Request for Proposal (RFP)

for an

Advanced Metering System

RFP #440

CONCORD MUNICIPAL LIGHT PLANT

ELECTRIC | BROADBAND | ENERGY MANAGEMENT

Deadline for Submission: January 25, 2022

RFP Dated: November 29, 2021

Contents

1. LEGAL NOTICE

Pursuant to Massachusetts General Laws, Chapter 164, Section 56D, the Concord Municipal Light Plant ("CMLP") is soliciting proposals to procure **An Advanced Metering System ("AMS").** The procurement includes the purchase of electric meters, water radio units and network equipment along with professional services for the AMS network design, integration, testing and troubleshooting, firmware, hosting services, training, as set forth in the Request for Proposals ("RFP"). The procurement does not include the purchase of water meters, meter installation services or construction work.

A Teleconference will be held on December 7, 2021, to provide background on the project and to answer any general questions. All responding vendors are encouraged to participate. Teleconference instructions will be provided to all vendors who have emailed their intent to respond to **AMSResponse@Concordma.gov**.

Six (6) hardcopies of a sealed proposal and **two (2) electronic versions** saved to separate thumb drives marked "Proposal for An Advance Metering System", shall be submitted to the Concord Municipal Light Plant, 1175 Elm St., Concord, MA 01742, ATTN: Ms. Carole Hilton, no later than 3:00 pm (local time) on Tuesday, January 25, 2022, at which time all proposals will be opened by two witnesses. If there are discrepancies between the hard copy and the thumb drive electronic copy, the terms in the hard copy shall prevail.

A copy of the RFP which includes submission instructions, specifications, and standard contract terms may be obtained by contacting **AMSResponse@Concordma.gov**.

CMLP reserves the right to reject any and all proposals, waive informalities or irregularities, modify specifications, negotiate price and contact terms, and award the contract, in whole or in part, as it deems to be in its best interest.

David Wood, Director
Concord Municipal Light Plant

ADV: COMMBuys
Goods and Services
Concord Journal
Lowell Sun
Metrowest Daily News
Concordma.gov website

RFP Package & Specifications

2. INSTRUCTIONS TO VENDORS

Pursuant to M.G.L. c. 164, § 56D, CMLP is soliciting proposals for a complete Advance Metering System ("AMS") solution as described in this Request for Proposals ("RFP"). All proposals **must be submitted in hardcopy and on thumb drives and shall be received by 3:00 PM on Tuesday, January 25, 2022** (reference Section 2.10). CMLP reserves the right to extend the deadline if CMLP determines that it is in the public interest to do so. CMLP will post any changes to the deadline on its website and will notify all registered vendors via email if a deadline is extended. One hardcopy of the proposal containing original signatures and five (5) copies along with two (2) copies of the proposal on separate thumb drives shall be delivered to Concord Municipal Light Department, 1175 Elm St., Concord, MA 01742, ATTN: Ms. Carole Hilton and marked "Proposal for an Advance Metering System Solution." Late proposals will not be accepted. Proposals shall be considered firm offers valid for a period of three hundred and sixty-five (365) calendar days from the submission deadline. Proposals may not be corrected, modified, or withdrawn by the vendor during the three hundred and sixty-five (365) day period.

2.1 Tax Exempt Status

CMLP is a municipal light plant operating pursuant to M.G.L. c. 164. As a department of the Town of Concord, CMLP is exempt from Sales and Use taxes.

2.2 Proposal Requirements

Vendors shall submit six (6) hardcopies and two electronic versions of the complete proposal in Adobe Acrobat (.pdf format). The proposal shall include the vendor's name, business address, contact person, telephone number and email address. The pricing matrix shall be submitted as a separate file using the Excel spreadsheet in Appendix A. with the following:

- Proposals shall address in sufficient detail the proposed AMS solution and shall include all required technical and commercial/pricing information solicited by CMLP and completed and signed forms and certifications in the Appendices.
- Proposal price shall be firm and shall include the purchase of a complete Advance Metering System Solution, freight and delivery charges to the final location, meter and collector installation excepted.
- For the **Advance Metering System**, all components and equipment provided are to be the manufacturer's latest models.
- Equipment warranty information shall be included in the proposal.

2.3 **Performance Bond**

Prior to starting any work, the vendor will be required to provide a Performance Bond in the amount of 100% of the contract price, issued by a Surety Company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to CMLP. The form of the bonds shall be subject to the approval of CMLP. Information is provided in Appendix E.

2.4 **Proposal Submittals**

The following instructions describe the form in which proposals must be submitted.

2.4.1 Submittal Deadline

Proposals will be accepted by CMLP until the submittal deadline specified in Table 1, Section 2.10 or as otherwise may be extended by CMLP as provided herein.

Proposals received after the submittal deadline will not be opened and will be considered void and unacceptable. Hardcopies and thumb drives will be returned unopened. CMLP is not responsible for lateness of the proposal delivery. The date and time of the hardcopy received by CMLP shall be the official record of receipt and not the date and time the proposal is sent. Vendors may deliver hardcopies by hand or by any available means. If delivery will be made in person, please email **AMSResponse@Concordma.gov** ahead of time for instructions.

2.4.2 Format

The electronic versions of the proposal shall be presented in Adobe Acrobat document format (.pdf). The pricing matrix shall be delivered in separate files as a .pdf version and in the Excel file. CMLP, in its discretion, reserves the right to require resubmittal or disregard proposals not reasonably compliant with the prescribed format.

2.4.3 Responses to RFP Requirements

The Vendor shall provide answers to CMLP's inquiries and/or describe its solution's capabilities in sufficient detail. Responses should be provided directly in the RFP immediately below each subsection where information is requested. A Word version of the RFP is being provided to support this request. If it is necessary to provide an answer in a separate document, the Vendor shall clearly identify immediately after the subsection requirement exactly where the information is located and label the attachment with the subsection reference and question.

2.4.4 Form of Proposal

The Proposal shall include the following parts:

- Cover Letter including Contact Information
- Part I: Executive Summary
- Part II: Management Proposal with References
- Part III: Technical Proposal, Sections 4 through 7
- Part IV: Commercial Proposal
- Part V: Appendices
- All proposal forms (Appendix E) shall be signed by a duly authorized individual.

2.4.4.1 Cover Letter and Contact Information

The cover letter shall indicate the legal name and address of the vendor and include a contact person for responding to technical questions and requests for clarification. Please include the name of the contact, title, mailing address, email address and telephone number where the contact person can be reached. The contact person must possess sufficient technical and/or operating knowledge of the item(s) contained in the proposal. The cover letter as well as all forms must be signed by a duly authorized officer of the Vendor with full capacity to bind the Vendor. Contractual responsibility for the proposal shall rest solely with the Vendor.

2.4.4.2 Part I: Executive Summary

Vendors shall concisely summarize, in no more than three (3) pages, the solution proposed, including a high-level block diagram illustrating the major components of the proposed system.

2.4.4.3 Part II: Management Proposal

Briefly introduce your firm, providing a summary of the administration, organization and staffing of your firm, including office locations. Provide an organizational chart indicating the positions and names of the core management team and identify those individuals from all companies who will have responsibility for the AMS solution proposed. Provide resumes for key personnel that will be assigned to this project.

Provide a minimum of three (3) references for projects similar to CMLP. Thoroughly describe the Vendor's experience in the last five years providing completed AMS systems, and

integration services to utilities similar in size and with similar scope to this RFP. Also, include a complete listing of all current/active projects and an estimated completion date for each.

2.4.4.4 Part III: Technical Proposal

The Vendor shall provide point-by-point responses to all requirements found in RFP Sections 4 through 7. In response to Section 4.1, the Vendor shall state compliance to the Mandatory Requirements and in Section 4.2, respond to the Highly Desired Requirements. At a minimum, the technical description shall cover the System Design, Equipment and Software subsystems and shall contain detailed descriptions, general drawings, photographs, or illustrations of the equipment the Vendor proposes to utilize in the proposed design.

A response must follow each technical requirement. The RFP in MS Word format is provided to facilitate the desired question and answer format.

2.4.4.5 Part IV: Commercial Proposal

Vendors shall provide a completed pricing table as found in Appendix A. Pricing tables in an Excel format have been provided. Proposed equipment shall be described by manufacturer and model number.

Recommended spare parts shall be itemized. If a maintenance contract is proposed, the price of this maintenance contract shall be included in the Commercial Proposal and AMS Pricing Table. Hardware quantities in the AMS Pricing Table shall be adjusted, as proposed, to include the spares.

The AMS Pricing Tables must be filled out completely on the form provided with this RFP. The AMS Pricing Table defines further instructions on how to complete the table. *Use of the Pricing Tables is mandatory*. Vendors that do not provide a Commercial Proposal that complies with the requirements may be rejected.

Vendors shall provide a sample contract(s) for the equipment and the scope of work that conforms to the RFP requirements. It is desirable that vendors propose a master agreement that includes and incorporates as attachments terms and conditions and specifications for design, integration, and implementation services, equipment purchases and warranties, software licensing and hosting services, and maintenance and support. Vendors explicitly shall identify any contractual provision which does not conform to the RFP requirements. Vendors shall mark any proposed change to the mandatory requirements of the RFP and provide a reasonably detailed explanation for any proposed changes on the proposal form. Any

conflicting or additional terms provided in the proposal that have not been identified shall be ineffective and shall not be deemed to be accepted by CMLP without its express consent.

Failure to take exception or suggest alternative language to any term, provision, or requirement shall be understood by CMLP as acceptance of that clause. A later attempt by Vendors to take exception may be deemed as negotiation in bad faith. Alternative proposal options, however, may be provided as set forth in Section 2.5 as long as they are clearly identified and marked.

2.4.4.6 Part V: Appendices

Vendors shall include their appendices and any other supporting or reference materials in this part of the proposal, with cross references to the appropriate proposal subsections that the information herein supports. The non-disclosure agreement and all proposal forms shall be executed by a duly authorized individual of the Vendor. The proposal forms and certifications shall be submitted with the proposal. As provided in Section 2.7, the executed non-disclosure agreement shall be submitted as a condition to receiving GIS information from CMLP.

2.5 Proposal Options and Alternatives- Subject to discussion with counsel

This RFP is the basis for the initial screening of proposals by CMLP. Vendors may propose alternative solutions to an RFP requirement. If such alternatives are proposed, it is the Vendor's obligation to clearly identify and explain in detail the proposed alternatives. Vendors must also explain how the proposed alternative will be a suitable working solution to the original RFP requirement.

If a superior product(s) becomes commercially available after the award of the contract, the Vendor may submit such substitute product(s) for CMLP's approval. Such proposed substitutions may be approved if, in the opinion of CMLP, the substitute is equal to or better than the specified products, and the substitution will not delay or necessitate revisions in related work.

2.6 Reimbursements

Nothing contained herein shall create an implied contract and CMLP shall not be liable for proposal preparation expenses or other costs associated with submitting proposals in response to this RFP. CMLP will not reimburse responding Vendors for these expenses, nor pay any subsequent costs associated with the provision of any additional information or presentation, or to procure any contract for these services. CMLP, within its sole discretion, may deviate from or abandon the RFP process at any time without liability for proposal preparation costs or damages of any kind.

2.7 Questions About RFP

A teleconference is scheduled for Tuesday, December 7, 2021 (reference Section 2.10). Details of this call will be provided to all vendors upon receipt of the Response Form provided in Appendix B. Upon receipt of a signed non-disclosure agreement in Appendix C, CMLP will provide GIS data to the Vendor.

To ensure a fair and objective RFP process and evaluation, all questions and inquiries related to this RFP, shall be addressed in writing via email to the contact listed below. The deadline for written questions and inquiries is included in Table 1, Section 2.10. CMLP will have no obligation to answer any inquiry unless it is received prior to the date. All Vendors that inform CMLP of their intention to submit a proposal will receive answers to all questions and the inquirer will not be identified in the process. E-mail requests must be sent to the e-mail address below. All questions must be submitted in the form of a Word document. No telephone or oral questions or inquiries about the RFP process or its content will be considered. Questions must include the requestor's name, address, telephone and facsimile numbers, and the Vendor he/she represents.

Requests for clarification or interpretation must specifically reference the relevant RFP section and requirement number, unless such request is of general application (in which case the request for clarification shall so note). CMLP will send responses to all vendors as referenced Section 2.10.

Prospective vendors shall notify CMLP by email to AMSresponse@Concordma.gov, if they find any discrepancies or omissions in the specifications, or if in doubt as to their meaning. If an explanation is necessary, a reply will be made by an addendum issued to all firms who have received the specifications. CMLP will not give verbal answers to any inquiries regarding the meanings of the specifications.

All requests, questions, or other communications about this RFP shall be made in writing and emailed to the RFP Designated Contact: AMSresponse@Concordma.gov

2.8 Contact with Employee(s)

Other than communications with the RFP Designated Contact, direct contact with CMLP employees or consultants on issues related to this RFP, is expressly prohibited without prior consent. Vendors who directly contact CMLP employees about this RFP risk elimination of their proposal from consideration.

2.9 Project Scope

The project's objective and required elements are outlined in Section 3, An Advanced Metering System Solution. Vendors shall fully address the requirements of this RFP related to the performance of all required work, including site assessment, drawings and document submittals, manufacturing, testing, delivery, and technical support during and after installation of the AMS system.

Vendors are also encouraged to include any additional items that your firm deems necessary and consistent with the intent of the project.

CMLP will perform installation of all network equipment and contract for meter installation services.

2.10 Schedule of Important Dates

The schedule for this RFP and AMS Project is as follows.

Table 1. Procurement Schedule

Time (EST)	Deadline	Process Step
	Monday 11/29/2021	RFP issued to Vendors
1:00 p.m.	Tuesday 12/07/2021	Teleconference for Vendors
	Thursday 12/09/2021	Deadline to submit a signed Non-Disclosure Agreement for receipt of CMLP asset data
	Monday 12/13/2021	Delivery of CMLP asset data to Vendors
	Thursday 1/06/2022	Final RFP questions due from Vendors
	Thursday 01/13/2022	Responses to all RFP questions
3:00 p.m.	Tuesday 1/25/2022	Submittal deadline for proposal
	March, 2022	Notify short list Vendors, Vendor presentations
	March, 2022	Customer reference check, visit to Vendor locations, notify finalist
	April, 2022	Contract negotiations begin

Note: All RFP process milestones, leading up to and including a contract, as well as deployment timeframes, are subject to change.

2.11 **Proposal Evaluation and Contract Award**

CMLP's selection process consists of two phases. The first phase will be to evaluate all compliant proposals, as determined by CMLP, for the purpose of selecting a short list of Vendors. The second phase will include presentations or meetings for product demonstration and proposal clarifications from the short-listed vendors. At CMLP's discretion, CMLP may choose to forego presentations and may award a contract based solely on information supplied in the Vendor's proposal response. The focus of the second phase will be to conduct further due diligence (e.g., site visits with Vendor's customer references, solution/product demonstrations) with the short-listed vendors, if necessary.

Any presentations or demonstrations shall be conducted (at Vendor's sole expense) at CMLP offices or such other location designated by CMLP on a date and time acceptable to the CMLP AMS Evaluation Team. However, CMLP may, in its sole discretion, allow Vendors to conduct presentations virtually. The decision of CMLP shall be final.

Proposals will be evaluated by CMLP, which may include outside consultants and counsel, based on price and non-price factors such as the ability to meet CMLP's specifications and requirements, quality and quantity of changes proposed to proposed terms, demonstrated qualifications and experience and resources to fulfill the obligations under the contract documents, and any other considerations as determined by CMLP to be in its best interests. CMLP shall not be obligated to award the contract to the vendor with the lowest or best price. CMLP reserves the right to request any additional information, accept any proposal in total or in part, waive any informality, irregularity, or deviation, revise specifications, negotiate pricing and contract terms and to reject any or all proposals if deemed in the best interest of CMLP to do so.

CMLP will evaluate proposals using a scoring method that gives the CMLP AMS Evaluation Team insight into the strengths of each proposal relative to CMLP's needs. Criteria to be used in the selection process will include but is not necessarily limited to:

- AMS Technical Attributes
- Vendor Qualifications, Experience and References
- Life Cycle Cost (15-year), including Warranties/Guarantees
- Project Management and Schedule
- Vendor Support Services and Roadmap

This project represents a significant investment and undertaking for CMLP, therefore, warranties and maintenance associated with both products and services will be a key part of the decision-making process.

2.12 **Right to Accept or Reject Proposals**

CMLP reserves the right to accept or reject any or all proposals for any reason at any time. All proposals become the property of CMLP. Causes for rejection of a proposal may include but shall not be limited to the following:

- Failure to deliver proposal before the submittal deadline;
- Failure to use the proposal forms furnished;
- Failure to properly complete the proposal and respond to every requirement;
- Failure to provide a complete proposal;
- Evidence of nonfeasance, misfeasance or malfeasance by Vendors;
- Vendor's current or previous inability to satisfactorily perform work or service under a contract with CMLP;
- Any alteration of the language contained within the RFP or its forms; and/or
- Vendor's failure to limit contact regarding this RFP as defined in Section 2.8.

Proposals submitted may be reviewed and evaluated by any person who is under suitable non-disclosure agreement to CMLP, including non-allied and independent consultants retained by CMLP, now or in the future for the sole purpose of obtaining evaluations of proposals.

2.13 **Vendors Acknowledgement of Process**

By submitting a proposal, the Vendor certifies that it has read and understands this RFP and has full knowledge of the scope, quantity, and quality of the products and services to be furnished, is qualified and able to provide the products and services under the terms and conditions noted, has adhered to the provisions described herein, and has otherwise complied with and understands the consequences of failing to comply with the Vendor's responsibilities set forth in this section.

Should there be any errors, or omissions in the Vendor's response to this RFP, it is the Vendor's responsibility to provide the capability as described in the proposal.

The Vendor shall furnish any additional information as may be required. CMLP reserves the right to investigate the qualifications of Vendors as deemed appropriate.

2.14 **Withdrawal of Proposals**

A Vendor may withdraw its response to the RFP and price proposal by written declaration, provided that the declaration is received by CMLP prior to the submittal deadline. Following withdrawal of its proposal, a Vendor may submit a new proposal, provided that such new proposal is also received by CMLP prior to the submittal deadline.

2.15 **Execution of Contract**

Vendors shall provide a proposed contract(s) with their proposal for all services and equipment to be provided. The proposed contract(s) shall conform to the specifications, requirements, and proposed terms and conditions, or as provided in this RFP, clearly indicate any deviations and the reasons therefor. As noted in Section 2.4.4.5, it is desirable that CMLP enter into a fully integrated agreement that includes and incorporates terms and conditions and specifications for design, integration and implementation services, equipment purchases and warranties, software licensing and hosting services, and maintenance and support. The agreement shall include a detailed scope of work. CMLP may choose to negotiate with the short-listed Vendor(s) whose solution provides the greatest value to CMLP. CMLP has the right to negotiate pricing and terms, to modify or amend with the consent of the vendor any offer prior to acceptance, to waive any informality and/or effect any agreement otherwise, all as CMLP may deem to be in its best interest.

By responding to this RFP, the Vendor further agrees to negotiate in good faith all additional terms and conditions of the Vendor's performance under the contract. Following successful negotiations, the parties shall execute a written agreement. No Agreement shall be binding on CMLP until CMLP obtains internal and management approvals.

3. CMLP BACKGROUND AND OBJECTIVES

The Concord Municipal Light Department (CMLP) is seeking an Advanced Metering Infrastructure (AMS) system to cover 100% of their electric and water service territory. CMLP has approximately 8300 electric customers and 5200 water customers in the Towns of Concord and Acton, MA. CMLP is a not-for-profit municipal public power utility operating pursuant to M.G.L. c. 164.

CMLP seeks to install an AMS solution to automate the electric and water meter reading process and to have more in-depth information on its customers' usage and system usage. AMS will serve as the foundational technology to meet CMLP's future Smart Grid and Smart Water vision and goals, including the following:

- Reduce costs through efficiencies and improve quality of service.
- Empower customers to help manage their energy.
- Provide a technology platform to meet the increased electrification and information needs of its customers.

3.1 RFP Intent

CMLP intends to select an AMS solution that meets or exceeds the requirements outlined in this RFP. The intent of this document is to solicit a detailed proposal that meets the requirements in Sections 4 through 7. Vendors are encouraged to read the RFP completely, understand the needs thoroughly and seek appropriate clarification. Any vendors seeking clarification regarding any information or specifications within this RFP must do so in writing prior to the deadline date and time for RFP questions (see Table 1, Section 2.10) and in accordance with the provisions outlined in the RFP.

3.2 AMS Objectives

In its strategic plan, Concord Municipal Light Plant (CMLP) identified an Advanced Metering System (AMS) for both electric and water metering as an enabling technology to:

- Maintain System Reliability
- Maintain or Increase Customer Satisfaction
- Provide Energy Related Services to as Many Customers as Possible
- Improve Financial Performance
- Reduce Greenhouse Gas Emissions

Concord Municipal Light Plant (CMLP) and Concord Public Works (CPW) plan to replace their existing obsolescing meter systems with a system that will allow two-way communication with customers for improved billing, customer service, and reliability. The Advanced Metering System will also support Town-wide water conservation goals.

CMLP desires to leverage the existing fiber optic network to minimize the duplication of physical infrastructure and to offer a wired solution to those customers who want one.

3.3 Definitions

Terms used throughout this RFP are defined below.

AMS – Advanced Metering System

AMS end-points – AMS Meter, HAN, IHD and optional distribution devices.

AMS Meter – An electric revenue meter that conforms to the specifications of this RFP and communicates to the hosted data center.

AMS Network – The combination of hardware, software, and services that support AMS data and command communication between the AMS Head-End System and the AMS endpoints. The AMS Network may include the backhaul network, MCP's, repeaters, and the communication network to be proposed by vendor.

AMS Provider – This is the manufacturer of the chosen AMS solution.

Backhaul Network - The infrastructure used to connect the AMS Head-End system to the AMS network equipment.

CMLP– Concord Municipal Light Plant

CPW – Concord Public Works

CIS – Customer Information and Billing System

DLC – Direct Load Control

FAN – Field Area Network, local meter communications

FTTH – Fiber to the Home communications

HAN – Home area network

Head-End System (HES) - The system is hardware and software that controls, schedules communication, transmits/receives meter information to and from the utility through the AMS network. Head-End system also accepts/receives information, including upgrade information, and to and from devices and systems on the network as well as to Billing, CIS (and optional OMS, MDMS) systems.

kV – Kilovolt

kVA – Kilovolt-amps

kVAR – Kilovolt-amps-reactive

kW – Kilowatt

MA – Commonwealth of Massachusetts

MCP – Meter Collection Point, a node in the AMS Network that constitutes the transfer point for communication to/from numerous individual meters and other end points to the backhaul network. Also called Collectors or Gateways.

MIU – Meter Interface Unit, the radio communications connected to a water meter

MDMS – Meter Data Management System

OMS – Outage Management System

RFP – Request for Proposal

Service switch – Integrated in the AMS Meter remote disconnect/reconnect switch

TOU – Time-of-Use

Vendor – An entity that is providing a response to this request for proposal.

WAN – Wide Area Network to support the AMS network backhaul.

3.4 About CMLP

Concord Municipal Light Plant (CMLP) is a municipal-owned, public power utility offering electric and broadband Internet service under the direction of the Town Manager. With approximately 110 miles of streets in the service territory, CMLP serves approximately 8,500 meters providing 170,000 Megawatt Hours (MWh).

Customer Type	Electric Customers	Water Customers
Residential	7,166	5,144
Commercial	1,286	485
Totals	**8,452**	**5,629**

CMLP offers Concord Broadband Internet service delivered through a dedicated fiber line right to homes or businesses. Broadband service is currently available to 95% of Concord

residents and many businesses. CMLP offers consistent, guaranteed speeds throughout the day.

CMLP maintains a grid that consists of a Town-owned distribution system with substations, power lines, light poles, and transformers. CMLP operates two electric distribution substations. The substation at Forest Ridge is the primary substation which functions as a gateway for all electricity coming into Concord from Eversource. CMLP has 110 miles of distribution with 56 miles underground. It is not desired to install poles to support AMS equipment in areas with underground distribution.

Concord's water system consists of 6 active groundwater supply wells and one surface water supply, pumping stations, 2 storage reservoirs with 7.5-million-gallon capacity, and approximately 121 miles of water main. Depending on the season, all available production facilities may be called upon to satisfy system demands which fluctuate between 2 million gallons per day (MGD) during the winter months to over 5 MGD in the summer. Concord's public water system is interconnected with Acton and Bedford for emergency backup, if ever needed. To help preserve our limited drinking water resources, Concord has established a vigorous water conservation program including conservation-based rates.

Concord Statistics	
Number of utility customers	Electric (7,165 Residential; 1,287 Non-Residential) Water (5,246 Residential; 405 Non-Residential)
	Broadband (1435 Residential; 121 Non-Residential)
Enterprise software system	National Information Solutions Corporation: Modules used: CIS, ABS, OMS
	ESRI
Billing cycles	Currently 3 monthly billings; water and electric combined billing
Electric distribution system	Service provided by CMLP; two substations with 13- 13.8kV distribution circuits, approximately 5290 poles
Water distribution system	Service provided by the Concord Public Works (CPW)
Broadband distribution system	Service provided by CMLP. 105 miles of fiber optic cable traversing all major roads which is attached to CMLP poles and is partially underground. The fiber optic network is connected to Town administrative buildings, electric substations, Fire Stations, the Police Station and public schools.

CMLP operates as an enterprise fund of Town government and functions under the specific statutory authority contained in Chapter 164 of Massachusetts General Laws. CMLP is

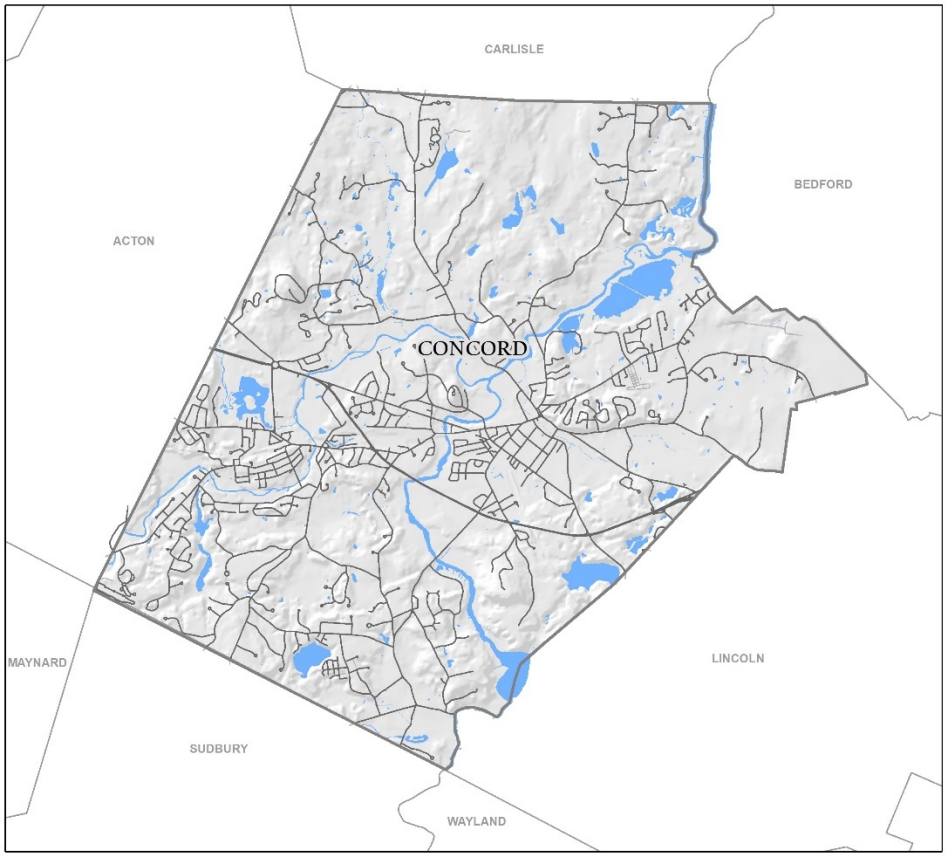
managed under the operational authority of the Town Manager pursuant to Section 9 of the Town Charter and designation in the Light Department Administrative Code as Manager of the Municipal Light Plant. The Town Manager appoints the five-member Light Board, the department head (the CMLP Director) and all CMLP staff. The CMLP Director supervises the department staff and reports to the Town Manager.

All CMLP operating expenses, capital investments, and debt service are paid from electric and broadband revenues. In addition, CMLP contributes to the Town via a Payment-in-Lieu-of Taxes (PILOT). For 2020, this formula-based payment was $478,000.

The Concord website contains information on CMLP's various load control and EV charging programs. Municipal Light Plant | Concord, MA (concordma.gov) More about the AMS project can be found on the website: 2021 Advanced Metering System Project | Concord, MA (concordma.gov).

3.4.1 Service Territory

The Town of Concord, Massachusetts is located approximately 20 miles northwest of Boston with a total area of 25.9 square miles. Concord is an historic town with an older building stock. The territory is dense with trees. CMLP will share a geodatabase (all meter, fiber locations and asset locations) with all proponents upon signing a Non-Disclosure Agreement in Appendix C by the submittal deadline specified in Table 1, Section 2.10



CMLP service territory boundaries.

3.4.2 Current Systems and Meter Reading

CMLP's metering infrastructure is a combination of Advanced metering (AMI) and drive-by collection systems (AMR) with some manual collection when needed. The majority of the meters are currently read by the AMR system. Shown below is the breakdown of AMI vs. AMR.

Metering System	Electric	Water
AMI	1,049	0
AMR	7,403	5,651

CMLP implemented an Advanced Metering Infrastructure (AMI) System in 2010 to support some of the enhanced customer programs such as load control, Net metering, Electric Vehicles (EV), Electric Thermal Storage (ETS) and Heat Pumps (HP). CMLP has installed about 1,049 AMI meters to support customers enrolled in these programs using a load management software system acquired in 2010. This system collects consumption in 15-minute intervals and daily reads, meter events and alarms from these AMI Meters.

In 2019 CMLP deployed an enterprise-wide software solution from the National Information Solutions Cooperative (NISC) that integrates billing and customer service, metering, accounting and outage management. Billing data from the AMI meters are stored in NISC's Customer Information System (CIS). A Meter Data Management (MDM) system was included as part of the NISC software implementation. The NISC MDM system will be available to store more detailed meter data from the future two-way communicating meters. It is in the process of being configured to support a TOU Rates Pilot program and is expected to be fully integrated.

Note: CMLP installs a separate meter for each of the customer programs. A premise may have a residential meter, a net meter, a meter for electric thermal storage, a meter for electric vehicle, etc. Alternately, CMLP offers a TOU rate option if the customer chooses to consolidate all the programs.

The table below identifies the systems in place at CMLP.

Vendor System	Version
Customer Information System (CIS)	NISC IVue 2.5.2
Service Order System	
Outage Management System (OMS)	NISC OMS v 2.5.2
Geographic Information System (GIS)	ESRI ArcGiS 10.5.1

CMLP does not currently have a SCADA (Supervisory Control and Data Acquisition) system. CMLP is interested in AMS functionality that supports SCADA like functions.

3.4.3 Electric Meters

The majority of CMLP's single-phase, residential meters are radio read of various manufacturers, including GE, Itron, Focus, and Landis & Gyr.

In 2010, CMLP installed an AMI system consisting of approximately 800 AMI Meters and fiber-optic cabling using a Zigbee mesh network. CMLP's objectives were as follows:

- Technology Assessment -
    - Field test meters and communications
    - Assess infrastructure needs
    - Effect on business processes
- Solar net metering capability
- Load control capability

An RFP was issued in 2009 for the AMI system and NexGrid was awarded the CMLP implementation.

CMLP installed the new AMI meters at locations with solar generation and/or load-controlled heating and hot water heating. CMLP also hoped to offer load control for thermostats, but physical incompatibilities with the wiring in many older Concord homes prevented the American thermostats supplied by NexGrid from operating with the new meters. More AMI meters have been purchased over time to accommodate more solar generation, changes in load control customers, and to enhance the quality of the partially deployed mesh network. The AMI system is hosted in the cloud by NexGrid's EcoOne product.

The following chart provides a breakdown of the electric meter forms. To meet its business case, CMLP requires meters capable of remote connect and disconnect. Meters used for all new residences are 2S Class 320.

Table 2. Electric Meter Forms & Quantities

Form	Class	Number
1S	100	25
2S	200	6,600
2S	320	500
12S	200	925
3S	20	10
4S	20	100
9S	20	165
16S	200	275
16S	320	100
45S-5S	20	15
Total		**8,715**

3.4.4 Water Meters

CPW deploys approximately 5,600 meters. About 20% of the installed meters are less than five years old, 20% are between five and ten years old, with the remaining 60% over ten years old.

Table 3. Water Meters by Manufacturer

Manufacturer	Number of Meters
AMCO	4
Badger	174
Elster	78
Hersey	2
Invensys	219
Itron	8
Metron-Farnier	2
Neptune	466
Sensus iPerl	293
Sensus Omni	5
Sensus	3905
Zenner	1
Unknown	494
Totals	5651

All meters use Itron endpoints. Most of these endpoints are Itron 60-watt units, with a small number of Itron 40-watt units still in use, with a growing number of Itron 100-watt units.

4. REQUEST FOR PROPOSAL OVERVIEW

CMLP is issuing this RFP to select an electric and water Advanced Meter System (AMS) solution. CMLP requires an AMS solution that allows them to continue to offer innovative and creative solutions to their customers now and in the future. It is a top priority that the chosen AMS solution be positioned to bring about the many economic benefits of on-demand meter reading, outage and leak notification, bi-directional metering for solar integration, time of use (TOU) rates, dynamic pricing, improved system reliability, increased Smart Grid functionality and other emerging requirements.

CMLP acknowledges that some of the vendors receiving this RFP are not electric meter manufacturers and therefore will need to coordinate their efforts with one or more-meter manufacturers to respond to this RFP. Each Vendor will be required to propose, at a minimum, one type of AMS Meter but is encouraged also to propose an alternate meter. The AMS vendor will be responsible for supplying all AMS meters in accordance with the contract terms.

4.1 **Mandatory Requirements**

The following requirements are mandatory minimum requirements identified by CMLP. Respondents are asked to respond and state compliance with each of the following requirements:

1. The Vendor must provide a contractually binding network design covering 100% of CMLP and CPW meters and meeting the service level stated in Section 5.4, AMS Network. Additional network equipment hardware beyond the stated numbers for CMLP's solution needed to meet the service level agreement will be at the respondent's cost. Any additional integration or professional/field services associated with these criteria will be at the respondent's cost.

2. The AMS solution must be hosted, cloud-based residing in a Tier 3 or better data center located in North America with a disaster recovery site in North America.

3. The solution, including all equipment and components must have a fifteen (15) year life with equipment warranties no less than three (3) years from the date of installation.

4.2 Highly Desired Requirements

- AMS Network uses the broadband service to the home for a full wired solution as an option for the customer
- AMS-equipped electronic meters (AMS Meters) for all electric services to include an integrated service switch for Form 2S meters and bidirectional metering capabilities
- Electric meters certified to UL 2735 standards
- Remotely upgradable meters and AMS communications via the AMS Network
- AMS Network communication infrastructure supporting two-way communications, daily meter reading, interval data collection, on-demand communications, and meter notifications, e.g., tamper and outage
- Support of and compliance with Open Standards including Multispeak
- Support for CMLP's existing and new load control, demand response programs and innovative rate structures (TOU)
- Integration to NISC's CIS, MDMS and OMS
- A proven track record of successfully managing and implementing similar projects
- A complete set of documentation and training materials that clearly and accurately describes the installed AMS
- Successful completion of AMS Acceptance Testing after 99.5% of the meters are installed and delivering of register reads and interval data from all meters
- A system performance level which achieves 99.5% of register reads and all interval data from all meters reporting data every day

All requirements listed above must function under the AMS network. Vendors responding to this RFP are expected to propose an AMS solution by which 100% of the electric and water meters will be served.

5. TECHNICAL REQUIREMENTS AND SOLICITATION OF INFORMATION REGARDING PROPOSED AMS SOLUTION

Please answer all questions and provide detail on any specific capabilities of AMS technology in your response. Please show your responses in different font (*e.g.*, bold, italics, color). Attach separate pages as necessary. Identify the section reference and question on all attachments.

5.1 Electric Meter Endpoints

This section defines the functional and technical requirements for the new solid-state electric AMS revenue meters (AMS Meters) that shall be provided as part of the AMS project.

5.1.1 General Meter Requirements

1. Identify the specific makes and models of electric endpoints included in the proposal that support replacing 100% of the meter population shown in Section 3.4.3. Note: actual number of meters ordered will be updated at the time of contract negotiations.
2. Provide a list of all alternative AMS Meters, by make and model, which currently work with the proposed AMS solution. Include a timeline for alternative meter compatibility with the Vendor's AMS solution.
3. If multiple meter hardware options are available, are there functional differences between the various options, in terms of their performance within the AMS network?
4. Identify all form factors with the service switch. If an integrated service switch is not available, provide the timeframes in which integrated service switches will be available on additional meter forms (single & polyphase) and classes. Address the following capabilities:

    a. load side voltage monitoring
    b. cold load pickup or duty cycle monitoring
    c. load limiting programs
    d. "arming" of the meter prior to reconnecting unoccupied buildings
    e. confirmation and logging of disconnect and reconnect events
    f. security and access considerations for remote disconnect capabilities
    g. the number of disconnect/reconnect cycles that the switch is rated to perform at full meter load.

5. Are all meters programmable or configurable? Are all features accessible to CMLP staff both locally and remotely? Identify any inaccessible meter features or meter tables for the AMS vendor. Each meter's programmable features shall be programmed at the

factory for function and display according to specifications that CMLP will provide to the meter manufacturer at time of meter configuration.

6. Describe all electric hardware certifications (e.g., ANSI, NEMA, IEE, FCC, UL2735). Identify any differences in certification by meter type.
7. Identify all quantities and frequencies on all meter forms that the AMS meters are capable of measuring and recording. Which quantities are calculated by the meter, the vendor firmware or via the HES? Include a table which shows the relationship between number of channels, interval length and days of storage in the proposed meters.
8. Describe the capabilities to manage dynamic rates, like time-of-use (TOU).
9. Describe the available options to record either “rolling” or “block” interval demand values. Rolling demand subintervals shall include resolution of five (5) minutes, three (3) minutes, two (2) minutes or one (1) minute.
10. Describe the meter’s capability to support net metering loads.
11. Identify all data captured in the meter logs.
12. Describe the demand (kW) metering functionality of the electric meters and the electronic reset capability. Do the meters include residential demand functionality? Discuss the security provisions to prevent local demand register resets by anyone other than authorized personnel.
13. Describe the abilities of the proposed AMS Meters and the AMS system to provide time-stamped voltage data, maximum and minimum voltage data, sag, and swell events or counts, loss of voltage, etc. Describe the method of measuring voltage, average or RMS. Include how often this data is retrieved from the AMS Meter by the AMS system (real time, daily, scheduled, or on request).
14. Are there any exceptions for all polyphase AMS meters to auto-range when connected to services in the range of 120-480 Volts RMS, ± 20%
15. Describe if power quality functions are running all the time, or how the AMS Meter can be remotely reconfigured to turn on power quality monitoring when needed.

5.1.1.1 Meter Events

1. Provide a list and description of all alerts, events and notifications provided by the AMS meter. Identify all conditions that will trigger an alert.
2. Explain how alerts are generated and communicated within the system, as well as how CMLP personnel are made aware of system alerts.
3. Describe the proposed AMS system’s ability to detect and record electric service continuity data for effective monitoring, analyses, and management of service voltage interruptions and restorations.

4. Explain the delivery of power outage notifications for localized outages versus a large system-wide outage. State the percentage of power outage notifications expected to arrive in the Head-End System for both small, localized outages and large-scale territory wide outages. Describe how the “last gasp” notification occurs or is limited by the loss of power to a Meter Collection Point (MCP). What information can be stored on a meter during an outage event? How long can that information be stored without a power source?
5. Describe how the day/date/time of AMS Meters is maintained in the network. Describe how time keeping is performed and if proposed meters contain clocks. Include the latency of getting AMS Meters time synchronized after an outage and with Daylight Savings time changes.

5.1.1.2 Meter Display and Testing

1. Describe the information available to be displayed on the meter.
    a. Is there an easily interpreted graphic representing the magnitude and direction of energy quantities passing through the meter?
    b. Is there an indicator that shows the status of the service switch? Is it easily recognized, readily interpreted, and clearly visible to an observer viewing the meter?
    c. Is there an easily interpreted indicator showing the status of the meter’s AMS network connection. Describe how this is accomplished. For example, the indicator may show the following states:

        - Network detected – connected
        - Network detected – not connected
        - No network detected
        - Transmitting
        - Receiving

    d. Describe the Test Mode that suspends normal meter operation so that consumption and demand measurements from tests are not recorded in the billing registers and/or interval data. Describe how the Test Mode feature is activated and suspended on each of the proposed models of AMS Meters.
2. Describe the meter nameplate including all applicable meter identification information. This information may include a unique alphanumeric meter ID code (company number) specified by CMLP, the manufacturer’s name, the manufacturer’s serial number, manufacturing date, bar coding, etc. Is customizing the nameplate included in the meter configuration? Provide sample specifications of the file delivered with the meters.

3. Describe the meter testing procedures prior to delivery from the factory that the meter manufacturer uses to certify the accuracy and proper operation of the meter. Any test device used to certify meter accuracy must itself have a clear and documented chain of calibration traceability that begins at an American National Standards Laboratory. A file with meter attribute information and test results is expected to be electronically provided to CMLP prior to every shipment from the manufacturer.
4. Does the meter require any special equipment for shop or field-testing procedures? All standard test equipment may be used for testing in both the field and the shop.
5. Describe the self-test capabilities of all proposed AMS Meters. Each meter shall be able to self-test the condition and validity of its internal functions, its internal components, and its connected electric service. The meter's self-test capabilities shall be operable regardless of whether the meter has been programmed for service and shall not interfere with any of the meter's normal measurement and recording functions. Description of the meter self-test capabilities shall include the following information:

    - Explanation of how self-test results are recorded by the meter.
    - Explanation of how self-test results are presented on the meter display.
    - Explanation of how self-test results are communicated to the Head-End System.

5.1.1.3 Communications and Firmware Management

1. Identify the types of communications supported by the electric meter, i.e. RF, PLC, FTTH. If RF is offered, can CMLP turn off RF? Explain how this is performed.

2. Is a wired only communications option available?

3. Please provide an overview of the field tools for meter installation, maintenance, troubleshooting and field programming. Identify the equipment required for local communications as well as the types of communication supported, e.g. Bluetooth, Wi-Fi, etc.

4. What meter configurations are required to support each type of communication option?

5. Describe the meter's ability to switch communication types. Explain whether the switch is automatic or manual and if needed, the software and hardware required.

6. Explain the communications capabilities to support indoor meter banks?

7. Describe how messages including disconnect/reconnect messages are securely routed and verified between the meter and Head-End System. Include the data logging done by the meter and/or Head-End System that tracks meter commands and their success rate.

8. Describe the conformance with the NEMA SG-AMS 1 – 2009 standard. Clarify the degree to which this capability supports revision of the following.

    - Metrology Firmware Upgrade
    - AMS Applications Firmware Upgrade
    - AMS Communications Firmware Upgrade

9. Describe proposed provisions for multi-level protection of meter programming, information, and control functions in conformance with the current version of NEMA SG-AMS 1.

10. Describe the meters' program security provisions and include the following information:

    - Method of multi-level authentication and authorization over the AMS network.
    - Explanation of how program access and change events are recorded by the meter.

11. Describe the AMS meter's internal memory. Describe how the proposed AMS performs in the event of a communication failure and the AMS meter's ability to store data until communication has been re-established.

5.2 Other Electric Endpoint Requirements

1. Identify any other non-metering electric endpoint in the AMS solution. Provide a functional description for each type.

2. Are these endpoints programmable or configurable? Describe the methods available to configure these endpoints.

3. Describe all electric hardware certifications for each endpoint type (e.g. ANSI, NEMA, IEE, FCC).

4. Describe the meter's capability to support CMLP's existing load control programs, e.g. water heaters, electric thermal storage. Identify the communications capabilities available within the meter, e.g. Zigbee, Wi-Fi. What physical configurations are supported or required, e.g., CMLP has pedestal meters for load control.

5. Identify and describe any other in-home capabilities offered through the electric meter communications.

5.3 **Water Meter Interface Units (MIU)**

1. Identify all the meters and registers that are compatible with the AMS MIUs. Verify that MIUs support reading 100% of the water meter population shown in Table 3. Note: actual number of MIUs to be ordered will be updated at the time of contract negotiations.

2. Provide a table that shows the relationship between datalogging interval and days of storage in the proposed MIU. Describe the options to collect data in varying intervals, such as hourly, 30-minute, 15-minutes, etc.

3. Describe how the day/date/time of AMS MIU is maintained in the network. Describe how time keeping is performed and if proposed meters contain clocks. Include the latency of getting AMS MIU time synchronized after a network outage, firmware updates, and command execution (remote shut off, etc.).

4. Provide a list and description of all alerts, events and notifications provided by the AMS MIU. This should include battery level, wire tamper, reverse flow, register removal, magnetic tamper, leak detection. Which water meter manufacturers allow the support of extended alerts?

5. Describe the use of batteries in proposed AMS MIUs. Describe the expected life of batteries, remote battery monitoring, recommended battery life management, and battery replacement procedures (if applicable). Describe how is the low battery flag triggered, by a time-based calculation or by monitoring voltage?

6. Provide MIU battery life warranty (in years). Describe the conditions of the warranty, such as if On-Demand Reads affect warranty terms, and if so to what extent, Provide details regarding the typical and maximum expected failure rate for the proposed AMS MIUs.

7. Describe the internal memory of the MIU. Describe how the proposed AMS system performs in the event of a communication failure and the AMS Water Meter MIU's ability to store data until communication has been re-established.

8. Describe the MIU's programming security provisions including but not limited to the following information:

    - Method of multi-level authentication and authorization.
    - Explanation of how program access and change events are recorded by the MIU.
    - Explain the MIUs communication options to the AMS network.

9. Describe the local communication software and methods between the AMS Water Meters, MIUs and staff who locally read and/or service the water meter. Explain the provisions for securing communication with the meter via the meter's local communications portal(s) – optical and/or RF.

10. For indoor/basement water meter products, provide:

    - Preferred mounting method of MIU (wall enclosure or flange).
    - Three-wire capability

11. Describe how the MIU is to be connected to the AMS Water Meter register (e.g. splice, connector, etc.).

12. For pit-installed products and manhole water meters, provide:

    - Preferred mounting method.
    - Minimum requirements of the meter pit lid (material construction, maximum thickness, depth of through the lid antenna recess necessary to make the antenna flush with the top of the lid and diameter of hole).
    - Minimum clearance needed between the top of meter to bottom of pit lid.

13. Describe the AMS radio's compatibility with any other non-metering water devices.

5.4 **AMS Network**

CMLP requires an AMS Network that will transport data and commands supporting all proposed AMS functions at all AMS endpoints, in accordance with the functional and performance requirements specified throughout this RFP. Note that Town of Concord, MA offers a broadband service to its customers.

1. Identify the wired and wireless network options for the Wide Area Network (WAN).
2. Identify the wired and wireless network options for the Field Area Network (FAN). How is your system designed (e.g., FTTH, mesh, star, etc.)? Is it possible to have both wired and wireless options?
3. Provide detail and clarification as to how the AMI system will work in underground developments where it may not be practical to install pole mounted hardware or repeaters.
4. Describe the proposed AMS Network and backhaul network that will serve 100% of the AMS endpoints. Provide a network design, in both map and text format, based on CMLP service locations, customer fiber locations, density, topography, and asset locations showing approximate network equipment locations on a map of CMLP's service territory. Meter locations and asset locations are provided in the ESRI shapefile. Use of CMLP's fiber network for backhaul is preferred.
    a. Confirm that two-way communication for messaging and data retrieval is supported. Identify any messages without two-way communication.
    b. For purposes of sizing and configuring the communication elements of the proposed AMS, vendors shall assume the following baseline system activity, and shall ensure that adequate system capacity exists to retrieve and process these data and maintain AMS system performance requirements stated in this RFP:

- On-demand reading requests shall have an average response time of 30 seconds or less at least 90% of the time.
- All polyphase AMS Meters will record, at minimum, six channels of 15-minute interval data, delivered to the AMS Head-End System three or four times per day.
- All single-phase AMS Meters will record four channels of 15-minute interval data, delivered to the AMS Head-End System three or four times per day.
- All polyphase AMS Meters will record 15-minute interval data for average voltage measurement, and event logs of power quality measurements (voltage min/max, frequency, transients, interruptions, harmonics, etc.) delivered to the AMS Head-End System hourly.
- All single-phase AMS Meters will record 15-minute interval data for average voltage measurement, and event logs (voltage, maximum, minimums, sag and swell events or counts, etc.) collected.
- A minimum of 20% of all single-phase meters will receive a disconnect or reconnect message two times per year.
- The AMS Head-End System will send 100 individual control message commands to AMS Meters with an integrated service switch to perform 200 connections a day. The commands will be sent to meters uniformly distributed over the service territory, and will be uniformly spread over the time interval from 8 a.m. to 6 p.m. Each end point will acknowledge promptly each service switch control message received by sending a confirmation message to the AMS Head-End System.
- All AMS Meters will send outage notifications to the Head-End System as they occur. It is expected that outage notifications from a minimum of 80% of meters with outages will successfully reach the Head-End System.
- The Head-End System will provide a daily meter self-test status and service status (power on/off) for all meters.
- The AMS System shall not rely on any collector device as a single point of failure for data retrieval of any specific endpoints. All meters shall have a minimum of two (2) pathways.

5. Describe compliance with IPV6 (Internet Protocol Version 6) and/or a migration path to support forward-looking requirements of CMLP.
6. Describe the network equipment proposed for CMLP. Identify the number of communication slots available for use within the MCP. Describe the failover capability from one backhaul source to the other within the MCP. Is the failover automatic or does it require manual intervention?
7. Provide and explain a calculation that predicts the percent of total usable AMS network communication capacity Vendor expects to be used in the proposed AMS system under the baseline operating conditions described above.
8. Specify the installation requirements for the MCPs. Describe the proposed AMS Network infrastructure devices power supply requirements, weather restrictions, remote antenna

capabilities, and battery backup capabilities. Provide an installation diagram that shows spacing requirements and where the MCP and associated equipment will be placed on the poles or towers.

9. Describe how personnel will perform firmware upgrades (patches) using either the Head-End System or remote meter management software with the AMS Network. Identify whether the vendor or CMLP performs the firmware upgrade.
10. Describe the AMS Meter's capability to sense, reverse, and report unsuccessful firmware replacements. What controls are built into the process to prevent errors? Describe the amount of network capacity and the time that would be required to perform this function in the event that 100% of the AMS Meters need firmware upgrades. How often is a firmware upgrade required?
11. Explain the process of changing the meter configuration on all polyphase meters from measuring 15-minute data to 5-minute data for a one-month period.
12. Does the AMS solution support message prioritization i.e. Quality of Service (QOS)? Can this be managed by the user and if so, explain how.
13. Describe the software tools available for network monitoring. Include the metrics available in the system to determine network health.

5.5 **HES (Head End System)**

1. Describe the AMS Head End System (HES). Identify the various software components of the system. Provide screen shots of the Head-End system dashboard and key screens or reports available from the proposed Head-End system. State the version of all software components to be delivered.
2. Provide a description of the data center hosting the Head-End System.
3. Describe and represent graphically (Visio preferred) the physical and logical architecture of the proposed AMS Head-End System. Describe the firewall, bandwidth, and connectivity requirements from the HES to the hosted data center. The description shall include all hardware, software, data, network elements, and integration interfaces needed to concurrently support production, and disaster recovery instances of the AMS Head-End System. Will any equipment be located at CMLP?
4. Identify all data stored and managed by the Head End System. Is the data persistently available on demand? How much data is stored in the Head End System?

5. Describe how the proposed AMS system ensures that all required customer data, (voltage, power factor, outage status, tamper flags, service connect/disconnect confirmation, etc.) are collected on schedule or in timely manner from each AMS Meter.

6. Describe how the software supports billing data collection to ensure there are no data gaps. Does the system have the capability to backfill missing data? Explain how the software manages this process.
7. Describe the proposed methods for retaining customer data in the AMS Meters and in each type of intermediate AMS storage device proposed by Vendors and utilized between the AMS Meters and the AMS Head-End System.
8. Describe the proposed methods for retaining and managing configuration data for the AMS Meters, in the AMS Head-End System, and in each type of intermediate AMS device proposed by Vendors and utilized between the AMS Meters and the AMS Head-End System.
9. Describe how system management messages are collected, stored, viewed, and purged.
10. How are meter and system alerts communicated to CMLP staff?
11. Does your HES monitor for high/low thresholds that might be triggered by excessive water usage or leaking for water customers and EV charging or voltage problems for electric customers?
12. Describe the HES' role to characterize the difference between the different types of interruption including momentary and sustained, and correctly report back to CMLP's OMS.
13. Provide the disaster recovery provisions for the AMS solution. Include recommended practices and available components (whether included or at extra cost). The chosen vendor will be required to provide detailed procedures for the following:

    - Data protection
    - Configuration protection
    - System recovery & validation
    - Data recovery & validation
    - Application recovery & validation
    - Software configuration files (system, database, application)
    - Network communications

14. Describe the options for backup and archiving (onsite and offsite storage) of AMS data. Describe the storage of archived data and the process for CMLP to access archived data.
15. State and describe compliance with active directory for identification, authentication, and authorization of users and external processes. CMLP is moving to Azure Active Directory.
16. AMS Head-End System shall comply with the following security criteria:

- Security for software running on Windows servers must interoperate with Azure Active Directory
- Full compliance with Sarbanes–Oxley (SOX) and IFRS

17. Provide details of daily procedures to manage meters, collectors, and network. Describe a day-in-the-life of an AMS user at CMLP.
18. How does the HES support grouping of meters for commands and functions to be applied to a group of meters rather than only on individual meters?
19. How does the HES support remote disconnect/reconnect operations? Is this function supported if the meter is read by FTTH?
20. Detail how the HES can identify issues with installations of meters, MCPs, and the network.
21. Provide details of procedures when there is failure of meters, collectors, and network. How does your software help identify aberrations in the data coming back over the network to help CMLP pro-actively fix potential problems?

22. Describe the software capabilities supporting network monitoring and meter paths. Is there a GIS mapping component to network monitoring? What statistics on the network are presented to the user, e.g., RSSI?
23. Detail how the HES is configured and managed over time. How are updates applied and who applies these updates to the HES? How does the HES support firmware management of system devices?
24. Does the HES support long term performance tracking and issue recognition? If so, how long?

5.5.1 AMS Integration

1. Identify Vendor's experience working with the NISC IVue product suite: Meter Data Management, Customer Information System, Outage Management System and Customer Portal.
2. Identify all interfaces required between the proposed AMS and the NISC MDM, CIS and OMS and the CMLP ESRI ArcGIS. Is Multispeak supported by the AMS system? What version of Multispeak is supported with NISC?
3. How does the HES support exporting data to third party systems for analysis? Provide details of how third-party systems (API) can access HES data.

5.5.2 Cybersecurity and Interoperability

1. Describe the data protection and operation security provisions in the AMS Head-End System, AMS Network, AMS Meters, other AMS end-point devices (if any) and communicating customer-premise devices (if any). Explain how said provisions will prevent, detect, and mitigate the impact of unauthorized access to the data and control functions of all intelligent AMS components. Further, in compliance with Sarbanes-Oxley requirements, all AMS data communicated between discrete AMS elements shall be secure and encrypted.
2. Describe the Advanced Encryption Standards (AES) supported by the AMS solution. If AES-256 is not supported, identify any plans to support this level of encryption.
3. Identify the National Institute of Standards and Technology (NIST) Smart Grid standards supported by the AMS solution. Describe how your system adheres to protection and encryption protocols, like those prescribed by NERC or otherwise defined under Mass 201 CMR 17.00.
4. Describe how breaches in security are identified and handled. Have there been any data breaches in the last five years?
5. When was the last security audit performed on the AMS system and the data center?

5.6 **Customer Services and Smart Grid Capabilities**

CMLP is interested in understanding capabilities provided by the AMS solution that go beyond meter reading and meter data collection.

1. Describe AMS system features that support or replace CMLP's load control programs. Is the solution fully integrated with the AMS or is a third-party product required?
2. CMLP is interested in understanding the meter-to-home communication options provided through the AMS solution. Identify and state compliance with any in-home communications standards and methods.
3. Describe how the AMS solution can enhance distribution system monitoring in the absence of a SCADA system.
4. CMLP has a solar net metering program for its customers today. Describe the current capabilities and plans for the proposed AMS to support distributed generation for customers as well as on the distribution grid.
5. Identify the capabilities of the AMS solution to support the identification and measurement of electro technologies such as electric vehicle charging, power walls, etc.

6. Describe the AMS capabilities to support micro grids, increased electrification and potentially, a transactive energy market.

6. SERVICES AND SUPPORT REQUIREMENTS

6.1 Project Management

CMLP requires the vendor to have a proven track record of success managing projects with similar requirements as those defined in this RFP. CMLP will contact references to verify vendor's experience. CMLP reserves the right to interview and approve assignment of Vendors personnel recommended for placement on this project.

1. Describe in full detail the project management support proposed and various levels of optional support available.
2. Provide the vendor's account management approach, including the turnover from presale through post-implementation support.
3. Provide a project plan with a work breakdown structure (WBS), key milestones and deliverables.
4. Describe the planned project status reporting approach, methods and frequency, including the proposed review process and schedule.
5. Describe the tools (including software) to be used to ensure quality, timeliness and performance of the project. The Vendor shall identify recognized industry standards and guidelines to which these tools and methods conform.
6. Describe the organization proposed to both plan and manage the work. Include an organization chart. Vendors will identify by name and provide resumes for the project manager and key individuals who will work as part of this project. CMLP understands that the individuals cited as key personnel will manage the work, and CMLP reserves the right to approve, or not, any personnel substitution.
7. If applicable, describe in detail the specific role and responsibility of each subcontractor in the project plan, including their interactions with CMLP personnel, if applicable.
8. Describe the proposed plan for reacting to schedule slippage if work is not delivered as expected. It is important that CMLP achieves their milestones; therefore, Vendors are expected to manage the work and workers in a proactive manner.
9. Describe the escalation plan for problems or issues that arise during the project. In addition, Vendors will illustrate the described plan with examples of problems (for example, from a previous project) and proposed escalation for difficulties with delivery schedule, hardware quality, software quality, system operation, and subcontractor performance.
10. Describe the inventory management practices and labor staffing practices that will be used to ensure adherence to schedules.

11. Provide a sample project Scope of Work (SOW) identifying the essential tasks and actions of the project. The SOW shall identify the party responsible for each element in a manner that provides CMLP a clear understanding of Vendor's expectations of CMLP during the implementation of the AMS.
12. Provide a description of the work that will be performed on-site, at Vendors or subcontractor locations, and in the field. The Work Plan shall explain any physical space and other logistical requirements. The work plan shall also explain any specific resources required from CMLP.
13. Describe any work or tasks that CMLP might consider undertaking prior to contract signing to expedite implementation activities.
14. Describe the processes for managing the delivery of training for qualified CMLP personnel in the installation, configuration, maintenance, and testing of the AMS hardware and software, as well as any other system components required to properly operate the system to meet the requirements outlined in this RFP.
15. Provide a candid assessment of the areas of project risk identifying and ranking the risks. Include a description of each risk and a discussion of how each risk is to be mitigated. This assessment shall consider organizational impacts to be expected both during and post AMS deployment.

6.2 Training and Documentation

1. At the appropriate times during the AMS deployment, the selected Vendors shall provide detailed training at CMLP facilities for various levels of personnel and contractors who will:
    - Install AMS hardware
    - Operate, administer and integrate the installed system
    - Troubleshoot, diagnose and repair the installed system
    - Use the AMS applications
    - Other areas as required.
2. Describe the methods, tools and training to be provided to ensure effective AMS implementation by CMLP personnel in their respective roles.
3. Describe its proposed resources, curriculum, and methods that will support each type of training provided.
4. Vendors shall provide a sample training plan which shall:
    - Fully address all areas of system functionality and operation
    - Include training outlines for general user and advanced user training
    - Clearly identify learning objectives for each section of the training plan. All training materials shall clearly support the achievement of those objectives.

4. Provide samples of class agendas, training manuals, supplemental materials, and online materials that will be used to provide training as part of the training plan.

5. Identify all documentation provided with the AMS. Provide softcopy samples of the applicable user, administrator, and technical support manuals for each distinct hardware and software element of the proposed AMS.

6. Does the vendor document the AMS as installed including the asset identification, location, product specifications, installed configurations, physical interconnections, and logical interfaces for all hardware, software, and network elements of the AMS and for each interface between the AMS and other CMLP systems, including the methods required for integration?

6.3 System Implementation and Support

1. Provide a description of the support offered for the proposed AMS solution, including the following:
    - Location(s) of support personnel
    - Hours of support
    - Organizational structure of support team(s)
    - Support escalation process (including an organization chart with escalation paths)
    - Support tools used (email/web trouble tickets, general hotline, direct support via dedicated contact, etc.)
2. Regarding support services, describe any priority tiers available (if applicable), as well as the guaranteed response and resolution time for each.
3. Who would be CMLP's primary point of contact for issues after installation is completed?
4. What types of capital reinvestment for CMLP should be anticipated during the life of this project? Specifically, what is the anticipated failure rate of various pieces of hardware and are there expected upgrades that will be required to support system performance?
5. Provide the manufacturing and delivery lead time on all electric meters, water meter interface units, meter collection points and software. Lay out timelines for ordering products and what would be a standard time for product delivery once a purchase order is released.
6. Describe the process of obtaining new electric meters and water meters interface units for your proposed AMS solution after the initial deployment is complete.
7. How are new hardware and software releases migrated into current products once the system is deployed?

8. Provide the following support information (when applicable) for all proposed software components to be provided by Vendors:
    - Describe resources for software technical support services
    - Describe the planned schedule of future software upgrades for each major software component
    - Describe Vendor's policy for "sun-setting" the support for non-current versions of its software
9. If a "Users Group" exists for the proposed AMS, describe the User Group's structure, purpose, and governance. If the Users Group has an informal or formal role in submitting or disseminating software upgrades, that process shall be described. Describe how the Users Group provides input to the product roadmap.
10. Provide the AMS product roadmap for the next three (3) years. Note any significant product changes over that period.

6.4 Quality Assurance and Change Management

1. Provide details (workflow or description) on the company's quality assurance plan or process for the solution, including details on how your company responds to:
    - Service/support related problems
    - Software quality problems
2. Outline how the proposer controls non-conforming products and deals with non-conforming meters and shipments. Unacceptable shipments shall be marked, segregated, and reported.
3. Describe the quality management structure for inspection and sampling of all other components being proposed. Outline how quality will be achieved, controlled, assured, demonstrated, and managed.
4. Describe the frequency of product releases (major and minor), and the suggested way this schedule can be managed by the utility.
5. Provide the recommended upgrade process, testing process, and versioning rollback process.
6. Indicate how many previous versions back are supported by the Proposer.
7. Provide a sample of release notes to understand the quality of this documentation. Provide a sample of the test scripts performed for the release
8. Indicate the product version proposed and when the next versions, major and minor, are expected to be released. Explain backward compatibility and migration from major and minor versions of the solution. Describe the vendor's guarantee for backward compatibility on all product components: meters, network equipment, software, and capabilities?

6.5 System Acceptance

1. The Acceptance Test Plan will include tests to demonstrate the ability of the AMS to perform in accordance with the specifications in the RFP under conditions likely to occur during the operating life of the system. In addition, establish that the Vendor has met all obligations and that the AMS performs as represented. The Acceptance Test Plan will provide rigorous verification of the acceptability of the provided AMS.
2. The Acceptance Tests will be contractually binding between CMLP and the vendor and will establish milestones for the parties. The Vendors will be responsible for organizing and conducting the Acceptance Tests, which will be monitored and witnessed by CMLP. Vendors shall document the Acceptance Test(s), the methods, and the performance parameters demonstrated in the form of an Acceptance Test Plan Report.
3. Details of the Acceptance Test Plan will be negotiated with the selected Vendors and incorporated into the final Contract with CMLP. Formal sign-off accepting each stage must occur prior to proceeding to the next stage. Payment milestones and contract termination clauses may apply to each stage.
4. The Acceptance Tests will occur in stages to identify problems early and to establish confidence for the continuing work and funding. Early tests will demonstrate system viability, compliance with the submitted proposal and validate deployment processes. A Final Acceptance Test will exercise all capabilities of the provided AMS. It will describe any fixtures, contrivances, system modifications or other support elements. It will identify all functions tested in each major step at every stage of the Acceptance Test Plan. It will describe the consequences of test failure, the alternatives available for the AMS provider to remedy failure, and the consequences of subsequent repeated test failures.
5. Provide a sample Acceptance Test Plan that clearly outlines and demonstrates anticipated stages, including number of AMS Meters installed and how the Vendor has verified the success of the AMS to meet the requirements of any previous project. The final Acceptance Test Plan will be developed collaboratively by CMLP and the selected Vendors.

7. COMMERCIAL PROPOSAL

The pricing and terms may be negotiated by CMLP. CMLP anticipates commencing negotiations with the Vendor, as determined by CMLP, based on its ability to meet or exceed all requirements. If an agreement cannot be reached with the first choice CMLP may negotiate with the next Vendor. Provided however, CMLP, in its discretion, may negotiate with multiple short-listed Vendors contemporaneously if CMLP determines that it is in its best interests to do so. The overall cost of ownership over the life of the project will be considered in the selection process, this is a total cost of ownership-based selection process.

As a basis for negotiations, Vendors shall supply a draft contract with its proposal that conforms to the RFP requirements and terms specified in Appendix C, General Terms and Conditions. Vendors may provide separate contracts for software licensing, professional services, equipment purchases, and maintenance, provided the Vendor is responsible for a fully functional and integrated AMS solution. Any conflicting or additional terms provided in the proposal or proposed agreements that have not been identified shall be ineffective and shall not be deemed to be accepted by CMLP without its express consent.

7.1 **Pricing**

Vendors are required to fill out the pricing matrix, CMLP AMS Pricing Table.xls included in Appendix A.

Proposals shall include specific makes, models, warranties, pricing, pricing period, and optional future price protection guarantees for at least one primary AMS Meter and preferably one first alternate AMS Meter. Vendors will describe any stipulations or requirements within this RFP that the proposed AMS Meters cannot meet.

Include the procurement method for each make/model. Vendors shall specify if the AMS Meter will be ordered as one unit or as a separate meter and AMS module. If the meter and module require assembly, vendors shall specify how this will be accomplished. Warranty terms and bounds of responsibility for each of these scenarios shall be provided by the vendors.

Meter warranties shall be no less than three years from the date of installation. MCP (and repeaters) warranties shall be no less than three years from the date of installation. Vendors may provide pricing for optional or extended warranty periods.

Proposals shall not include fuel charges, delivery charges, or any other miscellaneous fees and/or surcharges.

Vendors shall provide a plan to protect CMLP from abnormal failures in excess of 0.5% annually throughout the expected life of the AMS meters.

Vendor's proposal shall provide the following information (when applicable) for each proposed software component to be provided by Vendors:

- One-time cost of license procurement and recurring costs for future license maintenance and version upgrades
- Vendor's policies and procedures for software maintenance and version upgrades
- Description of policy regarding patches and upgrades to third party software components (i.e. Windows)
- Describe any software keys, restrictions of use, or other limitations that may in any way restrict CMLP's full and open use of the AMS

It is critical for CMLP to manage its risks for both product and work through warranties and guarantees offered by Vendors. CMLP will require protection against any defects in materials or other premature failures in software or hardware that may occur as part of this project.

Vendor's proposal shall itemize and estimate all reasonably foreseeable hardware maintenance cost elements according to the hardware infrastructure of the proposed AMS Head-End System (e.g. replacements for failures, batteries, media, etc.).

7.2 Subcontractor Relationships

If the vendor plans to enter into contracts with subcontractors and suppliers to complete the proposed project, the vendor shall provide evidence, upon request, that the third party is under substantially similar obligations of non-disclosure as those that exist between CMLP and the vendor.

The vendor represents to CMLP that the vendor and its subcontractors, suppliers and agents are properly insured, licensed, and qualified to perform the type of Services proposed.

The vendor shall remain entirely responsible for the quality, completeness, and timeliness of the work of its contractors and subcontractors. The vendor shall fully disclose existing legal relationships and any litigation between its subcontractors and their clients or customers, and between the vendor and its clients or customers.

Describe each subcontractor that the vendor proposes to use in this project and the portion of the proposed AMS for which said subcontractor(s) will be responsible.

7.3 Partnership and Alliance Relationships

Describe all (if any) partnerships, alliances, and other strategic relationships the vendor has established with other energy industry participants, including AMS and meter developers and suppliers, distribution automation suppliers, utilities (other than direct sales relationships), software suppliers, and integration and consulting firms.

If the vendor's proposal is successful and leads to a contract with CMLP, failure to timely disclose a relationship which later is found to have materially influenced the course of the CMLP AMS project may constitute a material breach of contract.

7.4 Expertise, Experience, Corporate Attributes

Briefly describe (no more than 2 pages) the expertise, experience, stability, competence, and credibility of your company to ensure the success of CMLP's AMS project.

APPENDIX A – Cost Spreadsheet

CMLP AMS Cost Table.xlsx

APPENDIX B – Proposal Response Form

PROPOSAL FORM

Please complete and return this form stating your intentions to participate in the Vendor Teleconference. Your response will assist us in maintaining a fair and productive solicitation process for this important project.

Name: Title:

Organization:

Phone Number:

Email Address:

Physical Address:

APPENDIX C – Non-Disclosure Agreement

CONFIDENTIALITY%
20AGREEMEN1.docx

APPENDIX D– General Terms and Conditions and Insurance Requirements

CMLP TERMS
CONDITIONS Eff 8-1-18_2018.pdf

APPENDIX E – FORMS AND CERTIFICATIONS

Certificate%20of%20
Non-Collusion.docx

Statement of State
Tax Compliance.docx

PERFORMANCE%20
BOND.doc