

Electric Cooperatives Continue to Lead Industry AMI Deployment

Key Highlights

- Adoption of AMI among electric cooperatives has been steadily increasing, with an average of around 1.2 million added annually.
- Most recent growth in co-op AMI is due to co-ops transitioning from AMR to AMI, and the number of co-op AMI meters is now more than quadruple the number of AMR meters.
- Co-ops continue to lead the industry in AMI deployment, with 83% of co-op meters now using AMI, compared to 71% for the rest of the industry.

As advanced communications have become increasingly important for electric system operations, cooperatives have been transitioning from Automated Meter Reading (AMR) to Advanced Metering Infrastructure (AMI). According to updated analysis by NRECA, electric co-ops continue to lead the industry in AMI deployment.

AMI vs. AMR

AMR is the technology of automatically collecting basic energy consumption data and transferring it from the electric meter to the utility. AMI is a system of newer digital meters, often referred to as smart meters, integrated with communications networks and data management systems, to enable two-way communication. This allows the utility to transmit real-time pricing and other energy information back-and-forth to the meter, providing operational, financial, and customer service benefits. Most electric co-ops communicate with their AMI meters via power line carrier technology, though radio frequency communications are becoming more widely deployed because they offer increased bandwidth, lower latency, and fewer dropped messages.

Transition from AMR to AMI

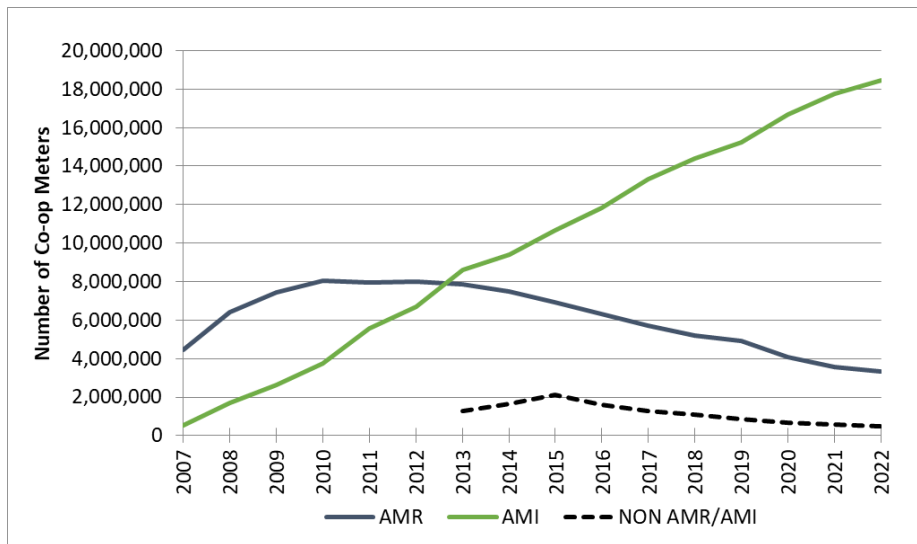
Adoption of AMI meters by electric cooperatives has been steadily increasing, with an average of around 1.2 million added annually from 2008 through 2022. Co-op AMI meters overtook AMR meters as the most common type in 2013 and have continued to grow rapidly since then. NRECA's analysis of newly mined 2022 data¹ shows that the number of co-op AMI meters is now more than five times higher than the number of AMR meters. The number of co-op AMR meters has been in decline since 2012, and the number of co-op meters without either technology has also been in decline since 2015,² with AMI meters displacing both other types (see Figure 1). In addition, many co-ops have replaced or are planning to

¹ U.S. Energy Information Administration (EIA) Form 861. Year 2022 data is the most recent data available. Calculations for "Electric Cooperatives" include NRECA's non co-op distribution members, primarily rural public power districts, as well.

² EIA data on the number of meters without AMI or AMR technology is only available for 2013 and later.

replace first-generation AMI meters with more advanced models with shorter data collection time intervals and more advanced features.

Figure 1: Electric Cooperative Advanced Meter Adoption

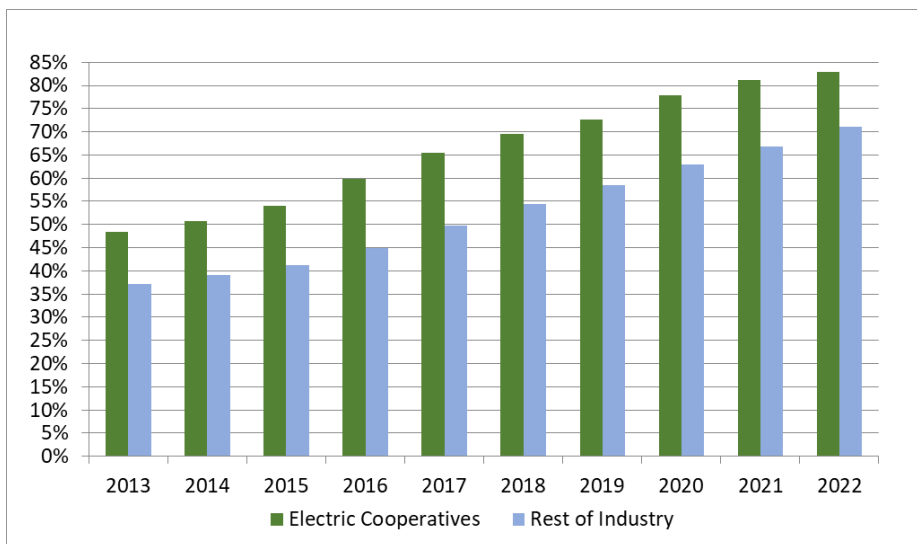


Source: NRECA analysis of EIA-861 data

Co-ops Lead the Way

Due to lower population density in their territories, co-ops were early adopters of advanced metering capability to reduce the need for on-site meter reading. This led co-ops to initially adopt AMR, and we have seen the same trend as newer AMI technologies have become available. Co-ops have consistently led the rest of the electric industry in AMI adoption. From 2013 to 2022, the percentage of co-op meters that have adopted AMI has increased from 48% to 83% (see Figure 2).

Figure 2: Percentage of Meters Using AMI



Source: NRECA analysis of EIA-861 data

AMI was also an important component of NRECA’s Smart Grid Demonstration Project,³ in partnership with the U.S. Department of Energy. A primary purpose of the project was to examine existing and emerging smart grid technologies for their technical effectiveness, suitability to the co-op business model, and return on investment. From 2013 to 2014, the project deployed AMI technologies at seven different electric cooperatives, and also studied demand response utilizing AMI two-way communications at 10 cooperatives.

The Value of Data

Electric cooperatives are benefitting from the use of AMI in a variety of ways, including outage management, supply cost mitigation, and improved consumer energy profiles. Additionally, with AMI, co-ops now have unprecedented access to data and analytics. This two-way iterative data flow can be used by distribution co-ops to plan for member energy and service pricing. System visualization allows for efficient use of capital expenditures on construction projects. Increased information and communications systems allow for better alignment between retail rate setting and product pricing by G&T suppliers. Wholesale and retail rate signals and pricing for distributed energy resources (DER) products and services can be shared across the energy value chain in an iterative manner. This represents an opportunity for cooperatives to optimize the system and provide dynamic price signals to their consumer-members, who then become active participants in energy solutions.

Contact for Questions

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³ For more information on the Smart Grid Demonstration Project, see <https://www.cooperative.com/programs-services/bts/smart-grid/Pages/default.aspx>.