



ADVANCED METERING UPGRADE: Q&A

Purpose

Why is it necessary to upgrade the metering system?

- The current system has served us well, but it's not what Concord needs for the future.
- With increased reliance on electricity to provide space heating, transportation and internet in addition to traditional uses, the reliability of electricity supply has taken on an even greater importance in our lives. CMLP is responsible for planning far into the future and maintaining the power grid so we can continue to provide you with reliable energy at competitive rates.
- The features that the new meters will provide are critical to CMLP achieving its strategic goals, including improving reliability and efficiency, reducing costs and supporting greater customer participation in renewables.
- In addition, the existing meters are nearing their end of life, so doing nothing is not an option.

Benefits

What are the benefits?

- The new metering system will lay the foundation for a wide range of benefits. It offers a lot of capabilities, and how the technology is used can vary widely from one company to another.
- Here in Concord, we're looking at upgrading the metering system as an investment in improving service reliability, improving storm response, and offering customers more choice, control, and convenience in how they use energy.
- Some benefits can be realized soon after the system is fully installed, while others take more time to deliver because they must be integrated with other internal systems. After we choose a solution and vendor, we will be able to share a more detailed timeline.
- While we are still finalizing our plans, what we can tell you now is that we are especially interested in upgrading to:
 - Help identify and diagnose power issues so we can prevent outages and restore power more efficiently when outages do occur
 - Strengthen reliability by giving us better visibility into the health of the power grid
 - Keep customers better informed when outages occur
 - Support growth in electric vehicles and solar energy without jeopardizing reliability
 - Offer customers more flexibility and control over their energy use by giving them access to hourly usage data--no more waiting for a monthly bill to see how much energy they've used
 - The ability to provide customers with rate plans that can help them save energy and money, and reduce their environmental footprint

How have other utilities benefited from smart meter technologies?

- Smart meter technologies are essential to fully realizing the promise of smart energy to improve reliability, encourage energy savings, realize operational efficiencies, and derive environmental benefits.
- Many case studies on smart energy and the benefits of smart meters have been published by the Smart Energy Consumer Collaborative.
- According to a 2016 white paper published by the U.S. Department of Energy, the deployment of smart meter technologies, and the associated costs and benefits, varied widely; however, the value has been demonstrated clearly. See the study here: https://www.energy.gov/sites/prod/files/2016/12/f34/AMI%20Summary%20Report_09-26-16.pdf.

Cost

What is the new system going to cost?

There will be no fees or surcharges added to customers' bills related to the new system. Article 26 of the 2017 Town Meeting authorized up to \$3M in borrowing for the new metering and communication system. The CMLP Board will decide what percentage of the costs will be funded from accumulated depreciation versus borrowing. Depreciation of the capital expense for the new metering and communication system has been factored into future rate estimates.

Will there be a one-time fee or ongoing monthly costs?

No. Customers will not incur any additional costs for the meter upgrade. Customers choosing to opt out of the new meters will incur an ongoing monthly fee.

How do the benefits compare to the costs?

When accounting for improvements to electric and water delivery, including reliability of service, customer service and operational efficiencies, we expect the benefits to be greater than the estimated costs. Precise project costs will not be available until the metering and communication system proposals are received and the solution is chosen.

Will there be a positive cost benefit ratio for the Advanced Metering System?

We expect so, yes. CMLP will be posting an AMS Benefits Analysis providing details on the benefits CMLP expects from AMS.

Understanding advanced metering and smart energy technologies

How would the new metering system be different from the system in use today?

- With the existing system, your electricity usage is read wirelessly once a month by collection devices installed in drive-by vehicles or held by meter readers.
- With the more advanced metering system, that same data would be recorded and transmitted at frequent intervals back to CMLP over a secure two-way communication network.

- The primary difference is in the frequency of the data collection and the two-way communications capability. Together, those two features are what enable such a wide range of improvements in how utilities serve their customers.

How will the new meter system lead to improvements in outage management?

- When integrated with an outage management system, the new meters help utilities restore power more efficiently.
 - The meters send an alert to the utility if the power goes out at a customer's home or business. That means the utility can get to work restoring power right away. The new metering system provides an earlier source of information on outages rather than relying solely on customer calls, giving the utility an earlier advantage on troubleshooting and restoring power.
 - In some cases, the new metering system will also reroute power around trouble spots and automatically restore power after a momentary outage, which can help keep the lights on for more customers when there is a problem.
 - The new metering system also provides better information into the health of the grid and enables utilities to pinpoint and address some issues before they cause outages.

How do “smart” technologies make the grid more reliable?

- Giving utilities better visibility into the health of the power grid, enabling them to address some issues before they lead to outages.
- Diagnosing and locating outages more quickly when they do occur, enabling more efficient restoration.
- Providing more insight into how and when energy is being consumed and use that information to operate more efficiently and provide customers with better service, new energy-saving products and services, and more flexible rate plans.

How can smart grid help expand the use of clean, renewable energy?

- Renewable energy sources such as wind and solar are what we call “variable”—meaning they’re constantly changing. That makes them challenging to manage when they’re connected to the power grid.
- Utilities must be ready to balance electricity supply and demand while maintaining the stability of the grid. By building smart technologies into the grid, CMLP can support greater customer participation in renewables while also improving reliability and efficiency.
- Smart meters make customer-sited solar generation, batteries and electric vehicles more affordable.

What if there is no broadband, are you relying on a mesh network? Is that what you're relying on?

That depends on the solution, and CMLP hasn't yet chosen a solution.

Is CMLP considering Advanced Distribution Management System (ADMS) functionality as part of the Advanced Metering Systems?

CMLP will be considering functionality which supports their goals and benefits. There are ADMS capabilities such as voltage monitoring that support CMLP benefits.

How much energy do wireless networks consume?

The network gateways supporting the collection of data in the Wide Area Network require a power source. Gateways typically have a voltage range of 120 to 240 VAC and consume less than 10W of power. The number of gateways in the AMS will be determined once a system is selected.

Security and Data Privacy

What protects the data?

- No private, customer-identifying information is collected or transmitted across the network. CMLP adheres to strict data privacy policies, and that will not change.
- The energy usage collected by smart meters is encrypted (coded) before being sent over a secure network to CMLP.
- Cyber security is a mandatory requirement of all our systems, from end to end. Before the implementation of the system, all components will be reviewed following strict cyber security criteria and will be continuously monitored for any potential issues by our security team.
- Protecting customer data is a top priority for CMLP; multiple layers of security are incorporated throughout the system.

What do the meters record and in what detail?

The data collected by smart meters would be the same data that is collected from the meters that are being replaced—the amount of energy used at the residence or business, along with the meter number—at greater frequency. The information is then encrypted (coded) and sent over a secure network.

How will CMLP use the data?

- The data will be used for billing and operational purposes—essentially the same way we use data today. The difference lies in having more frequent usage data that will provide deeper insight into the demand on the system in near-real time and the health of our infrastructure.
- The ability of the meters to communicate back to CMLP in near real-time allows us to see where there are problems on the system, manage voltage (which can save energy) and control load for customer requested services.

Who can access the data?

- CMLP collects customer data to manage accounts, operate the electrical grid, provide customers with current and new services, and conduct business.

- Data provided through your smart meter will only be used to manage your CMLP account and the electrical grid. It will not be sold, traded, or provided to a third party in any other way.

With whom is the data shared?

- CMLP uses the data to manage accounts, operate the electrical grid, provide customers with current and new services, and conduct business.
- Data provided through your smart meter will be handled in the same way your usage data is handled now. It will only be used to manage your CMLP account and the electrical grid. It will not be sold, traded, or provided to a third party in any other way.

Autonomy

Will you dial back my electricity usage without my consent?

No. The only time CMLP will control the flow of electricity is when customers have specifically asked and authorized CMLP to do so. The load control services, such as controlled water heating, electric thermal storage and electric vehicles, will be 100% voluntary programs.

Health and Safety

- All meters used by CMLP must fully comply with Federal Communications Commission (FCC) health and safety standards.
- Smart meters emit radio frequency signals far lower than the levels permitted by the FCC.
- Like CMLP's existing meters, smart meters operate over a very low radio frequency (RF).
- In fact, people are exposed to far lower levels of RF from utility meters than from many other electronic devices used in everyday life, such as cell phones.
- For more information:
 - [Radio Frequency and Smart Meters](#) (Smart Energy Consumer Collaborative)
 - [About Smart Meters](#) (American Cancer Society)
 - [Radio-Frequency Exposure Levels from Smart Meters](#) (Electric Power Research Institute)

Can the new system be operated without wireless data transfer?

Not entirely. There are several wired options for advanced metering systems including fiber optic cable and power line communications; however, all solutions require some wireless transmission.

How are you planning to protect people who live near large meter banks in multifamily buildings, and what I would encourage is that you look at either direct wiring those buildings to get through data or providing shielding for the tenants.

We will be asking prospective vendors to provide information about their proposed solutions and radio frequency and will consider the possibility of direct wiring where it is feasible. We will be able to share more information when we have chosen a solution.

Miscellaneous

What are the downsides?

- Smart meters are a proven technology that have been in use for more than a decade and, because of their many benefits, they have become the industry standard in North America.
- About 75 [percent of American households are served by smart meters](#), according to the Institute for Electric Innovation.
- Therefore, CMLP will be able to apply lessons learned by other utilities who have already upgraded to smart meters.
- There is a learning curve for our staff, but we are excited about the efficiencies the upgrade will bring to the work we perform for our customers.
- It's CMLP's responsibility to choose a metering solution that best serves the needs of its customers, and we intend to upgrade to a system that will lay the foundation for a wide range of customer benefits while enabling us to operate the system more efficiently and reliably.

Will there be a reduction in staff because of the new meters?

A staff reduction is not the driving force behind the move to a new metering and communication system. Nevertheless, CMLP estimates it will be able to eliminate 1 full-time equivalent over a two to five-year period by moving to the new system.

Will smart meters be available in apartments and condos?

Yes. The new meters will be installed at every location where CMLP has a meter now.

What is the relationship between solar panels and a smart meter?

- They're two different technologies with different functions.
- Solar panels generate energy from the sun for use by the homeowner or business as a renewable resource.
- Smart meters measure electricity usage and communicate it back to the utility. Smart meters are used in net energy metering to measure how much energy the solar system is generating and returning to the power grid.
- A smart meter is required to take advantage of CMLP's Net Metering with Banking Rate, which makes solar more affordable.

Do the new meters support net metering?

- Yes. A smart meter is required to perform the measurements than enable solar customers to net meter. Net metering is a type of rate that makes solar more affordable.

- CMLP has about 1,000 smart meters in the field already that allow solar customers to net meter and enable load control services for those customers who want them. That equipment is reaching its end of life. In the last two years CMLP has experienced very significant issues with the existing smart meter system that left customers without heat and hot water. We cannot continue to rely upon the existing infrastructure. We need a new smart metering system to continue to provide advantageous solar rates and load control services.

Will CMLP still be able to provide load control service for hot water heaters, electric thermal storage units, electric vehicles, etc.?

Yes. The ability for CMLP to remotely control the flow of electricity to customers who want this service is a required specification in the Request for Proposal for the new smart meter system.

Will smart meters interfere with cell phone service?

No. Smart meters communicate over a different network and don't interfere with mobile phones.

Why can't CMLP finish undergrounding the electric system before thinking about installing new meters?

- CMLP has joint ownership of the utility poles in our service territory. When CMLP converts the electric distribution system from overhead to underground it is done in coordination with other Town Departments and the other utilities located on the utility poles.
- CMLP's conversion expenditure is limited to the amount of funds collected to date from the 1.5% surcharge on the customer bills. The revenue collected from the surcharge can only be used for underground conversion per MGL 166. It takes approximately three years to collect enough revenue to convert one mile of roadway.
- Meters on the other hand can be funded from a borrowing or from the CMLP depreciation fund. A meter replacement project only requires coordination with another Town Department rather than with other private utility companies. CMLP has complete discretion to change meters when there is a need or a business case to do so.

Will the new system be used to identify people who consume energy poorly and treat them differently?

Certainly not. Our job is to provide our customers with the energy they need when they need it--not to judge them.

Do you plan to introduce new rates based on time of usage?

- Yes, this is something our customers have asked for.
- The new meters will measure electricity use frequently throughout the day, enabling pricing plans that more closely reflect the cost of energy at times of peak and off-peak usage, so the price of the electricity will be different for different times of day.

- The new rate will be structured to collect the same amount of total revenue that the current rate does.
- If a customer uses the residential class average amount of peak energy, their rate will neither increase nor decrease.
- Customers who tend to use more energy at peak usage times might see an increase in cost.
- Likewise, those customers who tend to use less energy during peak times are likely to see a decrease in cost.
- In this way, a time-of-use rate more fairly allocates the cost of providing electricity.

Considering the most recent Broadband outage, does CMLP have the expertise to manage the complexity of a smart meter system?

- Yes. CMLP has been managing the procurement, installation and management of meters and their communication systems for over 100 years. Meter management is a core competency.
- CMLP has had 1,000 smart meters in the field generating meter reads every 15 minutes for the last 13 years.
- In addition, CMLP acquired and installed a meter data management system to warehouse and manipulate the new meter data when the enterprise-wide software system was implemented in 2019. The data coming from the new meters will already be fully integrated into the existing billing, customer, and outage management system.

I need more information – user specs, network topology, etc.

More information will be available when CMLP has selected a solution and vendor.

Where can I get more information about this project?

CMLP established the AskAboutAMS@concordma.gov email for customers to submit their specific questions about this project and the new metering system.

Before the town installs new meters, each resident should be informed of Concord's opt-out policy that allows a non-emitting meter.

Concord residents who do not want a smart meter will be able to choose an alternative. We will communicate the alternative after a solution has been chosen.

How long do you think the rollout will take once you've selected a system and you start swapping out meters?

Once CMLP receives meters, it will take 6 to 12 months to complete the installations. We will update the timeline once a solution has been chosen and the project plan finalized.

When the new meter is hooked up, what additional work needs to be performed at the homeowner's expense?

There will be no added cost or surcharge for the meter installation, nor will customers need to have additional work done at their expense for the new meter to be activated.

Does CMLP have a community education plan to help residents better assess their energy use and make more informed choices?

CMLP will provide customers with information on how to take full advantage of the exciting new features and benefits that they will have access to after we upgrade to advanced meters.