ATTACHMENT 1 - System Requirements

I   **Included** with base system or service as proposed by vendor without customization.
O   **Optional feature** or service provided for additional cost (e.g. separate line item cost) as indicated in cost proposal.
E   **Exception to the feature or requested service**. Explain on response form. Explain all alternatives and any additional costs.
N   **Feature or service NOT currently available**.

1	General Requirements	I	O	E	N	Comments
1.01	Ability for multiple users to simultaneously operate the system					
1.02	Ability to assign security levels to different users					
1.03	Ability to serve as a single, centralized, enterprise source for data from					
	Water meters (readings, alarms, etc.)					
	Permalog devices					
	SCADA information such as tank levels and gal/minute flow.					
1.04	Ability to calculate billing determinates such as consumption, peak demand, time of use consumption, and negative consumption.					
1.05	Capable of storing and processing readings from all registers of the meter/device.					
1.06	Ability to aggregate and sum consumption data on two or more meters/devices for use by other applications.					
1.1	Ability to Validate, Edit and Estimate (VEE) meter data automatically or manually.					
1.08	Ability to apply standard VEE Rules and build/apply custom VEE rules.					
1.09	Ability to configure the standard VEE rules and sequences of rules to a meter and/or a group of meters.					
1.10	Ability to provide automated exception management and reporting.					
1.11	Ability to schedule tasks and/or perform tasks on a real time basis.					
1.12	Ability to view readings and/or consumption for a selected customer, meter, smart point for a selected period of time. Ability to graph the consumption for the selected period.					
1.13	Ability to store event and alarm data such as tamper, empty pipe, leaks, etc. from meters/devices.					
1.14	Ability to filter events from meter/device based on user defined criteria such as a meter event or 'Failure.' (Example: A meter could send multiple messages/events of 'Failure' to the AMI database.)					
1.15	Ability to store data in the original time data as provided by the AMI system. I.e. raw data including missing intervals and bad data.					
1.16	Ability to provide audit trail of all changes in the MDMS with ability to track all version of the data.					
1.17	Ability to store register and interval reading data in any time increment. AMI readings are hourly increments, production meter read at a maximum every 15 minutes.					
1.18	Ability to maintain the raw readings of the AMI and pass the readings to the billing system but display the readings in the MDMS as the true value. i.e. 4" and larger meters register in 10's of gallons but should display in gallons in the MDMS.					
1.19	Ability to keep up to 2 years of interval data in the system.					
1.20	Ability to archive data older than 2 years for up to 5 years (total 7 years data) and access archived data from within the system.					
1.21	Ability to schedule tasks on a selected frequency basis.					
1.22	Ability to identify leaks on water mains as reported by Permalogs.					

1.23	Ability to perform date driven Load Calculations on a per customer basis.				
1.24	Provide the maximum demand of any requested meter.				
1.25	Within a user defined area calculate the sum of the individual meters and compare to the consumption registered for that area by SCADA meters and the SCADA tank levels in order to identify leaks.				
1.26	Use the Permalog information in order to identify leaks on mains.				
1.27	Ability to generate water loss analysis based on the entire system, individual meters or groups of meters.				
1.28	Ability to generate water load analysis based on the entire system, individual meters or groups of meters.				
1.29	Ability to group meters on a map and define a group from the map.				
1.30	Ability to archive data and retrieve archived data in real time. Describe the method to purge data to meet record retention requirements.				
1.31	Provide notification of all meters with consumption when account is shown as disconnected.				
1.32	Provide notification of all meters with consumption on inactive services.				
1.33	Identify meters in AMI and not in Eden and place those on a GIS map.				
1.34	The MDMS supports multiple rate schedules and can provide "what if" analysis on customers or groups of customers to verify system impact of rate changes (shadow bill analysis).				
1.35	The system is able to track 'equipment type' information (in order to tell the difference between meters, collectors, info. Meter.)				
1.36	Time references in data presented to billing or customer are based on the local time zone and use Daylight Savings Time.				
1.37	Ability to provide automatic notification of leaks based on AMI alarms.				
1.38	Ability to provide automatic notification of leaks based on set criteria in MDMS.				
1.39	Ability to set consumption parameters for a group of meters or an individual meter and give automatic alarms when parameters are exceeded.				
1.40	Ability to manage hourly readings and associated alarms from 6,000 end points.				

S   Standard out-of-the-box integration.
F   Standard out-of-the-box interface.
C   Custom Development providing for additional cost (e.g. separate line item cost) as indicated in cost proposal.

N   Integration/interface NOT currently available.

2	Interfaces/Integration	S	F	C	N	Comments
2.1	Integration with Sensus 3.x AMI application/database preferably utilizing MultiSpeak.					
2.2	Interfaces with City Works					
2.3	Interfaces with Watersmart					
2.4	Minimum data elements to be integrated from AMI to MDMS:					
	Request Response Brokering – On Demand Reads					
	Instantaneous Alarm Messages					
	The system supports both batch interfacing and real-time integration for events and tamper/theft flags.					
2.6	List the number of similar integrations you have in production with this version of Sensus.	███	███	███		
2.7	Integration with Eden application/database.					
2.8	Minimum data elements to be integrated from Tyler Eden to MDMS					
	Account Number					
	Location Number					
	Location Class					
	Service Delivery point					
	Location Class					
	Billing Cycle					
	Street Number					
	Street Name					
	Street Suffix					
	Street Suffix Dir.					
	Unit/Apt					
	City					
	State					
	Postal Code					
	Customer Name					
	Customer Phone Number					
	Register ID					
	Smart point ID					
	Meter Size					
	Meter Brand					
	Meter Install Date					
	Raw Unit of Measure (Gallon)					
	Multiplier (unit multiplier)					
	Meter Latitude					
	Meter Longitude					

		I	O	E	N	Comments
	Status (Active, Closed Disconnect, Closed Routine, Inactive)					
2.9	Bi-directional interface to keep systems in sync					
2.10	Meter Readings sent from AMI to Eden for billing purposes based on a system wide read date on the 15th of the month.					
2.11	The most recent AMI reading within the past 3 days must be used for billing.					
2.12	List the number of similar integrations you have with Eden.	███████████				
2.13	Ability to subscribe to and integrate with a live weather feed for daily average.					
2.14	Interface with SCADA (Ignition) for device information and data coming from field leak monitoring devices.					
	Pressure					
	Totalized Flow (in gallons)					
	Instantaneous Flow (In gallons per minute)					
2.15	List the number of similar integrations you have with SCADA.	███████████				
2.16	Integration with Permalog for data coming from field leak monitoring devices for leak detection on mains					
2.17	Provide pressure and flow monitoring including detection and notification of Leak detection (inferred from losses and main / zone relationships)					
2.18	List the number of similar integrations you have with Permalogs	███████████				
2.19	The MDMS has the capability of producing datasets that are interfaced with Innovize, the water audit modeling software.					
3	**System Requirements**	**I**	**O**	**E**	**N**	**Comments**
3.1	MDMS utilizes a web based User Interface					
3.2	Preferred database is SQL Server					
	If not SQL Server, provide full database support.					
3.3	Preferred operating system is MS Windows					
	If not MS Windows, provide full database support					
3.4	MDMS application user authentication can utilize Microsoft Active Directory					
3.5	The MDMS contains utility analytical tools to enable the aggregation of interval data into determinate format/buckets as required by operational system(s).					
3.6	Provide report definitions of Out-of-the-box reports, and include the output format options (.xls, .PDF, .CSV, XML, HTML, etc.) for each report and the delivery method (e.g. manual and/or scheduled).					
4	**Reports, Notifications, Utilities**	**I**	**O**	**E**	**N**	**Comments**
4.01	Ability to create custom reports utilizing industry standard report writer(s) such as Crystal Reports, Cognos, SQL Server Reporting Services.					
4.02	Provide alert and alarm notifications via email and the ability to associate alarm types to notification types.					
4.03	Provide a published entity relationship diagram for the MDMS database structure.					
4.04	Provide a published data dictionary for your MDMS database.					
4.05	Ability to provide automatically generated reports.					
4.06	Ability to provide data in interactive graphs of all metered values.					

4.07	Ability to schedule reports for delivery to specific utility personnel.					
4.08	The MDMS provides configurable dashboard functionality for key performance indicators.					
4.09	The MDMS is capable of executing custom queries to accommodate areas where standard reports are not available.					
4.1	Synchronization Status Reports (Meter Reporting not linked to an account, Meter Not Reporting linked to an account)					
4.11	Meters not reporting performance for the past 24 hrs/72 hrs/month/quarter/year.					
4.12	Provide AMI Management Reports.					
4.13	Ability to compare current period consumption to same period prior year consumption.					
4.14	Ability to analyze consumption profile over selected periods of time.					
4.15	AMI Tamper report (tamper and number of times reported at this service point)					
4.16	Ability to incorporate calculated meter reads from the SCADA system.					
4.17	Describe available features to support the automated identification and classification of events and procedures for further investigation and resolution via business rules. Attached additional paper and/or pages as needed.					
4.18	Minimum Standard Reports:					
	Map: Collectors Only					
	Map: 30 days since last comm.					
	Map: 14 days since last comm.					
	Meter Non-Communication Summary					
	Meter Non-Communication Listing					
	Unknown Meters Report					
	Interval No Register Report					
	Meters Missing Register Reads					
	Meters Missing Interval Reads					
	Register Reads Per Day					
	Meters with Estimated Intervals					
	Vacant Consumption Report					
	Zero Consumption Report					
	List of Meters Failing Validation					
	AMI Service Levels					
	Register Status Report					
	Interval Status Report					
	Register Validation Failures					
	Interval Validation Failures					
	Meter Event Query					
	Event Type Summary					
	Leak Events					
	Leak Prioritization Report					

5	Historical Data	I	O	E	N	Comments
5.1	Thirteen (13) months of historical hourly readings loaded into the MDMS prior to go-live.					