

Improving Grid Edge Communications, Efficiency and Control

Successful evolution to AMI 2.0

Meter technology is advancing, evolving meters into grid sensors—a network of powerful intelligent edge computing devices that become like a smartphone, capable of running many applications that can execute complex calculations at the edge and control energy devices in real-time.

AMI 1.0 solutions introduced over a decade ago provided access to more data to improve operations and billing for utilities and municipal energy providers. 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 with reduced operational costs.

With meter vendors predicting accelerating growth in MB per meter per month, the additional data processing and functionality enabled by AMI 2.0 can help utilities build a resilient grid with a reduced carbon footprint. AMI 2.0, also known as next-generation advanced metering infrastructure, brings enhanced technology to the edge and promises greater control and efficiencies for both consumers and utilities in the energy sector. These technologies can empower consumers with greater insights and transparency over their energy usage and billing.

For utilities, improved operational efficiency, real-time data-driven decision-making, integration of renewables and customer engagement are among the benefits. All these benefits require a reliable and scalable communications network to collect and utilize a broader set of available data.

The Evolution of Metering with Private Wireless Broadband

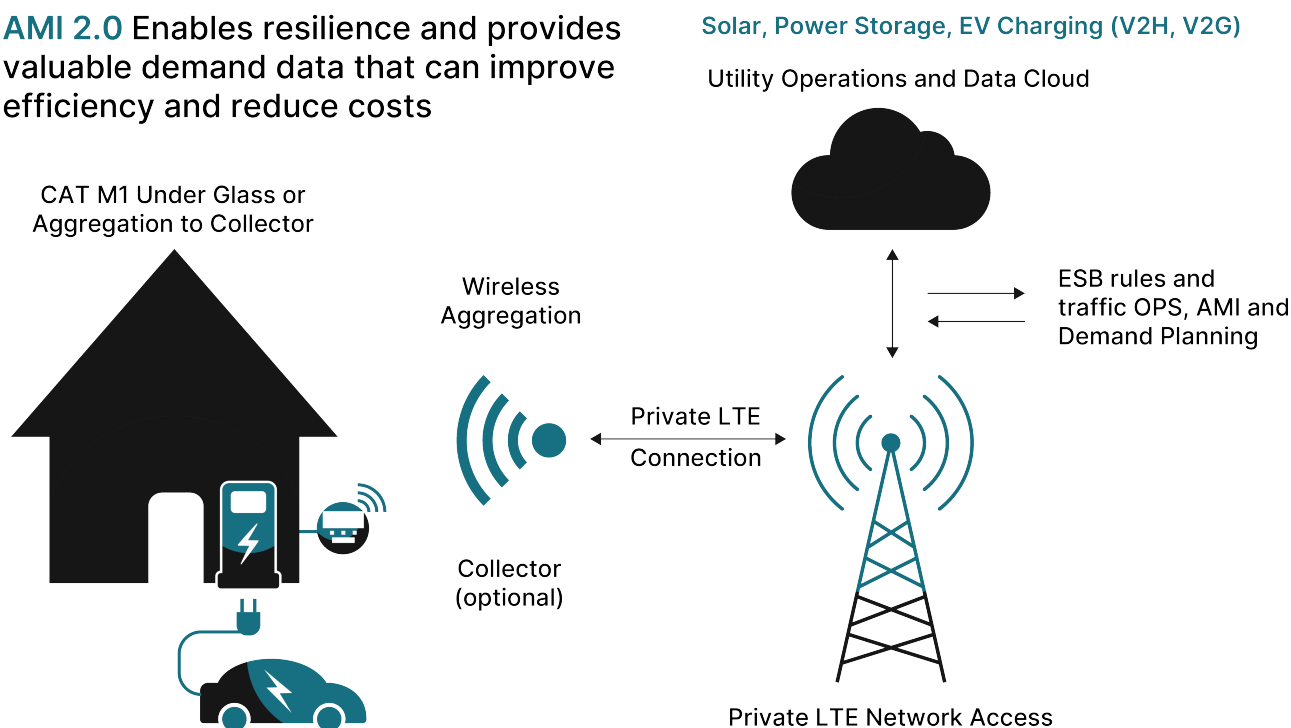
A private wireless broadband network using 900 MHz provides utilities with the control, performance, security, capacity and flexibility needed to manage evolving AMI systems. Private LTE can integrate with existing mesh networks and support direct-to-meter connections to residences or commercial buildings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

Supporting existing mesh networks: Meter data backhaul benefits immediately from 900 MHz private LTE. With private LTE, AMI 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 LTE provides the

utility 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 LTE network, “Under Glass Private LTE” is considered the next evolution of metering systems. Our future smart grid infrastructure will need data and sensing details from meters delivered more frequently and in much larger amounts of data, all requiring more data bandwidth. Private LTE 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 LTE 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, better fault identification and ease the challenges of Distributed Energy Resource (DER) integration. With private LTE, utilities can significantly reduce the incremental cost of endpoints, due to 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 LTE enabled AMI 2.0

Grid Resiliency: Private LTE 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 those can be easily delivered and applied.

Increased Control, flexibility: Consumers pre-pay for electricity and set thresholds via an app to control devices in their homes, giving them more control over their bills, and enabling a smarter grid.

Real-time grid management with improved access to data: Customers will have more information in real-time about the volume of electricity being produced, allowing them to make better decisions on how much and when to store or sell energy.

Accelerates DER, EV adoption supporting sustainability

Future proof innovation: Private LTE is built using global 3GPP (Third Generation Partnership Program) standards that can provide a future-proof investment for years to come. The latest third-party apps can easily be downloaded from a secure app store providing even more lifetime value.

Security and Privacy and Control: AMI 2.0 with private LTE 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 LTE connectivity enables real-time monitoring of solar invertors, power walls, EV battery 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 of the advanced metering infrastructure (AMI), needed for a single point of accountability. As an end-to-end, smart infrastructure solutions (SIS) partner we couple innovative technology with data-driven solutions to predict, plan and respond to system conditions across electric, gas or water distribution networks.

EasyMetering: EasyMetering accelerates the global adoption of advanced smart meters, our objective is to modernize the smart grid for a faster energy transition. Our technology contributes to a smarter, more responsive power grid. Our Advanced Metering 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, we are 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.



Reach out to the Anterix Active Ecosystem team at AnterixActive@anterix.com for additional information on our metering solutions members.