VISION STRATEGY REALITY

Savvy customers & utilities can win

+ TECHNOLOGIES TO BETTER CONNECT CUSTOMERS WITH UTILITIES

By Karen Blackmore

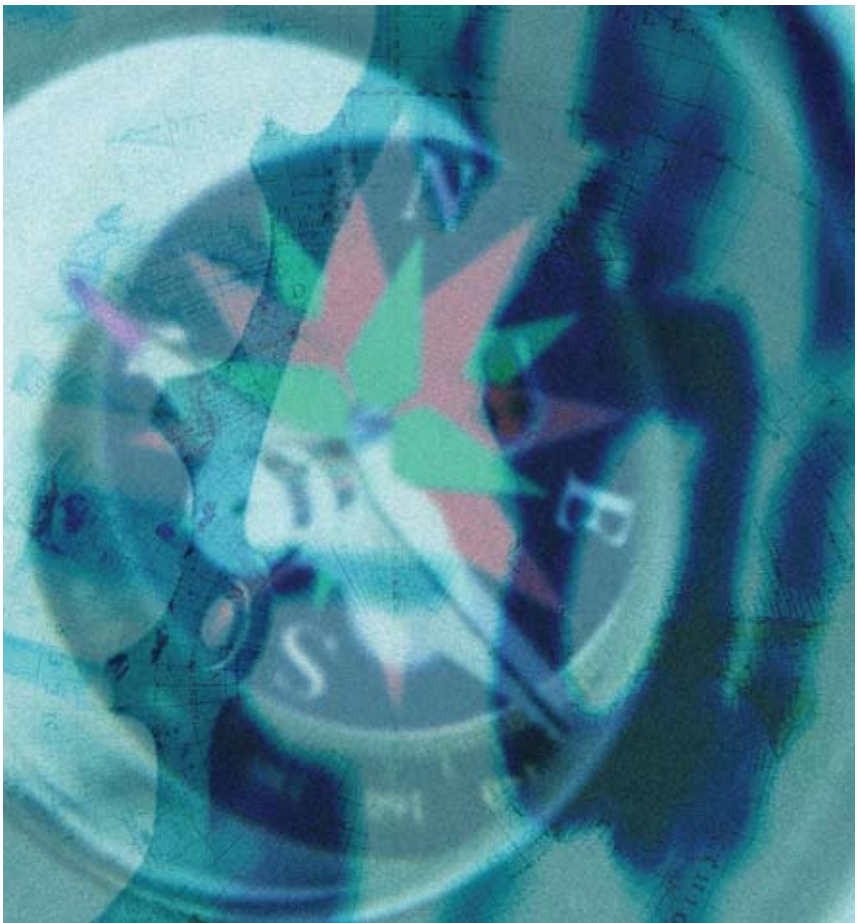
JUST AS SOME OF US RELY ON OUR CAR NAVIGATION SYSTEMS TO HELP US reach a destination, so too should a smarter grid provide customers with an always-on, but efficient electricity supply. Most electricity consumers are not aware of smart grid and its implications for them. In-home technologies that help customers plus utility technologies together will form the basis for making the grid and utilities more intelligent.

CUSTOMER IN-HOME TECHNOLOGIES

Most of today's talk around a smarter grid centers on utility systems, but customer applications will be key in making grid investments truly effective.

CUSTOMER CONNECTIONS

The next three articles focus on how utilities can better connect with customers. Karen Blackmore takes a high-level look at technologies that bring together the two groups. Craig Boice then discusses the reality of home energy displays. Finally, Bert Valdman talks about PSE strategies to keep customers from becoming just bits and bytes.



Applications that provide customers with information about their distributed generation systems are needed for net metering information, pricing and time tariffs, and generation capability. These applications give customers information to help them decide when to ramp up their generating systems and by how much, if the generating system has excess capacity over what they need for personal use.

Another application that is still under development and evaluation is the way plug-in hybrid electric vehicles (PHEVs), utility energy storage and electrical recharges may be credited or billed. Two examples of ideas are smart cards that can accept monetary adjustments and radio-frequency identification (RFID) tags that identify the vehicle owner and battery storage capability to the utility, which can then distribute that information back to a clearinghouse or to the utility of the account owner. This type of adjustment system is similar to the billing done by the telecommunications industry right after the breakup of the Bell System.

Smart energy homes require energy-usage information, provided by home energy display, home energy management systems, or Web-based applications that give customers data about their energy usage, current pricing, upcoming peak or demand events, and other similar data. This information helps customers curtail usage on peak days or during more expensive times of the day as well as learn more about their usage in general. Some of the energy-usage systems help customers go down to the consumption levels of individual appliances or devices. Other applications let a utility know what level of demand response a customer is willing to participate at for a given event and work with smart metering systems.

BACK TO THE UTILITY

These applications are helpful to consumers, but alone do not make an

intelligent utility. These applications do provide data and information to customers, but utilities need a way to gather and aggregate the data and combine it with other data from sensing devices. Using analytics to determine how customers respond to time-of-use and peak-period pricing will help utilities better understand how much peak demand they still need to offset to reduce brownout situations. In addition, utilities can use this information to further market demand response programs to other customers with similar demographics or to customers who are already starting to respond to those pricing signals. In all, decreasing overall demand will help ensure energy availability, while deferring additional generation and reducing overloaded transmission needs.

Customer involvement through technology will ultimately give utilities the last pieces needed to complete the intelligent utility. Smart grids and intelligent utilities will not cure commuter traffic jams or the common cold, but can certainly make it easier to achieve and manage energy reliability and availability for all customers. That means everyone wins.

Karen Blackmore is a research director with Energy Insights (an IDC company).

VISION STRATEGY REALITY

Come in and take a load off

+ HOME ENERGY DISPLAYS CAN BEGIN A REAL-TIME CONVERSATION

By Craig Boice

UTILITIES PROVIDE THEIR CUSTOMERS WITH METERS, BILLS AND CUSTOMER service. But the meters don't talk to the customers. The bills don't help much in figuring out how to use energy more wisely. Many utility customer service representatives lack the tools to tell customers much about household and appliance energy uses. Is there an easy way for utilities to begin a real-time conversation with their customers? The welcome many customers are giving to home energy displays suggests that customers are ready to welcome the grid into their homes.

Home energy displays are small, wall-mounted, countertop or plug-in devices indicating a household's energy use as well as a household's energy costs over a specified period. More than 20 models of home energy displays have been introduced in Europe and North America. Some do more than others, some are cheaper than others, and some are much easier to install than others. Early versions of home energy displays (e.g., Kill-A-Watt) have long been available at retail stores. Recently, several Canadian and American utilities have been testing and distributing home energy displays to their customers for free or at a discount (*see sidebar: Examples of utilities investigating home energy displays*).

Deployed home energy displays include the PowerCost Monitor (Blue Line Innovations), The Energy Detective (Energy, Inc.), the Whole House Energy Monitor (Energy Monitoring Technologies), the In-Home Display (AzTech), the Cent-A-Meter (Centameter) and the Energy Joule (Consumer Powerline). New devices are entering the market rapidly.

While home energy displays differ in their capabilities and ease of use, early reviews of these devices are encouraging. Customers like them and find them satisfying to use. Many types of home energy displays have been associated with 5 to 15 percent household energy savings in utility trials. For example, the much-cited 500-household Hydro One test indicated that home energy displays typically decreased energy use 6.5 percent, but households with electric space and hot water heating posted a 16.7 percent decrease.

Critics have been quick to point out that home energy displays have limitations. These devices do not offer billing-quality information. They are

EXAMPLES OF UTILITIES INVESTIGATING HOME ENERGY DISPLAYS

- BC Hydro
- Energy Trust of Oregon
- Hydro One
- Louisville Gas and Electric Company
- NV Energy
- NStar
- Newfoundland Power
- Pacific Gas & Electric
- Progress Energy
- Sacramento Municipal Utility District
- San Diego Gas & Electric
- Southern California Edison
- Tennessee Valley Authority
- TXU