



SMART GRID

BUILDING A MORE EFFICIENT,
SUSTAINABLE POWER
INFRASTRUCTURE



The nation's decades-old power grid faces unrelenting stress. With municipalities increasingly dependent on a stable supply of electricity, there's an urgent need to make the grid more resilient and efficient. In the smart city, connected technologies are providing the answer.

EARLY 20TH CENTURY TECHNOLOGY FACES CHALLENGES IN THE 21ST

Information technology as we know it did not exist when the grid was built, with consequences that persist to this day. Most grids are managed as they have been for decades: The only way to balance generation is to react to peak demand by bringing high-cost, small power plants online when a surge is seen. When there's an outage, utilities don't know where or what the problem is without physically going out and inspecting the wires. And in times of extreme demand, the only way to avoid brownouts or blackouts is to ask the public to curtail use.

A CONNECTED GRID IS A SMARTER GRID

Across the country, utilities are adding intelligence to the existing grid through connected devices in homes and businesses, as well as within the grid itself. Placing sensors in substations and on the transformers found in every neighborhood can tell the utility their exact status in real time, and even allow for automatic rerouting of power — transforming a passive grid into an active one with the ability to heal itself.

In homes, technology is being used in new ways to help manage demand. Smart, Internet-connected thermostats can be remotely controlled by the utility with the customer's permission, exchanging a temporary shift of a few degrees in temperature for a lower rate. There have even been experiments with smart appliances, which incrementally reduce power consumption in response to a signal from the utility.

Microgeneration is also being explored as a way to improve efficiency and balance load on the municipal grid. When connected to the utility, backup generators in commercial and public buildings can be started up in response to peak surges. The resulting power, generated at the point of use, does not suffer efficiency losses caused by transmission. This reduces load on the grid and saves fuel in the process.

SIMPLE, COST-EFFICIENT CHANGES BRING BIG BENEFITS

Leveraging network connectivity and smart devices to add intelligence to the existing grid gives municipalities a whole new way to address the aging infrastructure problem. Relatively modest investments in technology provide both visibility and control, opening up the possibility of new power management strategies that reduce cost, while improving the efficiency of the existing grid.

By making better use of what's already in place, the enormous cost of building new infrastructure can be deferred for years — or even avoided entirely. That's a win-win for the community and individuals alike. Power that's more stable and less costly, delivered through a grid that's more sustainable.

With investment cycles measured in decades and budget-breaking costs, keeping electricity flowing can seem like an insurmountable task. But it doesn't need to be. With the right technology and network infrastructure, your existing grid can continue to serve you well into the future.