



Vermont Public Power Supply Authority

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Request for Information (RFI)

for an

Advanced Metering Infrastructure Solution

Deadline for Submission: July 17, 2019

Issued by: Vermont Public Power Supply Authority
PO Box 126
5195 Waterbury-Stowe Road
Waterbury Center, VT 05677

Release Date: June 12, 2019

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1. INSTRUCTIONS TO RESPONDENTS

VPPSA and Member agencies assume no responsibility for any costs incurred by any respondent to this RFI. All costs are entirely the responsibility of the respondent. Good faith responses to this RFI are being solicited without the creation of any obligation between parties, explicit or implied.

1.1 RESPONSE REQUIREMENTS

All responses **must be received by 4:00 PM on Wednesday, July 17, 2019.**

Responses are to be delivered via email to: Ken St. Amour of VPPSA (kstamour@vppsa.com).

Responses received prior to the advertised hour of opening will be accepted. Only those responses that are received by the deadline noted above will be considered. Delivery in any other manner does not constitute proper or adequate delivery. Failure to submit a response to the RFI will eliminate the AMI vendor from the RFP bid process. Any RFP issued as a direct result of this RFI will be limited to vendors invited to participate in the RFP. Selection will be based upon the ability of each vendor's respective solution to meet Member needs and requirements.

Upon submission, all responses become the property of VPPSA and are subject to public record laws.

Responses shall have the following information in the Subject line of each email sent in response to this RFI: "Response to Automated Metering Infrastructure Solution – **Vendor Name.**"

1.2 RESPONSE SUBMITTALS

The responses shall be brief and concise, yet sufficient in detail to allow for the thorough evaluation of the solution and its estimated costs. The following shall be included in the proposal:

1. Cover Letter
 - a. Provide legal name of Company, including street and mailing addresses.
 - b. Indicate the key contact(s) for this response, including telephone number(s) and email address(es).
 - c. Provide a brief statement of the Respondent's understanding of the scope and commitment to the stated capabilities provided by the Respondent.
2. Responses to include:
 - Section 3 - General Solution and Experience
 - Section 4 - Technical Requirements.
 - Section 5 - Budgetary Pricing.
 - Section 6 - Project Plan.

1.3 QUESTIONS ABOUT RFI

Questions regarding this RFI must be received before **4 PM on Monday, July 1, 2019**. Send questions to Ken St. Amour (kstamour@vppsa.com) via email with copy to jackie@lemmerhirt.com. Answers to questions will be provided as soon as possible, and in plenty of time to submit responses.

In respect of VPPSA Members and their busy schedules we request that Member utilities not be contacted with questions about the RFI. Questions should be directed as stated above.

1.4 PROJECT SCOPE

VPPSA and its Members are seeking an Advanced Metering Infrastructure System to modernize the meter reading operations and to create an infrastructure that will meet the needs of a changing industry. VPPSA and its Members anticipate the need to accommodate new rate designs, improve customer service and customer communications and accommodate new technologies. The requested elements of this project are outlined in Section 3 and Section 4. Respondents shall fully address the information requested throughout this document, relating to the solution proposed. Respondents are also encouraged to include any additional items that vendor deems necessary and consistent with the intent of the project.

Vendor should provide a typical project plan and Gantt chart, keeping in mind the need to manage installations and deployment for multiple Member utilities concurrently. After review of the responses, VPPSA and its members will select those vendors that will be invited to participate in the resulting RFP, based upon the suitability of the proposed solution to meet the Member utility's needs.

1.5 PROJECT SCHEDULE

Estimated schedule for completing the evaluation and selection:

1) Issue RFI	June 12, 2019
2) RFI Response Due Date	July 17, 2019
3) Review and Comparison of Solutions	August 2019
4) Issue RFP	Q4, 2019
5) Desired Project Start Date	Q2, 2020

2. VPPSA OVERVIEW

2.1 Background

VPPSA is an instrumentality of the State of Vermont empowered under 30 VSA, Chapter 84 with broad authority to contract to buy and sell wholesale power within Vermont and wholesale and retail power outside Vermont, as well as to issue tax-free debt on behalf of municipal and cooperative electric utilities within Vermont. VPPSA has broad statutory authority to provide such services as may be required in support of the activities of its Member municipal utilities and to market its services to non-Member utilities as is deemed appropriate.

VPPSA originates projects for the purposes of planning, financing, developing, acquiring, constructing, operating and maintaining projects for the generation of electric energy. VPPSA also facilitates joint service contracts, at the request of its members, to aggregate like project efforts among its Members to improve operating efficiencies and reduce costs. VPPSA is governed by its Board of Directors, which is composed of representatives from each of its Members. Management of VPPSA is under the direction of a General Manager who is appointed by the Board.

VPPSA is soliciting information regarding Advanced Metering Infrastructure (AMI) offerings from vendors for the following member municipal electric systems within the State of Vermont.

Member	Meters	Distribution Line (miles)	Territory (sq. miles)
Barton	2,110	200	95
Enosburg	1,725	190	65
Hardwick	4,470	325	174
Jacksonville	700	50	54
Johnson	950	28	5
Ludlow	3,750	65	35
Lyndonville	5,750	400	200
Morrisville	4,000	180	22
Northfield	2,250	39	20
Orleans	660	40	28
Swanton	3,630	120	56

The following Members also operate water and wastewater municipal departments and are interested in utilizing any deployed system to manage water meter reading as well:

Member	Number of Water Meters
Barton	382
Enosburg	591
Johnson	427
Morrisville	958
Northfield	767
Orleans	325
Swanton	1,322

More information about the Members, along with geographic locations within the State of Vermont can be found under the Member section of our website: <https://vppsa.com/members/>.

2.2 Current Meter Reading Practices

For most Members, electric meters are read visually, and values are manually typed into a handheld device. Reading data is processed directly into the utility billing software with no other software application interface. Meters are read by a field technician who also makes notes of any issues or repairs.

For those Member utilities with water metering responsibility or affiliated water departments, water meters are concentrated in the populated town areas. Most water meters are located in basements and read via a touchpad on exterior wall or in some cases, Members have a limited drive-by system. Meter readings are downloaded to the Neptune software and sent in a file to the billing system.

2.3 Information Systems

The following table provides a list of Customer Information Systems used by each Member that will require integration with AMI.

Member	Billing & Outage Systems
Barton	NEMRC
Enosburg	Harris Spectrum
Hardwick	SEDC
Jacksonville	NEMRC
Johnson	NEMRC
Ludlow	Harris Select
Lyndonville	Harris Northstar mPower for Outage Management
Morrisville	Harris Northstar mPower for Outage Management
Northfield	Tyler Technologies MUNIS
Orleans	Creative Technologies
Swanton	Cogsdale

3. SOLUTION OVERVIEW AND EXPERIENCE

Please answer all questions related to the overall AMI solution and your company's experience with AMI. If your company provides more than one AMI solution, you may provide information on all the solutions, but we are most interested in the solution which best suits VPPSA Members.

3.1 General Solution

1. Does your company provide an electric and water AMI solution?
2. Describe the AMI solution options your company provides. Include all software solutions and partner solutions available, e.g. MDM.
3. Describe your company's background and experience with AMI.
4. If you have more than one AMI solution, which solution(s) are you suggesting/recommending for VPPSA and its Members?
5. Do you have an AMI solution that could be shared by all VPPSA Members and centrally operated?

3.2 Experience and Product Roadmap

1. Describe your company's experience in delivering AMI solutions to:
 - a) Joint Action Agencies and their Members
 - b) Municipal utilities
 - c) Utilities with Geographic challenges similar to VPPSA Members
 - d) Electric and Water Utilities
2. Outline the company's contract negotiation process and timeframe to execute a contract.
3. Describe your company's product evolution over the past 5 years.
4. Has your company made any acquisitions of products or companies in the last 5 years? If so, describe how this has been integrated into your AMI solution.
5. Share your AMI solution product roadmap for the next 5 years.

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6. What is the expected life of your proposed AMI solution? Please specify each component of the solution.
 7. Describe the project management and professional services available with your AMI solution. Include the lead time for ordering products.
 8. Describe the utility support required to implement the AMI solution.
 9. Describe your company's interest in and ability to support a pilot project or a field trial for a Member.

4. TECHNICAL REQUIREMENTS

Please answer all questions and provide detail on any specific capabilities of your AMI technology in your response.

4.1 Electric Metering

The purpose of this section is to understand capabilities of the electric meters that work with the AMI solution.

1. Provide details of meters available with your AMI solution, e.g. meter type, manufacturer, etc.
2. List all the meters and manufacturers that your AMI solution will support.
3. Does your AMI solution support meters from more than one manufacturer in a single AMI implementation?
4. What compliance standards do your meters meet, e.g. ANSI, UL, IEC, etc.?
5. Meters will be installed in Vermont and be subject to a wide range of weather (ice, heat, snow, temperature) and environment considerations. Please provide details on the performance of meters given these details. This includes compliance with an outdoor installation. This includes UV resistance.
6. Describe the service life of the electric endpoint, including internal batteries, given weather/environment considerations.
7. Provide details regarding the failure rate of the electric meter and communications technology in a Pareto analysis format.
8. Provide details of the alerts, alarms, and configurations, i.e. tamper, temperature, reverse energy, voltage etc.
9. Describe the electric meter disconnect capability including support for remote disconnect, load limiting, disconnect security, etc.
10. Provide meter identification details including barcode, labeling and meter security keys. Describe how meter identification is handled if a single central AMI system is used across all Members.

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11. Describe the measurement parameters available on all meter types, e.g. energy, demand, voltage, power factor, including interval data measurements.
 12. Describe data storage capacity within the meter.
 13. Provide details regarding the meter's ability to support Time-of-Use, Critical Peak Pricing and other rate designs.
 14. Describe the meter display and any visual indicators, e.g. disconnect indicator.
 15. Describe the meter's ability to support net energy metering installations.
 16. Provide details regarding the meter data security, along with associated hardware considerations from field to back-office systems, including encryption/decryption.
 17. Explain how security keys are managed. Include scenarios for a centralized implementation as well as individual Member deployment considerations.
 18. Describe the processes available to access data from the meter (over-the-air, drive-by, manual, Wi-Fi, etc.).
 19. Describe the process for meter firmware upgrades or configuration changes.
 20. Describe any other functionality available in the meter.

4.2 Water Meters and Endpoints

The purpose of this section is to understand capabilities of a water AMI solution including water meter capabilities and/or the integration of an AMI water endpoint with existing water meters.

1. Describe features of the proposed system relating to water meters:
 - a) Meter interface unit connection & mounting options. Address solutions for existing 6-digit touch read meters located in the basement with touchpad on the outside wall. There are a few meters in pits with a touchpad through the lid.
 - b) Alarm and tamper alert features, e.g. reverse flow, tamper, battery life, etc.
 - c) Read data and interval operations; describe the measurements available for each type of meter.
2. Provide a list of water meters and registers compatible with the AMI solution.

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3. Explain power output and two-way communication functionality. Does the meter interface unit (MIU) have the ability to "hop" information to/from the electric meters or other water meters?
 4. Explain the process of installation and commissioning of the meter and interface unit. Include any issues or concerns associated with communication devices. Address any issues of access to indoor meters. Most will be replacement of touchpad that is mounted on outside wall of the structure.
 5. What industry compliance standards do your meter interface units meet, e.g. ANSI, UL, IEC, etc.?
 6. What is the service life of the meter interface unit, including internal batteries, given weather/environment considerations?
 7. Provide details regarding the failure rate of the water meter and meter interface unit in a Pareto analysis format.
 8. Describe the capability of the system, meter interface unit and meter to support for remote disconnect, disconnect security, etc.
 9. Provide details of meter identification including barcode, labeling, meter security keys. Describe implementation of meter identification/discretion if one central AMI system is used for several Member utilities.
 10. Describe the meter data storage capacity within the meter interface unit.
 11. Provide details regarding security of meter, interface unit and associated hardware considerations for back-office systems including encryption/decryption.
 12. Explain how security keys are managed. Include scenarios for a centralized implementation as well as individual Member deployment considerations.
 13. Describe the processes available to access data from the meter (over-the-air, drive-by, manual, Wi-Fi).
 14. Describe the process for MIU firmware upgrades or configuration changes.
 15. Describe any other functionality available in the meter.

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16. Provide description of clock/calendar in the MIU including drift limits and synchronization intervals.

4.3 AMI Network

The purpose of this section is to understand the AMI network capabilities and operation as well as the equipment used for the network.

1. Describe the types of communications available with your AMI solution, e.g. RF, PLC. Include options for a mixed communication AMI solution.
2. Provide details regarding the metering communication network including types of equipment and backhaul options. Explain the alternative network backhaul options if cellular service is unavailable.
3. Explain the latency of your system for each communication and backhaul option used in your solution.
4. Explain the installation requirements for each type of network equipment, e.g. locations, mounting, height, power, protection from surges/lightning.
5. Describe the network architecture. Include the option of a shared AMI system for all Members. Does the configuration support common collection devices across Members, e.g. neighboring Members?
6. Describe the capacity of your AMI network, e.g. bandwidth, collector/repeater capacity (meters per network device), etc.
7. Describe the network security e.g. encryption, breach identification.
8. Provide an overview of how meters communicate with each type of collection device.
9. Describe how electric and water meters can be read concurrently through the network.
10. Describe how the network solution reaches hard-to-read meters (encumbered by terrain, foliage, etc.) or geographically dispersed meters.
11. Describe how the proposed system is managed over time, e.g. resource skill, training, remote management and maintenance, replacement process.

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12. What service level agreement is supported by your solution and capabilities? Can the solution provide 99% of daily reads every day?
 13. What is the success rate of last gasp messages for outages?
 14. What is the success rate of on-demand meter interrogations or pings?
 15. Provide a preliminary outline describing network solutions for VPPSA Members as a group and then also having each Member as an individual network.
 16. Describe the procedure for AMI network component firmware upgrades.
 17. Explain network disaster recovery processes specific to each proposed solution. Provide details regarding redundancy and failover of collection devices.

4.4 Software

In this section, provide a description of the AMI head end software, tools and software to operate the network and meter data management (MDM) capabilities. In addition, provide the options for implementation of the software and delivery of the solution.

1. Describe the software required to operate the AMI system. Provide product names of all software required for the solution. Include a MDM in your solution; third party solutions are acceptable.
2. Provide an architectural overview of the software solution provided with the AMI system.
3. Identify the software required to operate and troubleshoot the network.
4. Identify the software required to retrieve and manage all meter data.
5. What tools or software are available for field programming, data download and troubleshooting?
6. Does your company offer Meter Data Management (MDM) software?
7. Describe the following functionality and identify the software product performing the function:
 - a) Meter Data Interrogation

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- b) Meter Disconnect/Connect, Pinging
 - c) Meter Data Validation, Estimation and Editing
 - d) Reports
 - e) Analytics
8. Describe how meter reads can be transferred to billing systems, include manual and automated processes.
 9. Describe the options for software delivery including on-premise, hosted, managed services or others.
 10. Can one central system serve all Members but have the data segregated and accessed by the Member owning the data, i.e. multi-tenant database
 11. Can each VPPSA Member have their own separate system?
 12. Describe the advantages and disadvantages of a single central system versus separate systems for each Member.
 13. Has your system been integrated to the following systems and describe the type of integration, e.g. standard API, Multispeak, manual entry:
 - a) SEDC
 - b) NEMRC
 - c) Harris Northstar
 - d) Harris Spectrum
 - e) Harris Select
 - f) MUNIS
 - g) Cogsdale
 - h) Creative Technologies
 - i) mPower
 14. Does your company offer software for customer engagement such as a web portal?
If not, what are your recommendations for a customer portal solution?
 15. Does your company offer software for data analytics?

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16. Does your software provide any mapping or GIS functionality? If so, describe any 3rd party products.
 17. Provide a list of 3rd party products used in your AMI solution. Identify any product that requires a separate license.

4.5 Other Electric Capabilities

The purpose of this section is to understand the additional capabilities supported by the electric AMI solution beyond meter reading. If the solution has capabilities not captured in the questions below, please provide any additional material on those capabilities. Include any third-party solutions or partners that work with the AMI solution or network.

1. Describe your company's offerings for Demand Side Management (DSM).
2. Describe the AMI solution's capability to support Demand Response Programs.
3. Describe your AMI solution support for Home Area Networks (HAN).
4. What protocols are available to support DSM or HAN technologies, e.g. OpenADR, Zigbee, Multispeak?
5. What support does your AMI solution offer for outage management?
6. Describe the AMI solution's support for voltage reduction programs, e.g. CVR, VVR.
7. What support does your AMI solution offer for transformer sizing or transformer load management?
8. Describe the AMI solution's ability to support Distribution Automation.
9. Describe the AMI solution's support for net metering.
10. How does the AMI solution support new customer electric technologies, e.g. electric vehicles, power walls, etc.?
11. Describe methods of exporting data from your system.
12. Are there other functions available and supported by your AMI network e.g. streetlight control, security cameras, active shooter, propane tank monitoring?

13. Is there a customer pre-pay solution integrated with the AMI solution?

4.6 Water System Functionality and Leak Detection

The purpose of this section is to understand the additional capabilities of the water AMI solution beyond meter reading. If the solution has capabilities not captured in the questions below, please provide any additional material on those capabilities. Include any third-party solutions or partners that work with the water AMI solution or network.

1. Describe leak detection features of the meter interface unit using existing meters
2. Describe distribution leak detection device, capabilities, and requirements.
3. Describe system capabilities for district (zone) metering
4. Describe other features available for use with the proposed AMI system such as:
 - a) Pressure loggers
 - b) Water quality monitoring
 - c) Other water system monitoring features

5. BUDGETARY PRICING

VPPSA and its Member utilities are interested in understanding pricing for an advanced metering infrastructure solution. Provide a breakdown of the items listed below, and if necessary, a pricing spreadsheet may be submitted. Provide solution pricing for the following components:

1. Electric Meters: Provide pricing by meter type, form factor or any other price category. Include any price breakpoints based on quantity of meters.
2. Water Meters and Endpoints: Provide pricing by meter type (residential, commercial meters – positive displacement, turbine, magnetic resonance, ultrasonic) and/or any other price category vendor believes appropriate for such project. Separate pricing for radio module(s) shall be provided as well. Include any price breakpoints based on quantity purchases of meters and radio modules.
3. Network Devices: Provide pricing for every type of network device available for the AMI solution. Detail any configuration variations noting price differences.
4. Software pricing must cover the following components:
 - a) AMI head-end system and any software components needed to operate the system.
 - b) Meter Data Management System available from the responding company or partners.
 - c) Describe the delivery options for the software including a hosted service, managed service, on-premise or any other option.
5. Other components: Provide pricing for any add-on products available with your AMI solution.

6. PROJECT PLAN

Present a project plan in the form of a brief outline identifying anticipated work items and milestones along with a timeline or theoretical dates of progress. Include any support required from VPPSA or Member staff. This plan should include a narrative and Gantt chart. Identify any apparent challenges or deviations that may occur due to managing deployment for multiple Member utilities concurrently.