Innovate and Optimize: The Power of Analytics in Today’s Utility
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Introduction

From communication with customers and regulatory bodies to optimal integration of renewables, utilities face demands to be more transparent, more available and more personal than ever before. Customers want an improvement in electric reliability and protection from unreasonable rate increases. Meanwhile, utilities must invest to economically maintain and upgrade the system, and effectively manage aging infrastructure to meet growing needs for electricity to power data centers and projected waves of electric vehicles. Any one of these factors could consume entire organizations, but the scale and complexity of managing all issues now is just one more reason to think about embedding an analytic approach – from strategic capital investment decisions to network data management.

The industry hopes that investments in a smarter grid will address many of these challenges. But what is a smart grid? To identify the characteristics or performance features of a smart grid, the US Department of Energy held regional stakeholder meetings in which the participants outlined the following attributes:

- Enable active participation by consumers.
- Accommodate all generation and storage options.
- Enable new products, services and markets.
- Provide power quality for the digital economy.
- Optimize asset utilization and operate efficiently.
- Anticipate and respond to system disturbances (self-heal).
- Operate resiliently against attack and natural disaster.

Although this definition is from a US government organization, most differences that exist geographically and country-to-country are about the approach rather than the objective. In Europe, transmission and distribution system upgrades are slated to follow ambitious meter rollouts. In fact, 240 million smart meters are anticipated to be deployed across Europe by 2020. It is indeed a global issue, as indicated by the estimated spending on smart grid data analytics compiled in the following table from Pike Research. This research shows the global market spending topping US$4 billion by 2015, with compound annual growth rates (CAGR) over 50 percent in all regions.

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1 Smart Grid Principal Characteristics: Enables Active Participation by Consumers. Conducted by the National Energy Technology Laboratory for the US Department of Energy, Office of Electricity Delivery and Energy Reliability. September 2009.

In attempting to better understand the many ways in which the new energy landscape affects our customers, SAS conducted a focus group with utilities industry leaders at The Premier Business Leadership Series in Las Vegas in October 2010. The intent was to gather input regarding integrated resource planning, customer analytics and smart grid. Most participants agreed the volume and type of smart data will change planning capabilities, segmentation and customer engagement significantly. The group of senior executives also identified some of the “big issues” for utilities today:

- Capital requirements, both for new technologies (e.g., automated meter infrastructure) and aging infrastructure.
- Speed of technological change and lack of standards. New technology challenges the industry tenets of reliability and stability. Many companies are simply not sure how to deal with change.
- Changing consumer perceptions of the utilities business. Consumers are sensitive to rate increases, due in part to increasing costs. In addition, general customer awareness and complaints are increasing. Utilities are still learning the nuances of good customer service.
- Overall revenue and earnings growth in a flat market (although this generally applies less to companies that operate in unregulated markets).
- Resource planning in light of constraints on supply – for example, forecasting the right mix of generation and predicting the impact of renewable energy sources like wind and solar. In some states, politicians are forcing renewable energy standards that are challenging or problematic.
This paper defines and illustrates why analytics is so crucial for utilities in the emerging energy landscape. It addresses four key areas of the utilities business where analytics plays a distinct role in creating smarter business processes:

- Customers.
- Risk.
- Operations.
- Data.

**Defining Analytics and Its Importance**

We typically think of analytics as the application of a statistical methodology to answer a business question, such as “What is the average rate per kWh that our customers pay for electricity?” or “What is the anticipated load on the system at noon tomorrow?” Analytics can be either descriptive (as in the average rate example) or predictive (as in the load forecasting example).

Increasingly, with near-real-time data on the smart grid, analytics is being applied to determine the best-case scenario and answer situational questions, such as “What are the lowest-cost dispatchable resources that we can reliably execute to deliver the load reduction required?” and “Where are they located, and for how long can we control them?” To answer these questions, utilities require more data and proven models that are available for decision support, returning results quickly and reliably. In a recent webcast and white paper entitled Analytics 101, the authors state that “Analytics is about more than building and running models; it is a closed-loop process of data exploration and discovery, model creation and validation, then getting the results to the right people at the right time and learning from the results to further refine the process.”

To improve the application of analytical methodologies (descriptive, predictive and prescriptive) as well as the process described in the previous paragraph, utilities may consider establishing an analytic center of excellence. These have proven to be valuable resources in many industries that face data deluges in the midst of business transformation, particularly when it requires sharing information and analytical results across multiple business units.

Why do analytics matter? Utilities can no longer afford to base business decisions on life as we knew it. Most organizations operate in a data-rich, information-poor environment. Without analytics, utilities will underperform when trying to identify new revenue opportunities or minimize bad debt, optimize integration of renewables or understand their customers.

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3 For more definitions of analytics, visit the INFORMS website [http://www.informs.org/ORMS-Today/Public-Articles/October-Volume-37-Number-5 INFORMS-News-INFORMS-to-Officially-Join-Analytics-Movement].


Smarter Customer Care for Energy Consumers

Communication

Smart appliances, customer-centric demand management programs and utility ads on network TV are all seeding the ground for dialogue with energy consumers. Ensuring the availability of power at a reasonable cost is increasingly top of mind for consumers and regulators alike, particularly given recent economic times and severe weather events. Any rate increase is met with resistance, and the general public is skeptical about the intent of most big business, including their local utility.

A survey by the Boston Consulting Group found that 66 percent of consumers want more communication from their power company about smart meters. Questions about privacy, linking to in-home devices and impact on billing rates are commonly asked in public forums.

For the smart grid overall, recent research by the Smart Grid Consumer Collaborative found that the general public anticipated the most important smart grid and meter benefits were:

- Detecting outages.
- Reducing brownouts.
- Integrating renewables.

While the first two were personal for the consumer in regards to keeping the lights on, the last one – integrating renewables – is an interesting perspective because it is a societal benefit. It may be that the public is associating renewable energy sources with energy independence, job creation or environmental protection. Whatever the reason, consumers have identified these benefits as being most important to them. However, if they need to take action to realize those benefits, utilities will have to make the return more clear and customize their message to each audience.

Revenue Assurance

Every year energy companies write off millions in bad debt caused by customers who don’t pay their bills. Utilities are facing increasing pressure from shareholders and regulators alike to minimize those losses, while continuing to provide services to consumers who are not likely to pay.

Because electricity is considered a basic necessity, regulatory bodies require utilities to be more proactive with customers before disconnecting services, and they often won’t allow utilities to roll bad debts into the rate structure – which can affect shareholder value, the balance sheet and credit rating. It is becoming a real necessity to identify and predict when customers may have trouble paying their bills and then develop plans for helping those customers keep their accounts current.

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7 Smart Grid Consumer Collaborative, page 8.
Smart meters will enable more account management capabilities and improvements. For example, if the utility’s systems are set so that they have earlier notice when a customer’s usage pattern is changing, they can more proactively address a concern for a future high bill. This can help the utility resolve high-bill complaints, reduce the possibility of a bad debt situation and add an opportunity to interact with the customer in a positive framework.

However, none of these benefits can be achieved efficiently without the application of analytics. An analytic approach can help utilities take into account regulatory reasonable care demands while building risk scores for all customers based on credit ratings, usage patterns and payment history. Collections professionals may also use predictive analytics and “what-if” scenarios to test and optimize treatment strategies and ensure that only treatments suitable for particular customers are implemented at optimal cost. High-risk customers and eligible shutoff accounts can be prioritized based on risk mitigation objectives.

**Customer Segmentation**

When energy consumers take an action – whether it is to request a service call for a line repair, extend a contract or cancel an ancillary service – they are customers. This proactive engagement, versus passive receipt of energy, defines them as individuals with certain billing preferences, contact preferences, ability to pay, low-tech or high-tech aptitude, willingness to give the utility control, and sensitivity to savings or environmental messages.

A utility becomes an effective marketing organization when it can customize an offer based on an individual’s preferences. Accenture has developed a framework for segmenting utilities customers based on their interactions with energy companies around the world.

Our experience is that once utilities understand customer segments, they can gain situational intelligence from each customer interaction and use it to change service offering outcomes, adjust forecasted energy demand or efficiently satisfy customer requests. Historically, however, utilities – particularly in US regulated markets – have not applied customer segmentation techniques consistently for future load planning cycles, outbound marketing campaigns or optimizing customer contact. This is due to many factors – e.g., lack of detailed data, silos of customer contact and absence of analytics-driven decision support systems. With volumes of customer data being generated from automated meter infrastructures, utilities have the opportunity to optimize management of customer outreach programs, sites and premises, billing and payment schedules, and products and rates.

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**Six Consumer Segments from Accenture**

- **Eco-rationals** (12 percent) – Highest interest in the reduction of their impact on environment; higher willingness to decrease level of comfort; sensitive to savings but willing to invest in green technologies and programs (more often women).
- **Cost-conscious** (17 percent) – Highest sensitivity to electricity bill savings; less interested in complicated information or time investment in managing electric usage; higher level of trust of utility (more often women).
- **Pragmatics** (21 percent) – Lower acceptance of utility control; higher sensitivity to savings; slower to adopt new technologies (more often men).
- **Skepticals** (21 percent) – Lowest acceptance of utility control and lowest trust toward utilities; lower sensitivity to social pressure and electricity bill savings; more likely to seek advice from consumer associations (higher income).
- **Indifferents** (13 percent) – Lowest willingness to reduce use of major appliances but early adopters of new technologies and trends; higher acceptance of utility control; lower proportion believe electricity has a negative impact on environment; want simple bills and limited time commitments (more often men, below 24 years old, lower income).
- **Proactives** (16 percent) – Highest willingness to take action to reduce use of major appliances but lowest interest in the reduction of their impact on the environment; higher preference for in-person contact at home to get information.
Large Multinational Company Energizes Spain’s Deregulated Utilities Market with SAS® Customer Intelligence

Business Issue
Acquire and retain customers in a competitive, deregulated energy market through more efficient, effective campaign management and better understanding of customers.

Solution
SAS® Customer Intelligence

Benefits
Shortened design time for new campaigns from weeks to hours, reduced customer churn by 50 percent, significantly increased gas sales, reduced customer acquisition costs and improved cross-selling success.

Quote
“We chose SAS for its unlimited analytical power and potential and its ability to handle large data volumes. SAS provided everything we needed – it’s an indispensable tool for our work.”

— Customer Intelligence Officer

Optimizing the Marketing Process

For a utility to improve customer relationships, the ideal scenario is to match the right offer – from an increasingly large and diverse set of offers – to the right customer, through the right communication vehicle. Customizing this interaction is likely to increase adoption – a fact proven by mobile phone companies and online retailers.

To optimize the offer process, utilities are turning to advanced analytics to cluster customers by likes and dislikes and then assess their propensity to switch to a different offer. This is a fundamental of effective marketing – something that utilities often hide under the name “customer service.” In a BusinessWeek Research Services study, 55 percent of C-level executives surveyed said marketing plays a vital role in achieving their strategic goals; yet less than half were satisfied with their organization’s ability to increase revenue from new and existing customers. 9

Given the shift toward customer-centricity and the challenges to overcoming dirty data in legacy customer information systems, utilities today are evaluating their options for technologies that improve campaign management, real-time decision management and marketing optimization.

9 SAS. Competing on Customer Intelligence: Leveraging insight, interaction and continuous improvement to drive customer centricity. May 2011.
Campaign management automates campaign processes, such as pulling lists, managing communications with customers across multiple channels, tracking responses, and consolidating and reporting results. A smart grid pilot program that requires customer engagement is a great way to jump-start an iterative implementation approach for a broader utility application. Modern campaign management systems enable marketers to:

- Manage customer relationships at an individual level.
- Measure the relative effectiveness of various offers and creative treatments.
- Conduct tests rapidly and compress learning cycles to avoid wasting marketing dollars.

Real-time decision management provides recommendations on how to treat a customer during a live interaction. For example, a customer may be on the phone with a customer service agent. The agent may receive several screen prompts to ask specific questions. The customer’s responses are collected, and the system uses predictive and descriptive analytics to calculate the best action – all in real time during the interaction.

For utilities that have multiple lines of business, each with multiple offers for products and services, it can be challenging to fit the right offer to the right customer. Marketing optimization increases ROI by determining the best offers for individual customers. It also delivers analytic insight into the value of business constraints, such as channel capacity and contact policies.

**Smarter Risk Management**

Utilities must manage risk associated with trading activities and business planning. The global credit crisis showed many energy and utility companies that their risk models were too limited, restricting their ability to analyze market movements, measure corporate exposures and develop mitigation plans. An inability to aggregate internal and external data and transform it into useful information quickly means that many companies are not fully aware of their risk exposures. They need a better way to capture known risks and illuminate nontraditional exposures as they occur in real time.

Being unaware of compounded risks created in multiple data systems or across business units – or even among key trading partners – can substantially alter your company’s risk profile, leaving you exposed to greater market, credit, regulatory and even reputational risk than anticipated. What’s needed is a more accurate understanding of net exposure; not only the risks produced by market dynamics, but also the significant and often hidden risks and offsetting positions inside your operations. To prevent complacency from obscuring a severe threat, you should continually test fundamental assumptions about your risk profile. This requires investing in systems that are attuned to regularly measuring and accounting for internal and external exposures while striving to produce real-time guidance on risk.

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According to the Smart Grid Consumer Collaborative’s 2011 State of the Consumer Report, “It is possible to craft large-scale shifts by offering choices and by assigning value to different sorts of contributions. The metric of every household seeing a direct return from savings on their bill to pay for the meter does not leave room for the necessary mix of options.”

10 Smart Grid Consumer Collaborative, page 20.
Data-Driven Planning

How often do you find yourself wondering if the intelligence you are basing decisions on is driven by rigorous analytics or if the information is skewed to bias one outcome over another? A lack of transparency in any decision, as well as incomplete or erroneous data, significantly increases risk. Utilities must use the influx of data that smart network devices deliver to improve the decision-making process by putting powerful data exploration and analytic tools in the hands of experienced analysts.

Whether it is determining optimal deployment of capital, long-term demand forecasting, or integration of renewables and microgeneration, a utility’s ability to deliver profits will increase alongside improvements in data-driven planning.

Take, for example, a 2011 case study from Bonneville Power Administration (BPA) on wind forecasting, published in Intelligent Utility. According to the case study, “BPA has begun to place a large emphasis on wind forecasting in order to gain better visibility into renewable generation. The wide variability is difficult to manage and requires a significant amount of reserve capacity on BPA’s hydro system. Better forecasting allows BPA to hold less water in reserve behind the dams, saving ratepayers money and also providing a better option for the environment. BPA is looking at ways to integrate the data collected from wind forecasting into its planning models and dispatch models ... so they can get a clearer picture of what they believe their wind levels will look like for the next hour.”

Governance, Risk and Compliance (GRC) and Portfolio Risk Management

Utilities must manage risk in broad areas of the business, but none so much as energy trading and compliance reporting. Pending legislation will increase reporting requirements for energy trading. The Dodd-Frank Act in the US will affect the oversight and supervision of financial institutions, including energy and commodity traders. The law will affect utilities because of proposed changes in the securitization market and in the regulation of over-the-counter derivatives.

Managing market risk and shifting regulatory requirements is not new for utilities, but they now must shorten reporting cycles and process more data intra-day. To do so, energy traders must have the tools to effectively integrate both internal and external data sources from dispersed and diverse operations so they can improve netted risk assessment.

Advanced Risk Management

As they face complex political, environmental and business risks, utilities are held accountable for managing and mitigating shareholder impact. To manage performance against key risk indicators, some utilities are building a common, integrated repository of all critical GRC components – including risks, controls, policies, audits and more – to replace the manual, siloed tracking systems often used today. Let’s consider the way two utilities manage risk using SAS solutions.

Dominion Mitigates Its Risk Exposure with SAS®

Business Issue
Needed a system that could calculate the value of Dominion’s energy portfolio at any given time to mitigate financial risk, and generate management and regulatory reports with confidence.

Solution
SAS® for energy trading and risk management and SAS® Enterprise Guide® software

Benefits
The solution delivers timely and accurate valuations of commodity transactions and assets, produces accurate management and regulatory credit risk reports, and enables faster decisions and more efficient market response.

Vattenfall Powers Risk Management with SAS® Enterprise GRC Solution

Business Issue
Standardize risk-management processes and systems for a holistic understanding of enterprise risks and opportunities.

Solution
SAS® Enterprise GRC solution

Benefits
Regular standardized workflow and reporting, centralized view of entire risk database, large data-volume processing, event identification and quantitative assessment, incident reporting, scalability.
Smarter Operations

Utility operations – whether managing transmission or distribution – recognize the opportunity to use high volumes of data to bring new efficiencies to electric generation. These efficiencies will reduce manual intervention and improve the reliability of the power grid.

Why is this important? Four reasons:

- An analytical approach to network optimization enables integration of renewables while maintaining grid reliability. Grid operators have historically managed electrons moving one way – from power generation to consumption point. They need to rethink the use of network devices to effectively utilize energy from distributed resources.

- Dynamic network management enables implementation of demand response programs that engage with customers to offset peak power demands. With enhanced visibility to home and office energy consumption in minute-by-minute intervals, utilities can now work with customers to offer time-of-use pricing that will shift load away from peak hours.

- Analytics is the key to recognizing business value from millions of new data points and assets connected to the network delivering or consuming power, and responding to pricing and environmental signals in near-real time.

- The application of analytics on top of maintenance planning or enterprise asset management systems can increase the uptime and lifetime of aging assets by predicting asset failures in advance.

Figure 2: In the future, the smart grid will incorporate sensors and digital devices as part of a communications network that collects and transmits large amounts of data – enabling advanced analytics capabilities for smarter operations.
Optimized Distributed Generation

Distributed generation is power generation that occurs on or near the site where it is consumed. Small-scale power generation technologies are used to provide an alternative to or an enhancement of the traditional electric power system. The source of the power may be anything from solar to natural gas.

Many utilities have pilot programs in place to understand how grid management will change with the increase in distributed generation. For example, Duke Energy has a project in a suburb of Charlotte, NC. The McAlpine project is a test bed for distributed generation and other advanced technologies.

In the pilot program, electricity generated by 213 solar panels at the McAlpine Creek substation can be put directly on the grid in high-demand periods, or stored to a 500-kilowatt battery if power generation is adequate to meet demand. This stored power can then be used when demand increases.12

Utilities are exploring advanced algorithms that optimize the utilization of this distributed power to maximize reliability while controlling cost. Distributed generation may be associated with virtual power plants, a term that describes the as-needed integration of power assets that are disparately managed and/or owned by market participants. A recent study by Pike Research estimated that global output from virtual power plants will exceed 41 gigawatts by 2015.13

Improved Asset Utilization

Utilities also want to improve asset uptime and prioritize maintenance and replacement strategies using advanced analytics. Because the growth boom in the 1970s was not followed by a period of aggressive upgrades or replacements, many utilities are using assets at or beyond life expectancy. New equipment is increasingly monitored and provides significant data for analysis. The financial impact of outages and failures is increasing. Every year energy and utility companies spend billions of dollars maintaining and repairing their generation, transmission and distribution assets. A study by the US Department of Energy indicated that major US investor-owned electric utilities spent in excess of $14 billion on maintenance in 2008 alone. Worldwide, the maintenance costs are estimated to be $200 billion or more. In the US, 33 percent of maintenance costs are wasted each year on poor management of maintenance issues.14

While much focus has been given to preventive maintenance, very little attention has been given to predictive maintenance for the utility industry. Increasing the quantity and quality of predictive maintenance on equipment can improve total uptime. New economic and regulatory forces are requiring utilities to rethink ways to prevent asset failures and optimize maintenance cycles. SAS Predictive Asset Maintenance provides an analytics-based framework to improve uptimes, performance and availability of crucial assets while reducing the amount of unscheduled maintenance to minimize maintenance-related costs and disruptions of the operation.

**Figure 3: SAS® Predictive Asset Maintenance involves a continuous improvement cycle.**

**Global Energy Services Company Predicts, Prevents Asset Failures**

**Business Issue**

With more than 800 turbines under service contract, a global energy services company needed a better way to predict asset failures, prioritize sensor alarms, and maximize uptime through optimal maintenance and workflow. Drowning in detailed data, the company was forced into a reactive maintenance cycle which threatened to jeopardize service-level performance.

**Solution and Benefits**

Using SAS, the company built a monitoring and diagnostic solution for predictive maintenance that delivers:

- Management of analytical degradation models to predict turbine failures before they occur.
- Leading indicators of the cause of failure, which increases effectiveness of the maintenance fix.
- Flexibility in all areas, including platform support, data access, integration with Web services, analytics, information delivery, Web reporting and application design.

As a result, management can respond to existing problems more quickly and address the issue with accuracy. In addition, improved asset uptime is a competitive differentiator when seeking additional service contracts.
Workforce Analytics

The workforce represents one of the most significant costs for any organization. Nearly every activity associated with human capital management hits your bottom line. In particular, turnover in the workforce, whether voluntary or not, leads to additional costs for hiring, training, compensating, retaining or outplacement services. In fact, turnover has been estimated to cost from 50 percent to 200 percent of annual salary. Therefore, business leaders need to make smart workforce decisions based on the predicted demand for services offered by the organization.

Unfortunately, many utilities are hampered by an inability to accurately forecast business demand and match the appropriate skill set and certification to address customer needs. The situation is complicated by an aging workforce and resource data that is spread among many systems. Many organizations are losing money due to their suboptimal workforce management approach.

Utilities have an opportunity to augment existing talent management systems with optimization algorithms that can select the best route or best crew to address each outage or service call. The optimization engine considers all factors, including skill set, hours on job, proximity to event, prioritization of event and total workload.

Smarter Data Management

An article in Electric Light & Power had the following title: “The Meters Are Smart, but What About the Data?”

While smart grid teams are designing the IT and communications infrastructure, many are not adequately preparing for the real prize at the end of the journey: a predictive management engine that informs business decisions in any operating group, regardless of the data source.

Unfortunately, utilities often underestimate the ability to use vast resources of new data to optimize their daily business activities. As a result, valuable information remains trapped in silos, and utilities continue to underperform in critical areas such as meter data quality, asset management and customer service.

A recent report from Pike Research highlighted the impact that poor data quality and availability have on other business objectives. “In part, the lack of intelligent, actionable information can be attributed to the fact that data cannot be easily and quickly accessed because it is typically distributed across multiple sources and systems of record.”

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Utilities must also consider the value of data that is not in a structured format. Unstructured data – found in comment fields, Web pages, call notes and other open forms – is a valuable source of data for mining. These hidden gems are usually the source of analytical insights on predicting asset failures, root cause analysis or customer segmentation. The same Pike Research report noted that “gaining access to both forms of data is essential to making informed decisions and analyses.”

Data management tools are critical for helping utilities IT professionals capture, analyze and distribute smart grid data. Today, limited data management capabilities are bundled with point solutions for meters, communication devices, asset management systems and other components of a smart grid rollout. What utilities need is a comprehensive platform that integrates and rationalizes data regardless of source, and takes action on that data in real time by surfacing it to analytical or storage systems according to the business processes defined in metadata.

The smart grid efforts at companies today provide utilities with an opportunity to build an analytic center of excellence. This rich organizational asset can serve as a central hub for developing analytical routines that deliver specific business benefits to the organization – from data management to process optimization. One of the reasons for centralizing capabilities in this way is to overcome reliance on transactional systems that are not designed for speed and scalability. In fact, according to the Pike Research authors, “Smart grid data requirements – like speed and scalability – usually go beyond SQL-only systems, beyond traditional data architectures, and beyond conventional storage practices and procedures. In addition, the rate of data generation makes traditional database and data warehouse systems too costly and too slow for advanced, interactive analytics.”

Utilities need analytics embedded in a framework that supports the entire decision-making process, given all the new data coming from new sources. For example, a new entry in the service operations system might need to flag a particular group of accounts in the call center so that customer service is aware of the work being performed in the region. The smart, connected utility must address the complexities of more customer and network information and use new insights to efficiently implement its visions for the future. Operational efficiency is achieved when utilities can move from just analyzing historical or actual data, and begin to forecast possible outcomes before they happen.

17 Pike Research, page 14.
18 Pike Research, page 17.
Conclusion

From targeted customer interactions to optimized network operations, the application of analytics within the utility presents a myriad of opportunities. As evident in the research cited in this paper, leading utilities around the world are accelerating their adoption of smart grid data analytics. As markets become more competitive and margins are under pressure, the analytics that power the best-case scenarios may deliver a competitive advantage in the market – one that attracts new investors and customers alike.

To capitalize on the benefits that result from turning opportunity into action, utilities must address the lack of analytical talent present in organizations today and the barriers to data sharing across silos. Our focus group of utility executives noted how difficult it is to compete for top talent against other industries such as communications and media. Utilities are more than a company of wires and switches – they provide a critical service for the global information economy. But unless utilities begin to market themselves in a new way, they will continue to be starved of analytical talent.

The issue of cross-functional data sharing is not unique to utilities. It is a critical step in “crossing the chasm” from early adopters to majority adoption of the technology. Pilot projects that are contained within a division of an organization cannot get to scale without contributions from, and benefits provided to, multiple stakeholders across the company. For this reason, many utilities have established smart grid organizations that have members from many operating units.

As with all periods of change and organizational transformation, the challenges can be addressed by senior leaders who have the vision to spur new innovations and to implement best practices from other industries. Many will benefit from the power of analytics to enable both innovation and transformation.

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 delivered within an integrated framework, SAS helps customers at more than 50,000 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®.