reported to the applicable Utility under Sensus' or the Utility'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 Utility or its SmartPoint installation team to perform its obligations or tasks for which it is responsible, or to properly maintain network equipment owned by the Utility;
    h) its functioning or performance has not been adversely affected by a failure or insufficiency of the back haul telecommunications network of the Utility 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 Utility 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) "FlexNet Network Portal (FNP)" means a pole mounted unit with simple store and forward capability that communicates directly to a TGB.
7) "RNI" means the Regional Network Interface 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) "TGB" means a Tower Gateway Basestation consisting of hardware, firmware and software installed at a tower site and used to communicate by radio with SmartPoints and the RNI.

SENSUS

9) "Tower Site" means a site on a radio tower, building, or elsewhere where a TGB 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 TGB.

11) "Unavailable Meters" include, but are not limited to the following:

a) Cut At Pole — nominally a meter for which power has been turned off to the socket by the Affiliated Utility

b) Booted on Line Side — nominally a meter for which power has been turned off my placing "boots" in the socket from which the power to the meter has effectively been turned off.

c) Failed or flawed power delivery to the meter socket — an Affiliated Utility power generation, distribution or delivery system failure that has effectively turned off power to the socket and/or meter.

d) Tampered Meters — sockets, meters or distribution assets that have been modified by unauthorized personnel rendering the meter incapable of providing accurate usage readings from that meter.

e) Failed Register — the meter register is not responding to a read message.

f) 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.

g) Broken TouchCoupler — the TouchCoupler is damaged by intentional or unintentional acts.

h) 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.

i) 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.

j) 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.

k) Radio unit not securely attached to the Antenna unit — The water-proof SmartPoint housing is not properly installed and secured to the antenna unit.

l) Damaged antenna - the unit's antenna is damaged by intentional or unintentional acts.

m) Damaged radio package — the unit's water-proof radio package is damaged by intentional or unintentional acts.

n) Data Base 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.

o) 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, 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 utility 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 water register to the SmartPoint unit.

16) "Register" is a mechanical or electronic device attached to a water meter designed to capture meter consumption.

Appendix "D"
FlexNet Statement of Work Reference Chart

Rev 5-2009

FlexNet Statement of Work Reference Chart

Sensus Responsibilities: General

- Provide a Project Manager to coordinate all FlexNet installation activities
- Conduct a propagation study to determine locations best suited for Tower Gateway Base stations (TGB) locations
- Perform site selection survey and propagation analysis to determine the tower sites (Sensus would do this collaboratively with the utility to use utility tower sites if utility has sites they would like to make available for this use.)
- Hire a qualified installation contractor to install TGB equipment
- Commission the Regional Network Interface (RNI) hardware and software; provide training to operate the software

Sensus Responsibilities: RNI

- Supply and configure the RNI hardware and data management software
- Stage all software and configure the RNI hardware
- Install the RNI hardware, test and verify proper network connectivity

Sensus Responsibilities: TGB

- Determine the correct TGB configuration for project. TGB are available in three configuration: indoor, outdoor and rack mounted.
- Make all data and power terminal connection and antennae connections at the TGB cabinet
- Provide bracketing to mount antennae
- Mount the TGB cabinet (if needed) to the structure provided by the customer
- Provide strapping hardware needed to run the data and power cables
- Provide the TGB and antennae sufficient to receive meter data and provide the meter data to the RNI via the customer provided network
- Identify and hire a qualified installation team to install the TGB equipment and make final end connections

Sensus Responsibilities: Repeaters

- Provide mounting brackets for installation
- Install the repeaters and ancillary equipment
- Identify and hire a qualified contractor to install repeater
- Identify the optimum location to install the repeaters

Customer Responsibility: General

- Provide a key point of contact to interface with Sensus Project Manager
- Responsible for any monthly fees associated with network access for all sites
- Responsible for high speed network communications link between RNI and TGB
- Purchase routers, hubs, mounting equipment, uninterruptible power supply and/or security equipment required to connect the RNI to the customers internal network

Customer Responsibility: RNI

- Purchase all needed FlexNet (RNI) computer equipment
- Provide a location for the RNI servers
- Provide the network cabling from servers to network router
- Responsible for fees associated with acquiring and maintaining the static IP addresses needed to access network equipment
- Provide power source for the RNI equipment
- Secure a suitable contractor to connect the data management software to the billing system
- Allow 30 to 45 days from the time the TGB, RNI and sufficient endpoints have been operational before requiring data be used for billing

Customer Responsibilities: TGB

- Provide an area at the TGB site if the TGB installation is at the customers site
- Provide 120 VAC power source to the TGB to supply all the necessary electric requirements. 240 VAC will be required for outdoor installations
- Provide network access at the site where TGB is installed
- Provide CAT 5 UV and weather resistant network cable
- Provide any conduit or trenching required to run the data cable
- Provide sufficient foundation in the case of an outdoor TGB

Customer Responsibilities: Repeaters

- Provide 120 VAC power source to the repeater to supply all the necessary electric requirements
- Initiate, coordinate and acquire authorization for installation of repeaters
- Provide adequate electricity to the repeater location

Customer Responsibilities: End points and Installation/Miscellaneous

- Purchase endpoints/transmitters

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

Appendix "E"
Sensus FlexNet Customer Acceptance Plan (CAP)

SENSUS

Print Form

FlexNet Customer Acceptance Plan (CAP)

As part of the FlexNet system deployment, three milestones have been established and defined. The customer will accept and operate the FlexNet system once milestone three (3) has been completed. At that point, Sensus will provide support per the agreed upon service levels.

SENSUS

IN WITNESS WHEREOF, the parties have caused their authorized representatives to execute this Agreement as of the date first set out above.

SENSUS METERING SYSTEMS INC.

By: _____

Name: _____

Title: _____

Date: _____

_____
Customer Name Here

By: _____

Name: _____

Title: _____

Date: _____

Distributor Organization

By: _____

Name: _____

Title: _____

Date: _____

Please check one of the following:

○ CAP Document signed with no additions and or deletions

○ Customer requested changes to the CAP. See attached "Sensus FlexNet Change Order Form"

This page is superceded by Village of Lombard Contract Document PWU-1101

SENSUS

Formula

Calculating system performance will be accomplished using the following formula:

- **SmartPoints** minus **Unavailable SmartPoints** (including all sub categories) equals **Available SmartPoints.**
- **Unread SmartPoints** divided by **Available SmartPoints** equals the total Read Success Rate expressed as a percentage.

Example 1:

- **FlexNet SmartPoints** = 100
- **Unavailable SmartPoints** = 12
- **Unread SmartPoints** = 2

Then:

- 100 – 12 = 88 and
- 88 – 2 = 86 then
- 86 / 88 = 97.7% Read Success Rate

Example 2:

- **FlexNet SmartPoints** = 1,777,328
- **Unavailable SmartPoints** = 12,000
- **Unread SmartPoints** = 2500

Then:

- 1,777,328 – 12,000 = 1,765,328 and
- 1,765,328 – 2500 = 1,762,828 then
- 1,762,828 / 1,765,328 = 99.8% Read Success Rate

Conclusion: Monthly Billing Window Read Success Rate will be calculated using this formula for SmartPoints that deliver a read to the TGB and, subsequently, the RNI within the prescribed four (4) day billing window for that meter.

Appendix "F"
Sensus FlexNet Annual Maintenance Agreement

AMR-454-R2

Sensus FlexNet® Annual Maintenance Agreement

Customer Information Form

INTRODUCTION

The FlexNet Annual Maintenance Agreement was established to provide FlexNet utility customers with up to 50,000 endpoints a cost-effective array of services to meet their individual hardware and software support requirements.

PARTICIPATION AND COVERAGE

All new FlexNet systems receive Standard Support free for the first year of operation; Premium Support is available for an additional cost at the price listed below. After the first year of operation, customers may choose to extend coverage under Premium Support or Alternate Service Pricing. Participation in Premium Support is strongly recommended for maximum cost effectiveness.

Standard or optional Premium Support coverage begins upon completion of MDM training. Annual renewal notices will be mailed to customers approximately sixty (60) days prior to expiration of their current agreement. Customers who allow their support agreement to expire will be subject to current Alternate Service pricing for support needs. See Coverage Terms for more information.

FlexNet STANDARD SUPPORT

(Included for 1st year of New FlexNet systems)

- FCC license protection and maintenance
- 8AM – 6PM EST Phone support. (1-800-METER-IT) For hardware and software technical support
- FlexWare/MDM software updates.
- Loaner programming equipment, if necessary.

FlexNet PREMIUM SUPPORT

$3,000.00/year (net per year per TGB)

Includes Standard Support plus:

- 24/7 Phone support. (1-800-METER-IT)
- Sensus Extended Maintenance Program (SEMP) for one FlexNet Programming Tool Set. (AR5001, Charge Stand and M900)
- Annual Support Agreement for AutoRead (if applicable)

Tower Gateway Base Station (TGB)

- Sensus software updates
- Remote diagnostics[2] of operational issues (remote access required)
- Repair or replacement of defective parts or unit, at Sensus' discretion. Includes cost for parts and labor.
- Two business day response time for on-site analysis[1]

FlexNet PREMIUM SUPPORT (continued)

- Replacement equipment within 48 hours of completion of primary troubleshooting
- Does not cover 'Acts of God'
- Does not include costs associated with tower rental, electrical fees or site maintenance.
- Does not include costs associated with purchase, maintenance or support of ancillary network equipment or network backhaul connection.

FlexNet Network Portal (FNP)

- Two business day response time for on-site analysis[1].
- Repair or replacement of defective parts or unit, at Sensus' discretion. Includes costs for parts and labor.
- Does not cover 'Acts of God'
- Does not include costs associated with tower rental, electrical fees or site maintenance.
- Does not include costs associated with purchase, maintenance or support of ancillary network equipment or network backhaul connection.

FlexWare/MDM Software

- Sensus software updates
- Remote diagnostics of Sensus software issues[2] (Remote access required)
- Two business day response time for on-site analysis[1]
- Does not include RNI hardware[3]
- Does not include RNI operating system upgrades or updates after initial coverage[4]

HHD Programming Software

- Sensus software updates

ALTERNATE SERVICE PRICING

Phone Support

- $75 per call; $7.50 per minute after first ten (10) minutes.

Yearly Software Updates

- $4000.00 (net)

On Site Visits

- $1600.00 per day

Additional MDM/FlexWare WebEx Remote Training Session

- $750.00 per session

NOTES:

1. The two-day response time begins after primary troubleshooting personnel determine that all remote options have been exhausted and that a site visit is required.
2. Remote diagnostic services require the customer to provide high speed remote access to Sensus support personnel. Customer is responsible for any cost associated with the installation and ongoing costs or maintenance of the connection.
3. Contact Dell support at 1-800-624-9896 or http://www.dell.com for Server Hardware issues or extended Dell Support Options
4. Sensus includes a three year license for Red Hat Linux updates and support with every new RNI Operating System. Customers are responsible for costs associated with upgrades, support and licensing of Linux or Microsoft applications for RNI Operating Systems as per Red Hat and Microsoft policies. The support programs for Microsoft and Red Hat Linux are recommended but not required for system operation. For more information regarding Red Hat Linux and Microsoft Server and Microsoft SQL support, see the information included with the RNI equipment or visit Red Hat at: https://www.redhat.com/apps/support; or Microsoft at: http://support.microsoft.com/

Coverage Terms:

- Annual support costs are based on the total number of TGBs in the customer's system.
- The date customers complete MDM training establishes the anniversary date for annual support renewal. Standard Level Support is included free for one year following MDM training; customers opting for Premium Support for the first year will be billed the upgrade price after completion of MDM training. Standard Support is not renewable after the first year of operation.
- Customers are responsible for monitoring hardware and software components of their FlexNet system and contacting Sensus when support is needed. The FlexNet Annual Maintenance Agreement does not cover system monitoring on a continuous or on-going basis beyond that which is necessary to provide solutions for the customer's immediate hardware or software support needs.
- Customer acknowledges that Sensus reserves the right to repair or replace malfunctioning equipment at its discretion and at Sensus' choice of location, either customer site, Sensus manufacturing facility or other appropriate site determined by the technician.
- Renewal notices for FlexNet Annual Maintenance Agreements will be mailed 60 days prior to the MDM training anniversary date; invoices must be paid no later than 30 days following the anniversary date, or the support agreement will be cancelled. FlexNet customers not covered by an Annual Sensus Maintenance Agreement will be charged current Alternate Service Pricing rates for their support needs.

For additional information concerning the FlexNet Annual Maintenance Agreement, please contact your local Sensus representative, authorized distributor, or call:

1-800-METER-IT (1-800-638-3748)

AUTHORIZED SENSUS DISTRIBUTOR

SENSUS

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

Village of Lombard, IL
AMR/AMI Metering System
Return on Investment (Payback)
Commercial Meters

	Consumption Revenue Benefits	Estimated Labor Benefits	Total Estimated Benefits	Costs of Project
Year:				$1,600,855.42
1	$292,959.00	$6,925.50	$299,884.50	$1,300,970.92
2	$304,352.80	$7,098.64	$311,451.44	$989,519.48
3	$313,483.38	$7,276.10	$320,759.49	$668,760.00
4	$322,887.89	$7,458.01	$330,345.89	$338,414.10
5	$332,574.52	$7,644.46	$340,218.98	$1,804.87
6	$342,551.76	$7,835.57	$350,387.33	$352,192.20
7	$352,828.31	$8,031.46	$360,859.77	$713,051.96
8	$363,413.16	$8,232.24	$371,645.40	$1,084,697.37
9	$374,315.55	$8,438.05	$382,753.60	$1,467,450.97
10	$385,545.02	$8,649.00	$394,194.02	$1,861,644.99
11	$397,111.37	$8,865.23	$405,976.60	$2,267,621.59
12	$409,024.71	$9,086.86	$418,111.57	$2,685,733.16
13	$421,295.45	$9,314.03	$430,609.48	$3,116,342.64
14	$433,934.32	$9,546.88	$443,481.20	$3,559,823.84
15	$446,952.35	$9,785.55	$456,737.90	$4,016,561.73
Total			$5,617,417.16	

- Consumption Revenue Benefits were derived from a study done by the Utility for 2" – 6" meters with lost revenues calculated from 09/10 rates at $250,376 and 10/11 rates at $260,492.31. Then a 3% increase was factored into each year thereafter for future growth and rate increases. In addition, a 4% unaccounted for water improvement on commercial meter sizes 5/8" – 1.5" were taken into account. A 3% annual increase was factored into those as well. The 2" – 6" data were taken from actual meter test results. Actual commercial meter quantities were as follows:

  5/8" – 295 2" – 239
  ¾" – 343 3" – 119
  1" – 192 4" – 61
  1.5" – 284 6" – 6

- Labor benefits were calculated based on all commercial meters not having to be read through the current meter reading contract. The number of commercial meters taken into account for this data was 1,539 times the contracted rate of $0.75 per read times 6 reads a year per customer. A 2.5% cost of living increase was factored into these calculations.

- The Village of Lombard would receive a Return on their Investment in approximately 4.9 years based on the numbers provided. This would generate an additional $4.01 million in additional monetary benefit over a 15 year period.

Village of Lombard

Water Meter Change Out Program

Presentation Objectives

- History of Lombard Meter Replacement Programs
- What is AMR? What is AMI?
- Review of Data on **Small Meters** (≤1½")
- Review of Data on **Large Meters** (≥2")
- Review of FY 2011-2020 CIP Funding
- Staff Recommendations

History of Lombard Meter Replacement Programs

1980 –Water Meter Program Development Group

- Lake Water Allocation Reporting Requirements
  - Commercial, Residential, Industrial Accounts
- Verify meter inventory and accuracy
  - Did not have an accurate large meter database (size, location, type)
  - 3 brands of meters
  - No remote read
  - Reduce unaccounted for water
- Identify Ordinance Revisions

Water Meter Program Development Group

- Organized a team to inspect and test meters, including change-out of meters:
  - Foreman
  - 2 Maintenance Workers
- 1981-1983 - Purchased meter test bench & began testing meters
  - Focus on Large Meter Repair & Replacement
- Installed remote generator reading units

1987-1989

- Analyzed 419 small meters for accuracy
  - Estimated 34% water loss
- FY 1988 – Large Meter Testing and Replacement Program
- FY 1988 – 1989 – Small Meter Replacement Program
  - Upgraded to Touch Read
- Charged customers for meter & installation

1987-1989

- Charged customers for meter & installation

Meter Size	Installation Cost	Meter Cost	Total Cost
5/8"	50.00	52.50	$102.50
3/4"	50.00	86.10	$136.10
1"	65.00	102.90	$167.90
1 ½"	110.00	240.45	$350.45
2"	180.00	465.56	$645.56
3"	270.00	702.56	$972.56
4"	360.00	900.56	$1,260.56
6"	360.00	1,335.56	$1,695.56

Program Review

- Successful implementation by Contractor
- Reduction in staffing allocated to meter reading function due to touch read
- Billing time reduced due to automatic downloading
- ***Charging residents and businesses for meter and installation was extremely unpopular***
- Did not see anticipated revenue increases until billing system (HTE) was changed in 1996

Program Review

- 1996 – Implemented HTE billing software
- 1997 – Joint Finance/PW Water Meter Replacement Program Recommendation to PWC and Village Board
  - Additional meter testing warranted, current data indicated meters need to be replaced in 6-10 years, upgrade reading system, need to fund the project through Water Rates. $2.9 to $5 million

Program Review

- 2001 – Large Meter Testing Program reinstated. Test all meters on 5 year rotation. Funded through Water Rates
- 2002 – Tested 26 small meters. Recommended meter change out program for meters exceeding recommended registration and an upgrade of the reading system (radio, phone)

Program Review

- 2004 - Meter Replacement Program incorporated in CIP for FY 2008-2010 at $5,100,000
- 2005 – Tested 84 small meters.
  - **27%** were below (92.81%) acceptable accuracy on low flow of 95.0%
- 2007 - Implemented accelerated large meter testing program to reduce meter repair rate.
  - Over 1 million gallons tested every year
  - Less than 1 million gallons tested every other year.
  - $90k per year

Program Review

- 2008-Formed a Committee to evaluate meters and new reading technology (Advanced Metering Infrastructure - AMI):
  - Sharon Myers, Water Billing
  - Angela Podesta, Tom Czajka, Dan Simons, PW
- Met with various vendors to determine features
- Visited Willowbrook and Aurora to see AMI Systems in action
  - Willowbrook – Badger Meters, Actara Fixed Based Radio
  - Aurora – Sensus Meters and Drive By Radio

What is AMR? What is AMI?

Automated Meter Reading = AMR

- AMR refers to the ability to collect data from a metering device remotely and automatically.
- Methods
  - Touchpad
  - Drive-by
  - Fixed Point
- Data collection process is generally a one way process

AMR

- The Village currently uses Sensus Touch Read system
  - Requires labor to read approximately 12,700 meters
  - $60,000 annual reading contract
  - Requires labor to obtain Final Readings
  - No data transferred without work effort

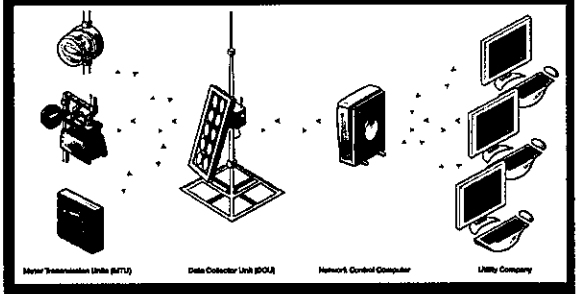
Advanced Metering Infrastructure (AMI)

- Advanced Metering Infrastructure (AMI) is an architecture for automated, two-way communication between a smart utility meter and a utility company.
- The goal of an AMI is to provide utility companies with real-time data about consumption and allow customers to make informed choices about usage.
- AMI is an important part of what is known as a "smart grid"

AMI & Smart Grid Technology

- Smart grid initiatives seek to improve operations, maintenance and planning by making sure that each component of the system can both 'talk' and 'listen'.
- Provides more accurate meter readings electronically
- Some systems can identify water leaks, even before customers call
- Offers quicker final readings and interim readings
- Allows Village oversight of vital water infrastructure 24 hours/day; 7 days a week, 365 days a year.

Advanced Metering Infrastructure (AMI)



WHERE ARE WE NOW?

- Developed list of AMI features that the team thought were important:
  - Proven record integrating with HTE
  - Use existing meter wire (minimize disruption and cost)
  - Two way communication… allows expansion of uses
- Invited Sensus, Badger and Neptune to perform propagation studies and to discuss their AMI systems in more detail.
- Invited Aclara to discuss their AMI systems. This system is compatible with all meters

Customer Service Benefits of an AMI System

- Increased billing accuracy due to elimination of estimated bills
- Programmable per meter size so that a meter can be billed in smaller increments
- Leak detection down to 1/10 gallon - tell customer they have a leak before they even know it! *"No more $800 bills because of toilet running for 2 months"*
- Reduced operational costs - No meter reading contracts ($60,000/yr)

Customer Service Benefits of an AMI System

- No personnel needed for final readings – and if someone calls after they've moved out, we're able to get actual reading from that date. (Some times customers who've moved only call after they get the next bill and our policy is to send someone out to get reading next day unless there was a reading taken "close" to the time they moved)
- Can, without a doubt, tell customer that "yes you did use this water" with print-out of readings provided on hourly basis (depending on who we go with)
- No more backwards meters.

Customer Service Benefits of an AMI System

- Can detect tampering with meters. No more finding accounts with bypassed meters and/or removing meter to fill pools, etc.
- Able to program all meters to read at Midnight on first of month in order to tie out customer usage with usage from DWC billing on a monthly basis.
- Report for installed meters not being billed.
- Stopped meters – can catch those quickly!
- Flexibility to go to monthly billing without a problem.

Small Meters

5/8" – 1½"

Small Meter Consumption (2009)

Meter Size	Number of Meters	Total Consumption	Percentage of Consumption
5/8"	9,992	569,035,000	43%
¾"	1,260	71,143,000	5%
1"	849	70,906,000	5%
1½"	302	87,568,000	7%
Total	12,403	798,652,000	61%

Current Data

- 340 meters (1½ or less) tested from 2003-2007
- Residential and Commercial
- Randomly chosen, mix of meters within recommended registration/age and meters exceeding recommended registration/age
- Based upon Lombard testing, the efficiency rating of meters does not necessarily correlate to the AWWA age or registration standards

Recommended Meter Replacement

- Industry standard provides for the replacement of **small meters** based upon "registration" or flow that passes through the metering device.

Meter Size	Registration (in gallons)	Time Period (in years)
5/8"	1,500,000	15
3/4"	2,250,000	15
1"	3,000,000	15
1½"	5,000,000-7,500,000	10

Meters Exceeding Registration

Meter Size	Number of Meters Exceeding Registration	Percentage of Meters in Service
5/8"	3596	[illegible]
3/4"	3	[illegible]
1"	26	[illegible]
1 1/2"	0	0%

Small Meter Usage vs Flow Rate

	GPM	% Usage	
Low Flow	< 1.0	13.1	Small Leaks
Normal Flow	1 to 10	83.5	Normal Household Use (Shower, Flush Toilet, Outdoor Use)
High Flow	> 10	3.5	Irrigation Systems

From AWWA Research Foundation Study (1992) by Paul Boyer

AWWA Meter Test Standards

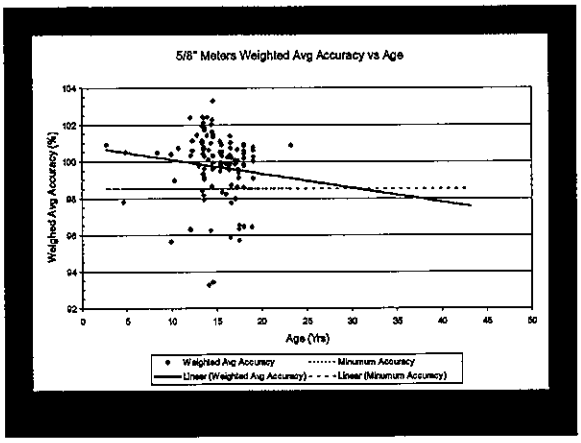
- AWWA Standard C-700 uses meter accuracy at Low and Normal Flow ranges to determine if a meter should be replaced (1½ or less)

	Acceptable Accuracy Limits (%)
Low Flow	95.0-101
Normal Flow	98.5-101.5
High Flow	98.5-101.5

Meter Accuracy (%) by Size & Flow Rate

	5/8"	3/4"	1"	1 1/2"
Low Flow		95.3		95.0
Medium Flow	100.5	99.5	99.6	
High Flow	100.6	99.9	100.2	
Weighted Average*	99.7	99.1	99.8	97.6

*Accounts for the percentage of flow



Predicted Meter Age to Drop to 98.5% Minimum Acceptable Accuracy

	Predicted Meter Age	Average Age of Meters*	Number of Meters Older than Prediction*
All	20	12	8522
5/8"	30	20	0
3/4"	17	11	122
1"	37	7	0
1 1/2	10.5	15	231

*2009 Meter Data

Impact on Revenue

- 43% of overall flow is attributable to 5/8" meters
- Majority of inaccuracy is on the low flow, which represents 13% of flow
- Running at 6.3% below AWWA efficiency standard
- IMPACT is approximately $29,000 per year in lost revenue

Large Meters

2"-6"

Large Meter Consumption (2009)

Meter Size	Number of Meters	Total Consumption	Percentage of Consumption
2"	242	144,805,000	11%
3"	119	118,550,000	9%
4"	61	215,520,000	16%
6"	5	37,400,000	3%
Total	427	516,275,000	39%

Recommended Meter Replacement

- **AWWA Standard C-702** standard provides for the replacement of **large meters** based upon "registration or flow that passes through the metering device"

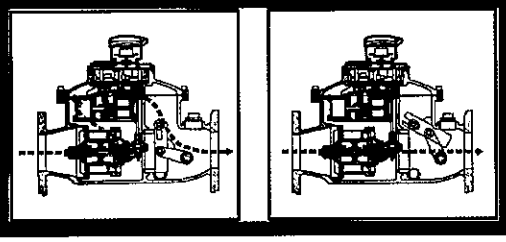
Meter Size	Registration (gallons)	Time Period (years)
2"	20,000,000	10
3"	40,000,000	7
4"	150,000,000	5
6"	300,000,000	3

Meters Exceeding Registration

Meter Size	Number of Meters Exceeding Registration	Percentage of Meters in Service
2" Meter	35	14.4%
3" Meter	11	9.2%
4" Meter	6	9.8%
6" Meter	0	0%

Large Meter Operation

- Compound meters consist of 3 components:
  - A turbine meter
  - A positive-displacement meter
  - An automatic valve arrangement



AWWA Meter Test Standards

- AWWA M36 uses meter accuracy at Flow Rate to determine if a meter should be replaced

	Acceptable Accuracy Limits (%)
Low	95 - 101
Crossover	90 - 103
High	97 - 103

Meter Accuracy (%) by Size & Flow Rate

Flow	2"	3"	4"	6"
Low			97.41	99.48
Crossover	92.03		93.65	95.73
High	99.96	98.56	100.95	100.88
Weighted Average				97.91

Impact on Revenue

- FY2009 spent $79,513 on testing & repair
- For meters outside the acceptable Meter Accuracy Range, the Village billed 28,101,000 fewer gallons = $250,376.11*
  - *This figure does not account for meters that had stopped operating*

RECOMMENDATION #1

- Install Meter – Single Family Applicable
  - Continue random meter testing program
  - Continue to monitor the efficiency of the meters
  - As meters are replaced or new meters installed upgrade to AMI compatible meter and reading technology
  - Install AMI device on existing meters that are compatible with AMI system (approximately 1,000) $180,000
  - For planning purposes, shift the small meter replacement program into FY 2016 of the CIP

RECOMMENDATION #2

- Commercial & Multi-Family Application
  - Continue Large Meter testing program
  - Contract for the replacement of the 412 Multi-Family and 1,127 Commercial Meters
- Cost of the replacement program is estimated at $1,441,602 based upon current cost for compatible system

Multi-Family Replacement Cost

Meter Size	Equipment Cost	Installation Cost	Quantity	Total Cost
5/8	253	86	13	$4,407
3/4	282	86	84	$30,912
1	323	86	48	$19,632
1½	599	215	114	$92,796
2	1,409	225	43	$70,262
3	1,947	325	60	$136,320
4	3,168	325	48	$167,664
6	5,386	500	2	$11,772
Total Multi-family			412	$533,765

Commercial Replacement Cost

Meter Size	Equipment Cost	Installation Cost	Quantity	Total Cost
5/8	253	86	282	$95,598
3/4	282	86	259	$95,312
1	323	86	144	$58,896
1½	599	215	170	$138,380
2	1,409	225	196	$320,264
3	1,947	325	60	$136,320
4	3,168	325	13	$45,409
6	5,386	500	3	$17,658
Total Commercial			1,127	$907,837

RECOMMENDATION #3

- Automated Metering Infrastructure (AMI)
  - Proceed with installation of backbone infrastructure (towers and data collection)
  - In order to gain efficiency at ability to detect leaks or abnormal usage, registers on the meter head must read to a factor of less than 1,000 gallons

AMI Cost

Estimated costs are not based upon full design and engineering of the system, but on the preliminary propagation study.

	Quantity	Cost	Total
Tower	2	74,000	148,000
Regional Network Interface	1	35,000	35,000
INFRASTRUCTURE COSTS			183,000

	Quantity	Cost	Total
Support	1	3,000	3,000
Maint	1	1,000	1,000
Backhaul	2	1,200	2,400
ANNUAL COSTS			6,400

Summary

- Replacement of all commercial and multifamily meters in FY 2011
  - Estimated cost of $2,000,000
- Installation of AMI infrastructure
- Program $5,000,000 in FY 2016 for single family residential meter replacement program