

OVERVIEW OF SMART METERING

One of the most important challenges facing the United States in the 21st century is energy management. Gaining control over how energy is generated, distributed and consumed will be paramount to the entire U.S. avoiding its greatest energy challenges since the shortages of the 1970s. As proof of the uphill battle the U.S. is facing, in 1999 the Electric Power Research Institute determined that power quality events in the U.S. cost the nation \$50 billion in lost productivity and damaged equipment, a loss four times more than the amount spent on power quality worldwide! Experts predict these losses could exceed \$100 billion in five years.

In California alone, billions of dollars were lost over the last couple of years as businesses experienced 32 straight days of Stage 3 emergencies and countless outages. In fact, two unplanned outages in 2001 resulted in losses of approximately \$450 million. And to compound the problem, lack of power generation forced many utilities out into the spot market for power, where prices soared to as much as seven times the normal rate. Many have pointed the finger at deregulation as the culprit for the nation's energy woes, but rather than identifying problems, the U.S. needs to identify solutions.

The only way for crises like California to be avoided is for utilities to be able to anticipate power quality and reliability issues and for their customers to be able to proactively manage their energy consumption—in other words, to install a smart metering system. Had a smart metering system been in place in California, the state would have saved approximately \$181 million to \$672 million in one year.¹

A smart metering system extends far beyond the capabilities of an Automated Meter Reading (AMR) system, one that simply allows for utilities to gather meter data remotely. In today's energy environment, the only way for utilities and their customers to gain control over power generation, distribution and consumption is to have access to a constant stream of accurate and timely energy-usage information. The ability to constantly monitor load, to view interval usage data online, to monitor power quality and reliability, to receive automatic outage and restoration notifications as well as peak threshold alarming—all of these help facilitate immediate reaction and enable real-time solutions.

SmartSynch™, the leading provider of smart metering solutions to the energy and utility industry, introduced its SmartMeter SystemSM in Spring 2000. The SmartMeter System is an integrated, end-to-end solution that empowers the energy industry with valuable information. Combining SmartMeters™, Transaction Management System software, Advanced Communication Networks and the Internet, the SmartMeter System manages the real-time, two-way delivery of critical usage data and power quality and reliability information between utilities, retail energy service providers, and commercial and industrial customers. This power management tool provides real-time two-way communication, maximum scalability and the flexibility to interface with any data

¹ EPRI and the Bay Area Economic Forum

application system, resulting in decreased labor costs, increased accuracy and forecasting, improved customer relationships and the ability to implement real-time solutions.

Leadership in today's dynamic energy environment demands that energy providers invest in an infrastructure that enables real-time services and real-time solutions. Companies need real-time meter data access and integration of that data into other systems, such as energy management, billing, CRM, outage management and field force automation. These extensive capabilities—to collect, analyze and distribute information—are exactly what the SmartMeter System from SmartSynch has been designed to provide.

Leveraging that real-time connectivity and harnessing the power of information yields insightful service, improved customer relationships and increased profitability. But how can a utility measure the impact the SmartMeter System will have on its operations? How can a utility evaluate whether or not the SmartMeter System makes sense for it and its customers?

OVERVIEW OF VALUE PROPOSITION MODEL

Methodology

Designed by SmartSynch and a leading utility consultant, the Value Proposition Model from SmartSynch provides utilities with a quantifiable comprehensive list of features, benefits, savings and revenues that result from the implementation of the SmartMeter System. The model forecasts income and savings generated over a 10-year period and compares it to the investment required to implement the SmartMeter System. Utilizing a discounted cash flow analysis, the model yields a NPV of the project as a whole and on a per meter basis.

The real value of the system lies in the fact that users are encouraged to enter their own data, meaning the model is not designed to deliver a pre-set outcome (although typical savings numbers are provided for each of the benefits). Instead, it offers a clear-cut, unbiased demonstration of the impact of the SmartMeter System. In order to get the maximum potential out of the model, SmartSynch recommends that the model be run using several different scenarios:

1. The SmartMeter System as a straight replacement for existing equipment and technology
2. Include utility plans for expansion to meet foreseeable growth
3. A significant expansion down to customers not normally equipped with Load Profile meters, including customers with Demands in the 20 kW to 100 kW range, who also can provide some response to Demand-Response programs (often provides a remarkable payback story)
4. To compare any competing alternatives

Functionality

The model is organized into different spreadsheets, with each spreadsheet focusing on a particular issue faced by today's utilities. This enables each utility to easily select only the most relevant issues to its operation. The model then focuses only on those issues and the cost savings or increased revenue associated with those issues to determine the overall NPV of the SmartMeter System.

Each issue is presented in an easy-to-follow "Problem/Solution" format:

- **Problem**
This section illustrates the current way utilities are serving their customers and what problems arise from their current methods of operation.
- **Solution**
This section explains how the SmartMeter System solves the aforementioned "Problem."
- **Calculation**
This section presents typical variables that can be used to help determine the costs involved with the aforementioned "Problem" and allows utilities to enter their own data for certain variables. Utilities then decide if they want this information to be included in the overall NPV analysis.

In addition, the model asks utilities to click "Yes" at the end of each sheet if they want the model to include the issue and the cost savings associated with that issue. This gives the user the added flexibility of entering all of the relevant data and then quickly and easily running a variety of different scenarios with just a few clicks.

Data

The primary benefits of the SmartMeter System are divided into four categories in the Value Proposition Model: Operational Efficiencies, Supply-Side Savings, New Revenue Streams from Value-Added Services and Customer-Side Savings. Each category is then sub-divided into individual issues faced by today's utilities. Utilities enter their relevant data for each issue and the model, through a series of calculations, determines the impact of the SmartMeter System.

In terms of Operational Efficiencies, the SmartMeter System is an instant technology upgrade that provides utilities with real-time, two-way delivery of critical usage data. This enables problems to be identified and solved automatically; automated power restoration; more accurate and timely Load Profiling; and real-time monitoring. In addition, the use of advanced communication networks and the Internet greatly reduces current manual meter reading costs associated with multiple phone/phone lines and wireless devices.

The Value Proposition Model looks at the following Operational Efficiencies:

- Reduction in Meter Reading Costs
- Reduction in Telephone Line Costs
- Reduction in Cell Phone or Other Wireless Device Costs
- Reduction in Estimated Bills

- Reduction in Trouble Calls/Problems With Existing Equipment
- Reduction in Future Testing and Replacement Costs
- Improvement in the Power Outage Restoration Process
- Reduction in Load Research Costs
- Reduction in Theft of Service Expense

In terms of Supply Side Savings, the SmartMeter System provides utilities with a much clearer picture of their power generation needs as well as their customers' power consumption needs. By providing real-time monitoring capabilities along with customer access to their real-time energy consumption data, the SmartMeter System greatly facilitates better load forecasting and demand response programs, which lead to better emissions, reduced rolling blackouts and proactive power generation expansion.

The Value Proposition Model looks at the following Supply side Savings:

- Improvements to Distribution Planning & Reliability, Transmission Planning and Generation Expansion
- More Effective Load Forecasting
- Demand Response Programs
- Reduction in the Need for Rolling Blackouts
- Reduction in Emissions – Improvement in the Environment

In terms of New Revenue Streams from Value-Added Services, the SmartMeter System manages the real-time, two-way delivery of power quality and reliability information. This enables utilities to offer a host of advanced services to their customers, including online interval usage data, online load research data, automatic outage notification and restoration, power quality monitoring, sub metering and peak threshold alarming.

The Value Proposition Model looks at the following New Revenue Streams From Value-Added Services:

- Power Quality Monitoring and Outage Notification Services
- Kw Demand Monitoring and Threshold Notification
- Load Profile Data to Customers Over the Internet
- Consulting Type Services Based on Load Profile Data
- Provide Sub Metering Services to Customers
- Provide Miscellaneous Utility Services

In terms of Customer Side Savings, the SmartMeter System provides utility customers with Load Profile data, operational interfaces, and services that allow them to more effectively manage energy costs and run their businesses more efficiently. While these cost savings accrue directly to the customer, the utility has a vested interest in making its customers successful through cost-effective product and service offerings.

CONCLUSION

The Value Proposition model from SmartSynch is an easy-to-use financial model that clearly illustrates the tangible and intangible value of the SmartMeter System to utilities and its customers. By enabling utilities to run multiple scenarios, the Value Proposition model provides utilities with a strong decision-making tool to assess the overall impact of

the SmartMeter System. The SmartMeter System will revolutionize the electric power industry by creating the long sought ability to manage the relationship between power provider and power consumer in real time. The Value Proposition model from SmartSynch helps determine the value of this relationship.