

# MAKING THE SMART CHOICE:

## How the right software keeps the grid smart



Green Energy Corporation has just unveiled GreenBus, an open source software platform for smart grid development needs. Will open source middleware prove to be a significant factor in smart grid adoption and implementation?

*By Oliver Bayani*

All across the world, power utilities are racing to install smart meters, electrical meters that monitor and relay real-time information regarding power consumption, power outage notification and power quality monitoring. As traditional electric, gas or water meters only measure total consumption, the data available from smart meters are of immense value to utilities and consumers alike in tracking actual energy use at

any given time. Installation in the Asia Pacific alone is estimated to increase from 52.8 million to 350.3 million by 2016, making smart meters one of the most prominent faces of the smart grid market.

Smart meters work in tandem with the smart grid, acting as its eyes and ears to effectively distribute and manage electricity based on real-time use by consumers. Consumption data gathered from the

meters can be analyzed to help utilities make better decisions in how to prioritize places that need more power. It can even influence positive consumer behavior by increasing awareness of how energy is used on a per household, per day or even per hour basis and how it can be economized.

But it seems that smart meters are just the tip of the smart grid iceberg. In an interview with EcoSeed, Mr. Glenn Booth, vice president of marketing at Green Energy Corporation emphasized one important insight: it is efficient software that brings it all working together.

**“There’s not been a big motivator for change until the Smart Grid. There are now mandates for utilities to use certain percentages of renewable energy, increase their efficiencies, decrease CO2 emissions, increase their reliability and follow strict federal security requirements. The old grid cannot support these new requirements.”**

Smart grids are “smart” because they are digitized so that a variety of electronic measures can be used to control and operate it. Digital devices within the grid can decide how to best allocate power depending on the demand and control devices attached to the grid.

A smart meter is one such device as the information they collect and communicate back to the utilities for monitoring and billing also allows for efficient tracking, management, and even estimation of current and future requirements in terms of usage.

This reliance on accurate data and secure communication underscores one essential component for smart grid development and

implementation: communication platform software.

“If you want to really do the Smart Grid you need intelligence,” said Mr. Booth.

Mr. Booth explained that the software ensures that the data and electricity sent between consumers and utilities are analyzed and transmitted as efficiently as possible. He said that utilities in North America have long been using proprietary applications from single vendors. However, since they are proprietary, compatibility issues soon emerged.

To address the issue, Green Energy Corporation developed smart grid software based on open source – a concept that promotes access to a product’s source materials. Mr. Booth observed that utilities have been somewhat “hostage” to slow updates, bug fixes and enhancements from vendors, which are the





only means to repair compatibility problems for proprietary software.

"The term that is often used is silo'd or island applications, meaning they 'don't play well with others'. This is the same model that we saw in the early days of computers," he added.

Their flagship software platform is called GreenBus. Just like in a personal computer, GreenBus acts as middleware, or the operating system of the grid, that manages the smart grid and the devices linked to the system.

According to Mr. Booth, making GreenBus open source-based helps utilities to be much less tied to a vendor and allows users to virtually build their own smart grid middleware using GreenBus' code. The company launched its GreenBus Alliance Program in January to connect developers and integrators to create, test and share smart grid related software based on GreenBus.

"Other vendors are free to make their own 'GreenBus' too. We like competition and our customers like competition.

### **"Open source software fosters competition, high value, lower cost products," said Mr. Booth.**

Through collaboration, Greenbus comes with as many as 100 customized and standard hardware drivers compatible with currently used smart grid

communication standards such as the Distributed Network Protocol (DNP3), Modbus, IEC 61850, and MultiSpeak.

Mr. Booth shared concrete examples of Greenbus' utility. GreenBus' compatibility with MultiSpeak enables it to utilize Supervisory Control and Data Acquisition system or SCADA. With the proper sensors, the SCADA-compatible application could detect outages in any neighborhood, upon which alerting and data sharing would be made with the Outage Management System to take appropriate action such as maintenance and repair. Another application could also be used to make use of this data for trend and analysis reporting as well as creating recommendations for greater efficiency and performance.

GreenBus is already running in the National Science Foundation funded Future Renewable Electric Energy Delivery and Management Systems Center, which Mr. Booth says is the largest smart grid lab in the world. In addition, Green Energy Corporation had its first utility customer in February, Piedmont EMC based in Hillsborough, North Carolina.

Mr Booth and Green Energy Corporation feel that open source based systems are truly the way to go. Mr Booth cited the example of Massachusetts computer company Wang Laboratories as a learning point, despite not being related to smart grid. Wang Laboratories made a good living by selling dedicated systems for word processing, reaching \$3 billion in

revenues and had over 30,000 employees. However, it eventually filed for bankruptcy in the fall of 1992.

"An open source strategy is vital if we are to transform to a smart grid, and to allow utilities of all sizes to own their information destiny," said Peter Gregory, chief executive of Green Energy. "It is the only cure for the silos that exist at virtually every utility."

