



Anterix[®]

Improving Grid Edge Communications, Efficiency and Control

Successful evolution to AMI 2.0

Meter technology is advancing, transforming meters into grid sensors—a network of powerful intelligent grid edge computing devices that can run many applications, execute complex calculations at the edge, and control energy devices in real time.

The first generation of advanced metering infrastructure (AMI 1.0) solutions, introduced more than a decade ago, provided utilities with access to more data, enabling new and expanded services for customers and improving resilience and operations. With AMI in place, the backbone infrastructure for the smart meter network was created—opening up the potential to address the increasing need for bandwidth, higher reliability, and better security, all while reducing operational costs.

With meter vendors predicting accelerating growth in megabytes per meter per month, the additional data processing and functionality enabled by AMI 2.0 can help utilities as they build a more resilient grid with a reduced carbon footprint. AMI 2.0 brings enhanced technology to the edge and promises greater control and efficiencies for both consumers and utilities. These technologies can empower customers with greater insights and transparency over their energy usage and costs. For utilities, improved operational efficiency, real time data-driven decision-making, integration of more renewables, and greater customer engagement are among the benefits. Achieving all these requires a reliable and scalable communications network to collect and utilize a broader set of available data.

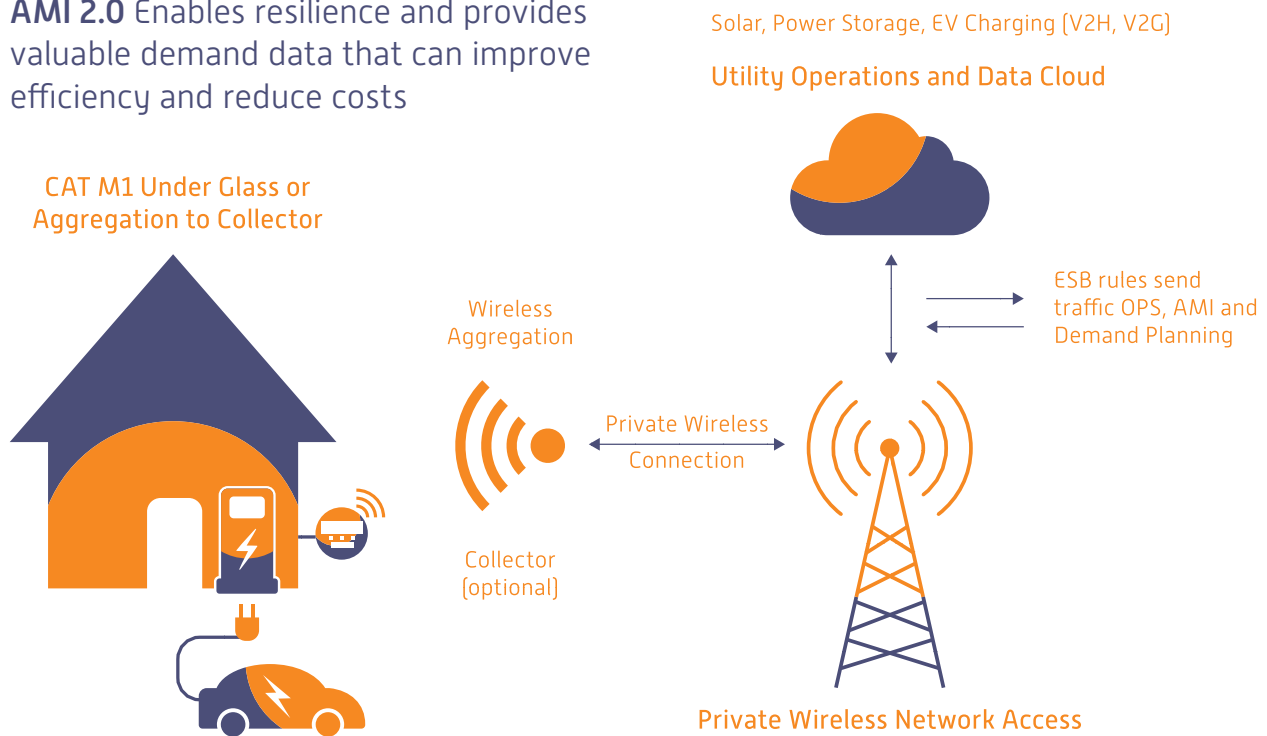
The Evolution of Metering with Private Wireless Broadband

A private wireless broadband network using 900MHz provides utilities with the ability to control performance, security, capacity and flexibility needed to manage evolving AMI systems. Private wireless networks can integrate with existing mesh networks and support direct-to-meter connections to residences or commercial buildings at scale, enabling quick access to data and increased control.

Supporting Existing Mesh Networks: Meter data backhaul can benefit from 900 MHz private wireless networks. By using a private wireless network, AMI data collectors or access points are better secured when behind the utility's firewall. Low latency data collection, coupled with quality-of-service control, allows the utility to prioritize traffic to fit their needs. Utilities can replace traditional narrowband links, costly commercial cellular connections, and other third-party backhaul with a single backbone providing connectivity at no additional cost for decades to come. Private wireless networks provide utilities with an ability to grow their meter infrastructure without the restrictions imposed by a proprietary communication platform or potential bandwidth constraints. With private LTE, utilities can benefit from a standards-based communications technology that enables efficient product integration from multiple manufacturers.

Direct to Meter: Meters have long been available with cellular LTE connectivity directly integrated, removing the need for proprietary AMI collectors. Communicating over a private wireless network, “Under Glass Private LTE” is considered the next evolution of metering systems. Future smart grid infrastructure will need data and sensing details from meters delivered more frequently and in much larger amounts, both requiring more bandwidth. Private wireless networks can support increases in data year after year with minimal additional infrastructure requirements because the network supports automated devices on the same electrical circuits supplying the meters. Emerging technologies will be enabled by the ease and low cost of adding to the existing private wireless network. In addition to billing data and outage reporting, these meters are expected to provide fault data, phase angles, voltages, currents, and much more. An “Under Glass Private LTE” Meter will allow for faster two-way communication between the utility and end users, faster outage response, and better fault identification, and will ease the challenges of integrating distributed energy resources. With private wireless networks, utilities can significantly reduce the incremental cost of endpoints by minimizing the number of AMI components.

AMI 2.0 Enables resilience and provides valuable demand data that can improve efficiency and reduce costs



Grid modernization benefits of 900 MHz private wireless network-enabled AMI 2.0

Grid Resiliency: Private wireless network AMI 2.0 residential meters can capture voltage more frequently enabling the utility’s distribution network to regulate the voltage with much more control.

Improved Operations: AMI 2.0 allows for new apps and capabilities that can be easily distributed from the utility’s operations center and run as needed. As new apps and capabilities emerge, they can be easily delivered and applied.

Increased Control, Flexibility: Utilities can leverage AMI data for smart energy management, increasing energy efficiency, reducing costs, monitoring usage and offering innovative pricing options, like fixed or pre-paid bills, and support flexible smart controls to reduce customers' costs and energy use.

Real-Time Grid Management with Improved Access to Data: Private wireless networks and AMI 2.0 can give utilities better insights on how to manage grid evolution and make better-informed decisions.

Accelerates DER, EV adoption supporting sustainability goals

Future-Proof Innovation: Private LTE is built using global 3GPP (Third Generation Partnership Program) standards that can help provide a future-proof investment for years to come. Customers can benefit from the continuous innovation of third-party app providers that create new solutions harnessing AMI 2.0 technology.

Security, Privacy, and Control: AMI 2.0 with private wireless networks enables complete control of the end-to-end system security, access, and data visibility and prioritization. Utilities can control access to both network and devices through user authentication and encryption capabilities. Customizable layers of security can also be added.

Remote Monitoring and Management: Private wireless network connectivity enables real-time monitoring of solar invertors, power walls, vehicle-to-grid energy storage, stand-alone battery energy storage, and demand response such as air conditioning and pool pumps. These emerging technology operators can remotely manage their respective devices, troubleshoot issues, and perform software updates without physically visiting the home or business.



Spotlight: Anterix Active Ecosystem members

Some of the Anterix Active Ecosystem members offering advanced metering solutions include:

Aclara: Aclara offers a comprehensive suite of solutions comprised composed of the advanced metering infrastructure (AMI), needed for a single point of accountability. As an end-to-end, smart infrastructure solutions partner, Aclara couples innovative technology with data-driven solutions to predict, plan, and respond to system conditions across electric, natural gas, and water distribution networks.

EasyMetering: EasyMetering accelerates the global adoption of advanced smart meters, with the objective of modernizing the smart grid for a faster energy transition. EasyMetering's technology contributes to a smarter, more responsive power grid. Its AMI 2.0 solution utilizes state-of-the-art cellular broadband technology, including 900 MHz Anterix spectrum.

Honeywell: Honeywell allows utilities to communicate directly to the meter over private cellular networks using standardized head-end systems without requiring intermediate devices to relay the transmission. The Honeywell LTE (4G) Cat-M1 wireless WAN interface card (W-WIC) and antenna are installed under the cover of Honeywell's A4 ALPHA meter.

Itron: Itron enables utilities and cities to deliver critical infrastructure solutions safely and reliably to communities in more than 100 countries. Powered by distributed intelligence, Itron is leading the movement at the grid edge, empowering utilities to build and operate an intelligent, flexible grid for the AMI 2.0 transition.

Landis+Gyr: For more than 125 years, using advanced metering infrastructure and other cutting-edge smart grid technologies, Landis+Gyr have helped utility companies all over the globe improve their operations, protect their assets, lower their operating costs, and provide better customer service. With a focus on quality, reliability, and innovation, their portfolio of products and services can help modernize the smart grid for the future.