COUNCIL WORKSHOP ITEM

ITEM: Automated Meter Reading Project
DATE: August 28, 2001
PREPARED BY: John J. Bajor, Jr., Director of Public Works
Laura Wainwright, AMR Project Coordinator
PURPOSE: To award a contract for the Water Meter Replacement and Automated Meter Reading Deployment project to Water Resources, Inc.
BID AMOUNT: **$ 4,125,767.00** **ACCOUNT:** **481.551.0000.5711**

Discussion:

The Village of Downers Grove received seven proposals in response to the above-mentioned Request for Proposals. Below is a table outlining the results of these proposals.

Proposal Number	Vendor Name	AMR Cost	PMMI Cost	Meter Cost	Total Cost	Rank by Price Only
1	Mass Installation, Inc.	$2,100,350.00	$2,527,087.00	$1,046,314.00	$5,673,751.00	**4**
2	Mass Installation, Inc.	$1,898,750.00	$2,228,204.00	$928,823.00	$5,055,777.00	alternate
3	United Metering Inc.	$1,831,442.00	$2,117,592.00	$968,512.00	$4,917,546.00	**2**
4	United Metering Inc.	$1,719,188.00	$1,742,567.00	$907,773.00	$4,369,528.00	alternate
5	U.S. Filter	$1,901,540.00	$2,264,715.40	$1,370,894.20	$5,537,149.60	**3**
6	Water Resources	$1,724,200.00	$1,152,060.00	$1,249,507.00	$4,125,767.00	**1**
7	Water Resources	$1,301,550.00	$1,152,060.00	$1,249,507.00	$3,703,117.00	alternate

After an initial review of all proposals, we shortlisted our list down to two vendors to interview: United Metering, Inc. and Water Resources, Inc. Over the last few weeks, interviews were conducted and reference checks were completed. Table below shows the comparison of costs for a five-year installation from the two finalists.

Proposal Number	Vendor Name	AMR Cost	PMMI Cost	Meter Cost	Total Cost	Rank by Price Only
3	United Metering Inc.	$1,831,442.00	$2,117,592.00	$968,512.00	$4,917,546.00	**2**
6	Water Resources	$1,724,200.00	$1,152,060.00	$1,249,507.00	$4,125,767.00	**1**

After carefully considering both vendors, it is the recommendation of the AMR committee that this project be awarded to Water Resources, Inc. In reviewing United Metering's alternative bid for a 15-month implementation schedule, we noted the substantial increase in their pricing to accomplish the same project over five years. However, even with the alternative bid price, Water Resources is still the lower bidder. Further justifications for our choice are outlined below.

Proposal Review:

AMR Technology

Three of the four vendors responding to our RFP proposed the Hexagram STAR fixed network AMR system. During the period leading up to our RFP, we had become familiar with this system, through both research and site visits. The STAR network allows the Village the following improvements:

- Daily meter reading from every meter in the system
- Village-owned infrastructure, which requires no additional expenditure for these daily readings
- Management reports on a daily basis, to include hi/low consumption, zero consumption, tamper detection, and error detection (hardware related problems)
- Web-based access to all data (through the Village's intranet)
- Proven service and support for all software and hardware related issues
- An open architecture that the Village can expand upon throughout the life of the system
- More efficient and responsive customer services

A major consideration with any AMR system is the battery life expectancy. Some systems offer a field replaceable battery, which tend to cost less to replace (battery life approximately 5 to 7 years). The Hexagram system comes standard with sealed MTU's (remote reading devices). These units would need to be changed out when the battery life has expired. Although they cost more than a simple battery, the life expectancy is 15 to 20 years under our proposed reading cycle of two readings per meter, per day.

Water Meters

Water Resources has proposed the Schlumberger line of meters for our project. We have been receiving meters from this manufacturer for approximately 6 to 7 years, and currently have just over 5,000 of their meters in service. Since the accuracy of newer meters is not a concern, we intend to have the vendor retrofit any meters 5 years old or newer with a new register head and new remote, which will allow us to save the cost of a new meter in at least 2,000 locations.

The Schlumberger meters use a true encoder register, which allows the MTU to read the position of the dials on the meter every time the meter reading is to be sent to the collector. There will always be a potential for "dash" readings, which means that a specific wheel on the dial is in between two different numbers and, therefore, a dash shows up in place of an actual digit. But, after addressing this issue with other municipalities using this system, we have determined that the majority of problems with dash readings stem from older encoder registers and not the newer ones made now. Since our entire inventory is made up of pulse registers, we will be replacing all registers in our system with new and improved encoder registers. In addition, since we will be obtaining two readings per meter, per day, we will always have more than enough reading data to work with.

The United Metering proposed register still uses a pulse technology that would still have the same potential accuracy issues that our current system has. If the meters mechanical operations does not generate the proper pulse, then the radio transmitter will have inaccurate data, and provide and inaccurate reading. In short, we wish to move away from this technology to direct readings accomplished by the reading device reading the meter, and not the meter sending a pulse to the reading device.

In response to the growing concerns regarding lead in water distribution systems and the newer, stricter guidelines that are being implemented nation wide, Schlumberger has been the first meter manufacturer to convert its entire line of water meters to a new lead-free material known as EnviroBrass. The meters the Village of Downers Grove has been receiving since the beginning of 2001 have been made of this material, and the AMR team feels that this a very proactive approach to reducing the lead content in our municipal water supply.

Project Management and Meter Installation (PMMI)

During our preparation for this project, much attention has been given to the requirements of the PMMI vendor. Our intention is to have one vendor solely responsible for any and all aspects of the deployment.

We carefully reviewed the proposed implementation schedules and management structures for both of the finalists. During the interviews, both vendors gave presentations detailing their proposed implementation. Each vendor brought to the table years of experience in the AMR industry, as well as the specialized staff to coordinate such a large deployment. After weighing all of the factors involved, we selected Water Resources for our PMMI vendor. Following are a few of the highlights of their proposal:

- Local Service and Support – Water Resources is located in Elgin, Illinois.
- PMMI Price – Out of the seven proposals received, Water Resources was the lowest for these services, coming in $965,532 below United Metering.
- AMR Price – The Hexagram STAR system as quoted by Water Resources is $107,242 below the pricing received from United Metering.
- Two-man installation crews vs. one-man crews proposed by United Metering – Water Resources will be using one licensed plumber and one laborer for each meter replacement. A two-man crew will do all retrofit installations either as stated above or with two laborers since no plumbing work will need to be performed.

Project Implementation:

Two implementation options have been developed and are outlined below. Please note, work under either schedule of implementation would begin within 6 to 8 weeks from the date of contract acceptance. Also, as defined in the RFP there will be two blackout periods during which no installation work will be performed: (1) December 15 through January 15; (2) June 20 through July 8.

Option 1 – 60 Months (5 years)

To obtain an "apples to apples" comparison of proposals, the RFP was written using a 60-month implementation. All vendors were required to follow the outline provided to them in the RFP documents to aid us in reviewing our options. In Attachment A, a comparison has been made between the 60-month proposals received from both shortlisted vendors.

In this scenario, we had anticipated dividing the installations throughout the time period with 30% of the installations to be completed the 1st year, 20% in years 2 through 4, and 10% remaining for the last year of the project to allow time to clear up any outstanding issues as well.

Option 2 – 24 Months (2 years)

In addition to the required 60-month proposals, both shortlisted vendors provided pricing for an accelerated installation project. Attachment B is a comparison the proposals received from both vendors and the projected results.

If a 24-month implementation were selected, the installations would be handled 50% the first year and 50% the second year.

Regardless of which time frame is considered, Water Resources is still the lowest, qualified bidder. Based on Water Resources bid, it would be less expensive from a time value of money analysis to go with the five year proposal, however, as outlined in this report, and the potential increase in revenues gained from more accurate readings, makes a two year proposal the lowest net-cost to the Village alternative.

Financing:

The Village Water Fund does not have sufficient reserves to accomplish this project within a two-year time frame. We are proposing the issuance of revenue bonds for a ten-year term to pay for this project. Given that the life of these meters is 15 to 20 years, this term represents an early payoff on the project, which can be accomplished mainly through the increased revenues anticipated from the new system. A sample bond table is provided as Attachment C to show the principle and interest payments needed for a $4.2 million bond issue. As noted above, we feel that increased revenues will result from this installation. Because of this we project that reserves will increase as a result of this project, even with the financing costs for the bonds added into the equation.

If we assume that other activities in the Water Fund do not change, we can show the five-year impact on the fund balance in the Water Fund of financing this project.

Year	Beginning Balance	Other Water Expenses*	Project Expenses*	Other Water Revenues	Project Revenues*	Ending Balance
2001-02	$ 3,598,689	$ 8,173,642	$ 1,133,014	$ 6,798,000	$ 4,000,000	$ 5,090,033
2002-03	$ 5,090,033	$ 7,734,171	$ 2,801,028	$ 7,152,580	$ 264,040	$ 1,971,454
2003-04	$ 1,971,454	$ 7,237,099	$ 1,648,014	$ 7,224,106	$ 528,080	$ 838,526

2004-05	$ 838,526	$ 6,590,170	$ 569,800	$ 7,224,106	$ 528,080	$ 1,430,742
2005-06	$ 1,430,742	$ 6,521,364	$ 563,950	$ 7,224,106	$ 528,080	$ 2,097,614

*Other Water Expenses has the previously budgeted project costs removed.
*Project Expenses include Debt Service and Project costs.
*Project Revenues includes bond proceeds in the first year.

Our original goal in implementing this system was to eliminate the need for a water rate increase in 2002-03. However, at the current project cost and interest rates, we currently project that the rate increase projected for 2002-03 can only be reduced from $.25 to $.10 per unit.

Summary:

Our goal is for a 100% completion of all meter exchanges and upgrades. As our research has shown, the constant communication and support within the Village organization will be the key factor in bringing about a total system upgrade. With a project of this scope, we anticipate the need to make special accommodations periodically in order to achieve our goal. Some of these issues are foreseeable, but many will have to be handled on a case-by-case basis. In consideration of these potential problems, we have included a 5% contingency above the quoted PMMI price that would allow us to work with our vendor in an expeditious manner to solve issues as they arise.

Attachment:

Attachment A – 60 Month (5 year) Cost Proposal
Attachment B – 24 Month (2 year) Cost Proposal
Attachment C – Bond Financing Table

Recommendation:

Recommend placing the award of the contract on the Council workshop agenda of August 28, 2001 and the Council active agenda on September 4, 2001, and that the Village of Downers Grove proceeds with the Award of Contract for the Water Meter Replacement and AMR Deployment project to Water Resources Inc. using the implementation scheduled outlined in Option 2 – 24 Month (2 years) be utilized.

Village of Downers Grove
Water Meter Replacement and AMR Deployment
FIVE YEAR IMPLEMENTATION

		United Metering	Water Resources
FIVE YEAR PROPOSAL		$ 4,917,546	$ 4,125,767
1st Year	30%	$ 1,475,264	$ 1,237,730
2nd Year	20%	$ 983,509	$ 825,153
3rd Year	20%	$ 983,509	$ 825,153
4th Year	20%	$ 983,509	$ 825,153
5th Year	10%	$ 491,755	$ 412,577

FIVE YEAR REVENUE INCREASE

Annual Sales $ 6,601,000

Savings	**Annual Savings**	**Cumulative Savings**	**Savings Factor = 0.08**
Year 2	$ 158,424	$ 158,424	
Year 3	$ 264,040	$ 422,464	
Year 4	$ 369,656	$ 792,120	
Year 5	$ 475,272	$ 1,267,392	
Year 6	$ 528,080	$ 1,795,472	
Year 7	$ 528,080	$ 2,323,552	
Year 8	$ 528,080	$ 2,851,632	
Year 9	$ 528,080	$ 3,379,712	
Year 10	$ 528,080	$ 3,907,792	
Year 11	$ 528,080	$ 4,435,872	
Year 12	$ 528,080	$ 4,963,952	
Year 13	$ 528,080	$ 5,492,032	
Year 14	$ 528,080	$ 6,020,112	
Year 15	$ 528,080	$ 6,548,192	
Year 16	$ 528,080	$ 7,076,272	

Savings (continued)	**Annual Savings**	**Cumulative Savings**	**Savings Factor = 0.08**

Village of Downers Grove
Water Meter Replacement and AMR Deployment
FIVE YEAR IMPLEMENTATION

Year 17	$ 528,080	$ 7,604,352
Year 18	$ 528,080	$ 8,132,432
Year 19	$ 528,080	$ 8,660,512
Year 20	$ 528,080	$ 9,188,592

FIVE YEAR NET COST

		United Metering	Water Resources
1st Year	30%	$ 1,475,264	$ 1,237,730
2nd Year	20%	$ 825,085	$ 666,729
3rd Year	20%	$ 719,469	$ 561,113
4th Year	20%	$ 613,853	$ 455,497
5th Year	10%	$ 16,483	$ (62,695)
Five Year Net Cost		$ 3,650,154	$ 2,858,375

Net cost is used to determine the amount of reserves to be spent or debt to be issued to finance the project within the implementation time frame.

Village of Downers Grove
Water Meter Replacement and AMR Deployment
TWO YEAR IMPLEMENTATION

		United Metering	Water Resources
TWO YEAR PROPOSAL		$ 4,917,546	$ 4,125,767
1st Year	50%	$ 2,458,773	$ 2,062,884
2nd Year	50%	$ 2,458,773	$ 2,062,884

TWO YEAR REVENUE INCREASE

Annual Sales	$ 6,601,000	

Savings		**Annual Savings**	**Cumulative Savings**	**Savings Factor = 0.08**
	Year 2	$ 264,040	$ 264,040	
	Year 3	$ 528,080	$ 792,120	
	Year 4	$ 528,080	$ 1,320,200	
	Year 5	$ 528,080	$ 1,848,280	
	Year 6	$ 528,080	$ 2,376,360	
	Year 7	$ 528,080	$ 2,904,440	
	Year 8	$ 528,080	$ 3,432,520	
	Year 9	$ 528,080	$ 3,960,600	
	Year 10	$ 528,080	$ 4,488,680	
	Year 11	$ 528,080	$ 5,016,760	
	Year 12	$ 528,080	$ 5,544,840	
	Year 13	$ 528,080	$ 6,072,920	
	Year 14	$ 528,080	$ 6,601,000	
	Year 15	$ 528,080	$ 7,129,080	
	Year 16	$ 528,080	$ 7,657,160	
	Year 17	$ 528,080	$ 8,185,240	
	Year 18	$ 528,080	$ 8,713,320	
	Year 19	$ 528,080	$ 9,241,400	

Savings (continued)	**Annual Savings**	**Cumulative Savings**	**Savings Factor = 0.08**

Village of Downers Grove
Water Meter Replacement and AMR Deployment
TWO YEAR IMPLEMENTATION

	Year 20	$	528,080	$	9,769,480

TWO YEAR NET COST

		United Metering		Water Resources	
1st Year	50%	$	2,458,773	$	2,062,884
2nd Year	50%	$	2,194,733	$	1,798,844
Two Year Net Cost		$	4,653,506	$	3,861,728

Net cost is used to determine the amount of reserves to be spent or debt to be issued to finance the project within the implementation time frame.

Village of Downers Grove
Water Meter Replacement and AMR Deployment
FINANCING OPTIONS

Water Revenue Bonds Totaling **$4,000,000**

DATE	Interest Payment	Annual Interest	Interest Rate	Principal Payment	Princ. & Int. Payment
Jul-02	$ 160,000.00		6.00%		
Jan-03	$ 120,000.00	$ 280,000.00	6.00%	$ 355,000.00	$ 635,000.00
Jul-03	$ 120,000.00		6.00%		
Jan-04	$ 120,000.00	$ 240,000.00	6.00%	$ 325,000.00	$ 565,000.00
Jul-04	$ 120,000.00		6.00%		
Jan-05	$ 120,000.00	$ 229,800.00	6.00%	$ 340,000.00	$ 569,800.00
Jul-05	$ 109,800.00		6.00%		
Jan-06	$ 109,800.00	$ 208,950.00	6.00%	$ 355,000.00	$ 563,950.00
Jul-06	$ 99,150.00		6.00%		
Jan-07	$ 99,150.00	$ 187,050.00	6.00%	$ 375,000.00	$ 562,050.00
Jul-07	$ 87,900.00		6.00%		
Jan-08	$ 87,900.00	$ 164,250.00	6.00%	$ 385,000.00	$ 549,250.00
Jul-08	$ 76,350.00		6.00%		
Jan-09	$ 76,350.00	$ 139,650.00	6.00%	$ 435,000.00	$ 561,600.00
Jul-09	$ 63,300.00		6.00%		
Jan-10	$ 63,300.00	$ 113,400.00	6.00%	$ 440,000.00	$ 553,400.00
Jul-10	$ 50,100.00		6.00%		
Jan-11	$ 50,100.00	$ 86,100.00	6.00%	$ 470,000.00	$ 556,100.00
Jul-11	$ 36,000.00		6.00%		
Jan-12	$ 36,000.00	$ 56,400.00	6.00%	$ 520,000.00	$ 576,400.00
Jul-12	$ 20,400.00		6.00%		
TOTALS		**$ 1,705,600.00**		**$ 4,000,000.00**	**$ 5,692,550.00**