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The Smart Grid is the convergence of information and operational technology applied to the electric grid, allowing *sustainable options* to customers and improved security, reliability and efficiency to electric utilities.

Linda Ziegler, executive vice president of power delivery at Southern California Edison, issued an industry call to action at the 2011 DistribuTech Conference in San Diego. Zeigler challenged the industry to explicitly state the benefits of the Smart Grid to customers and regulators or risk failure. “Why is the Smart Grid good for me?” is a question each customer and regulator must be able to answer. “What is my personal benefit?” Ziegler theorized that if the industry fails to define and communicate the benefits of the Smart Grid, we will not be allowed to build it.

This white paper directly addresses this challenge by examining the value of the Smart Grid to customers and regulators in the areas of cost, the environment, security, reliability and efficiency.

COST

The price of electricity is going up — period. Increasing global demand, decreasing supply, old power plants that need to be replaced, high-priced subsidies on renewables, and new technologies deployed on an aged transmission and distribution system leave little doubt that rates and bills are on the way up. After conservation, the technological advances of the Smart Grid will allow customers, who directly or indirectly vote for regulators, sustainable options to mitigate the increasing cost of electricity. Like telecommunications, video entertainment and the Internet, the new technology of the Smart Grid will give the customer options to effect their usage and pricing using applications yet to be developed. Ignoring the role that technology has played in other industries and can play in the future of electricity is to ignore history.

ENVIRONMENT

Customers and regulators will be armed with new information about their personal usage of electricity and will be able to choose to source, conserve, shift or otherwise manipulate their use of electricity to achieve their personal environmental goals. The unique energy profile of individual but anonymous customers will be publically available through power delivery providers or third parties via the Internet, allowing new demand-side applications for reducing individual carbon footprints, using renewable resources, postponing the need for physical assets, and new, yet to be determined, environmental benefits. It may be difficult to assign a cost benefit to environmental goals, but certain customer groups will embrace the opportunity to contribute personally.

SECURITY

Cyber security is an increasing concern for the electric utility industry. However, customers generally expect utility systems are secure and compliant with regulatory requirements and will not perceive that cyber security is a quantifiable, *personal* benefit of the Smart Grid.

RELIABILITY

Customers in developed nations take electric grid reliability for granted. Momentary electric power interruptions from lightning or line impacts may affect sensitive medical or production equipment but cause little concern for the general population. Rare extended outages from vehicular accidents or equipment failure may aggravate larger segments of customers. But multiday, long-term outages from major storms typically rally neighborhoods and communities around their lineman in harm's way, getting the lights back on. Improving system reliability by tenths of a percent, while quantifiable in performance indices and good for customer satisfaction surveys, does not justify the expenditure of millions of dollars. The marginal benefit of improved reliability for the customer and regulator cannot be quantified in terms of cost value to the customer in any meaningful way.

EFFICIENCY

Customers expect that monopolistic, and therefore regulated, utilities are run prudently and efficiently. The technology that allows a utility to reduce truck rolls, notify customers of outages, and identify failing equipment before it fails adds to the rate base and increases the cost of electricity, but does not give the customer, and thus the regulator, any tangible personal benefit.

CONCLUSION

In conclusion, the electric utility industry must focus on what the customer wants: lower electric bills and, for some, the opportunity to be good stewards of the environment. Efforts to sell the significant cost of the Smart Grid to customers and regulators on the basis of improved security, reliability and efficiency will not be successful.

ABOUT THE AUTHOR

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