BUSINESS INTELLIGENCE FOR UTILITIES
LIMIT EMISSIONS, MAXIMIZE EFFICIENCY, AND REDUCE COSTS

In an era of regulatory change, increasing stakeholder expectations, and competition, utilities executives must find new ways to run their businesses. Whether they manage a vertically integrated utility or a competitive retail operation, they need a strategic, proactive approach.

Smart grid technology represents a big step toward reducing emissions, maximizing efficiency, and offering customers better service. The data collected from the grid, however, is presenting a problem for utilities: they are overwhelmed with data that is locked up in silos, is difficult to retrieve, and cannot be shared across the organization. The data has not been cleansed, aggregated, or standardized. The lines of business have to manually extract, manipulate, and reformat the data before they can use it. Too few people receive the data they need, and what they do get is out of date.

Ideally, the data captured in many applications enterprise-wide should be converted to information and used as a strategic resource to drive the business, not just respond to problems. A business intelligence solution does just that. It enriches existing data and applications and provides a single front end for reporting and analysis across the entire environment.

TURN DATA INTO A STRATEGIC ASSET
USING BUSINESS INTELLIGENCE FOR IMPROVED OPERATIONS AND CUSTOMER SERVICE

Unlike other commodities, electricity cannot be stored; if it is not used, it is wasted. Delivering just the right amount of voltage to customers' homes and businesses is a challenge. Energy is more expensive for utilities in peak times, particularly in the middle of the day and in extreme hot and cold temperatures. When demand surpasses supply, utilities have to generate electricity in reserve plants or buy energy on the spot market. Consumers, on the other hand, pay the same price for electricity at all times of the day.

Business intelligence (BI) can work together with smart grid technology to monitor and regulate voltages in real time so customers save energy while never experiencing voltage drops or spikes. Armed with the data from intelligent devices, utilities can offer time-of-use pricing that reduces costs for the company and the customer.

Utilities can help ensure reliability by using event insight analytics from an event correlation engine. An effective event correlation engine lets utility companies analyze more than 300,000 events per second, monitor exceptions, and send alerts to dashboards. If an outage occurs or a line is overloaded, it can reroute power without manual intervention and allocate resources to fix the problem quickly.

Event insight analytics also enable utilities to optimize their use of fossil fuels and renewable energy. On a windy or sunny day, such technology can switch production automatically to a wind farm or solar generator. A weather change triggers an event threshold, and the software automatically shifts generation back.

Customer and Channel Analysis

Competitive retailers' needs are distinct from those of vertically integrated utilities. Retailers need BI solutions to closely monitor and profile customer behavior and collections data. They can then perform what-if and predictive analysis to determine which customers are most likely to respond to new marketing programs that focus on energy efficiency.

Cost-to-serve analysis helps them understand which customers and channels will provide the greatest overall profit. It also helps them improve the meter-to-cash cycle and make smarter pricing decisions based on customer value and actual energy and service costs. In addition, BI makes it easier to aggregate sales portfolios and restructure them to meet real market needs.

More-Informed Decision Making

In vertically integrated utilities and competitive retailers alike, a BI solution empowers executives to make better, quicker decisions. Data delivered to dashboards can be configured into charts, graphs, or tables. A BI solution should enable workers to access information anytime, anywhere, via PC and mobile devices. Accelerated search functionality allows users to ask questions about the data and receive quick answers. Further, such a solution can make it easier to collate information for regulators.

In addition, utilities can cope with the huge data volumes by leveraging in-memory computing from quality BI solutions. An integrated database and

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calculation layer in such a solution allows the processing of massive quantities of real-time data in main memory to provide immediate results from analyses and transactions. The most effective in-memory computing engines support industry standards such as Structured Query Language (SQL). But the in-memory computing engine also incorporates a high-performance calculation engine that embeds procedural language support directly into the database kernel. This approach reduces the time to make informed decisions, as it eliminates the need to read data from the database, process it, and then write new data back to the database.

Case Study: TXU Energy

Competition can be fierce for utilities operating in deregulated regions. TXU Energy Retail Company LLC is a retailer that provides electricity and related services to more than 2 million residential and business customers in Texas. The company maintains its competitive position by constantly targeting innovative products and services to customers, looking for ways to improve retention, and analyzing profitability. The recent phased implementation of SAP® BusinessObjects™ analytic applications has been instrumental in achieving the company's objectives.

Like many utilities, TXU Energy had several customer service applications, including three billing systems, in its IT environment. Some applications were decades old, and even the newer applications needed to be refreshed. Customer information dated back 90 years, and billing information on many customers was 20 years old. Additionally, with the advent of competition in the Texas electric market, TXU Energy had a much greater need to introduce innovative and competitive products and services. The time had come to merge the entire database onto one platform.

While preparing to do the migrations, TXU Energy realized the staff needed to access historical data but not in the transaction system. The company decided to retain the reporting shadow databases used by the analysts.

After it completed the migration to the single platform, it pushed the data to the reporting shadow, took a snapshot, and built BI tools on top. Now users could view customer information without clouding the new production environment.

Within two months of purchasing its BI solution, TXU Energy rolled it out. Another two months later, the company retired its legacy system. The return on investment was less than two months, the migration was fast and seamless, and the users found the system easy to use.

After the tools were in place, TXU Energy started consolidating information from across the enterprise so managers could make better use of it. The company used a point-and-click data visualization tool designed to create interactive analytics and dashboards with secure, live connections to an enterprise BI solution. Now the company can retrieve geographically segmented customer information, determine whether customers reside in single- or multifamily dwellings, evaluate payment records, and identify the largest concentration of customers with bad debts. It is also possible to calculate the churn rate and estimate the impact of an incentive program. Once TXU Energy completes the rebuild of the system architecture, it predicts that the time it takes to get data into the database at month end will be reduced by about 86%.

Senior managers have already benefited from the effort. In one case, a team's numbers appeared to have taken a turn for the worse within a two-week period. It took just 15 minutes of querying the tool to analyze the numbers, detect the error, and correct it.

Externally, TXU Energy established a Web-based reporting tool set for its commercial customers. Large customers are billed on 15-minute cycles, so their data is pulled at the end of each cycle and a nightly snapshot of their bill is provided on their personal Web portal. Customers can determine what they are paying at particular times of the day. They can analyze month-over-month details and figure out which activities may have driven their consumption up or down. They can view a consolidated bill or regroup the data to look at consumption and charges in a specific geographic area. Moreover, they can download the data into Microsoft Excel or manipulate it using the tools provided by TXU Energy. The tool set has taken manual intervention out of the process and allowed TXU Energy to meet the needs of its customers faster and more easily.

Now that the BI solution has proved its value to the business, TXU Energy plans to implement an accelerated search facility, enable the sales force to access consumption data via an iPad, and leverage in-memory analytics.

Driving More Value

A BI solution enables utilities to drive more value from existing assets and resources. Utilities can gain greater visibility into operating costs, performance levels, and safeguards for reliable service. A BI solution positions utilities to respond to increased demand from consumers for e-service options and account access. And utilities can use insight from a BI solution to prioritize asset maintenance spend and control risk and costs due to aging assets. Finally, companies can integrate process changes driven by the increased availability and convergence of technology innovations such as smart meters, distribution automation, wind and solar power, and home-area networks. With the insight that business analytics deliver, utilities can move beyond fixing holes and responding to problems to become more strategic and proactive.

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