Technical Memorandum #4
Analysis of the Performance Guarantee Component of the Siemens Contract

Raftelis Financial Consultants, Inc. (RFC) was engaged by the City of Jackson (City) to review and analyze the existing contract between the City and Siemens Industry Inc. (Siemens). The purpose of the review and analysis was to develop recommendations for actions the City could take to maximize the value of the Siemens contract.

OVERVIEW

In January 2013, the City entered into a contract with Siemens to make improvements to the City's water and sewer systems. Siemen's scope under the contract consisted of three major tasks: 1) Advance Metering Infrastructure (AMI) Upgrade; 2) Water Treatment Plant (WTP) Repairs and Upgrades; and 3) Sewer Collection System (SCS) Repairs. The total fixed cost of these projects to the City is $90,983,106 with additional payments due to Siemens for the Performance Assurance Program services.

The WTP Repairs include a variety of projects at the JH Fewell and OB Curtis WTPs. The total cost of these projects is $10,969,673 with the majority of the cost associated with projects at the OB Curtis WTP. The SCS Repairs include approximately 20 projects involving repair, replacement and/or relocation of sewer collection system infrastructure. The total cost for the SCS Repairs is $15,844,194.

The AMI Upgrade is the largest component of the contract and consists of the installation of almost 65,000 remote read water meters; the infrastructure necessary to collect data from the remote read meters; and a new customer billing system. The total cost of the AMS Upgrade is $51,209,884 or 56% of the contract value. An additional $12,959,355 in contract costs is related to Development, Parent Company Guarantee and Mobilization. Table 1 below summarizes the contract tasks and the cost for each.

Table 1 – Siemens Contract Tasks and Costs

Contract Task	Cost
Development	$ 1,120,000
Parent Company Guarantee	$ 148,000
Mobilization	$ 11,691,355
Billing Software	$ 11,320,444
Water Meters	$ 39,889,440
JH Fewell WTP	$ 3,980,465
OB Curtis WTP	$ 6,989,208
Sewer lines	$ 15,844,194
Total Cost	**$ 90,983,106**

The anticipated benefit of the AMI Upgrade project will be improved revenue collection resulting from more accurate water meter data as well as other operational savings and savings accruing as a result of deferred maintenance. Table 2 below is a reproduction of Table 1.2 from Exhibit C of the Siemens contract and shows the total savings that Siemens guarantees will accrue to the City as a result of the contract.

Table 2 – Guaranteed Savings

Performance Period	Small Meter Billable Usage Increases	Large Meter Billable Usage Increases	Operational Savings	Deferred Maintenance Savings	Total Savings
Construction	$484,347	$501,802	$503,750	-	$1,489,899
Annual Period 1	$2,421,737	$1,003,604	$2,015,200	$1,750,000	$7,190,541
Annual Period 2	$2,555,055	$1,003,604	$2,075,656	$1,750,000	$7,384,315
Annual Period 3	$2,688,373	$1,003,604	$2,137,926	$1,750,000	$7,579,903
Annual Period 4	$2,821,691	$1,003,604	$2,202,063	$1,750,000	$7,777,358
Annual Period 5	$2,955,010	$1,003,604	$2,268,125	$1,750,000	$7,976,739
Annual Period 6	$2,955,010	$1,003,604	$2,336,169	$1,750,000	$8,044,783
Annual Period 7	$2,955,010	$1,003,604	$2,406,254	$1,750,000	$8,114,868
Annual Period 8	$2,955,010	$1,003,604	$2,478,442	$1,750,000	$8,187,056
Annual Period 9	$2,955,010	$1,003,604	$2,552,795	$1,750,000	$8,261,409
Annual Period 10	$2,955,010	$1,003,604	$2,629,379	$1,750,000	$8,337,993
Annual Period 11	$2,955,010	$1,003,604	$2,708,260	$1,750,000	$8,416,874
Annual Period 12	$2,955,010	$1,003,604	$2,789,508	$1,750,000	$8,498,122
Annual Period 13	$2,955,010	$1,003,604	$2,873,193	$1,750,000	$8,581,807
Annual Period 14	$2,955,010	$1,003,604	$2,959,389	$1,750,000	$8,668,003
Annual Period 15	$2,955,010	$1,003,604	$3,048,171	$1,750,000	$8,756,785
TOTALS	**$43,476,313**	**$15,555,862**	**$37,984,280**	**$26,250,000**	**$123,266,455**

As shown in Table 2, Siemens guarantees that the City will realize savings in four areas. First, Siemens guarantees between $484,347 and $2,955,010 in additional annual revenue as a result of the greater accuracy of the small meters installed. Second, Siemens guarantees between $501,802 and $1,003,604 in additional annual revenue as a result of the greater accuracy of the large meters. Third, Siemens guarantees between $503,750 and $3,048,171 in annual operational savings related to meter reading and billing as a result of the AMI Upgrades. Fourth, Siemens guarantees $1,750,000 in annual savings as a result of being able to defer maintenance at the WTPs and the SCS. Over the term of the contract, Siemens guarantees total savings of $123,266,455.

DETERMINATION OF ACTUAL SAVINGS

At the end of each contract year, Siemens will prepare an Annual Performance Assurance Report that details the savings realized during the prior year and compares those saving to the guaranteed savings

for that same period; however, only one category of savings is subject to annual verification in that the savings resulting from large meter installation, the operational savings, and the deferred maintenance savings are stipulated to have occurred each year regardless of whether any actual savings can be demonstrated to have occurred. Therefore, of the approximately $123 million in anticipated savings, only $43 million is actually guaranteed by Siemens while almost $80 million will only be realized as a result of actions taken by the City.

The savings attributable to the small meter component of the AMS Upgrades is determined by comparing the predicted billable water consumption using the existing meters for each meter group to the billable consumption for each meter group using the new meters with the latter value being a function of the measured accuracy of the new meters.

The calculation to determine the savings attributable to the new small meters is as follows:

- Predicted Existing Consumption (CCF) = Existing Consumption at 100% Accuracy multiplied by the Predicted Meter Accuracy from Test Data applied per Guarantee Year
- Consumption Billed with New Meters (CCF) = Existing Consumption at 100% Accuracy x Actual New Meter Accuracy (%), where New Meter Accuracy is based on the measured and verified meter accuracy per Guarantee Year;
- Annual Consumption Increase (CCF) = Consumption Billed with New Meters (CCF) – Predicted Existing Consumption (CCF); and
- Annual Consumption Increase ($) = Annual Consumption Increase (CCF) x Water Rate ($/Unit).[1]

If the actual savings are less than the guaranteed savings, a Savings Shortfall will be paid by Siemens to the City. The Savings Shortfall is an amount equal to the difference between the actual savings and the guaranteed savings.

It should be noted that the values for Existing Consumption at 100% Accuracy and Predicted Meter Accuracy are contractually predetermined, and therefore, the annual baseline consumption for each meter group during each contract year can be calculated in advance and is shown in Table 3 on the following page. As a result, the only variable used in the calculation of savings from the new meters is the accuracy of the new meters which is determined using a testing protocol outlined in Exhibit C of the contract.

[1] The Project Team has developed an Excel spreadsheet that will allow the City to perform the calculation described above.

Table 3 – Baseline Consumption

Meter Groups	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Water - 5/8" Inside Group 1	1,227,323	1,220,278	1,213,233	1,206,187	1,199,142	1,192,096	1,185,051	1,178,005	1,170,960	1,163,914	1,156,869	1,149,823	1,142,778	1,135,732	1,128,687
Water - 5/8" Inside Group 2	1,089,119	1,082,867	1,076,615	1,070,363	1,064,111	1,057,859	1,051,607	1,045,354	1,039,102	1,032,850	1,026,598	1,020,346	1,014,094	1,007,842	1,001,590
Water - 5/8" Inside Group 3	753,675	749,349	745,022	740,696	736,369	732,043	727,716	723,390	719,063	714,737	710,410	706,084	701,757	697,431	693,104
Water - 5/8" Inside Group 4	893,832	888,700	883,569	878,438	873,307	868,176	863,045	857,914	852,783	847,652	842,521	837,390	832,259	827,128	821,997
Water - 5/8" Inside 1 Mile	236,762	235,403	234,044	232,685	231,326	229,966	228,607	227,248	225,889	224,530	223,171	221,812	220,453	219,093	217,734
Water - 5/8" Outside 1 Mile	185,806	184,739	183,673	182,606	181,540	180,473	179,406	178,340	177,273	176,206	175,140	174,073	173,007	171,940	170,873
Water -1" Inside	441,804	439,439	437,074	434,709	432,344	429,979	427,614	425,249	422,883	420,518	418,153	415,788	413,423	411,058	408,693
Water -1" Inside 1 Mile	9,018	8,969	8,921	8,873	8,825	8,776	8,728	8,680	8,632	8,583	8,535	8,487	8,438	8,390	8,342
Water -1" Outside 1 Mile	7,795	7,753	7,712	7,670	7,628	7,587	7,545	7,503	7,461	7,420	7,378	7,336	7,294	7,253	7,211
Water -1.5"&2" Inside	1,574,867	1,566,552	1,558,237	1,549,922	1,541,607	1,533,292	1,524,977	1,516,661	1,508,346	1,500,031	1,491,716	1,483,401	1,475,086	1,466,771	1,458,456
Water -1.5"&2" Inside 1 Mile	8,293	8,249	8,205	8,162	8,118	8,074	8,030	7,986	7,943	7,899	7,855	7,811	7,767	7,724	7,680
Water -1.5"&2" Outside 1 Mile	11,051	10,992	10,934	10,876	10,817	10,759	10,700	10,642	10,584	10,525	10,467	10,409	10,350	10,292	10,234
Sewer - 5/8" Inside Group 1	619,678	616,121	612,564	609,006	605,449	601,892	598,334	594,777	591,220	587,663	584,105	580,548	576,991	573,434	569,876
Sewer - 5/8" Inside Group 2	623,447	619,868	616,289	612,710	609,131	605,552	601,974	598,395	594,816	591,237	587,658	584,079	580,500	576,921	573,342
Sewer - 5/8" Inside Group 3	420,923	418,507	416,090	413,674	411,258	408,841	406,425	404,009	401,592	399,176	396,760	394,343	391,927	389,511	387,094
Sewer - 5/8" Inside Group 4	476,528	473,792	471,057	468,321	465,586	462,850	460,114	457,379	454,643	451,908	449,172	446,437	443,701	440,966	438,230
Sewer - 5/8" Inside 1 Mile	5,505	5,473	5,442	5,410	5,378	5,347	5,315	5,284	5,252	5,220	5,189	5,157	5,126	5,094	5,062
Sewer - 5/8" Outside 1 Mile	845	840	835	830	825	821	816	811	806	801	796	792	787	782	777
Sewer -1" Inside	182,300	181,324	180,348	179,372	178,396	177,420	176,445	175,469	174,493	173,517	172,541	171,565	170,589	169,613	168,637
Sewer -1" Inside 1 Mile	772	768	764	760	756	752	748	743	739	735	731	727	723	719	715
Sewer -1" Outside 1 Mile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer -1.5"&2" Inside	1,132,801	1,126,820	1,120,839	1,114,858	1,108,877	1,102,896	1,096,915	1,090,934	1,084,953	1,078,972	1,072,991	1,067,010	1,061,029	1,055,048	1,049,067
Sewer -1.5"&2" Outside 1 Mile	894	889	885	880	875	870	866	861	856	851	847	842	837	833	828
Sewer -1.5"&2" Inside 1 Mile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**9,903,039**	**9,847,695**	**9,792,352**	**9,737,008**	**9,681,665**	**9,626,321**	**9,570,978**	**9,515,634**	**9,460,291**	**9,404,947**	**9,349,604**	**9,294,260**	**9,238,917**	**9,183,573**	**9,128,230**

Since each of the other three components of annual savings are stipulated in the contract and the savings attributable to new small meters is solely a function of the measured accuracy of the new meters, it will be very important for the City to carefully monitor the testing of the new meters.

METER TESTING PROTOCOL

Article 4 of Exhibit C of the contract describes the testing protocol that will be used each year to determine the accuracy of the new meters. Generally speaking, Siemens will select a sample of meters using a process that randomly selects a predetermined number of meters from each meter group. The contract stipulates that the sample from each meter group will include meters that have experienced high, medium, and low cumulative flows over their lifetime. The inclusion in the testing sample of meters that have experienced various levels of flow recognizes that meter accuracy decreases more quickly in meters with high flow levels as a result of wear on the meter.

Additionally, as shown in Table 4 below, the contract stipulates the sample size for each meter group based on the number of meters in each group.

Table 4 – Meter Sample Size Guidelines

Population	Number of Samples
1	1
2	2
3	3
4	3
5-6	4
7-9	5
10-13	6
14-19	7
20-29	8
30-49	9
50-110	10
>110	11

Sample sizes for each meter group using the criteria from Table 4 are provided in Table 5 on the following page. The largest group of meters, 5/8" Inside meters, were broken into four groups, and these groups were utilized for determining the sample size.

Table 5 – Meter Testing Sample Sizes[2]

Meter Groups	Total Meters	Sample Size
Water - 5/8" Inside Group 1	11,121	11
Water - 5/8" Inside Group 2	11,121	11
Water - 5/8" Inside Group 3	11,120	11
Water - 5/8" Inside Group 4	11,120	11
Water - 5/8" Inside 1 Mile	1,911	11
Water - 5/8" Outside 1 Mile	3,587	11
Water -1" Inside	2,091	11
Water -1" Inside 1 Mile	35	9
Water -1" Outside 1 Mile	100	10
Water -1.5"&2" Inside	1,866	11
Water -1.5"&2" Inside 1 Mile	19	7
Water -1.5"&2" Outside 1 Mile	19	7
Sewer - 5/8" Inside Group 1	10,392	11
Sewer - 5/8" Inside Group 2	10,391	11
Sewer - 5/8" Inside Group 3	10,391	11
Sewer - 5/8" Inside Group 4	10,391	11
Sewer - 5/8" Inside 1 Mile	112	11
Sewer - 5/8" Outside 1 Mile	11	6
Sewer -1" Inside	1,415	11
Sewer -1" Inside 1 Mile	9	5
Sewer -1" Outside 1 Mile	-	0
Sewer -1.5"&2" Inside	1,368	11
Sewer -1.5"&2" Inside 1 Mile	5	4
Sewer -1.5"&2" Outside 1 Mile	-	0
Total Meters To Be Tested		**213**

Once the sample meters have been selected, they will be removed from service and tested using procedures provided in the American Water Works Association (AWWA) Manual M6 – *Water Meters-Selection, Installation, Testing, and Maintenance*. The test for each meter will involve the determination of meter accuracy at three flow levels (low, medium and high) and the average weighted efficiency of the meter will be determined. Once all of the sample meters from a specific Meter Group have been tested, the results will be averaged to determine the accuracy for that Meter Group. As described in Article 4 of the contract, this value will be multiplied by the value for Existing Consumption at 100% Accuracy for that meter group to arrive at the Consumption Billed with New Meters for the Meter Group which is then used to determine whether or not the Performance Guarantee has been met for the contract year.

[2] Meter counts for each meter group are based on data extracted from the City's water billing system in November 2014. The actual number of meters tested will need to be determined annually based on the number of meters actually in service at the time.

Section 4.6.1 of the contract discusses the possibility of Siemens taking corrective action in the event that a Savings Shortfall occurs, but since measured accuracy of the new meters is the only factor that can affect whether or not a Savings Shortfall occurs, it is unlikely that Siemens could take any action that would remedy a Savings Shortfall that has already occurred. Therefore, if a Savings Shortfall does occur, Siemens' only recourse would be to pay the City an amount equal to the Savings Shortfall.

OTHER COMPONENTS OF GUARANTEED SAVINGS

As mentioned previously, the Operational Savings, Deferred Maintenance Savings and additional revenue resulting from the installation of large meters are contractually considered to be Stipulated Savings which means they are presumed to have occurred regardless of whether the City actually realizes savings in these areas. As such these savings have no impact on whether or not Siemens meets its Guaranteed Savings. However, these potential savings are to one degree or another attainable and the City should strive to ensure these savings are actually realized.

Operational Savings

Siemens maintains that the City will realize operational savings as a result of several factors associated with the new AMI meters.

- Fewer New Employee Requests – The City currently uses manual labor for meter reading and meter data entry. The remote read capabilities of the new meters will result in the need for fewer employees and the City should realize a commensurate decline in employee costs.
- Reduced Vehicle Costs – Meter readers currently use vehicles to travel to meter reading routes. Since meter readings will be taken remotely, meter readers will no longer need to travel to meter reading routes which means they will not need vehicles for travel. As a result the City will avoid the cost of vehicles and vehicle fuel.
- Fewer Re-reads/Meter Locates – Currently, when it appears that a reading error may have occurred, a meter reader must return to the meter location to perform a re-read. Additionally, meter readers sometime have difficulty locating meters and the utility incurs costs to locate the meters such that they can be read. The remote read capabilities should reduce these costs in several ways. First, the remote reads are typically more accurate than manual reads thereby reducing the number of re-reads necessitated by reading errors. Second, in a case where a re-read is required, the re-read can be performed remotely thereby eliminating the need for a person to travel to and read the meter. Third, since remote reads occur regardless of whether someone knows the exact location of the meter the need for meter locates should be reduced.
- Fewer Meter Lid Replacements – The new meters will be fitted with tighter fitting, non-floating lids that should stay in place better than the current meter lids. This will reduce the number of meter lids that require replacement each year.
- More Efficient Shut offs/Service Restorations – Currently, when service to a location needs to be discontinued or restored a person must travel to the location and physically turn the water service off or on at the meter. The new meters have remote turn of/turn on capability thereby reducing, if not eliminating, the need for a person to travel to the location.

- Reduced Bill System Maintenance – The existing billing system requires approximately $20,000 in maintenance each year. The new billing system will also require annual maintenance, but these costs are included in the amount paid to Siemens under the contract.

Table 6 below summarizes the operational savings that Siemens maintains the City will realize as a result of the metering and billing system project.

Table 6 – Anticipated Operational Savings

Annual Operational Savings Calculations			
Quantity	**Source**	**Unit Total**	**Annual Total**
14	New Employee Request Reduction (Annual Cost)	$34,000	$476,000
11	Vehicle Reductions (Annual Cost - $350/month/vehicle)	$4,200	$46,200
11	Vehicle Fuel (Average Cost)	$3,000	$33,000
20,000	Annual Re-reads/Meter Locates (100 per day * 200 days/yr)	$20	$400,000
3,000	Meters/Lids Replaced Annually ($80 per meter)	$80	$240,000
20,000	Annual Shut offs/Restore service (100/day * 200 days/yr)	$40	$800,000
1	Existing Billing System Maintenance	$20,000	$20,000

It should be noted that the savings associated with Re-reads/Meter Locates; Meters/Lids Replaced; Annual Shut offs/Restore service; and Existing Billing System Maintenance are predicated on the assumption that the City currently spends an amount that is at least equal to the predicted savings associated with each of these items. If the City actually spends less than the predicted amount, then realized savings will be equal to the amount actually spent and not the amount predicted by Siemens. For example, if the City currently only performs 90 Re-reads/Meter Locates per day, then the City will only realize savings associated with 90 Re-reads/Meter Locates instead of the 100 used to estimate savings. In order to set reasonable expectations for the level of operational savings that will be realized in association with each of these items, the City should determine the amounts they are currently spending on each.

While it is possible that the City will realize savings in each of these areas it is imperative that the City take action to maximize the savings it will ultimately realize. First, the City should make sure that the new meters are installed as quickly as possible. All of the operational savings presented in Table 6 are contingent upon the entire system being equipped with remote read meters. Until all of the new meters are installed there will still be a need to maintain the staff necessary to manually read and locate meters and to discontinue and restore service.

Second, the City must effect the staff reductions in order to realize the anticipated savings. If staff count is not reduced these savings will not be realized. It should be noted that based on our experience with water utilities across the country, municipal labor policies often make it very difficult to effectuate staff reductions in a timely manner. Typically staff reductions are only realized as the result of attrition and therefore decreased costs as a result of staff reductions may not be realized as quickly as the contract predicts. In addition, the AMI system will still require annual inspections of meters and billing personnel

will be needed to address the billing and collection issues noted in Task 3. City staff also indicated a team of existing customer service representatives will be needed to test the system. If these employees are testing the system, other employees will be needed to fill their positions.

Deferred Maintenance Savings

Siemens maintains that the City will be able to defer collection system maintenance costs as a result of the collection system improvements included in the Siemens contract. Since many of these projects involve replacing older, more maintenance intensive assets with newer assets, it is possible that maintenance costs will be avoided in the short-term.

Large Meter Savings

Siemens is replacing a number of large meters with new remote read meters. The "savings" attributable to the large meter replacements is actually additional revenue that will accrue to the City as a result of greater metering accuracy. These savings are similar to the savings attributable to the small meter replacement program; however, unlike the small meter savings, this component of saving is not based on testing of the actual accuracy of new meters. Instead, these savings are Stipulated Savings and will be assumed to have occurred regardless of whether or not more large meter revenue is generated. Since it is likely that the new meters will be more accurate than the meters they are replacing, the probability of realizing at least a portion of these savings is high; however, there is no guarantee that the additional revenues will be equal to or greater than the stipulated savings included in the performance guarantee. It is not clear why the contract does not treat large meters in a manner similar to the treatment of small meters and provide a guarantee of additional revenue based on actual large meter accuracy, but since it does not, in order to maximize the additional revenue realized from these large meters the City must ensure that these meters are indeed more accurate than the meters they replaced. To do this, the City must develop and implement a robust meter testing and maintenance program for these meters.

STATUS OF CONTRACT PROJECTS

As of October 2014, Siemens had invoiced the City a total of $74,522,254 which represents approximately 82% of the contract value. As of that same date the WTP projects were approximately 76% complete and the SCS projects were approximately 89% complete.

Although the total amount invoiced includes charges for approximately 89% of the new meters, it is our understanding that only around 40% of the new small meters had been installed as of the end of October. Additionally, Siemens has charged the City for 79% of the costs associated with the new billing system.

CONCLUSIONS AND RECOMMENDATIONS

The projects being implemented under the Siemens contract should allow the City's water and sewer utilities to improve their efficiency, especially in the areas of meter reading and billing. Specifically, the installation of remote read meters and a new billing system should result in increased revenue by

ensuring that water bills more accurately reflect the amount of water being consumed. In fact, Siemens has guaranteed a certain level of increased revenue associated with the meters that are typically used to serve residential customers. However, the majority of the "guaranteed savings" that Siemens maintains will be realized during the contract term are not truly guaranteed. Only the additional revenue that the City should realize as a result of the greater accuracy of the new meters 2-inches and smaller is guaranteed and in reality, only the accuracy of those meters is guaranteed.

The other projects implemented under the Siemens contract are expected to either reduce expenses associated with meter reading, billing and maintenance or provide additional revenue as a result of greater accuracy of new meters larger than 2-inches.

By taking the following steps, the City can improve the probability that the benefits offered by the Siemens contract are realized.

- Prioritize the installation of the remote read meters. Until such time as the entire system is equipped with remote read meters the accuracy of the new meters cannot be determined and the City will not realize the savings that are dependent upon reduced staffing requirements.
- Since it is quite possible that complications associated with integration of data derived from the new, remote read meters and data derived from old, manual read meters will reduce efficiency and lead to greater costs, the City should postpone implementation of the new billing system until all of the remote read meters are installed.
- While the full implementation of the new billing system should not take place until all of the remote read meters are installed, the City should work with Siemens to ensure that all actions required to allow for the implementation of the new system are being performed. To the extent that these actions require City resources, the City should do everything in its power to ensure these resources are available. There are a couple of other tasks the City should undertake prior to implementation.
    1. Process map existing billing and collection practices and processes under the new billing/AMI system
    2. Modify policies (adjustments, cut-offs, etc.) accordingly
- Once the system is fully equipped with remote read meters, the City must effect the staff reductions that drive the operational savings. If current staffing levels are maintained, these operational savings will not be realized.
- Determine the amount that is currently being spent for the items included under Operational Savings such that the City will have more accurate expectations for the savings that will be realized once these expenditures are either reduced or eliminated as a result of the installation of the remote read meters.
- Carefully monitor the meter testing program that determines whether the City is actually generating more revenue as a result of the greater accuracy on the small meters. Although the meter testing protocol described in the contract should provide a good indication of the accuracy of the new small meters, the City must ensure that the test sample is truly representative of the meters throughout the system.

- Develop a robust testing protocol for the new large meters that ensures that these meters are providing the expected benefits. While the additional revenue from large meters is not guaranteed, it is still important to make sure that the new large meters are accurately recording water consumption.