5 critical steps to take on your utility's AMI 2.0 journey

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July 26, 2023

Utilities are starting to upgrade existing advanced metering infrastructure (AMI) systems with the next generation of AMI systems, also known as AMI 2.0. These legacy systems are either approaching the end of life or simply not providing all desired functionality.

AMI 2.0 isn't just about the meters and software. It includes far-reaching goals to:

- Enhance the customer experience
- Use data to make wiser operating decisions
- Meet ever-increasing environmental expectations and requirements

In this blog post, we explore what AMI 2.0 is (and isn't!) and summarize the five steps you should consider as your utility embarks on its AMI 2.0 journey.

The next generation of AMI is calling. Is your utility ready to answer?

With AMI 2.0, utility operations benefit from the availability of more-frequent usage information—5-minute,

15-minute, or shorter versus hourly interval data. And increased computing capability within the meter can provide important power quality information to operate an electric system more efficiently with fewer potential power interruptions. From a water perspective, AMI 2.0 meters can deliver pressure and temperature information that can avert leaks and reduce strain on aging distribution infrastructure.

With AMI 2.0, utilities can get:

- Metering with digital meters that are more accurate, can read at lower resolutions, and include more-powerful computing capabilities
- AMI communication networks that transmit more data from the meters, faster and more frequently
- AMI software systems that provide an improved user experience and can be more easily integrated with other utility systems to make sure AMI data gets to the right systems at the right time to provide better overall operations efficiency and customer service

The AMI 2.0 journey in five steps

The steps a utility should take in implementing an AMI 2.0 system are similar to those they took when implementing a first-generation AMI system, with some subtle yet important differences. Here are the five implementation steps, along with the differences from earlier implementations for each step.

Assessment

First and foremost, utilities must perform an analysis to determine whether they should embark on an AMI 2.0 journey or remain with their current system. Part of this decision may be based on the failure rate of current system components. If the system isn't experiencing significant failures, the change will likely be driven by the increased benefits of AMI 2.0.

For AMI 1.0, many of the business cases were fairly simple, justifying the move forward through savings in meter-reading costs. However, with those savings already captured, an AMI 2.0 assessment might require a more detailed analysis of the additional use cases an AMI 2.0 system will enable. These include:

- Improvements in the amount and transmission rate of data
- Edge computing capability within the meter
- Sharing the AMI data with other systems like outage management and supervisory control and data acquisition (SCADA)

To assess these use cases, we're seeing utilities turn to vendors to provide demonstrations of their capabilities. This enables the utility to better understand different vendor offerings ahead of the formal procurement process. Once the specific use cases and benefits have been identified, it's important to provide a value on these improvements in terms of dollars to compare that value against the cost of a new system.

Vendor selection and contract negotiation

Once a utility has decided to move forward with AMI 2.0, it's vital to pick the right vendor. There may be some advantages to using the same vendor that deployed and supported the AMI 1.0 system (from a familiarity, both personally and technically). But you should make sure that the vendor's technology and support of that technology align with the needs and expectations of the AMI 2.0 system.

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Requirements development will be extremely important to define the system's needs during this stage. Many utilities are realizing that the first-generation mesh networks they deployed in AMI 1.0 won't meet their new functionality requirements in an AMI 2.0 system.

Another trend that has emerged as AMI procurement has progressed over the years is a move toward a single turn-key approach versus having separate contracts for meters, the system, and installation.

Cloud computing has also progressed significantly since systems were initially installed. So, many utilities are now looking for software-as-a-service or network-as-a-service agreements as part of their contracts. This must be factored into a successful contract negotiation process to make sure the contract supports the ongoing vendor relationship.

Implementation planning

Because many of the first-generation AMI systems are mesh networks, implementation planning is critical to success. Utilities want to be able to maintain their current systems and the data coming from those systems while installing replacement AMI 2.0 systems.

This can be tricky with a mesh network. It's important to deploy the AMI 2.0 communications network ahead of the meters to provide flexibility in meter deployment. This is easily accomplished when choosing an already available cellular network, but it should be in place of whatever network is used. From there, we believe an approach based on the following four steps will best serve utilities' needs:

1. Define the migration's business goals, objectives, and constraints
2. Run current-state performance benchmarks (service level agreememts, problem areas or meters, number of mesh hops or meters talking to a single collector, etc.)
3. Research tools available to mitigate breaking the mesh for the current AMI technology
4. Build a meter exchange and mitigation plan based on the goals, objectives, constraints, and assets

One of the main purposes of a good AMI 2.0 system is to integrate seamlessly with legacy utility systems to provide AMI data where it's needed to support efficient operations. A strong solutions architecture plan

developed up front provides the cleanest and most efficient path to the development of seamless integrations.

Other important considerations during the implementation planning phase involve the people and process aspects of the project. Communication—both internally and with customers and other stakeholders—is key. Since these projects cross silos between operations, customer service, and other utility departments, it's important to ensure everyone is on the same page as the project progresses. Check out the recent E Source blog post 5 tips for an effective communication strategy for guidance.

Initial phase implementation and testing

As you execute the implementation plan, it's important to start with a small deployment of meters to test AMI system functionality and integration between systems and to verify the proper implementation of any business process changes.

> **Because the main purpose of the AMI 2.0 deployment is to take advantage of advanced functionality, testing that functionality is all the more important to make sure you can capture the benefits.**

This is best done with a small group of meters installed in what we refer to as an initial deployment area (IDA). It's important to choose the meters within the IDA to test all functionality of the system by deploying all of the different meter types and sizes.

It may also be beneficial to test the system and network communications by placing meters in hard-to-reach areas to make sure data is getting passed effectively between the meter and the head-end system. Because the main purpose of the AMI 2.0 deployment is to take advantage of advanced functionality, testing that functionality is all the more important to make sure you can capture the benefits.

Full deployment

Once testing is complete, you're ready for full deployment. Approach full deployment carefully to make sure your AMI 1.0 system remains functional while you deploy the AMI 2.0 system. Issues with mesh breaks in the old system should be addressed immediately.

For some systems, the meters haven't been visited in the field since the installation of the AMI 1.0 system, so it's essential to have a field inspection plan in place along with plans for corrective actions should safety, theft, or simply poor conditions exist at meter locations.

Often, because of the utility experience as well as the efficiency of meter installation crews, deployment can proceed at a faster rate than was seen in the first-generation installation.

How can we help?

E Source stands ready to support you in your AMI 2.0 journey. Our team of consultants has the skills and resources to address all aspects of an AMI 2.0 implementation project—from initial assessment and business case development, through procurement, planning, testing, and full deployment. Contact us today to learn how you can start receiving the added benefits that an AMI 2.0 system can provide.
