Itron

Gas AMI:
A Market Primed for Innovation

WHITE PAPER

knowledge to **shape your future**

DELIVERING AMERICA'S FOUNDATION FUEL

The natural gas market today is characterized by robust supply and significant potential for expanding its use in homes, businesses, power generation, industrial plants, and vehicles. Investments in these energy applications can provide benefits to our nation's economy, environment and national security.[1]

- As a storable energy, natural gas plays a vital part in the development of a smart grid
- Low emissions make natural gas a clean fuel in a world concerned with carbon output
- With an abundant supply, natural gas plays a central role in developing energy independence
- Greater operational and delivery efficiencies help sustain the role of natural gas in a global energy future and ensure reliable service to customers
- 50% increase in global natural gas demand between 2005 and 2030[2]

Due to its abundance, natural gas operators do not face the demand response hurdles that electrical operators confront. Rather, they face fluctuating commodity availability and costs due to cyclical demands. In conjunction with long-term price uncertainty, gas utilities are up against operational and environmental constraints, along with an overburdened delivery infrastructure. In this evaluation, new business cases are identified in an effort to benefit gas utilities, as well as society.

BIG DATA MANAGEMENT – ANALYTICS	CONSUMER EMPOWERMENT	OPERATIONAL EFFICIENCY
CUSTOMER SERVICE	ENHANCED SAFETY	SYSTEM INTEGRITY

Reducing the number of utility vehicles on the road lowers operational and maintenance costs as it helps to moderate traffic congestion and lower carbon emissions.

- Empowering utility customers with up-to-the-minute gas usage information actively engages them in their consumption decisions and subsequently lowers their gas bills, in turn helping the utility to manage overall demand
- Real-time gas distribution monitoring offers increased safety and reliability for the community, as well as utility workers, and lowers maintenance costs
- Customers are afforded greater safety at home and utilities can avoid a truck roll by shutting off service remotely in case of a leak or safety event
- Access to real-time customer usage information accelerates the resolution of bill inquiries to lower operational costs and instills greater confidence and satisfaction from customers

Gas utilities are recognizing the importance of enhancing operational efficiencies, impacting consumer consumption behaviors, enabling conservation efforts and increasing distribution integrity, as well as system safety. To achieve these goals, they are considering gas advanced metering infrastructure (gas AMI) as the answer.

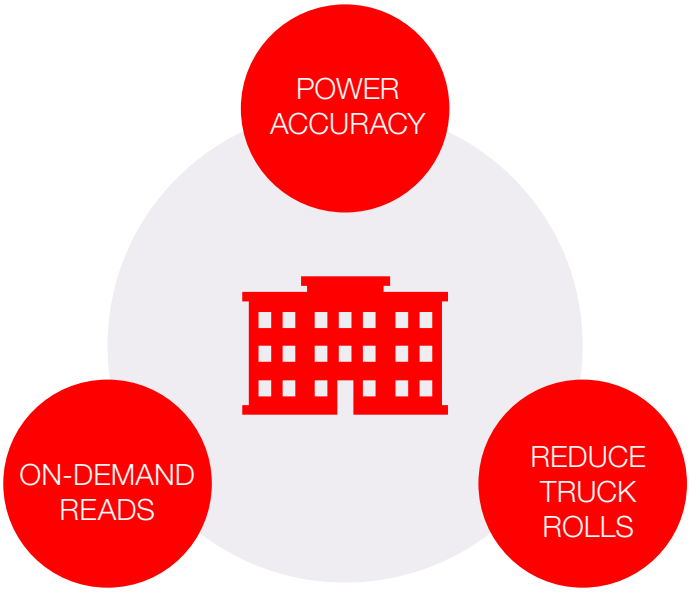
[1]AGA, Spring 2013

[2]U.S. Energy Information Administration

AMI FOR GAS

Prior to gas AMI, the gas industry has been very successful with automated meter reading (AMR), and for decades has collected meter reads monthly for billing purposes. As AMR becomes legacy technology, a logical comprehension of what AMI could mean to gas utilities is essential. Gas AMI differentiates itself from AMR systems in several key ways. Gas AMI solutions collect time-synchronized interval meter data up to every hour, offer full two-way communications to the meter and can extend communications to include sensor technology placed along the gas distribution system.

With the advanced capabilities of gas AMI, utilities are able to improve their relationship with customers by providing levels of customer service previously unheard of. They can actively engage customers in their consumption decisions with real-time access to usage information. Gas AMI offers newfound efficiencies that streamline operations while reducing costs and increasing services, as well as providing greater safety measures with the proactive collection of pipeline sensor data.



WHY GAS AMI?

So, is this the beginning of a gas AMI hype cycle? No. Gas AMI borrows from the experience and success of other AMI programs—the value propositions and how they benefit utilities. Gas AMI has the advantage of learning from achievements and pitfalls, ensuring that its application is focused on real-world business objectives. Below is a detailed look at the new value that gas AMI brings to utilities.

Customer Service

Gas AMI provides customer service beyond a bill and a new level of connection to customers. Time-synchronized interval meter data and on-demand meter reads from a gas AMI solution enable customer service representatives to quickly and efficiently respond to customer inquiries for real-time bill reconciliation. Access to historical usage information such as monthly, weekly and daily profiling, along with comparative analysis and trending reports presents gas utilities with greater insight and understanding into customer usage and overall demand. The granular meter data also gives customers greater confidence in usage and billing data.

As well, customer safety is always a concern for gas utilities. The two-way communications of a gas AMI network enables remote service shut-off at the gas meter as a safety precaution in the case of a premise gas leak or safety issue.

Customer Empowerment and Conservation

In a culture where being a good steward of resources is continually emphasized, very little information has been provided to inform consumers about their natural gas usage. Gas AMI allows consumers to see the impact of gas-fired appliances and enables their behavior modification. When shared with customers, interval meter data empowers consumers with timely and accurate usage information for more informed decisions about their consumption. AMI meter end points send meter data to in-home displays, which present the data in commodity units of measurement or current cost information. The same data can be shared by the utility to web services which present usage information in similar formats online. Access to this information provides customers with an understanding of their consumption behavior and how they might change it, and increases customer engagement and active participation in conservation programs for greater effectiveness.

Operational Efficiency

Gas AMI is changing the way utilities operate with efficiencies and cost reductions considered unfeasible until now. With its full two-way communication capabilities, gas utilities are able to remotely collect on-demand reads for move-in and move-out reads, customer service inquiries and other off-cycle read requirements. This reduces truck rolls, lowering utility vehicle drive times, carbon emissions and associated staff and maintenance costs, as well as a decrease in traffic congestion. Also with two-way communications, gas service can be remotely disconnected at the meter to provide premise safety or at a vacant location to avoid misuse and lost revenue. Field service calls to gas meters can be eliminated by performing remote meter interrogations. In both cases eliminating truck rolls.

Timely and accurate interval meter data decreases billing complaints, facilitates real-time bill reconciliations and helps accelerate payment for efficiency benefits at the customer service level. Gas AMI also expands the use of cost-effective remote monitoring by implementing remote devices on additional monitoring points beyond the customer meter. When analyzed in an aggregate manner, time-synchronized interval data allows utility engineers to more accurately adjust forecast models, infrastructure requirements, and emphasize proactive versus reactive maintenance.

System Integrity

The volatility of natural gas makes safety a top issue for gas utilities. Gas AMI helps gas utilities ensure greater distribution system integrity with sensors and telemetry technologies that remotely monitor different key distribution system performance indicators. Pipe corrosion is proactively monitored by collecting daily cathodic protection readings with a telemetry device and communicating the data back to the utility with the gas AMI network.

By collecting pressure recording data over the network, system pressure can be remotely monitored and drive alerts should pressure fall below or above preset thresholds, thus avoiding adverse pressure related events. Temperature and volume flows can also be remotely monitored by integrating a telemetry device to an electronic corrector, enabling the gas utility to properly manage gas distribution. With the remote service shut-off enabled by the two-way communications of a gas AMI network, safety is also enhanced at the customer premise in case of a gas leak or safety event. These activities enable a utility workforce to shift from collecting system data to maintenance of the system, thus providing greater safety and reliability for the customer, community and employees.

Big Data Management – Analytics

With Itron Analytics, utility employees from the meter shop to executive management are able to receive information gathered using the AMI network, presented via a web-based application. All data gathered across the network is organized into intuitive dashboards for easy access to data intelligence. Never before has it been so easy to identify and take action upon opportunities for more streamlined operations and cost savings. Itron Analytics makes it possible for you to unlock the maximum value from your AMI investment.

Itron Analytics effectively manages and stores up to 10 years of collected metering data. This vast repository of data collected from Itron gas communication modules can be accessed for analysis across the utility. Itron Analytics helps gas utilities reach business goals through innovative data analysis in the following areas:

» Enhanced Customer Service: Accelerated Call Resolution with Fast Access to Consumption Data
» District Metering: System Integrity and Theft
» Revenue Protection: Correlate Consumption and Event Data
» Custom Reporting: Format Data in Ways that Provide the Most Insight
» Comparative Analysis: Spot Trends and Anomalies
» Consumer Portal: Web Access for End-Use Customers
» Cathodic Protection: Automated Pipeline Safety and Revenue Protection

HOW IS GAS AMI DIFFERENT?

AMR systems include a meter endpoint to transmit meter consumption data via radio frequency to a handheld, mobile or network system to collect the consumption read, typically on a monthly or possibly daily basis. The collection software then sends the read data to the billing system. Gas AMI solutions are similar, but different.

» With gas AMI, the flow of information is the same, but the type of information and frequency is much greater, moving from monthly consumption reads to separate usage reads collected at hourly intervals
» Gas AMI employs full two-way communications from the utility to the end-point for time-synchronization of the end point clock. This time synchronization guarantees that interval hourly reads occur at the same time throughout the service territory
» Two-way communications to the meter also enable the remote disconnect of service. (It should be noted that remote connection of service at the meter is not enabled for safety reasons)
» Gas AMI facilitates the collection of different data types from a variety of sensor technologies along the distribution system, extending the value of the solution beyond the meter
» Gas AMI leverages the full value of interval meter data with the effective data storage, access, reporting and analysis offered by meter data management software

ITRON AND GAS AMI

Itron, a leading provider of automation technologies, has developed a gas AMI solution under the ChoiceConnect™ name, utilizing the recently released 100G Gas ERT® module. The solution is built upon the foundation of 73 million endpoints delivered over the company's history. In an industry where reliability is paramount, Itron has put our experience and track record into the system's development to ensure the level of dependability our customers have come to count on. Our gas AMI solution has been tested and re-tested to foster the trust the industry has bestowed upon Itron and to confirm its readiness for the marketplace.

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