



SAS® for Smart Meter Program Optimization

Optimize the life cycle of smart meters



Overview

When it comes to smart meters, utility companies can benefit tremendously if they are “smart” about how they deploy, install, operate, service and maintain their programs. Fact-based decisions can defray much of the time and effort involved in running successful smart meter programs. Acting with insight also helps utilities offset the multifaceted effects of deregulation.

Applying analytics to the management of smart meter programs can address many challenges utility companies face today. For example, smart meter data promises better customer intelligence – leading to better decisions. But utility retailers often lack the technical staff to build new analytical models for marketing optimization, credit risk scoring and fraud detection. And utility distributors may not be equipped to capture value from predictive grid analytics that detect technical losses.

The entire installation process is resource-intensive, requiring hardware, skilled labor and vehicles. Any rework or unnecessary hours due to poor route planning is costly. Before installation, utilities must confirm the customer’s address and set up an appointment. In competitive markets, retailers need to be able to predict if a customer is likely to switch providers within a few months. Installation plans should also prioritize customers who are likely to sign up for home energy services once the smart meter data is available.

After installation, each smart meter and each head-end system needs to be meticulously tracked, including make and model, warranty information, firmware release and configuration settings. And the accuracy of each meter needs to be validated to ensure customers are treated fairly. Through all aspects of the smart meter program, SAS can help.



Smarter deployment, operations and management with predictive analytics

■ Challenges

- **Making rollouts cost-effective.** Utilities need to find the right customers for smart meters and must plan meticulously for routing, shipping materials and recruiting resources.
- **Predicting and preventing disruptions.** To contain costs, utilities need to be able to detect potential deviations from the plan and dynamically assess remediation strategies.
- **Ensuring meter data quality.** Without sophisticated analytics or analytically trained staff, utility retailers cannot trust their data.
- **Running the grid smoothly.** Distributors are challenged to reduce technical losses along the lines without predictive grid analytics and data-driven models to pinpoint inefficient assets.
- **Managing disparate data, equipment quality and network stability.** As the pace of smart meter rollouts increases, the technology landscape becomes more mixed, posing multiple challenges for data collection, analysis and management.

“Our experience shows that optimal use of analytics within a smart grid program can help utilities improve customer relationships through more regular and targeted demand response programs, boosting customer loyalty and minimizing wasted marketing spend.”

Accenture, Ten Leading Practices for Smart Grid Analytics

Key Benefits

SAS for smart meter program optimization helps utilities:

- Improve smart meter rollouts by identifying the right customers, organizing the right resources and proactively mitigating future problems.
- Gain value from meters during operation by improving customer insight, optimizing tariffs and pricing, and predicting future energy demands and potential fraud cases.
- Optimize meter service and maintenance throughout the life cycle using predictive asset maintenance to gauge how many days are left until asset failure.

How SAS® Can Help

SAS gives utilities valuable insights to strengthen all aspects of smart meter programs. Based on advanced data analytics, utility retailers and distributors can make more informed decisions from deployment through usage and maintenance.

Improve Success of Planning for Meter Rollouts

SAS approaches the planning phase of smart meter rollouts by focusing on three critical areas: identifying the right customers, organizing the right resources and proactively mitigating future problems. Depending on the retailer's program limitations, SAS can help determine the optimal order for customer installation by ranking customers based on payment risk, churn or propensity to enroll in additional

services. SAS improves this process by building statistically representative samples of customer data early in the rollout process to maximize accuracy of customer sentiment analysis and load forecasting during adoption cycles.

Optimize Routes and Workforce Allocation for Installation

Utilities can use analytics to enhance selection of routes and workforces for meter installation. Routing can be optimized against constraints (resource limitations), while taking preferences (time of day) and regulations (dates) into consideration. Using analytics, the utility can dynamically adapt to scenarios that affect the current rollout plan, such as strikes, weather, illness and cancellations.

Predict Future Meter Problems

SAS enables analysis of technical and nontechnical losses as well as predictive analysis of network operations and improved load forecasting models. Even during the installation process, analyzing meter data can help to quickly identify potential future problems with meter quality. This approach improves fault detection and reduces stranded assets. The data can also detect anomalies that indicate tampering or fraud.

Match the Right Programs with the Right Buyers

SAS relies on a combination of utility-owned and third-party data to provide the most comprehensive sentiment

analysis available. This data comes from social media, credit risk agencies, billing and customer information systems, and new meter readings. Improved customer insights from this data lead to new revenue generation by attracting new customers and cross-selling new products and services to existing customers. Smart meter data can also help utilities identify the right customers for each energy program, enabling them to match each offer with the buying potential.

Optimize Tariffs and Pricing

Through analysis of meter data, utilities can determine an optimal rate plan for each customer's usage patterns. This analysis may also help utilities identify new pricing programs that can more effectively achieve energy efficiency goals.

Improve Service and Maintenance Across Smart Meter Life Cycles

By considering maintenance data and signal patterns from meters, SAS provides early warning for meter maintenance that predicts how many days remain until asset failure. This predictive asset maintenance approach reduces downtimes by using enterprise business intelligence capabilities to gain near-real-time insight into the performance of sites and assets. As a result, maintenance engineers can react to and solve issues faster at every level. The approach also reduces unscheduled maintenance based on predictive and near-real-time performance alerts. Alerts advise maintenance teams to

fix issues during already scheduled maintenance outages and to plan for the most cost-effective time to replace degrading assets.

SAS optimizes maintenance inventory by forecasting the total demand for meter deployment by geography and by related items, such as batteries and replacement parts. This approach relies on enterprise business intelligence to provide key maintenance reports that reflect the number of meters running on a specific version of firmware, as well as the current configurations for all smart meters, problem meters and network segments that are unreliable (i.e., causing missed or inaccurate readings). Analytics data also supports asset management tasks like planning upgrades (e.g., adding repeaters to fix intermittently dark network segments), swapping out bad equipment, and making future purchase decisions.

The SAS® Difference

To help companies in the utility industry make a smooth transition to a more customer-centric business model, SAS provides:

- **Predictive analytics for all skill levels.** Advanced analytics from SAS are just as accessible and meaningful to business leaders as they are to engineers.
- **Industry expertise.** SAS has utility domain expertise that spans global teams, and it has served utility customers since its founding in 1976.
- **Data management.** With SAS, you can combine and quickly analyze huge quantities of data, regardless of source and without making changes to your ERP or MDM systems – to make discoveries, solve complex problems, and deploy accurate results and information across the enterprise.



Figure 1: Analytics for an optimized smart meter program.

Components

SAS offers a comprehensive set of products in all stages of the smart meter life cycle.

Customer Intelligence

Optimize management of customer outreach programs, sites and premises, billing and payment schedules, and products and rates using customer intelligence solutions from SAS. Customer interactions provide situational intelligence that can be used to change service offering outcomes, adjust forecasted energy demand or efficiently satisfy customer requests.

Supply Chain Intelligence

Use supply chain intelligence solutions to reduce product inventory levels, and inventory carrying and expediting costs – while maintaining or increasing customer service levels.

“One of the primary consequences of implementing smart metering technology is that it results in a flow of data several magnitudes greater than any previous traditional metering schemes. The need to manage this data, and subsequently transform it into actionable business intelligence, creates challenges for utilities implementing smart metering.”

Accenture: Achieving High Performance with Smart Meter Data Management Systems

Strategic and Operational Planning

Reduce downtimes by using enterprise business intelligence capabilities to gain near-real-time insight into the performance of sites and assets, enabling maintenance engineers to react and solve issues quicker at every level.

Regulatory Compliance

Increase data consistency, enable data-driven decisions and streamline reporting through integrated business intelligence. Improve performance by focusing on accountability, measurement and transparency.

About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions, SAS helps customers at more than 60,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®

