

The Future of Utility Meter Services

Changing needs, requirements, and responsibilities for meter services work groups in a post-AMI deployment world

INTRODUCTION »

The deployment of Automated Metering Infrastructure (AMI) is changing utility operations in both expected and unexpected ways. AMI deployment raises a myriad of issues and questions about how utilities will operate in a fully deployed AMI environment (i.e., "steady state") and fully leverage this infrastructure investment. Assessing how traditional meter and field service work groups will be best suited to manage work flow, system management, and maintenance is critical to unlocking the inherent advantages of AMI. Utilities are just now beginning to address these questions and their implications.

In 2010, Navigant worked with a group of utility clients to explore the impact of AMI on steady-state meter services operations. For the scope of the investigation, meter services was defined as including meter shop (receipt, testing, repairing/maintaining and inventorying meters) field services (installation, field testing, and removal of meters in the field), and communications/network services (operation and maintenance of the communication network for AMI meter system). Answers were sought for three core questions:

1. How will the roles of the meter shop change as AMI becomes the primary meter-reading and connect/disconnect technology?
2. What will the high-level requirements for meter services be, from both an operational and organizational perspective?
3. What is the roadmap for evolving today's meter services environment to meet an AMI requirements-based future?

The project involved a series of activities and interactions designed to identify gaps and constraints that typically arise as AMI systems are installed, consider how each might be addressed most effectively, and explore the implications for current state utility operations.

The results showed that deployment of AMI necessitates a thorough review of the operational functions of several groups within the utility—often work groups that functionally report to more than one organization. Our workshop revealed that while typical meter shop and meter deployment functions (such as meter installation, inventory management, and testing) will likely remain the organizational responsibility of the existing meter services work groups, questions remain as to where responsibility for network communications, solid-state meter repair, and AMI system maintenance should reside. Further, we found that utilities are still coming to terms with the impact of AMI on the type and frequency of interactions between various front, middle, and back-office functions.

AUTHORS »

Timothy Douek
215.832.4410
tdouek@navigant.com



This paper presents perspectives on the changing role of meter services within an AMI operating environment, and frames a number of the core elements that need to be addressed as utilities transform their operations into AMI-centric organizations.

UNDERSTANDING THE “PAIN POINTS” »

Wide-scale deployment of AMI technologies is transforming the basic work requirements and approaches embedded in the utility meter shop. In the past, meter shops were configured to support the large-scale deployment of electro-mechanical meters, typically on a 20-year cycle. Meter testing, inventory management, and meter replacement were geared towards relatively simple skills requirements and were primarily focused on inventory and logistics management of large numbers of relatively simple meters. As electronic metering became mainstream in the commercial/industrial space, some meter shops added modest functionality to deploy and service these more sophisticated electronic devices. Others segregated this work within more specialized electronics groups.

Large-scale AMI deployment is changing the fundamental work mix and work requirements in today's meter shop environment. Electronics and radio communications skill sets are increasingly required to effectively deploy and maintain these advanced and complex systems. This change in functional requirements means a transformation of meter services functions and workforce skill sets will be required. Navigant's extensive interviews with utilities, vendors, and other stakeholders suggest that utilities are currently focused on their AMI system deployments and have yet to fully define the future operating model for their smart meter systems. The AMI meter and associated communications network has become a “core” utility operation. Utilities need to critically review the skills and roles of existing operational groups, identify gaps, and then work to proactively address each.

Navigant's research highlighted a number of “pain points” that utilities are encountering as they develop and deploy smart meter systems:

- » **Field Services** – There is a limited understanding of the changing nature of field services among workforce, union, and management.
- » **Meter Shop** – Additional capabilities and tools are required to effectively implement and maintain smart meter networks.
- » **Communications/Network Services** – Roles and responsibilities lack definition and system analytics tools lack maturity.
- » **Back Office Coordination** – Requirements for coordinating work flow among the three work groups that comprise meter services has become too complex to rely on traditional work scheduling and coordination methods. In the future, effective work flow coordination will likely require a new work group to ensure that AMI data can be used to effectively schedule and deploy the workforce to process meter data exceptions and maintain the system.

EFFECTIVE PAIN MANAGEMENT »

There are a number of gaps that need to be addressed as utilities move beyond AMI deployment to an AMI operational steady state. These can be broadly categorized into the same four previously mentioned “pain points”. In our research, Navigant found a broad consensus among utilities about where there will likely be process gaps, along with the associated constraints to addressing these gaps. A number of these are presented in the following table, along with some potential strategies for remediation.

GAPS	CONSTRAINTS	REMEDY	OUTCOMES
Field Services: <ul style="list-style-type: none"> » Appropriate job classification (mid-skill or low-skill) » Additional resources required to handle work flow management (WFM) exceptions, e.g., theft 	Limited workforce, union, and management understanding of the changing nature of field services	<ul style="list-style-type: none"> » Review current field operation job classifications » Realign staffing and skill levels to ensure efficiency 	Appropriately organized and trained workforce, properly equipped to tackle various types and complexities of issue
Meter Shop: <ul style="list-style-type: none"> » Appropriate testing equipment/process » Asset mgmt. platform/process » Hardware / firmware testing (coordinated with communications/network group) 	Lack of unified, defined vision on the new tools and processes required to manage more numerous, complex AMI system components	Analyze needs to determine what new systems and processes are required to ensure utility is properly equipped to handle steady-state AMI operations	Appropriately equipped and coordinated meter shop
Communications/Network Services: <ul style="list-style-type: none"> » System life-cycle management tools » System integrity metrics, measurements, trends reporting/monitoring » Security planning » Defined skill sets/jobs to address requirements 	<ul style="list-style-type: none"> » Lack of defined roles and responsibilities and established protocols for issue remediation » Immature system analytics 	<ul style="list-style-type: none"> » Develop well defined organizational structure » Establish system-reporting protocols for a series of system "health" indicators and refine as more data becomes available. Use trends to inform staffing and work flow management 	Integrated and well-managed AMI system
Back Office Coordination: <ul style="list-style-type: none"> » Clear identification of work orders (by root cause) » Exception processing (theft, outage, service voltage, meter health) » Meter event, alert, and status prioritization and response » Network event, alert, and status prioritization and response » Meter operating management system (work flow mgmt.) 	<ul style="list-style-type: none"> » AMI system immature » Utility focus on deployment (as opposed to transition to steady state operations) » Sub-optimal issue resolution processes 	Develop well defined organizational structure under "meter services of the future" group.	Integrated and well-managed AMI system

SUMMARY CONCLUSIONS »

Addressing the transition from AMI deployment to steady-state operations yields a series of requirements gaps associated with managing the data-enabled AMI operating environment.

Traditional meter services functional work requirements are best grouped into three major functional groups:

- » Field services
- » Meter shop
- » Network/communications operations and maintenance

A new "back office" meter services management group will be required to leverage AMI system data, in order to coordinate efficient work scheduling and interactions among the three groups. Consolidating data analysis and work flow control into the "back office" meter services management group will leverage AMI system capabilities and enhance work group efficiency.

More sophisticated data analysis and workflow control will be required (and made possible by the system) to assure seamless coordination of work requirements among these functional work groups.

AMI system deployment will not, in and of itself, equip utilities to integrate new system requirements and associated functionalities into their existing operations. Electronic and human interfaces and day-to-day operational processes that have worked well for utilities pre-AMI are

likely to require significant reengineering to leverage this infrastructure investment. Effective post deployment performance will require well-defined work group roles and responsibilities coupled with new processes to coordinate and deploy the workforce.

METER SERVICES »



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