



Attachment A

Advanced Metering Infrastructure (AMI) System

Scope of Services

Vendor Selection, Contracting
and Implementation Support

Prepared for:

Town of Apex
Town North Carolina

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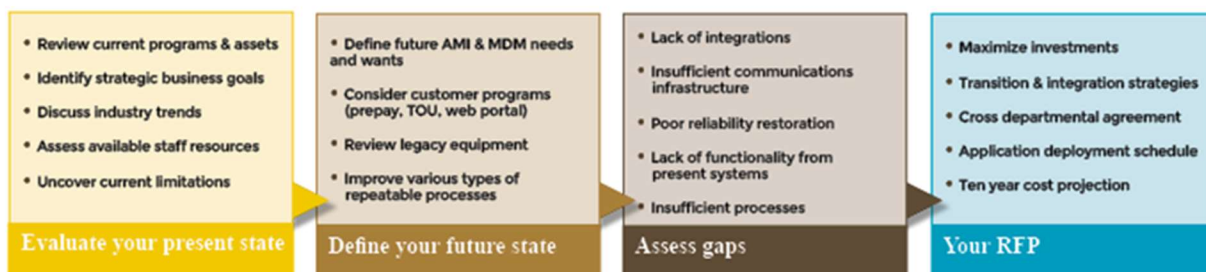
Scope of Services

The following pages describe our scope of services for AMI and MDM procurement, integrations services, contracting, and implementation support (note, we recommend that Town consider inclusion of an MDM (if desired) and meter exchange services in the RFP). PSE has a proven, flexible, and efficient process for choosing the ‘right fit’ vendor(s).

At a high level, we will lead the following:

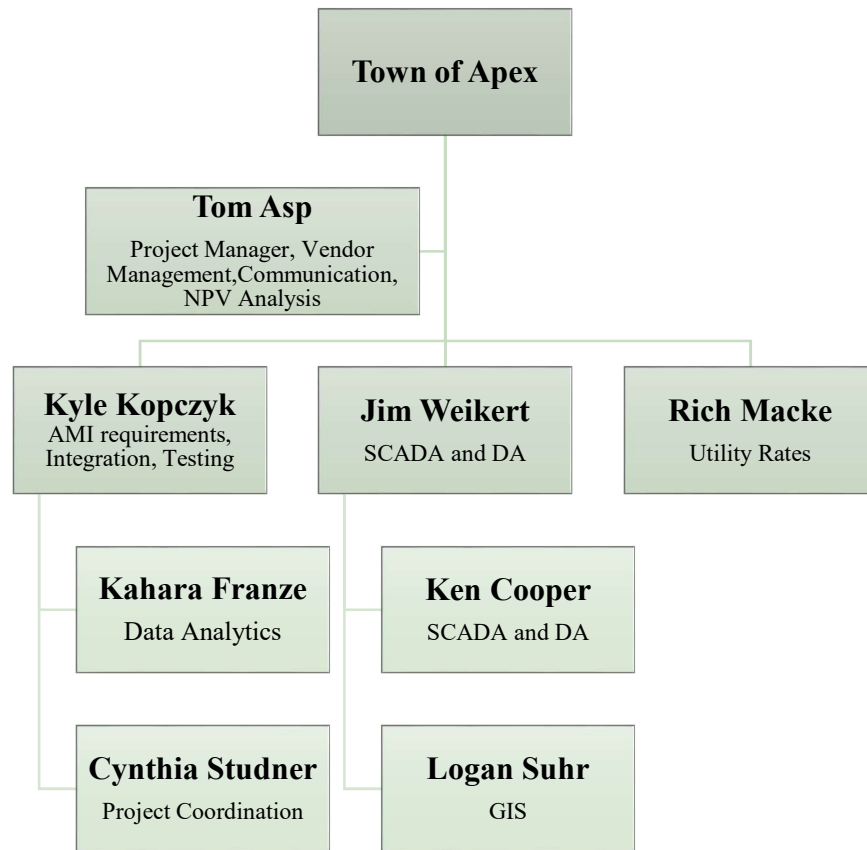
- Evaluate your present state:
 - Where are you today?
- Define your future state:
 - Where would like technology to take you?
- Assess, define, and plan the gaps between your current and future states:
 - The how, why, and what needs to be done to close gaps.
- Review and discuss the potential need of an MDM to meet the vision.
- Review the pros and cons of contracting for meter exchange versus use of internal staff.
- Assemble your RFP and future plan:
 - Actionable process changes and a purpose-built RFP to keep Town ‘Future Ready’

Figure 1: RFP Development Process



PSE’s project team is shown in the org chart below. The project manager for this engagement will be Tom Asp.

Figure 2: Project Organization Chart



The table below summarizes the project team’s general responsibilities.

Team Member	Responsibilities	Capabilities & Experience
Tom Asp Project Manager, Vendor Management, Communication, NPV Analysis	Business Planning Communication requirements, NPV analysis, vendor management, stakeholder engagement, and assist in project management.	Tom has 30 plus years in the Utility industry. Including procurement, system recommendations and feasibility studies for both communications and AMI.
Ken Cooper SCADA and DA Support	SCADA and DA Expert. Assist in integration needs and requirements.	Ken has 30 plus years of experience in the electric utility. Ken has experience with operations, distribution automation, and SCADA.
Kahara Franze Data System Analyst	Assist in preparation of requirements for enhanced data analytics.	Development of analysis tools to assist clients in driving value from AMI, DA, and SCADA data.
Kyle Kopczyk Project Manager, AMI Requirements, and Integration	Utility Automation Expert. Manage the requirements development, gather pertinent data, prepare RFP documents, data integration and analytics and lead vendor analysis.	Kyle has 10 years of water and electric utility automation experience and has led many strategy projects and numerous AMI and MDM deployments. Kyle also provides AMI business case and feasibility studies.
Rich Macke Economics, Rates, and Business Planning	Economic & Financial Expert. Rich will provide his deep understanding of wholesale and	Support of the cost-benefit analysis. Support for AMI requirements for rate designs.

Team Member	Responsibilities	Capabilities & Experience
	retail rate design and DSM programs to the project.	
Cynthia Studner Project Coordinator	Project Coordination. Coordinate communications between both teams, track project objectives and milestones.	Cynthia has 15 years’ experience coordinating strategy, procurement, and deployment projects.
Logan Suhr Senior Geospatial Consultant	GIS Expert. Integration support.	Support of enterprise database administration, web map and application development, cartography, and mobile mapping requirements.

1 Phase I: Vendor Selection

1.1 Prepare Data Request and Collect Required Background Data

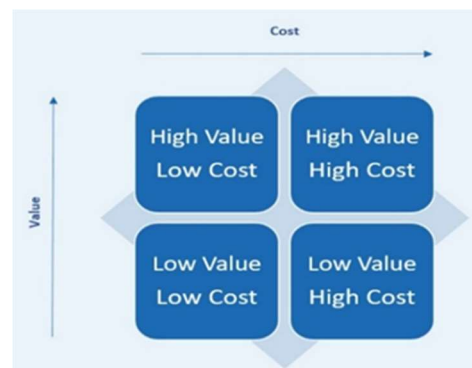
We will start our engagement by preparing a detailed information request. We see one of PSE’s roles as helping to organize, track, and maintain the schedule. We will accomplish this through regular scheduled meetings with the Town of Apex (Town) team to ensure tasks and quality are being maintained, as well as collaborating on any new updates to project documentation.

PSE will continue to be a resource to keep an eye on your project as a whole. In this role, we will provide updates, monitor high-level system milestones as they are met, manage a master project task list, and maintain availability to answer questions as they arise.

PSE will facilitate a project kick-off meeting to help the PSE and Town teams to agree on assignments and define relationships between team members at the start of the project, thereby maximizing various expertise across teams and building on existing work.

During the kick-off, PSE will work with the Town project team to:

- Analyze needs
- Explore current technology
- Review previous work to date
- Facilitate inter-departmental communications
- Track the schedule
- Coordinate with all stakeholders
- Discuss advantages and disadvantages of maintaining the existing Itron ERT’s for water
- Discuss advantages and disadvantages of maintaining the existing Elster commercial deployment



PSE will also use this time to discuss the business case data and information needed to perform the study as accurately as possible. We will facilitate and lead the discussion on the current

information available, specific needs and situations to Town, and any other pertinent talking points.

During this meeting, PSE will:

1. Review and discuss the present metering situation, any information gathered thus far, and the structure of Request for Proposal (RFP) documents.
2. Review and discuss the project needs, assumptions, and rationale.
3. Review the potential options prior to analysis.
4. Introduce the team to the RFP document structure and key elements PSE will need to have in order to complete the financial and feasibility study.

1.2 Conduct a Review of Existing Utility Goals, Concerns, Systems and Applications

PSE will investigate and document Town's existing procedures and systems as they relate to the creation of the System(s) business case and to understand the goals the Town wants to achieve with the System(s).

Key steps include:

1. **Present System(s) Industry Overview:** PSE will provide an introductory overview of current System(s) product and service offerings to educate the Town Team, including current state of the market, equipment, and software availability.
2. **Conduct and Lead Data Gathering Meetings/Interviews (Town Systems, Applications, and Goals):** PSE will facilitate discussions with Customer Service/Billing, Information Technology, Engineering, Finance, Rates/Load Control, Metering, and if desired, the Gas and Water departments to gain a thorough understanding of Town's current systems, applications, and the main features and functions desired from the System(s) and software for the next 10 to 15 years. PSE will consider the desired functionality in light of market standards, advising the Town of potential ramifications that could be encountered by specifying features that are not typical for the industry.

Figure 3: Sample System Requirement Document

AMI Requirements						
No.	Product Attributes	High Importance	Medium - Key Differentiator	Low - Standard Offering	Remove - Not a Requirement	Comments or Questions to be Addressed During PSE Session?
AMI Master System and Integration						
1	The AMI master system must support all MultiSpeak versions 3.x/4.x/5 AMI use cases for integrations with other enterprise applications as listed in Appendix VII. <i>Note, if any additional costs are required to comply with all MultiSpeak 3.x/4.0/5.0 AMI use cases must be quoted in the Pricing section.</i>	X				Utility ranks importance of over 100 requirements in a dozen critical categories of AMI system functionality
2	If Supplier has existing APIs between the proposed AMI system and existing vendors of the Purchaser, please provide a listing of available APIs.		X			
3	The AMI master system base bid shall be a hosted/cloud-based hardware/software solution. Please provide an optional cost for a premise-based AMI Master hosting solution.			X		
4	The AMI master database can be a SQL server or Oracle DB installation for premise-based solution. For cloud-based AMI master systems, the database could also be SQL or Oracle. Please state what database software is proposed in your base bid and whether the database license costs are included in the proposed base bid.			X		
5	For premise-based master systems, the software can be installed in a VM environment. It is assumed this functionality is included in the base bid.	X				

System integration and data transfer is critical, and Town applications are an integral part of an AMI deployment. We have worked on numerous deployments, and we understand what the criticality of integration to drive value.

The needs assessment and data gathering effort begins with the collection of current financial, business, meter operations, other related costs, and interviews with the Town’s staff. Prior to developing the RFP, PSE will conduct department interviews with the Town to assess the current metering system needs. We will capture each want and need from all stakeholders to develop a complete and well-rounded AMI RFP.

During this time, PSE will gather information related to the current meter situation and how it is being used today. Additionally, PSE will provide some use cases and scenarios to understand the expectations for the future system, such as:

1. Understanding the current system network and bandwidth capacity.
2. Expected water and electric meter reading data requirements.
3. Additional features or monitoring needed (reporting needs, critical alarms and events, tamper detection, disconnect/reconnect, overflow or level monitoring, leak detection, and other monitoring and control data.
4. Current struggles or issues.
5. Current successes and expectations for the future system.

A key output is development of data flow diagrams, system interface requirements, and outlining systems of record (system of truth). Example tables are shown below.

Figure 4: Example Output Tables

Use Case Group	AMI Use Case Number	Use Case Name	Actor Initiating Messaging to AMI Head-End (or AMI Head-End if AMI Initiated Messages)	Return Actor	Web Service Method	Message	All required functionality is supported in AMI software as bid. State MultiSpeak version supported.	All required functionality is supported in AMI software as bid. State MultiSpeak version supported.	Date	Cost
Manage Customer Service Changes	MSP-MR-30.100	Customer moves out, service is disconnected with disconnect switch.	MDMS	AMI head end	InitiateCDStateRequest()					
	MSP-MR-30.110	Customer requests routine electric service turn on (move in).	MDMS	AMI head end	InitiateCDStateRequest()					
	MSP-MR-30.120	Customer moves out and service is disconnected at service; meter remains, service on disconnected status.	MDMS	AMI head end	InitiateCDStateRequest()					
	MSP-MR-30.130	Customer moves out and meter is uninstalled.	MDMS	AMI head end			MSP-MR-9			
	MSP-MR-30.140	Field worker performs local electric service connection or disconnection.	AMI Head end	MDMS			MSP-MR-20			
	MSP-MR-30.150	Utility disconnects customer for non-payment by physically disconnecting service.	MDMS	AMI head end	InitiateCDStateRequest()					
Usage Monitoring and Tampering	MSP-MR-40.100	Meter is removed by authorized party.	AMI head end	MDMS	MeterEventNotification()					
	MSP-MR-40.110	Meter is inverted.	AMI head end	MDMS	MeterEventNotification()					
	MSP-MR-40.120	Meter bypass detection at the meter.	AMI head end	MDMS	MeterEventNotification()					
	MSP-MR-40.130	Physical tamper detection.	AMI head end	MDMS	MeterEventNotification()					
	MSP-MR-40.140	Unauthorized meter location change.	AMI head end	MDMS	MeterEventNotification()					
MSP-MR-40.150	Customer moves out, service left on. Utility initiates usage monitoring on meter.	MDMS	AMI head end	InitiateUsageMonitoring() CancelUsageMonitoring()			No separate			

Address Potential Concerns: Often, citizens will raise a concern about the potential for negative health impacts and from the implementation of AMI meters using radio frequency communications technology. Privacy concerns at times are also raised.

PSE will conduct a meeting with staff to review potential concerns. We will develop a strategic communications plan outline that addresses these concerns and the implementation process.

1.3 Quantify the Potential Benefits of a System-Wide AMI Implementation

PSE will prepare a written benefits analysis based on our experience, the information gathered in the meetings with Town personnel, and the current state of metering and communications technology. In this step, we will develop, analyze, and quantify potential benefits to be gained from an AMI and MDM implementation for water and electric meters. In addition to potential operational cost savings, the business case will also consider advantages seen through improved customer service and the furtherance of Town’s Strategic Goals.

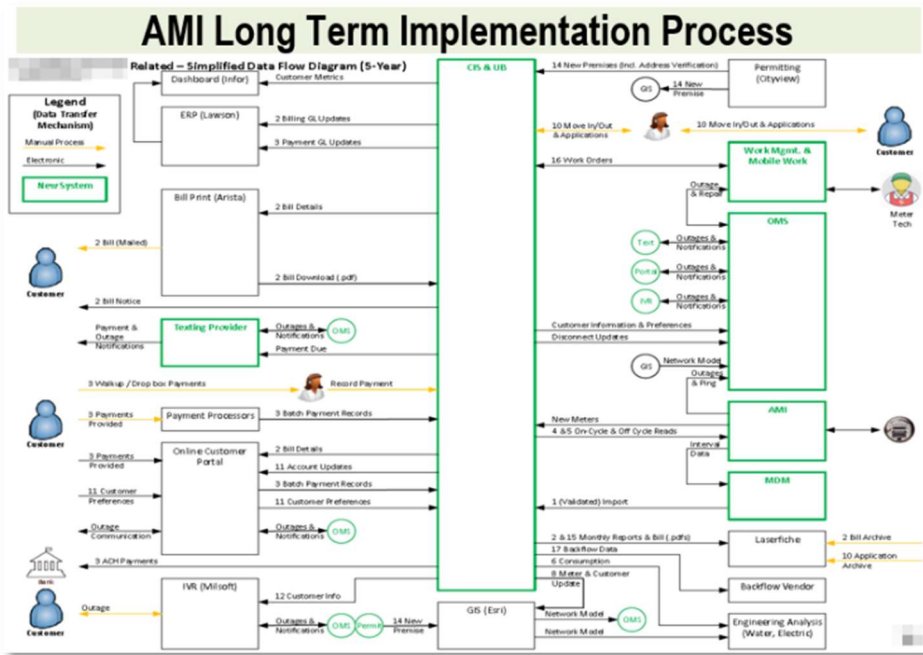
To supplement the business case, we will use our extensive knowledge and expertise to prepare, run AMI scenarios, and present our findings for the AMI business case. We will use the discovery sessions to gather information and data available, such as:

- Own and operate model vs. a software as a service (SaaS) model.
- Meter Data Management System (MDMS).
- Integration services between AMI and other software systems such as GIS, OMS, CIS, SCADA, MDMS, etc.
- AMI meter installation services from a third-party.
- AMI transport field equipment installation.
- Maintenance of the AMI infrastructure and programs.

- Employee training
- Labor costs for AMI administration
- Book value of present meter reading and other systems no longer needed with the upgraded AMI (Elster, Itron, other)
- Other cost categories as appropriate

A critical aspect of an AMI deployment is reviewing and outlining of recommended process. We consider the staffing evolution to support and leverage the new system. With planning, PSE will ensure the value gained from an AMI system does not diminish. Without the evolution of process and staffing, AMI and MDM implementations become an expensive billing read data collection system.

Figure 5: Business Process Improvement Mapping



PSE will take the lead in finalizing the future state of each business process. We will also provide a meeting to review the “as-configured” processes for what will be implemented into the operation environment.

As part of this deliverable, PSE will provide applicable information and documentation for each of the core business processes. PSE will provide an RACI diagram (responsible, accountable, consulted, and informed) to help assist in the transition from a utility without AMI to one with AMI.

Figure 6: Sample RACI Document

	Customer Service	Meter Tech	AMI Project Lead	Billing Department	Field Crew	IT
Check Daily on AMI Network Health	Informed	Consulted	Responsible	Informed	Consulted	Informed
Check Daily Read Rates	Consulted	Consulted	Responsible	Accountable	Informed	Informed
Confirm Meter Disconnect Cut List	Accountable	Informed	Informed	Accountable	Informed	Informed
Outage Reports Generated Weekly	Informed	Informed	Accountable	Informed	Informed	Responsible

In addition to the financial aspects of the analysis, the AMI Business Case will include evaluation of non-financial factors. PSE will work with the Town’s AMI team to identify and report on other non-economic value factors where AMI may provide benefits that are difficult to monetize, including customer satisfaction, employee safety (reduced workman’s comp will be included in the economic analysis), the Town’s brand and image, customer engagement and understanding, scalability for new services, other additional considerations.

The results of the business case will be presented in easy-to-read charts and tables. For example, the sample pie chart shown below is a visual representation of cost savings broken into categories such as meter reading, reconnects, disconnects, etc. Another example shows the NPV comparison of vendor solutions.

We will update the analysis during the vendor evaluation tasks.

Figure 7: Sample Business Case Outputs

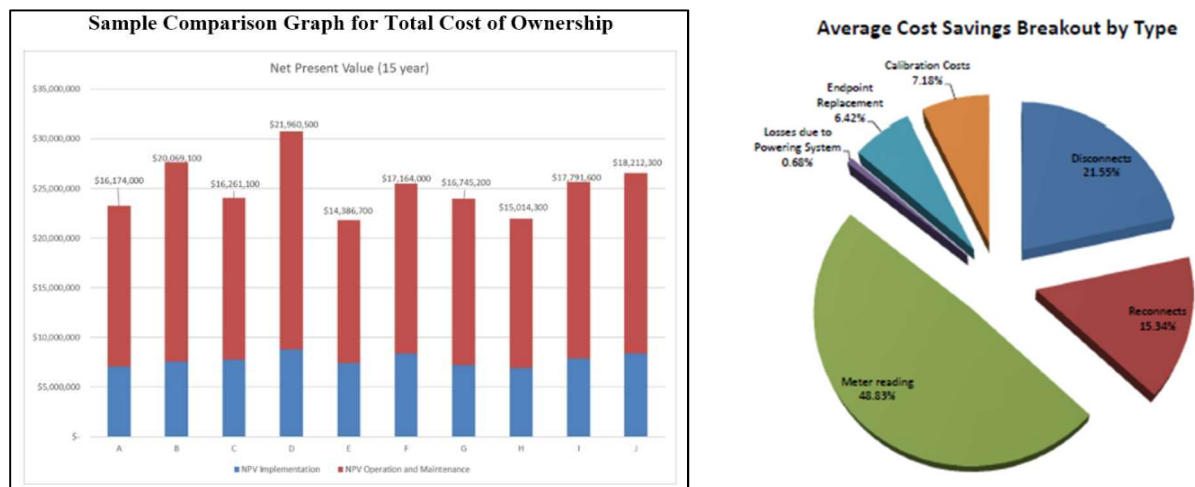
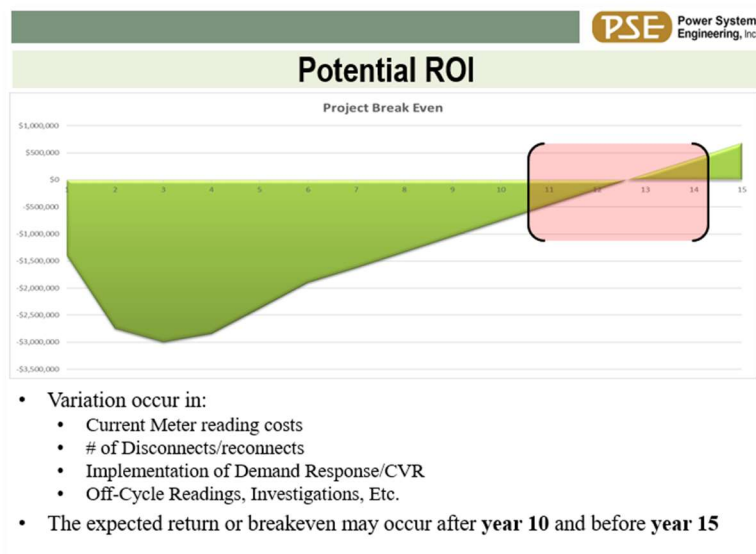


Figure 8: Example AMI Cash Flow



1.4 Determine Optimal System(s) Hardware and Software Procurement Strategy

We will work with the Town to create the most efficient and effective way to procure the required labor, materials, and equipment, services to implement, install, and integrate the System(s) components. We will consider the potential to use Town staff in the deployment process in addition to outside contractors, including the AMI vendor. We will discuss and determine whether Town should install the meters, contract separately for meter installation, or obtain a turnkey supplier for the System(s) and meter installation. We will strategize the optimal way to structure the RFP to obtain results most beneficial to Town (standard response forms, CPI caps on price increases, 15-year support commitments, other).

For the AMI scenarios from vendors such as Aclara, Sensus, Tantalus (220MHz), and Vision having a height advantage will be important, PSE will create assumptions for the quantities and costs needed if sufficient mounting locations are not available. Again, this will also be added to the business case. For the mesh-based and star-based AMI scenarios that will require collectors in the field, such as Eaton, L+G, Itron, Badger, Tantalus, Trilliant, and Honeywell, PSE will make assumptions on the costs for the backhaul based on knowledge gained in completing detailed Field Area Network (FAN) procurements with many other clients.

The resulting budgetary communications systems costs will be populated in the business case with selection options to match AMI technology scenarios. Town will also be able to evaluate the impact of percentage of communications backhaul assigned to AMI.

1.5 Develop RFP Specifications, Procurement Documents, and Evaluation Criteria

PSE will develop specifications for the system(s), taking into account the goals and concerns identified in the above development process, and leverage our typical specifications. The identified requirements will incorporate our expert industry knowledge and ensure future proofing as requirements evolve. These specifications will be used to purchase hardware and software for the system(s). Town will work with PSE to review and approve the specifications.

Figure 9: Sample RFP TOC

Table of Contents		Supplier Response Forms Include:
1	RFP Response Instructions.....	1
1.1	Procurement Schedule.....	1
1.2	Response Copies and Delivery.....	2
1.3	Intent to Respond Form.....	2
1.4	Questions.....	2
1.5	Instructions for Responding to this RFP.....	2
1.6	Evaluation and Award.....	4
1.7	Purchaser Confidentiality.....	4
2	Project Background.....	5
2.1	Overview.....	5
2.1.1	Present Meter Reading Situation.....	5
2.1.2	Existing Systems.....	6
2.2	Backhaul Communications.....	7
3	AMI Master System Integration.....	8
4	Deployment Plan.....	9
4.1	Approach.....	9
4.1.1	Phase I.....	9
4.1.2	Phase II.....	9
4.2	Deployment Timeline.....	11
5	System Acceptance Testing (SAT).....	12
5.1	System Acceptance Testing (SAT).....	12
5.2	Coverage Commitment Testing.....	12
5.3	Zero Consumption (Zero Usage) Meters.....	13
5.4	Non-Associating Meters and Major Meter/Module Failure.....	13
	Attachments: Supplier Response Forms.....	15
	Exhibits.....	17

- Supplier Qualifications
- Terms and Conditions (Technical)
- Requirements
- Questions
- Responsibility Matrix
- Pricing Schedule
- Software Application Info
- MultiSpeak Integration (Use Cases)

The AMI vendor qualifications will be developed that will limit those bidding based on experience with vendors’ equipment and personnel, deployed systems in similar sized utilities, presence in the region, and other critical factors.

We will develop evaluation criteria and the response forms to compare the proposals on an apples-to-apples basis. The criteria will be clearly explained and included in the RFP with definitions of what constitutes good, fair, poor, etc. Weighting factors will be assigned to each criterion so that a composite score may be calculated for each proposer. Some criteria may be quantitative in nature, such as total cost of ownership over the life of the proposal term. Other criteria may be qualitative.

Town staff shall work with PSE to review and approve the evaluation criteria (we provide a excel spreadsheet that allows evaluators to score respondent categories and provide the ranking score).

1.6 Project Manage the RFP Process

We will prepare the RFP documents, including required response formats, cost forms, requirement compliance forms, and an executable procurement contract. The response forms will be structured to become part of the contract. The RFP will also include a proposed schedule. The RFP will not specify a technology but will be comprised of requirements that allow all viable technologies and vendors to respond, and the RFP format will enable an apples-to-apples comparison of the response features as well as implementation and operational costs of each proposed solution.

The RFP will be structured to allow meter installation as a separate, optional offering (unless Town decides to favor a turnkey approach¹) and will include a scoring system to show how the respondents will be evaluated.

¹ PSE recommends that the Town consider a turnkey approach, in which the AMI vendor is responsible for meter exchange.

In addition, the RFP will allow MDM procurement (if desired) as a separate, optional offering. We will develop and provide a list of suggested vendors to request proposals from based on the developed RFP and our experience.

In addition, we will lead a pre-response vendor teleconference meeting. During the bidding period, we will also prepare written responses to vendor questions and create addenda as needed, subject to the Town review.

1.7 Evaluate Vendor Responses

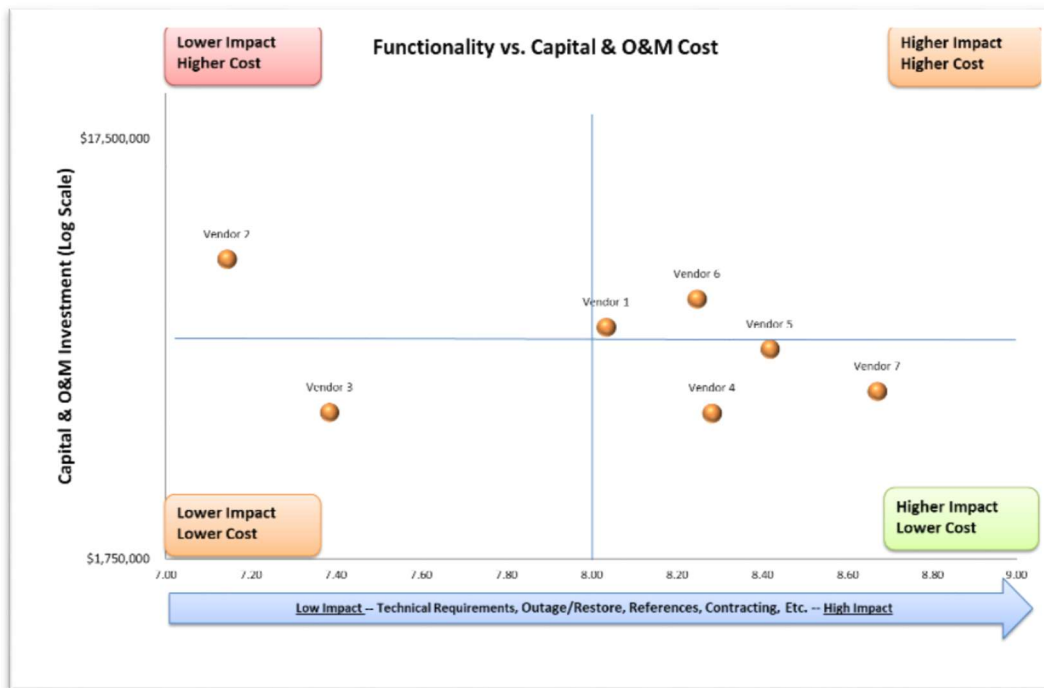
PSE will perform a comprehensive review of vendor responses. Each response shall be scored according to the evaluation criteria specified in the RFP. The review shall include a total cost of ownership comparison and a comparison of the features offered.

We will then prepare a recommendation for shortlisted responses. If vendor demonstrations are advisable (typically they are), we will prepare a script and evaluation criteria for such demonstrations. PSE will schedule and lead interviews with the shortlisted vendors. Town staff will review our recommendation and will make the final vendor selection.

Included in the evaluation is participation in shortlisted onsite vendor presentations.

Figure 10: Example AMI Evaluation Matrix Outputs

		Best	Medium	Worst					
Rank: Lower Number = Best Vendor		Weight	Vendor 1	Vendor 2	Vendor 3	Vendor 4	Vendor 5	Vendor 6	Vendor 7
Meets existing functional and technical req. (req. from ex	15%	5	7	6	3	1	2	4	
Pricing	11%	5	7	1	2	4	6	3	
Simplicity of the system and ease of use (maintenance an	6%	3	7	4	1	6	5	2	
Coverage/read success commitment	18%	2	3	7	6	5	3	1	
Integration fit with existing systems (MultiSpeak, other in	15%	1	7	6	3	1	3	3	
Strength of customer references, Ease of doing business (1%	3	3	1	6	1	7	3	
Project Management, Training, Ongoing System Support	6%	1	3	3	7	2	3	3	
Gas products, support, maturity, and functionality	20%	5	5	7	4	1	1	1	
Outage/Restore reporting and capability	6%	3	1	6	4	4	6	1	
Future system life expectancy and additional features (Ot	3%	6	4	2	2	7	1	4	
Raw Total		8.03	7.14	7.38	8.28	8.42	8.25	8.67	
Total Rank		5	7	6	3	2	4	1	
Short List for Vendor Days		No	No	No	Maybe	Yes	No	Yes	

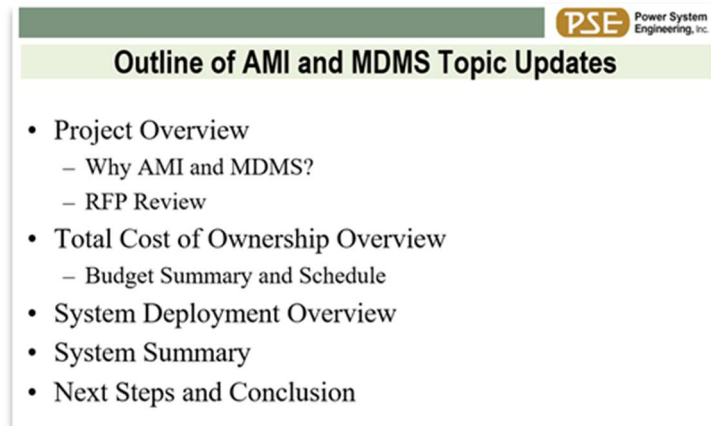


1.8 Write a Recommendation Summary

We will consolidate all findings into a written recommendation, including estimated costs, risks, recommended concurrent systems/processes, project deployment timeline, network security, vendor product warranty, proposed future staffing, future opportunities available, any opportunities Town will have to forego with the selected vendor, analysis of the different meter and communication vendor proposals, and a justification for the ultimate recommendation.

We will present the recommendations to the selected stakeholders.

Figure 11: Sample AMI Recommendations Presentation Agenda



2 Phase II: Contract Negotiations

PSE will support the contract development. A key in the assistance is structuring the RFP response forms to be incorporated in the contract and including a draft contract in the RFP submittal.

- We will serve as technical advisor in the negotiation of terms and conditions with the recommended vendor(s), including service level agreements, performance criteria, scheduling, warranties, and final pricing.
- Perform a technical review of final contract documents and facilitate their execution.
- Provide representation during the approval process.
- We will offer insights to the Town team to ensure the total cost of ownership calculated is what Town pays for the life of the equipment and services purchased. A key to this is including CPI service fee increase limits on support services and equipment.
- We will also provide a strategy if Town is unable to obtain acceptable contract terms with the preferred vendor. PSE will assist Town until a final contract is executed by Town and the vendor.

Figure 12: Sample Master Agreement Contract TOC

1	AMI System Master Agreement	3
1.1	RECITALS	3
2	Terms and Conditions	3
2.1	Term	3
2.2	Definitions	3
2.3	Cost	6
2.4	Taxes	6
2.5	General Scope of AMI System to be Purchased	6
2.6	Entire Agreement	6
2.7	General Statement of Responsibility of Supplier	7
2.8	Independent Contractor	7
2.9	Purchaser Review and Approval	7
2.10	Supplier Representations	8
2.11	Change-Orders	8
2.12	Right to Use System Not Yet Accepted	9
2.13	Right to Use Accepted System	9
2.14	Defective Work and System (Warranty)	9
2.15	System Life Expectancy	10
2.16	Deployment Plan	11
2.17	Payment to Supplier	11
2.18	Equipment Forecasts	13
2.19	Purchase Orders	13
2.19.1	Cancellation and Modifications	13
2.20	Major Meter/Module Failure	14
2.21	Meter Disconnection/Reconnection Failure	14
2.22	Coverage Commitment	14
2.23	Meter/Module Replacement for Zero Consumption and Non-Associating Meters	15
2.23.1	Zero Consumption (Zero Usage) Meters	15
2.23.2	Non-Associating Meters	15
2.24	Tests and Inspections	16
2.25	Initial System Acceptance Test (ISAT)	16
2.26	Final System Acceptance Test (FSAT)	16
2.27	Applicable Laws and Courts	17
2.28	Licenses	17
2.29	Insurance	17
2.30	Settlement Preferred	18
2.31	Indemnification	19
2.32	Transportation and Risk of Loss	19
2.33	Confidential and Proprietary Information	20
2.34	Safety and Compliance with Codes and Other Laws	21
2.35	Site, Supervision, and Safety	21
2.36	Time is of the Essence	22
2.37	No Implied Waiver	23
2.38	Liquidated Damages and Remedies	23

Figure 13: Example ISAT/FSAT Document Excerpt

Test	Activity	Overview	Procedure	Pass/Fail?
1)	Test meters with electric endpoints in the field.	Using a field handheld tool or device, verify communications with 5 polyphase electric and 5 residential meters.	Connect to the meter with the field device using the mesh network and once through the optical port. Verify a reading of kwh and demand can be retrieved. Verify diagnostic information from the AMI network can also be retrieved.	
2)	Test meter demand reset from AMI software.	Verify peak demand can be reset from the software system and the peak demand is read and stored.	Reset the current demand from the office. Confirm the current demand reading is set to zero and the current demand reading has been moved to the 'peak' or 'frozen' register in the meter.	
3)	Test meters with electric endpoints capable of remote disconnect.	Using a field handheld tool or device, verify with 5 residential meters a disconnect can be performed.	Connect to the meter with the field device using the mesh network and once through the optical port. Confirm a successful disconnect and reconnect.	
4)	Test meter/module configurability for polyphase electric meters.	Verify meter parameters (recording and reporting intervals) can be changed 'over-the-air' from the AMI software system. Must be able to configure and re-configure items such as; Sag/Swell alarms, TOU programs, or meter collecting/reporting intervals.	Using 5 – 10 installed Polyphase meters on the system. Alter the reporting and recording intervals and confirm the change. Setup status, events, and alarms. Confirm these status and event changes. All changes and updates must be done from the office through the software system.	

3 Phase III: AMI System Implementation Support

Implementation support requirements will vary greatly depending upon the meter exchange (AMI vendor turnkey, meter exchange contractor, internal meter exchange), the desired time to deploy, and other factors. For this project, PSE is assuming a lead role and responsibility throughout the deployment. PSE will be the primary point of contact for the vendor(s), but all major decisions will be approved by the Town.

Below is a DACI (Driver, Accountable, Consulted, and Informed) Chart.

Figure 14: Phase III – AMI System Implementation Support DACI Chart

Phase III – AMI System Implementation Support DACI Chart		
Task	Power System Engineering	The Town
1. Project Initiation		
a. Assemble Internal Project Team	C	D
b. Initiate Purchase Orders	C, I	D, A
c. Specify and Approve First Article Meters	D	A, C
d. Refine Implementation Schedules	D	C
e. Weekly AMI Impact and Implementation Meetings	D	C
f. AMI Vendor and Install Mobilization	D	C
2. Prepare for ISAT (Initial System Acceptance Test)		
a. Prepare Team for Testing	D, A	C
b. Order Meters (based on First Article)	C, I	D, A
c. Notify AMI Vendor of Testing Date(s)	D	C
d. Notify AMI Installer of Testing Date(s)	D	C
e. Install and Setup AMI Software	D	A
f. Complete pre-check list (interfaces to other systems, issue reporting and capture, etc.)	D, A	C, I
3. Deployment of ISAT Meters and Equipment		
a. Coordinate with Town Staff	D	A
b. Identify Area(s) for Install	D	A
c. Coordinate with AMI Vendor and Installer	D	C
d. Conduct Training for Installation as Needed	D	A, C

e. Deploy AMI Network Equipment	D	A
f. Deploy AMI Meters	D	A
g. Resolve ISAT Issues and Sign-Off	D	A
4. Conduct Full Deployment		
a. Coordinate with Town Staff	D	A
b. Coordinate Purchasing and Delivery Schedules	D, A	C, I
c. Coordinate AMI Network Install with Town Staff	D	A
d. Coordinate and Schedule Meter Deployments with Town and Customers	D	A
e. Monitor and Update of Installation Progress	D, A	C, I
5. Conduct Final System Acceptance Test (FSAT)		
a. Coordinate with Town Staff	D	A
b. Coordinate with AMI Vendor and Installer	D	C
c. Conduct Training for Installation as Needed	D	A, C
d. Deploy AMI Network Equipment	D	A
e. Resolve FSAT Issues and Sign-Off	D	A
f. Project Complete	D	A

Based on our experience, we find that it is 1) critical that the Town assign a full-time administrator during the implementation and transition to the AMI system owner, 2) important to consider using a contractor for the meter exchange process to help free up staff time to learn how to leverage AMI data into their day-to-day job functions, and 3) critical to complete all database interfaces and data exchange processes to be implemented and tested before the mass meter exchange begins.

3.1.1 PSE Implementation Support

The following SOW assumes that the AMI vendor will offer turnkey meter exchange services.

In our experience, the full meter exchange process begins when most of the heavy lifting has been completed. The integrations, testing, and initial training have been completed, Town staff has become more familiar with the equipment, and the vendor has outlined their meter exchange procedures.

We anticipate project initiation to completion of the ISAT to take up to 6 months, and the full deployment is estimated to occur over 10 to 12 months after the passing of the ISAT (ISAT and deployment times defined and negotiated in contracting process).

PSE will take the lead role in managing the project and will drive the project to completion. For our support, we estimate that PSE will average 22 hours per week of support for the first six months and 12 hours per week for the remaining 10-12 months.

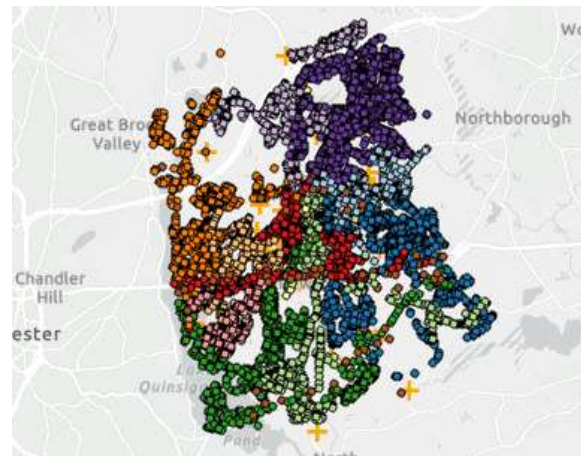
PSE will organize, track, and maintain the deployment schedule, assist in coordination of Town responsibilities, and lead vendor coordination. We will accomplish this through regular scheduled meetings with the Town and vendor(s) and onsite meetings to ensure tasks and system quality are being maintained, as well as collaborating on any new updates to project documentation. Finally, we will be in attendance to formally close out the project.

PSE will keep an eye on your project as a whole. In this role, we would be available for meetings, general overview updates, coordinate activities between city staff, and monitor high level system milestones as they are met, manage a master project task list, and maintain availability to troubleshoot and answer questions as they arise.

PSE will support and guide in the following areas:

1. Coordination between Town departments
 - a. Prepare a detailed work breakdown structure
 - b. Define roles and responsibilities
 - i. IT
 - ii. Electric
 - iii. Billing
 - iv. Water & Gas
 - v. Finance
 - vi. Etc.
2. Develop a Project Communications Plan
3. Direct weekly scheduled calls
 - a. With the AMI vendor and MDM vendor
 - b. With the meter install vendor
 - c. With the TOWN deployment team
4. Discuss and considerations for data storage and systems or record
 - a. MDM
 - b. GIS
 - c. Billing
 - d. AMI

Figure 15: Example Meter Exchange



- e. OMS
 - f. SCADA
 - g. IVR
 - h. Other current and planned future systems
5. Follow-up and monitor of task list
 6. Schedule initial and ongoing training for:
 - a. Installation
 - i. Network
 - ii. Meter provisioning
 - iii. Backhaul Communications
 - b. Maintenance and System Troubleshooting
 - c. Using the Software
 - d. Running Reports
 - e. Generating Billing Files
 - f. Etc.
 7. Initiate ISAT preparation
 - a. Work with Town and vendor in specifying first article meters
 - b. Work with Town and vendor in defining ISAT area(s) and meter quantities
 8. Monitor contract obligations of Town, AMI vendor, and MDM vendor
 9. Verify and tracking equipment shipments (with Town support)
 - a. Monthly meter forecast numbers
 - b. AMI network equipment
 - c. Communication equipment
 10. Review and implement recommended business process improvements with Town
 - a. Disconnect for non-pay
 - b. Voltage complaint
 - c. High-bill complaint
 - d. Outage and restoration
 - e. Other
 11. Maintain and update contact lists for vendors
 - a. Troubleshooting contacts
 - b. Project liaisons and managers
 - c. Billing and Accounting contact

- d. Equipment order, placement, and tracking contacts
- e. Scheduling and requesting training
12. Review of ongoing project budgets and forecasts
13. Prepare and report progress updates
14. Support execution of ISAT, the Final System Acceptance Test (FSAT) and other proof-of-performance testing
15. Maintain and monitor quality assurance
 - a. Master task list
 - b. Master issues/complaints/defects and resolution list
16. Coordination of any upcoming or remaining integrations
 - a. Work with Town to ensure vendors meet obligations
17. Coordination between vendors as required and needed
18. Monitor internal and external project management support
19. Project sign-off and closure

3.1.2 Responsibility Summary Example

As indicated above, the implementation steps and responsibilities are detailed in the RFP and refined during the contracting process. The draft responsibilities for the Town and the AMI vendor are summarized below. We used this responsibility list in development of our tasks above.

Town responsibilities include:

- Define first article meters configuration and faceplate design.
- Provision of access to required assets to mount network devices and elements.
- Complete installation of collectors (including backhaul communication) and repeaters outlined by the respondent's design (excluding electric meters).
- Complete installation of any gas or water nodes required for the Initial System Acceptance Test (ISAT).
- Complete installation of any K-Base AMI electric meters (if applicable).
- Provision of wide area network (WAN) communications (if applicable).
- Provide technical assistance for supporting successful interface and interoperability, as required for the identified management systems.
- Jointly execute ISAT, the Final System Acceptance Test (FSAT) and other proof-of-performance testing.
- Negotiation of secured lease agreements from third party providers for WAN (if required).

The AMI vendor has the single point of responsibility for the AMI network, AMI meters, software, and databases. In addition, the AMI vendor has responsibility for electric meter installation.

AMI vendor responsibilities include, but are not limited to:

- Work with Town in defining first article meters configuration and faceplate design.
- Conduct onsite training of utility staff to install network devices.
- Conduct onsite training at a designated customer facility for AMI network and software provided.
- Verify and approve network device installations.
- Jointly execute ISAT, FSAT, and proof-of-performance testing.
- Completion and provision of AMI system design to meet outlined requirements in the agreement (includes diagram and complete BOM for network).
- Provision and optimization of secure communications within the meter network, as well as within the LAN and WAN for advanced metering functionalities.
- Install, provision, and test the AMI software and related interfaces.
- Identification of locations to mount network gateways as required.
- Demonstration of ability to support AMI for water.
- Provision of AMI network management system.
- Provide training for AMI network management system.
- Lead discussions and interface development regarding required interfaces with identified applications.
- Coordinate and assist vendors in interfaces as outlined in contract to AMI vendor-provided software and databases.
- Provide implementation support (troubleshooting, network provisioning, etc.).
- Provision of a long-term test environment master station software (if option chosen by the Town).
- Secure delivery of meter reading data into appropriate database(s).
- Provision of required interfaces to Town's applications, ISAT, and expected to work with Customer staff to setup various dashboards to facilitate ease of use of the solution.
- Recording and provision of future proofing measures taken, which will enable the Customer to interface other, newer systems using the current AMI data (this includes, but is not limited to, firmware downloads and ongoing software updates).
- Provision of list of equipment or hardware required to be supplied by the Customer.
- Detail of power requirements for each network device.
- Recording of condition of site (photo and notes) and GPS coordinates for each endpoint and network element installed by AMI vendor or their contractor(s).

- Complete electric AMI meter installation (detailed requirements as indicated in contract).
- Conduct water and gas AMI module and wiring installation training for the ISAT.
- Provide experienced project management.
- Provide warehouse and inventory management for received AMI meters and removed meters.
- Provide disposal of removed meters (hold for 90 days after completion of installation) meeting all Federal and state regulatory requirements, including environmental standards.
- Obtain and provide Town updated hosting certifications prior to their expiration (if hosting option chosen)

4 Project Cost and Schedule

The following costs and schedules follow the scope of services presented above.

4.1.1 Phase I: AMI RFP Development and Vendor Selection

Tasks for Phase 1 include:

1. Prepare Data Request and Collect Required Background Data.
2. Conduct a Review of Existing Utility Goals, Concerns, Systems, and Applications.
3. Quantify the Potential Benefits of a System-Wide AMI Implementation.
4. Determine Optimal System(s) Hardware and Software Procurement Strategy.
5. Develop RFP Specifications, Procurement Documents, and Evaluation Criteria.
6. Project Manage the RFP Process.
7. Evaluate Vendor Responses.
8. Write a Recommendation Summary.

Our proposed costs include all fees and expenses including travel. The cost of Phase I is \$73,200.

Given an execution of the services contract with the Town of Apex and PSE by the end of January 2022, Phase I will be completed by August 3, 2022.

4.1.2 Phase II: Contract Negotiations

PSE will support the contract development. A key in the assistance is structuring the RFP response forms to be incorporated in the contract and including a draft contract in the RFP submittal.

The support required for contract negotiations depends upon the selected vendors response to the RFP and their willingness to meet the Town of Apex requirements.

On average, we have seen 28 hours of support in finalizing the contract including an onsite visit. Based on that average, **the estimated cost for this effort is \$5,240. We estimate a completion date of August 24th, 2022 but will vary based upon vendor selected and their approval process.**

4.1.3 Phase III: AMI System Implementation

As described above, PSE will take the lead role in managing the project, and anticipate Phase III occurring over a 16-month period. We estimate that PSE will average 22 hours per week of support for the first six months and 12 hours per week for the remaining 10 months. Given this estimate, **the cost estimate for the lead implementation role is \$186,480 and the estimated project completion date of February 8, 2024.**