

ADVANCED METERING SYSTEM SELECTION



STAKEHOLDER MEETING

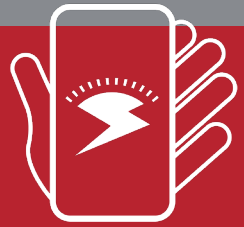
September 22, 2021



CONCORD MUNICIPAL
LIGHT PLANT

ELECTRIC | BROADBAND | ENERGY MANAGEMENT

ADVANCED METERING SYSTEM STAKEHOLDER MEETING: INFORMATION FOR PARTICIPANTS



- Please be advised the meeting will be recorded. The recording will be available on the CMLP website.
- After a brief introductory presentation, we will invite questions and comments from Concord residents. (Residents only, please.)
- If you wish to speak, use the “raise hand” feature during the Q&A session and you will be called on in turn.
- When it is your turn to speak, please state your full name and address. You will have up to two minutes to offer your comment or question.
- In the interest of time, and to enable maximum participation, we must observe the two-minute time limit.
- You may also offer written input through October 1, 2021. Please send email to AskAboutAMS@concordma.gov

AGENDA

Welcome and Introductions

Project overview

Goals

Need and benefits

What customers are saying

The state of technology

Vendor selection

Public input

PANELISTS



- David Wood, Director, CMLP
- Carole Hilton, Customer Service Administrator, CMLP
- Laura Scott, Power Supply & Rates Administrator, CMLP
- Bob Hill, Water Operations Management Analyst, Town of Concord Public Works
- Jackie Lemmerhirt, President, Lemmerhirt Consulting
- Barbara Leary, Consultant, Lemmerhirt Consulting



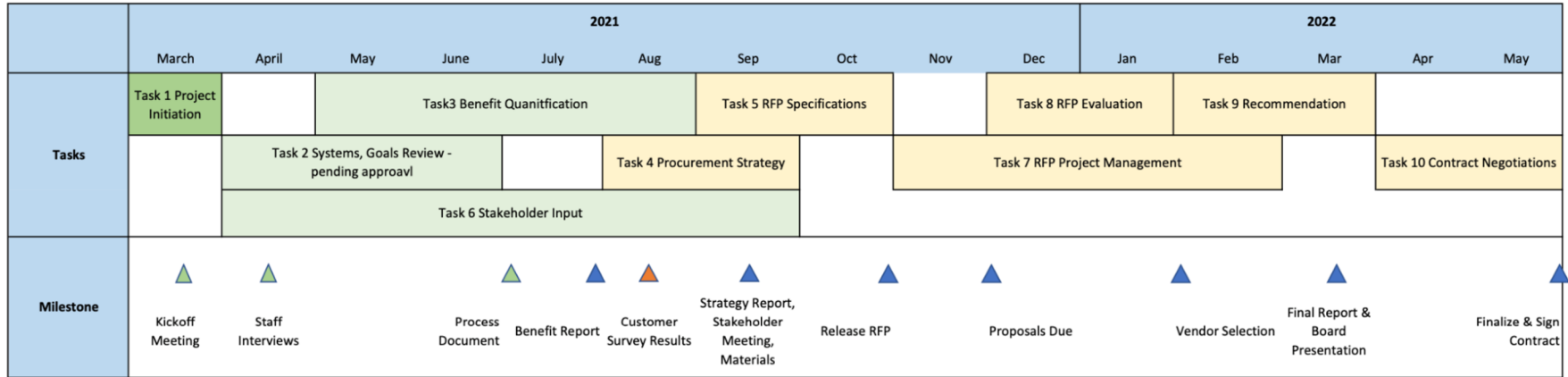
PROJECT OVERVIEW



METER UPGRADE PROJECT STATUS



Metering System Selection - Project Timeline



Task Legend

Completed	In Progress	Pending
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Milestone Legend

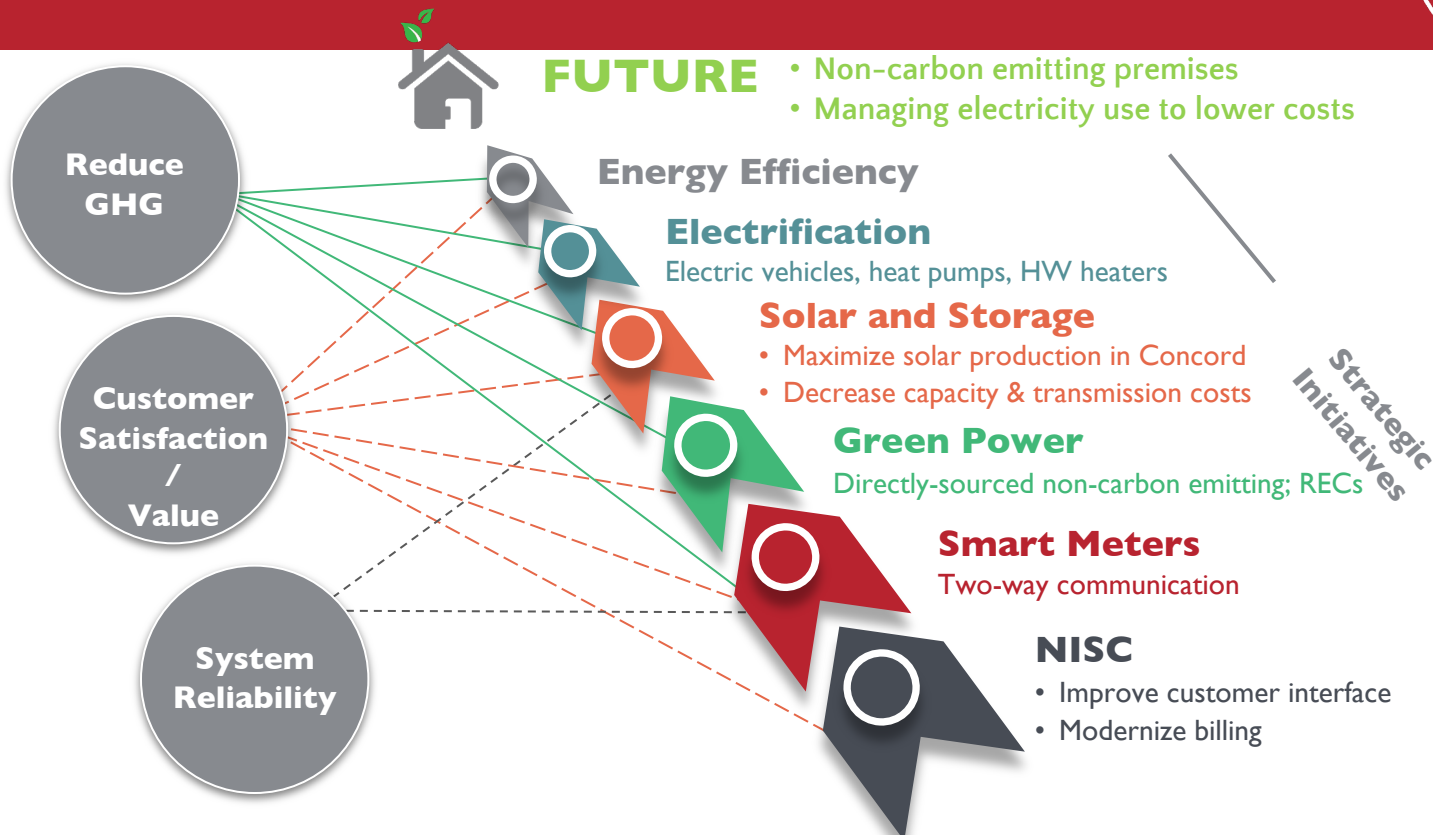
Completed ▲	Due ▲	Outside Vendor ▲
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GOALS



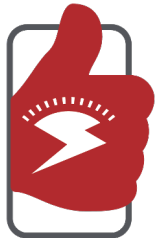
CMLP VISION, GOALS & INITIATIVES



THE NEED FOR A METER UPGRADE



Metering technologies currently in use are outdated and limited



Advanced metering offers compelling benefits for customers and enables significant operational improvements and efficiencies



Automated Meter Reading (AMR / “Drive-by”) system

- First installed in 2007
- Covers approximately 14,000 electric and water meters

Advanced Metering Infrastructure (AMI)

- Installed in 2011
- Covers approximately 1050 meters
- Includes communication endpoints

CURRENT AMR SYSTEM



- **Meters are near end of life (16 years old)**
- **Data transmits constantly but meter reads are only captured once a month for billing**
- **Does not support any CMLP grid operations or customer programs**
- **No path to a modern advanced metering system**
- **Uses high powered technology that broadcasts signals every 7 seconds on average**
 - 1/4 watt per signal / Approximately 8.5 signals per minute / 12,342 signals per day

CURRENT AMI METERS



→ **Technology is not current and is unreliable**

→ **Limited deployment: 1,050 meters**

- AMI meters deployed for solar and load management customers since 2010
- Meter sends 6 signals per day on average
- 1 watt per signal

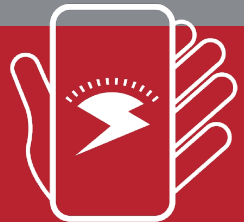




BENEFITS



BENEFITS OF ADVANCED METERING



- **Advanced meters provide a wealth of data** to better use system capacity, transmission and distribution infrastructure, manage outages and identify water issues more efficiently.
- **Devices report how much electricity and water is used and when**, then automatically sends that information over a secure network to the utility.
- **The information is then deployed to improve customer service and operational efficiencies.**

IMPROVED SERVICE RELIABILITY



- Reduce the frequency and duration of outages by allowing CMLP to isolate outages faster and dispatch repair crews more precisely
- Detect equipment in need of repair or replacement to address issues before they lead to outages
- Enable better diagnostics to manage the health of the power grid
- Identify water loss or leaks for customers and in the system

MORE EFFICIENT OPERATIONS



- Reduce meter reading costs
- Reduce trips for move-in/out and collections
- Improve detection of theft and meter tampering
- Support customer programs with a single meter
- Avoid expensive power purchases during peak hours
- Improve employee safety with fewer onsite visits
- Improve vegetation management with more targeted trimming
- Ensure accurate meter readings, especially for water meters, by replacing older, end-of-life meters in the field
- Reduce the need for estimated bills due to inaccessible meters

REDUCED GREENHOUSE GAS EMISSIONS



- Fewer truck rolls
- Decrease distribution losses by right-sizing transformers
- Promote use of solar by enabling net metering
- Encourage expansion of electric vehicles with the option to charge at off-peak rates
- Enhance the value of customer-sited battery storage from time-of-use rates
- Integrate renewables into the power grid safely and efficiently

MORE CUSTOMER CHOICE, CONTROL & CONVENIENCE



- Improve outage notification with up-to-date outage information on a web portal or mobile application
- Provide a self-service portal with detailed electric and water usage data for better insight to manage bills
- Offer alerts for customers for potential high bills, water leaks
- Enable customers to start and stop service at customer-directed dates and times
- Offer direct load control programs to lower customer bills and reduce greenhouse gas emissions
- Enable time-of-use rates to promote equity in rates, energy savings, and encourage use during off-peak periods



WHAT CUSTOMERS ARE SAYING

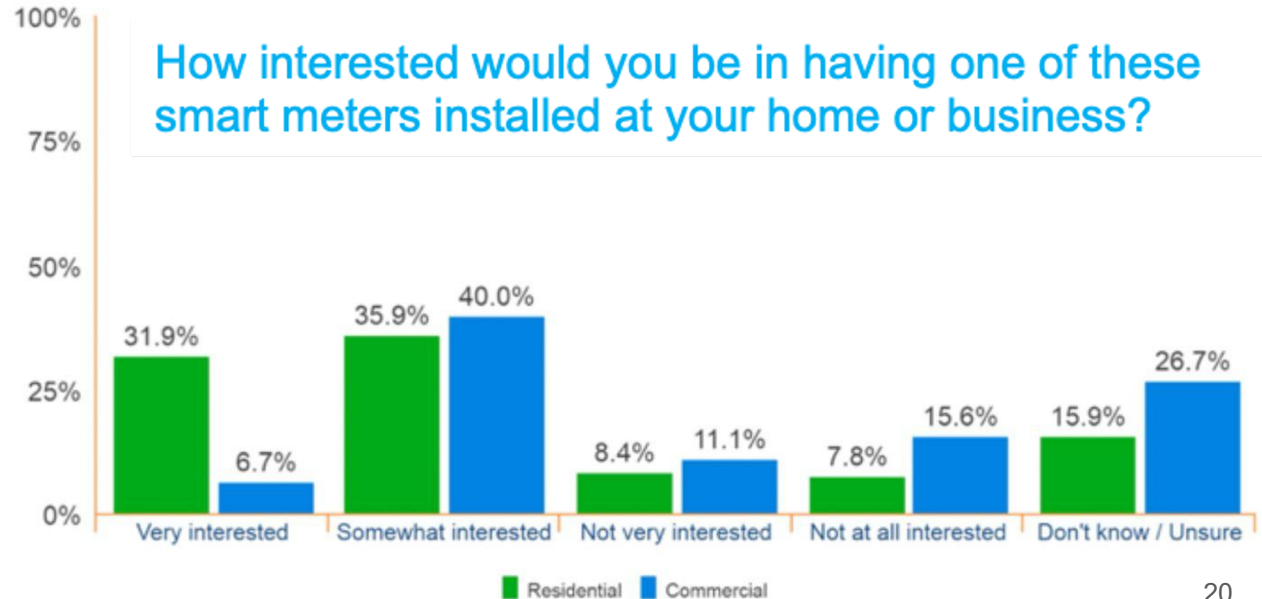


SURVEY: INTEREST IN SMART METERS



After reading a description of the smart meters CMLP intends to install, over two-thirds of surveyed residential customers (67.8%) and nearly one-half of commercial respondents (46.7%) indicated they would be either “very interested” or “somewhat interested” in having one of these smart meters installed at their home or business.

These new meters look like the current meter on your home, but what makes them different is they allow two-way communication between CMLP and its customers. These are digital meters that measure electricity usage frequently throughout the day and they are often called “smart meters.”



SURVEY: RELIABILITY RANKED FIRST



Below is a list of benefits of smart meters. Please indicate how important each is to you using a scale of one to 10 where one is “very important” and ten is “not at all important.” (Total “important” ratings of one to four.)

	Residential	Commercial
The meter will alert CMLP if your power goes out so CMLP can get to work right away restoring your power.	89.1	86.7
You will have access to an online dashboard that will show you your energy usage. You can use this tool to save energy and money.	68.4	55.6
You will be able to start and stop service without needing a visit from a technician and so it can be scheduled at your convenience.	45.1	57.8
You will be able to set bill alerts to notify you when your usage has reached a certain threshold – you set the threshold.	44.1	46.7

SURVEY: EFFICIENCY MATTERS



Below is a list of benefits of smart meters. Please indicate how important each is to you using a scale of one to 10 where one is “very important” and ten is “not at all important.” (Total “important” ratings of one to four.)

	Residential	Commercial
The new metering system will enable CMLP to manage the system more efficiently. This will help to keep costs down and improve reliability.	84.2	77.8
Studies show that consumers are increasingly interested in hybrid and electric vehicles and home solar, and the meter upgrade is necessary to help CMLP plan for and accommodate the additional demand on the electric system.	78.8	64.4
Smart meters are needed to enable time of use rates and other rate plans that can help customers save time and money.	75.0	66.7
CMLP will have fewer trucks on the road, which will help in reducing carbon emissions.	63.4	66.7



THE STATE OF TECHNOLOGY



EMERGING TRENDS SUPPORTED BY ADVANCED METERING



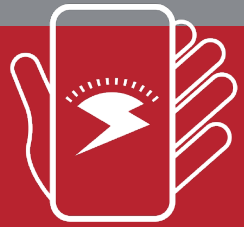
→ **Renewable Energy, Microgrids, Transactive Energy**

- New meters can measure delivered and received energy
- Active researching microgrids, vendors have projects with DOE
- With Distributed Intelligence in the meter, active monitoring and autonomous control of the grid is possible to reflect customer behavior

→ **EVs and other beneficial electrification technologies**

- Monitor, manage load and accurately bill
- Identify loads without needing a separate meter

COMPONENTS OF AN ADVANCED METERING SYSTEM



→ Meters

- Electric meters with two-way communication capabilities
- Water meters with two-way communication capabilities

→ Communications

- Multipurpose networks

→ Software

- Functions to data collection and network monitoring
- Grid Analytics



ELECTRIC METERS

- Metering + two-way communications
- Gathers hourly data from every meter daily or other frequency
- (5-, 15-minute data also available)
- Automates collection of register reads
- Solid State with digital display
- Computing and processing capabilities



- Time of Use Period
- Load Limiting
- Provides alarms and events occurring at the meter
- Service disconnect/connect remotely
- Communicates to a network infrastructure

INTELLIGENT METER APPLICATIONS



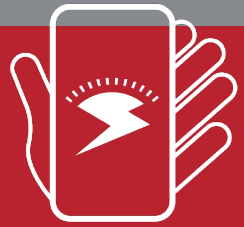
→ Enable a wide range of customer programs and in-home technologies

- Water heaters
- Electric Thermal Storage
- Heat Pumps
- EVs

→ Provide information to better manage the grid

Example: Transformer loading concern in neighborhood with many Evs; able to provide a picture of the neighborhood back to CMLP to manage local resources, improve reliability

WATER COMMUNICATION MODULES



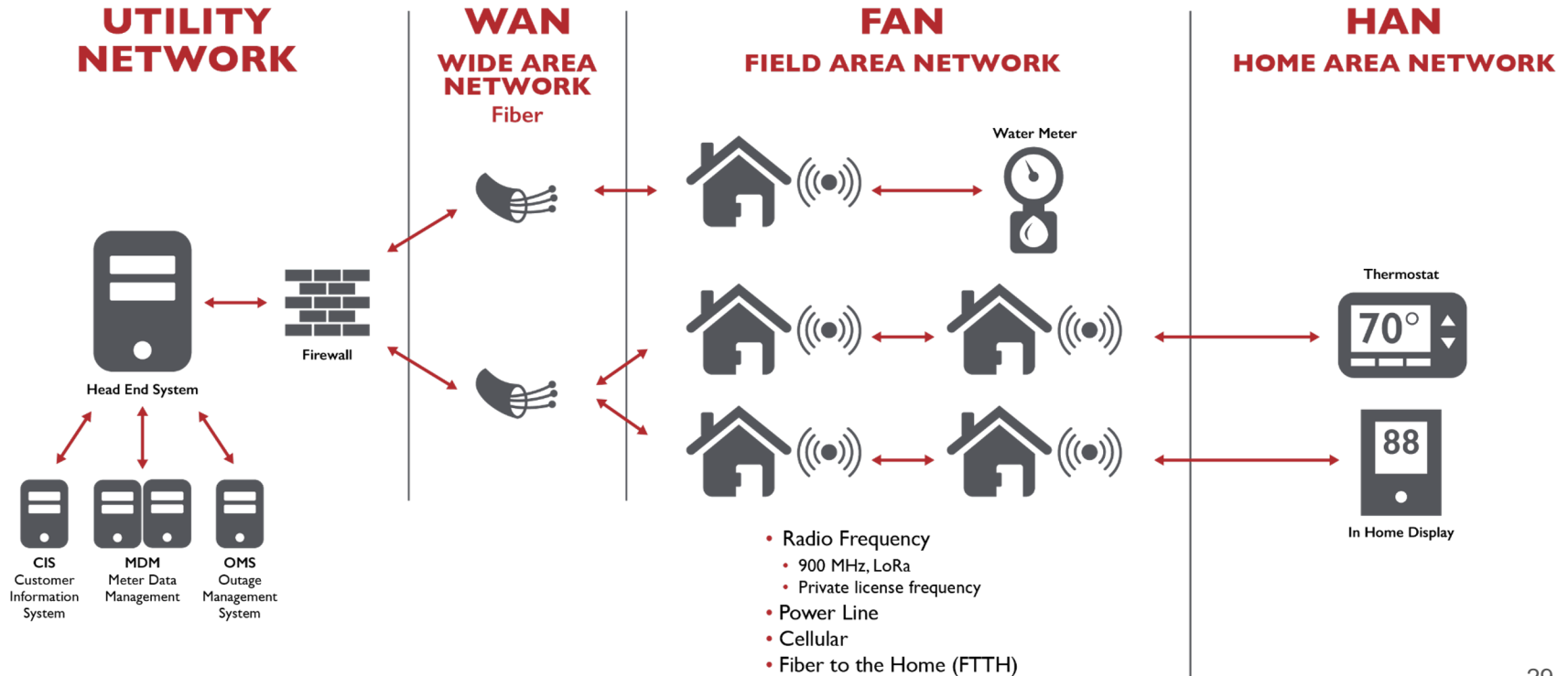
→ **Advanced metering supports water conservation**

- Gathers hourly data daily from every meter for customers to better manage their usage

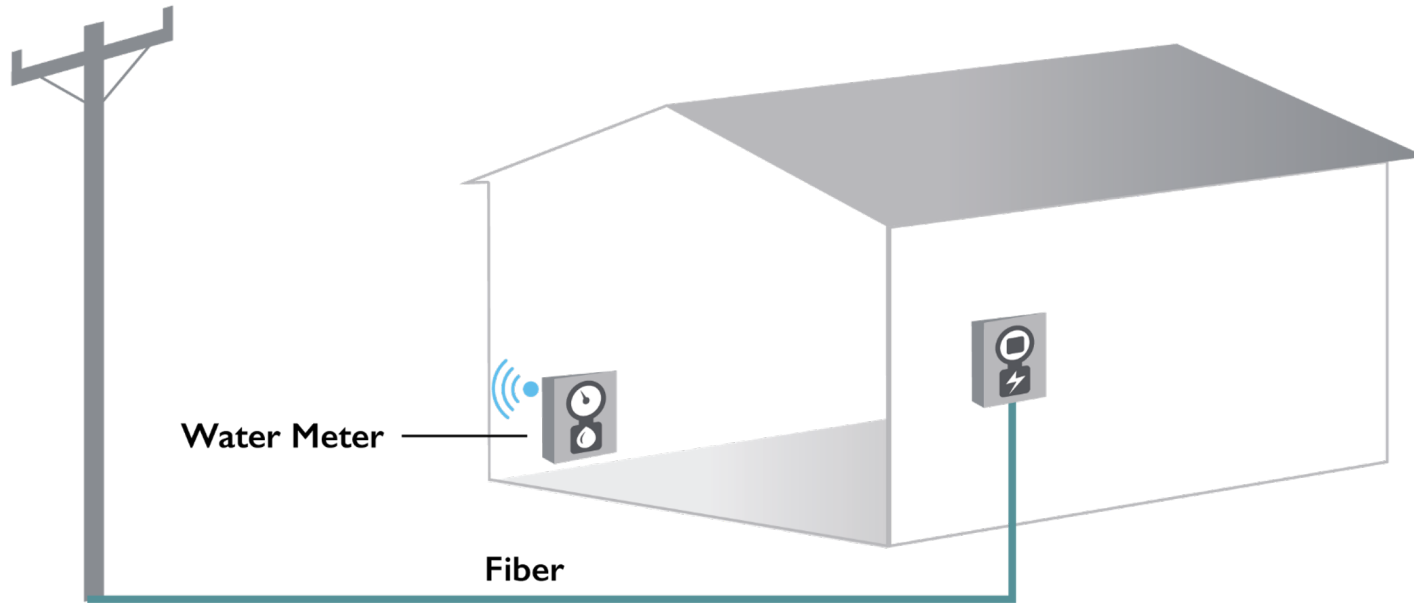
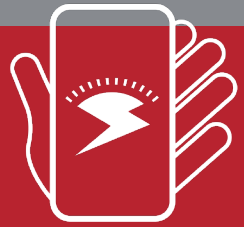
→ **Provides alarms and events occurring at the meter to minimize high water usage and leaks**

- New highly accurate water meters: solid state, ultrasonic meters

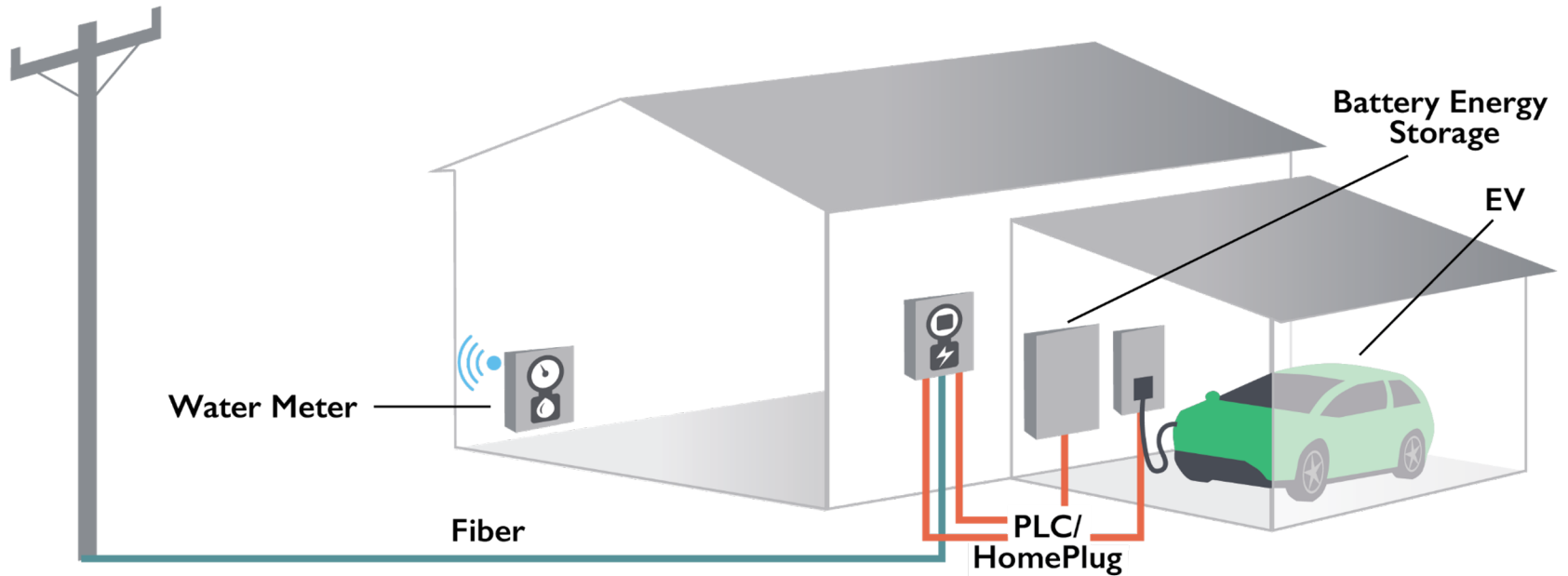
ONE NETWORK, MULTIPLE COMMUNICATION OPTIONS



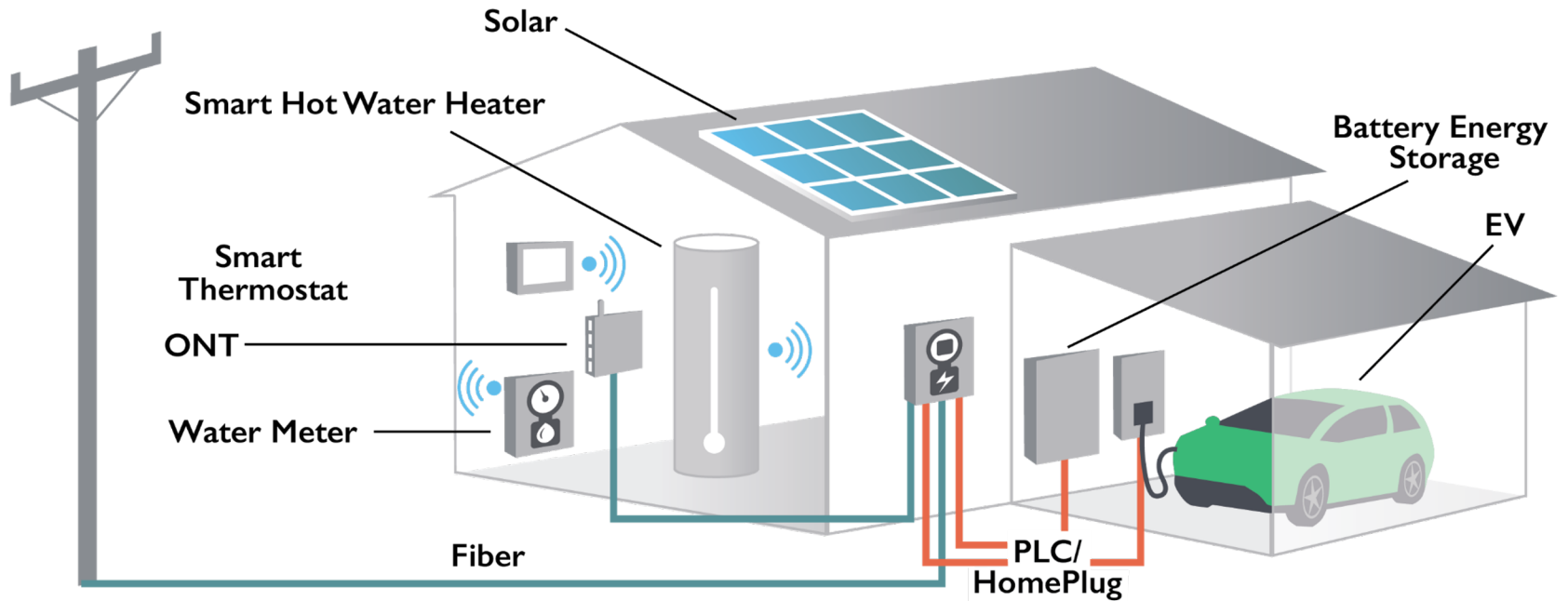
Option: WIRED SOLUTION USING FIBER



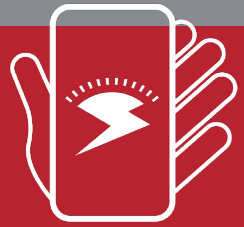
Option: SOLUTION WITH POWER LINE CARRIER



Option: MIXED SOLUTION--WIRED / WIRELESS



SOFTWARE



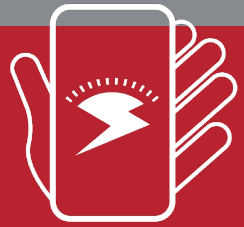
- **Orchestrates 2-way communication to the meters**
 - Interrogates meters
 - Collects and processes all meter data
- **Monitors network performance and all equipment**
- **Manages alerts from the meter, e.g. outage alarms**
- **Provide operational analytics**
- **Integrates data to CMLP systems**
- **Cloud solution is becoming the standard**



VENDOR SELECTION



EVALUATING VENDORS AND SOLUTIONS



- **What communications technologies are supported? Can CMLP have a mixed system?**
- **How does the solution address emerging industry trends? Where does the vendor see the industry heading?**
- **What provisions are in the system to ensure customer data security and data privacy?**

VENDOR SELECTION PROCESS



Requirements Definition	Mandatory Functional Business
RFP Preparation	Technical Pricing Contract
RFP Release	Proposal conference call Respond to vendor questions
Proposal Requirements	Submittal Validation Benefit Alignment Technical Scoring
Vendor Selection	Shortlist Demonstrations Reference Check

THANK YOU

- Concord residents are invited to ask questions or comment.
- Please use the “raise your hand” feature and you will be called on in turn.
- State your full name and address and kindly keep your comment or question to under two minutes.
- You may also offer written input through October 1, 2021. Please send email to AskAboutAMS@concordma.gov