

Energy Security for The Future

When selecting a site for a new warehouse or distribution center, there's a second infrastructure that demands attention – the power generation and delivery system.

When making site selection decisions, energy is either overlooked or viewed as a cost component, added to the spreadsheet analysis without much consideration.

But when you operate an automated warehouse or refrigerated facility, or you just want to be sure the lights come on and the computers boot up, the policy and infrastructure supporting energy distribution become important parts of risk assessment as well as cost analysis.

Energy utilities don't earn the respect of economic development managers, noted Allan Hooper, economic development manager for Consumers Energy, in a recent presentation to the Utility Economic Development Association. He urged better communication about the value utilities deliver to customers and companies considering locating in a region. Every business or prospect is, after all, a power customer, and that makes economic development—including retention—important to the utilities.

Utilities are enterprises with significant assets and infrastructure that require considerable annual capital investment; they are accountable to customers, shareholders, and regulators for the decisions and investments they make; they are businesses with profit-and-loss requirements like any other; and they are regulated enterprises overseen by public service or utility commissions that demand the utilities make prudent decisions, said Hooper.

"And while the utilities have similar fiscal responsibilities to shareholders, their regulated status dictates that they maintain pricing that's fair to all customers while they are allowed, at best, to earn a set maximum return to investors," he added.

New Business, New Customers

Talk to Ameren Corp.'s Michael Kearney, manager of economic development, and he'll reinforce many of these points. Kearney describes a warehouse/distribution center study that looks at the areas Ameren serves as a power distribution utility—Illinois and Missouri—and models product flows, examines transportation infrastructure,



Power Under the Microscope

John H. "Jack" Boyd, founder of site selection consulting firm The Boyd Company, adjusts the old real estate line to: energy, energy, energy. In all sectors, companies are looking more closely at energy, says Boyd. Whether they are locating a data center or distribution center, planners are interested in power costs and reliability. Drivers include national energy policy changes, the continued rise of environmental awareness, and even the Gulf of Mexico oil spill disaster.

The value of the energy discussion extends to more departments within companies planning an expansion or relocation. "There's public relations value in using more 'green' energy, and companies realize that," says Boyd. "They want to be in a position to use more alternative energy sources and to publicize that fact."

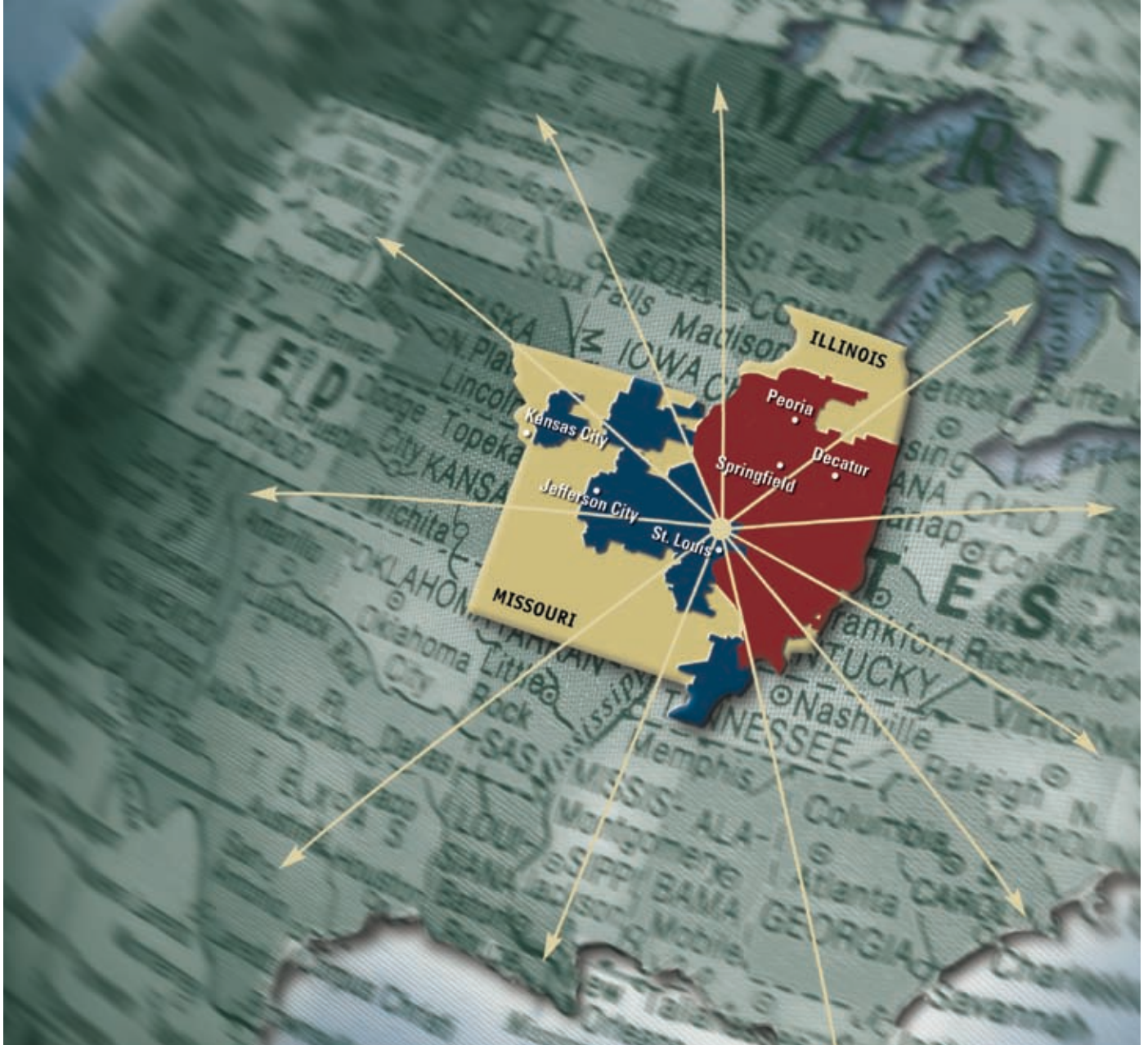
But beyond feeling good about taking an environmental stand, these same users also want reliability. As energy-generating utilities move to balance their portfolio of sources, this contributes to rate stability and reduces some of the risk associated with a single type of power generation.

Energy was the trump card when automaker BMW selected an unexpected place to build a new plant: Quincy, Wash. Already home to a multitude of data centers, Quincy's low energy costs and hydroelectric power reliability were a big plus in BMW's decision, Boyd says.

But the environmentally friendly energy source also fits with the direction in which automakers are moving—toward designing and building cars that use more composites and computer controls. Those changes are environmentally friendly, and make the process of designing and building cars more like that of the aircraft industry. "And what better place to locate an auto plant than in the backyard of Boeing Aircraft Company?" Boyd asks.

Energy costs can vary widely from location to location, and Boyd notes that electricity can jump from two or three cents per kilowatt hour to the high teens, based on where a facility is located and where it gets its energy.

▲ Energy-efficient BMW plant



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This geo-thermal system is part of an energy savings initiative at an Anheuser-Busch DC in Ameren's service territory.

by their collective members; others are multi-state corporations.

"The cooperative business model has worked well for 70 years and will continue to serve the energy consumer into the future," says Steve Smith, president and CEO of Hoosier Energy. "Resiliency is one of the keys, and it's what will be needed going forward."

The energy industry faces a number of challenges, including a need to grow capacity while facing increasing pressure on environmental issues, maintenance and expansion financing, and a mixed public attitude toward energy sources.

Hoosier Energy, based in Bloomington, Ind., is a generation and transmission cooperative providing electric power to 17 member electric distribution cooperatives in central and southern Indiana and one member cooperative in Illinois. During the past 10 years, Hoosier Energy has grown from

looks at costs, and even evaluates rail service, and highway and air capacity. The utility offers project management and property location services in addition to its capabilities as a full-fledged site selection consultant. Clearly,

Ameren's view is that new businesses in the region represent new customers for the utility.

The power play has certainly led to growth through consolidation. Many power utilities are cooperatives owned

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1,200 megawatts (MW) of baseload and coal-fired capacity to more than 2,100 MW of capacity that includes baseload, intermediate, and peaking units in 2010. More than one-third of that capacity comes from natural gas or renewable sources.

All of this comes at a cost. Hoosier spent \$630 million during those 10 years for new plants and plant upgrades, and another \$200 million for transmission and substation improvements. Much of that investment went to help reduce emissions by 40 percent.

The energy cooperative has also identified and implemented process improvements to reduce costs, including incorporating some supply chain management lessons. When Hoosier Energy began providing power for the Jackson County, Ind., cooperative, it made sure consistent and standard power delivery equipment was in place at substations and facilities to improve reliability and response time.

During that reconstruction, Hoosier Energy set up a pilot program that

delivered parts and supplies from the vendor directly to the worksite instead of moving them to a warehouse or stores area in Bloomington or other work centers, then redistributing them to the worksite. Hoosier Energy will review the pilot program to determine whether it was successful in boosting efficiency and reducing costs.

From Waste to Energy

Further diversifying its energy production, Hoosier Energy began construction of an 11-MW plant to convert waste to energy. The \$22.5-million facility will quadruple production of renewable energy for the cooperative. It will produce electricity from landfill methane created at the Woodland Meadows Landfill in Wayne, Mich. Hoosier Energy will use waste heat from the project to supplement hot water production for automotive supplier Visteon.

Hoosier Energy already operates a 3.5-MW landfill methane generation plant at the Clark Floyd Landfill in southern

Indiana. Its renewable energy portfolio also includes 25 MW generated at an Iowa wind farm.

While Hoosier Energy has taken many positive steps to improve its generation and distribution capabilities, increase capacity, and balance its portfolio of generation sources to move away from total dependence on coal-fired plants, it has had to do so in an increasingly restrictive environment.

Ameren has always been aware of emissions, says Kearney, and part of the challenge of any power utility is complying with continuous new mandates. The economic downturn moderated power demand and while Ameren is not looking at increasing its baseload capacity, it does continue to invest in infrastructure, including upgrading technology, says Kearney.

Part of that investment includes balancing the power generation portfolio. That includes conventional coal-fired generation plants, but also nuclear, hydroelectric generation, and combustion turbines, says Kearney. Federal,



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Show Me The Green

A buzz in Joplin, Mo., is resonating throughout the local business community.

The city's access to U.S. and North American markets, proximity to major highway and rail connections, low operating costs, and skilled labor pool are sure-fire magnets for prospective businesses. But Joplin's buzz is quite literal. An abundance of renewable energy resources offer a complementary value proposition that is increasingly important for site selectors looking to reduce fuel and electricity expense while towing the sustainability line.

The Empire District Electric Company, an investor-owned, regulated utility based in Joplin, provides electricity, natural gas, and water to approximately 215,000 customers in Missouri, Kansas, Oklahoma, and Arkansas, supporting the energy needs of local businesses.

Beginning in 2004, the utility began exploring new and innovative means to invest in and harness renewable energy for customers. It began by inking a 20-year contract with PPM Energy (now Iberdrola Renewables) to receive all energy generated at the 150-megawatt Elk River Wind Farm, located in Butler County, Kansas. This success led Empire District to sign a second power agreement with Horizon Wind Energy, breaking ground on the 201-megawatt Meridian Way Wind Farm in April 2008.

Missouri regulators are currently exploring ways to implement a state law requiring electric utilities to use more renewable energy. So Joplin and Empire District's forward-thinking approach to wind energy development positions the area well ahead of the curve—and that bodes well for enterprising businesses looking for a similar edge.



Nebraska's largest power plant, Gerald Gentleman Station, consists of two coal-fired generating units, which together have the capability to produce 1,365 megawatts of power. NPPD built a second rail spur to the plant in 1994 so coal can be shipped directly from UP or BNSF railroad lines.

state, and regional initiatives also promote more use of solar, wind, methane, and biomass.

Companies are increasingly sensitive to energy efficiency, says Kearney, and the utility's customers are participating in programs or initiating their own energy efficiency projects.

One of the first projects companies tackle is usually lighting. Ameren and most utilities will act as a "trusted energy advisor to their customers," says Kearney. The power utility doesn't usually do the consulting or implementation, but will support a customer's effort and provide as much guidance and input as possible. Companies are also much more aware of Department of Energy grants and other programs.

Customer Incentives

Echoing that sentiment, Nebraska Public Power District (NPPD) cites its EnergyWise incentive program, which pays customers to upgrade various technologies such as lighting, HVAC, variable frequency drives, and motors.

"These incentives are structured to reduce the upgrade's capital outlay while saving the business energy and dollars," says Dennis Hall, economic development manager, NPPD.

In addition, incentives are available

for reducing peak usage. For example, NPPD offers a net metering program that awards a rate benefit to customers who curtail usage during peak summer energy periods. In 2007, load management netted NPPD on-peak capacity savings of more than 760 MW.

Renewing for the Future

Comparisons and overall growth in usage are difficult to estimate in light of reduced demand for electricity during the economic downturn. Some utilities are not adding dramatically to their baseload capacity, but that doesn't mean they aren't building for the future. Some areas for expansion require careful attention. Renewables such as solar, wind, and waste-to-energy alternatives often require adjustments in infrastructure, including power distribution networks.

NPPD operates an asset management program that addresses refurbishments and replacements, as well as additions to its system, including a new 80-mile, 345 kV transmission line between Columbus and Lincoln, Neb. The \$140-million project includes substation construction and expansion, filling a gap in the regional high-voltage transmission grid and strengthening the electric system, says Hall. During

the last five years, NPPD has invested approximately \$360 million in transmission system upgrades.

On the controversial side of new energy sources, the federal government is supporting nuclear power. The Nuclear Regulatory Commission (NRC) is focusing on standardized design and has combined construction and licensing procedures to streamline the process of bringing more nuclear capacity online.

One example is Nebraska Public Power District, which has made major improvements to its Cooper Nuclear Station. "If state or federal regulations force NPPD to use less coal to produce electricity in the future, Cooper Nuclear Station will become an even more important part of our generation mix," Hall says.

NPPD is making significant investments to ensure the 36-year-old plant can operate safely and reliably for the next 20 years. In the past four years, NPPD authorized \$350 million for capital projects at the station.

Nebraska was an early user of nuclear power. Construction of what is now NPPD's Sheldon Station began in 1958. Initially, it was a combined nuclear and conventional energy facility that included the 75,000-kilowatt Hallam Nuclear Power Facility, built as an experimental plant for the former Atomic Energy Commission (AEC).

The AEC (now the Nuclear Regulatory Commission) gained the information it needed from the facility's operation and decommissioned the nuclear part of the plant. Along with the 30-year-

NPPD customer energy was provided by nuclear generation. Hydroelectric and wind energy provided another five percent, and NPPD has a goal of generating 10 percent of its energy supply from renewable resources by 2020.

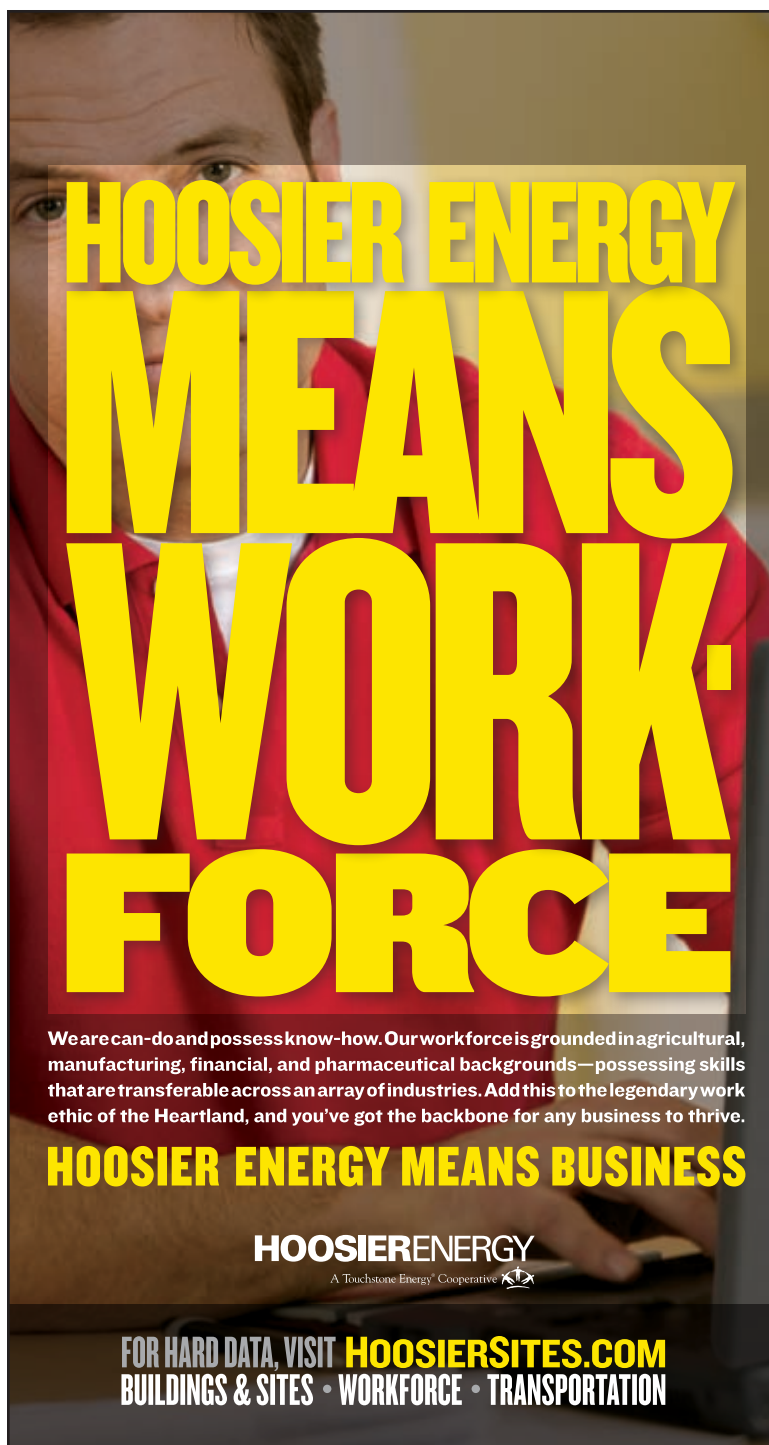
As a member of an International Economic Development Council public policy subcommittee on infrastructure, Ameren often assesses whether it is making wise infrastructure decisions. "Customers and prospective customers are looking at the blend of resources and infrastructure power companies employ," Kearney suggests.

Part of that is a view to future rate stability, but it is also about reliability. In an increasingly deregulated industry, many power companies are delivery service utilities—"the wires and the pipes," says Kearney.

That means end users may have alternatives available for the purchase of their electricity. "Alternatives spell risk reduction, whether it's with logistics services or power utilities," he adds.

"The challenge for the future is alignment and collaboration with our partners, because demands change, markets change, and players change," Kearney notes. "If utility companies do not look for new

approaches to leverage our resources for the greater benefit of all players, then we've missed the message of this economic downturn."



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old Gerald Gentleman Station, NPPD's capital projects from 2006 to 2010 have totaled \$150 million.

At the end of 2009, 21 percent of