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GridPoint

Making the electric grid smart

In today's power grid, a steady but essentially passive flow of electricity links power plants, distribution systems, and consumers. It is a "dumb, inefficient system," says Peter L. Corsell, founder and CEO of GridPoint; in order to meet peak demand, power plants must be able to generate twice as much electricity as is typically needed. So Corsell has created energy management software that, combined with hardware from GridPoint and others, allows utilities to better balance power generation and electricity demands, increasing both efficiency and reliability.

GridPoint's software allows consumers to use a personalized Web portal to set limits on electricity consumption. Using a small computer attached to a home's circuit box, utilities then measure energy consumption and control appliances such as water heaters and thermostats. "Consumers should be able to buy 74° and the utility company then sells them 74°," says Corsell. In addition to helping people conserve energy and reduce their bills, the system makes it simpler to integrate renewable energy sources such as solar cells and wind turbines into the grid.

Corsell has raised \$102 million, and utilities will begin deploying the technology within the next year. For instance, Xcel Energy, a Minneapolis-based utility, has selected GridPoint's platform for its power grid project in Boulder, CO. [Read](#) why Corsell thinks we need to apply information technology to the grid. --*Brittany Sauser*

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Managing Energy: We need to apply information technology to the energy grid.

By Peter L. Corsell

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Whether it is the price of oil, deteriorating environmental conditions, or the household electric bill, energy is affecting all of us more acutely these days. Demand for energy is rising worldwide, and that demand can no longer be met by simply building more power plants. With transmission and distribution systems overburdened and global warming threatening the environment, both utilities and consumers will have to pay closer attention to where, when, and how energy is generated and used.

Though acclaimed by the National Academy of Engineering as "the most significant engineering achievement of the 20th century," the electric power grid is outdated; it's a mechanically monitored, centrally managed system that has yet to take advantage of Internet-based information technology. If it did, and if it could integrate innovations such as solar panels, wind turbines, advanced batteries, and plug-in hybrid electric vehicles, the grid could be transformed into an intelligent, self-optimizing network. This "smart grid," which would deliver clean and efficient power, would be as consequential to the power industry as the Internet has been to the economy at large.

To illustrate the pressing need for a smart grid, consider a single emerging technology: plug-in hybrid electric vehicles. General Motors will release the Chevy Volt, the first such car scheduled to reach the market, in 2010. But a study by the Oak Ridge National Laboratory determined that 160 new power plants would be required if everyone plugged in such hybrids in the early evening, when electricity demand is already high. With smart grid technology, utilities could stagger charging times and offer consumers lower rates for off-peak electricity. This capability, dubbed "smart charging," would virtually eliminate the need for new power plants, according to the study.

The Electric Power Research Institute estimates that the poor reliability of the electric grid costs the U.S. economy \$100 billion today, but that a \$200 billion investment in the smart grid would generate \$2 trillion in annual GDP by 2020. This will not happen overnight (nor did the Internet), but the investment is well worth it. Ultimately, the smart grid will dramatically transform the way we generate, consume, and think about energy--because it will make each one of us a relevant point on the grid.

The key to implementing a sustainable smart grid will be technology that scales to accommodate future energy needs, increases operational efficiency, and establishes a mutually beneficial relationship among utilities, consumers, and the environment. GridPoint (*see page 58*), a company I founded to advance energy efficiency technology, offers a comprehensive platform that applies information technology to the electric grid.

If we bring utilities, consumers, regulators, and legislators into concert, we will be able to achieve the often conflicting societal goals of energy security and environmental responsibility. The combination of national energy goals and market-driven carbon management policies will create new technologies, new jobs, and new business models.