



Why Metering Maturity is a **Strategic Imperative for Utilities**



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Utilities operate in a landscape today that would have been unrecognizable just a decade ago. Through most of the 2000s, demand for electricity was largely flat across the U.S. due to factors like energy efficiency improvements, an economic shift away from heavy manufacturing to services, and the impacts of the 2008 economic crisis.

These days, utilities are grappling with how to meet dramatically spiking demand for electrons. Early in 2026, the U.S. Energy Information Administration (EIA) forecast that growth in power demand in 2026 and 2027 would be the highest in a quarter century, driven largely by data centers to power artificial intelligence (AI) applications. Data centers' urgent demand for huge volumes of electricity is taking place at a time of already rapid transformation across the utility industry. From the electrification of transportation, building heating and cooling to the influx of distributed energy resources (DER), and ambitious grid modernization efforts that include widescale deployments of advanced metering infrastructure (AMI), utilities are managing complexity and scale that many of their operational systems were never designed to handle.



Why Metering Matters More Than Ever

While many utilities are focused on how to quickly and affordably build out the generation, transmission, and distribution capacity needed to serve this growing demand, it's critical that they not overlook a key ingredient in the success of many of their most important strategic objectives: a foundation of accurate and integrated metering data. "Utilities really need to focus on meeting their demand and growing their grid in responsible ways," said Andrew Kaminsky, software sales manager for TESCO Metering, a provider of metering test equipment and software solutions. "Using data from these systems will help inform them on how to do that."

But there is a problem: as utilities race to transform and modernize to meet growing demand, become more data-driven, and focus more on customers, they remain dependent on antiquated metering operations. The fundamental importance of metering operations is hard to overstate, as they ensure meters are accurate, reliable, and comply with regulatory requirements. "Utilities need to protect the cash register, and the meter is that cash register," Kaminsky said. "What utilities are trying to achieve is 100 percent reliability."

This matters for reasons obvious and nuanced. Accurate metering, of course, ensures utilities don't overcharge or undercharge customers—including large customers, like data centers—for their consumption. But in a modernized grid, meters and the data they generate need to do much more than guarantee accurate billing. For example, widescale AMI deployments—over 70 percent of all meters in the U.S. are smart meters, according to the EIA—give utilities unprecedented visibility into grid conditions, enabling early identification of outages and voltage anomalies while providing better coordination of DERs.



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Metering data also has the potential to feed asset management systems. This helps track the performance and condition of meters themselves, but also other critical grid infrastructure like transformers. Ideally, meter data can be leveraged to inform predictive maintenance programs and utility planning.

To capture all this value, utility metering operations spearhead a wide range of activities, including:



Asset Tracking and Lifecycle Management

Many utilities deploy millions of meters across broad geographical service territories. This requires tracking their location and status, and handling returns for warranty issues. It's not just about meters. Utilities also need to track mesh network equipment, current and voltage transformers, and other grid assets whose failure can threaten grid reliability.



Testing and Compliance

This includes periodically testing the accuracy of meters already in service, new meter acceptance testing, and warranty testing when issues emerge. Some states mandate testing—Massachusetts, for example, requires every meter be tested once every seven years.



Data Integration

To deliver the maximum value to utilities, meter data must be integrated to a range of other enterprise systems. For example, without seamless integration to billing systems, asset management platforms and analytics tools, valuable metering data remains siloed and unable to support capital planning, predictive maintenance, and grid modernization.



Quality Control and Verification

Getting billing right is always important. But with a growing number of large customers—where a single meter may record \$1 million in monthly revenue—it is essential to identify and address potential metering problems as soon as they emerge. Proactive verification programs are critical to avoid lost revenue, but they are impossible to scale using manual processes.



From Reactive to Proactive

Put simply, utilities need their metering operations to move from being reactive to proactive and from being isolated to tightly integrated into a utility's core strategic systems. A proactive and modern approach to metering operations allows utilities to:

- Identify problematic meter populations before any failures occur
- Verify high-value accounts rather than waiting for complaints
- Use analytics to inform replacement strategies.

Accomplishing this with millions of smart meters as demand for electricity surges requires robust and integrated systems built specifically for metering operations. Despite the growing importance of metering operations, many utilities continue to rely on tools that were never designed for the task.





The Downsides of Legacy Metering Systems

Often, the inadequacies of antiquated metering systems don't become apparent due to an obvious crisis or failure. Instead, their deficiencies frequently surface as the result of a very common scenario: the retirement of a colleague. Kaminsky has seen the sudden panic that sets in when an employee who built and maintained a homegrown metering system reaches the end of their career.

"We find utilities working on an old DOS (Disk Operating System, a text-based system that predates Windows and is now nearly obsolete) that they're keeping together with chewing gum and paper clips," Kaminsky said. "Then the guy who is keeping everything together wants to retire and everyone else says, 'Now what do we do?'"

Utilities that rely on metering systems built and maintained by a single dedicated individual become harder to maintain when that expertise is no longer present.

The negative implications of relying on a system that is no longer adequately maintained only grow along with the importance of implementing efficient and scalable metering operations. Kaminsky recalls how one utility watched as the functionality of a homegrown system diminished to roughly one-fourth of its original capability not long after the people who maintained it retired and took their institutional knowledge with them.





Legacy Systems Can't Keep Up

Metering systems continue to operate but are so inefficient that they can't function at the scale and speed necessary to achieve utilities' strategic objectives. For example, one Canadian utility was running meter testing on a DOS-based system. Testing individual meters was quick and easy, taking just two seconds per meter. But wrestling with the DOS system to record the results and transfer them to billing and compliance took another 15 minutes. The reason: Workers had to press specific keys in precise sequences to navigate through multiple screens to record and share test results. One mistake caused the entire process to break down.

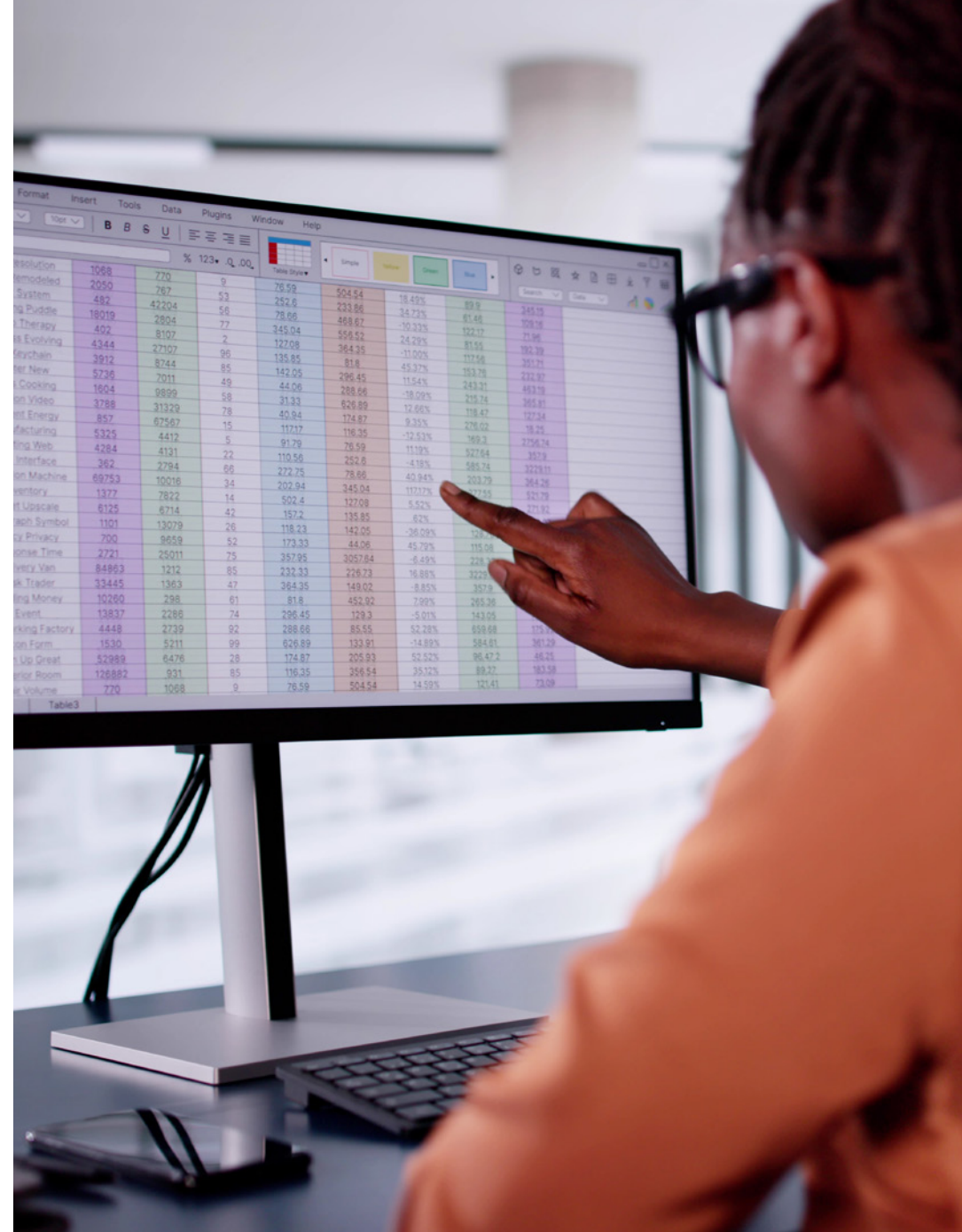
Other utilities don't use homegrown systems for meter management but instead rely on dozens of sheets to record test results, meter deployments, and track regulatory compliance, inventory, and warranties. Entergy, which serves over three million customers in four states, relied on 50-plus spreadsheets for meter management before pivoting to TESCO's Meter Manager software in 2023. "Everything would have to be aggregated into different spreadsheets," said Ashton Oldendorf, who manages Entergy's AMI Engineering Lab. Not only does working with spreadsheets require expertise, but it also demands a lot of time from staff who could be pursuing more valuable tasks, elevates the risk of errors, and makes it challenging to share and utilize data.



Although important, it's not just about efficiency. Spreadsheets and homegrown systems cannot connect metering data and analytics platforms to identify potential failure trends across meter populations by manufacturer or type—the kind of early warning that prevents costly mass replacements. They cannot manage collections of meters for regulatory in-service testing programs across multiple jurisdictions with varying requirements. Additionally, they are unable to provide the audit trails and data integrity that regulators increasingly demand. In short, they cannot execute the proactive, data-driven programs that grid modernization and load growth require.

They also can't scale. Though Entergy was able to make things work with spreadsheets, Oldendorf said the limits of the approach became increasingly clear as the number of meters that needed to be managed grew. "A more systematic solution was necessary," Oldendorf said.

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Lessons from Entergy's Metering Operations Transformation

The timing of Entergy's AMI Engineering Lab launch in 2018 was no coincidence. At the time, Entergy was launching grid modernization efforts aimed at deploying new technologies and better use data to operate a more efficient, reliable, and resilient grid. Metering was central to Entergy's grid modernization efforts, including the deployment of millions of smart meters to customer homes and businesses.

Opening the lab clearly indicated that the utility's metering operations were foundational to many of Entergy's most important strategic objectives and its vision for the grid of the future. "The lab's charter was to vet out and maintain the product lifecycle of those three million-plus electric AMI meters we deployed as well as track the warranties and ensure the communication of meter data back to Entergy was working reliably," Oldendorf said. "It was to make sure the entire AMI ecosystem works."



The Value of a Purpose-built System

Given the importance of metering operations to Entergy's grid modernization initiatives, the utility was keen to move away from its reliance on error-prone, labor-intensive spreadsheets. A longtime user of TESCO hardware and test boards, Entergy chose to transition to Meter Manager, TESCO's purpose-built platform for metering operations. Instead of using 50-plus spreadsheets to manage the risk that comes with running metering operations, Meter Manager provides a centralized database for all metering activities, from testing to inventory management to compliance while also enabling users to directly control test equipment from TESCO and other manufacturers. Importantly, Meter Manager also integrates with other enterprise systems, like billing, asset management, and analytics—providing an efficient way for valuable meter data to inform critical utility decisions.

Entergy deployed Meter Manager 2.0 in 2023 and upgraded to the latest version in November 2025. Not everyone in the lab was in favor of the change. Lance Allen, a technician in the lab, was vocal in opposition. "I was totally against all of this," Allen said. "I said 'this is going to be terrible. It's going to be a trainwreck.'" Allen is now a strong supporter of Meter Manager and uses it daily in his work.

Similarly, Oldendorf is a vocal advocate of Meter Manager. Oldendorf values the automation, standardization and, above all, the shared workspace Meter Manager provides. "Before we had spreadsheets everywhere," Oldendorf said. "Now everything is in one home system."

According to Oldendorf, the advantages include:

- ✓ Automatic storage of test results, removing confusion when different workers save data
- ✓ Standardized processes everyone follows
- ✓ Freedom from spreadsheet coding problems, allowing staff to focus on more high-value work



Individual and Enterprise-wide Benefits

While efficiency gains for individual lab employees are a significant benefit, Meter Manager has unlocked analytical capabilities that had been impossible with spreadsheets. For instance, by connecting to the SQL server backend database, Entergy has created Power BI dashboards that automatically refresh multiple times each day. This provides real-time visibility into the utility's testing operations and performance of meter populations, including how many meters have been tested and identifying meter failures. These insights, impossible to extract from spreadsheets, give Entergy an early warning system about potential meter failures.

The system also improved quality control in ways that directly protect revenue. Meter Manager alerts workers—with both visual and audio warnings—if they're about to process a meter that's still installed at a customer location. This prevents meters from being mistakenly sent back into the field while they're already in use, a problem staff previously had to solve by manually cross-checking multiple spreadsheets. The platform also helps Entergy manage the meters it needs to pull from service each year for mandatory accuracy testing—a regulatory requirement that's far easier to track systematically in one database than across dozens of spreadsheets.





A Vision for Tomorrow

Looking ahead, Entergy sees Meter Manager becoming an even more important tool, including making it part of an enterprise platform. The utility is considering using Meter Manager to track critical grid assets like current and voltage transformers as well as mesh network equipment.

The lessons from Entergy's journey demonstrate both the importance of metering operations to a utility's strategic goals and the value that comes from deploying a purpose-built platform. Entergy's previous struggles with spreadsheets aren't unique, nor are the benefits they have received through modernization. As utilities navigate unprecedented load growth and grid modernization pressures, metering maturity is no longer a back-office concern. It's a strategic foundation that determines whether utilities can capture the full value of their infrastructure investments and deliver on their mission to be a reliable, resilient, and customer-centric grid.





TESCO METERING

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