In spite of the technological advancements of the past century, the electric grid of 2009 doesn’t look all that different from the electric grid of 1909. That will soon change as utilities gradually transform the current electric grid into a dynamic, optimized Smart Grid that is better suited to meet client demand and today’s economic and political climate.

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 utilities. The Smart Grid can affect every aspect of the electrical system from the generator to the refrigerator, and each utility will adopt a unique approach. Each Smart Grid approach employs a combination of the following:

- Program management
- Business analysis
- Distributed generation
- Remote equipment monitoring
- Data acquisition technologies
- Telecommunications
- NERC compliance
- Data integration management
- Data analytics and evaluation
- Demand-side management
- Energy services
- Home Area Network

To help utilities find the right Smart Grid strategy, Burns & McDonnell has built a Smart Grid Laboratory to further study and analyze these focus areas through hands-on testing of a range of vendor equipment, rate structures, and renewable and distributed generation resources. This method is what Burns & McDonnell coined ‘The Intelligent Approach to the Smart Grid’.

For more information, contact Mike Beehler, 816-822-3358.

With smart meters, utilities can collect energy usage data electronically and will be able to detect outages and restore power more quickly.

Intelligent, in-home appliances and devices will allow individuals to monitor and adjust their energy use based on near real-time cost information.

All Smart Grid applications start with a scalable, high-bandwidth network that enables two-way communication among millions of intelligent devices throughout the electrical grid.
The Intelligent Approach to the Smart Grid™

Program Management

Demystify the challenges and potential pitfalls of Smart Grid development for your team. This plan should follow open system concepts including stakeholders, objectives, and problem solving that will result in higher performance, controlled costs and lower public concerns.

Business Analysis

Integrate multiple smart grid technologies and the business case to support regulatory requests and funding for pilot projects.

Distributed Generation

Engineer the connection, dispatch and/or storage of renewable and microscale generation resources to the customer/owner and the electric distribution system.

Remote Equipment Monitoring

Manage the data from the installation of intelligent equipment devices on major substation equipment and critical transmission equipment to remotely monitor asset and environmental conditions on a quasi-real-time basis.

Data Acquisition Technologies

Specify a vendor-neutral advanced metering infrastructure (AMI) system or a substation/distributed automation program that acquires real-time data to support improved security, reliability and operational efficiency of the distribution system.

Telecommunications

Nurture and develop a robust broadband telecommunications network that provides the backbone of your distribution system's communication infrastructure. These networks are used to monitor system performance and ensure customer satisfaction through real-time meter data and smart grid applications.

NERC Compliance

Evaluate physical and cyber security impacts on all distribution resources to maintain a mitigation plan to ensure regulations are met and develop a plan to comply with existing mandatory North American Electric Reliability Council (NERC) standards for better cybersecurity and equipment challenges.

Data Integration Management

Combine the physical and logical integration and transformation of operational and enterprise data from several large operational systems into a unified platform that allows data analysis, visualization and reporting by various user groups.

Data Analytics and Evaluation

Analyze real-time and historical data to develop a better understanding of historical energy usage and equipment conditions at college levels, design strategies for machine learning algorithms that identify trends and alert operators to inequities.

Demand Management

Utilize the use of construction and load management programs to manage demand response programs and dispatched or stored renewables, using AMI data to create more opportunities. Obtain the expected return of the marketing, performance and acceptance of these programs through pilot projects.

Energy Services

Provide design only or turnkey (engineer-procure-construct) services for commercial and industrial customers that implement energy efficiency or load shifting projects at their facilities.

Home Area Network

Identify, test and analyze the integration of various energy loads to the household equipment and understand its capacity to improve the reliability of the system in the event of existing or future load structures.

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