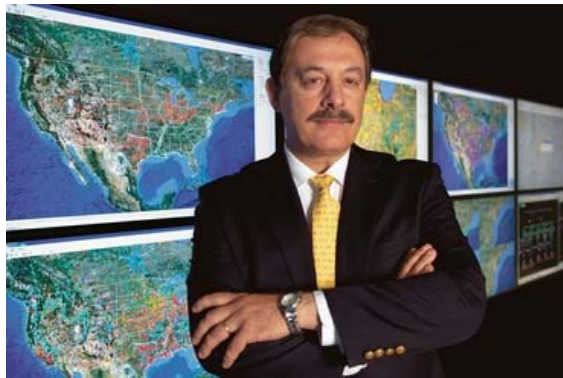


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## Why it never goes dark at IIT anymore

By: Howard Wolinsky September 30, 2013



Mohammad Shahidehpour  
 Manuel Martinez

In mid-2006, a group of incoming freshmen and their parents were spending the night in dorms at the Illinois Institute of Technology when a power transformer failed, turning off the lights and air conditioning for them and everyone else on the South Side campus, recalls **Mohammad Shahidehpour**, a professor of electrical engineering at IIT.

Today, thanks to Mr. Shahidehpour, blackouts effectively are a thing of the past. While the school still is connected to Commonwealth Edison Co.'s power grid, Mr. Shahidehpour

developed a **"smart microgrid"** that allows the campus to instantly switch over to its own backup supply, turning the campus into a self-sufficient island. The \$14 million system has smart switches that can isolate outages, pinpoint where something has gone wrong and redirect the flow of electricity.

It's smart in another way: IIT has batteries that get recharged overnight, when rates are cheaper, and then are tapped when demand and prices rise the next day.


Before IIT's "perfect power" smart grid, it took ComEd four hours on average to get the juice flowing again after an outage. "Now power is restored in one-tenth of a second, the blink of an eye," says Mr. Shahidehpour, 58, a native of Iran who earned his master's degree and doctorate in electrical engineering at the University of Missouri. (He still returns to Iran once a year to see his mother, now 87.)

"IIT has become a flagship installation that everybody's watching," says Wanda Reder, vice president of power systems solutions at Chicago-based **S&C Electric Co.**, which manufactures switches, including the ones at the institute. "IIT is the leader of the pack."

The four-square-block campus was especially prone to losing power, largely because of its age. Famed architect and IIT architecture head **Ludwig Mies van der Rohe** created the master plan for the school from 1940 to 1960 with much of the infrastructure hidden underground or within buildings. Those cables and wires are now worn out and hard to get at. Another design challenge: The institute's 52 buildings had to be altered as little as possible.

"It's like putting a new engine in an already-built car," Mr. Shahidehpour says.

That new engine—gas turbines, solar panels, wind turbines and batteries—can match its power supply from ComEd, a maximum of 14 megawatts. The new system has permanently lowered IIT's peak power demand by 20 percent from 2007. In addition, the always-ready backup protects research data from being lost, protects food in freezers and keeps the lights and AC on for IIT's

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8,000 students and 1,000 staff and faculty members.

Mr. Shahidehpour says the system serves as a "living lab" for IIT students training to run smart microgrids and is a prototype for other institutions.

He thinks that alternative energy sources along with hydraulic fracturing, or fracking, can allow the U.S. to become energy self-sufficient. He's doing his bit: He has solar panels on his Naperville home.

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**MIKE P.** 1 day ago

It's unfortunate that none of us can depend on ComEd anymore. Despite having a complete monopoly, they've done nothing to improve our electric system. They can't even figure out how to deploy remote meters, we still have a meter reader running around. Over 100 years of the same old lame technology.

Our water and natural gas have never failed us, but ComEd and our electric system does every time we have a large storm. Where are the government officials who are supposed to be looking out for consumers?

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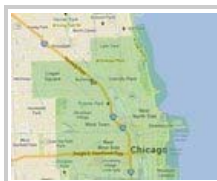
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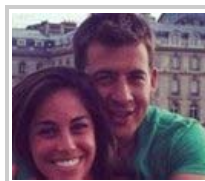
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