Can Worcester's 'Smart Grid' Become An Economic Driver?

BY **MATT PILON**

10/29/2012

Could National Grid's relative early-mover status in the smart electricity grid arena turn into an economic advantage for Worcester?

Jones Lang LaSalle (JLL), a global real estate services firm, seems to think so. JLL released an analysis this month that found a correlation between public investments in smart grid technology and economic performance in a number of cities

Christian Beaudoin, the firm's vice president of corporate strategy, analyzed the performance of 10 cities across the United States and Canada, including Worcester, that have invested to varying extents in smart grid infrastructure.

He found that those 10 cities — which include Boulder, Colo., Toronto, Washington, D.C., and Tempe, Ariz. — had higher-than-average growth rates and lower-than-average unemployment rates and Class A commercial property vacancies over the last three fiscal quarters.

Unemployment rates were a full percentage point lower than non-smart-grid areas, growth (measured by gross domestic product for each area) was seven tenths of a percent higher and vacancies 2.5 percent lower.

Worcester's unemployment rate was 7.1 percent in September, unchanged from August, but down from 7.8 percent a year ago, according to the Executive Office of Labor and Workforce Development. That's higher than the state average, but below the national average.

In a telephone interview, Beaudoin said that while there's a correlation in the sampling of cities he used, he's not willing to say that smart grid technology is directly responsible for above-average economic performance.

"We can only really prove the correlation, not the causation," Beaudoin said.

Similar economic arguments can be made for high-speed Internet, he added.

But Beaudoin does think technology investments help accelerate private-sector growth, and said large commercial energy users are further along in adopting intelligent building systems than the residential sector.

"It's continually coming up in discussions with our clients and government clients," he said. "As we manage facilities for large owners and tenants, they want to know if they should (adopt smart grid technology). In almost every case, they should."

JLL isn't entirely unbiased in encouraging smart grid adoption. The company introduced an intelligent building systems product to the market last year called IntelliCommand, which provides real-time remote monitoring and control of facilities.

But that doesn't mean there isn't a potential economic benefit from smart grid, said David Manning, a former National Grid executive in Massachusetts who now heads the New York State Smart Grid Consortium.

The potential in digitizing the grid and using the data to operate the system more efficiently and effectively — a process that is by all accounts still in the early stages — is huge, Manning said. And companies are thinking about a future in which energy prices are increasingly volatile. Smart grid infrastructure could play a role in some of their decision making, he said.

Of course, it's not the only factor, and it's very likely not the most important, he added.

Companies weighing real estate decisions look at many factors, including location, property and tax expenses, and increasingly, energy costs, Manning said

"These are all drivers when you look at where you're going to locate and where you're going to invest," Manning said. "Is it the key driver? No. But it's a consideration."

Jennie Stephens, an associate professor of environmental science at Clark University, is less convinced of early-stage economic benefits from smart grid investments.

For one, it may be that cities with relatively strong economies are more likely to invest in smart grid infrastructure, rather than the infrastructure causing an economic improvement, she said.

“It doesn't seem like a causal relationship,” Stephens said. “Those things could be co-correlated for lots of different reasons.”

Second, Stephens said the electricity grid is typically regional, so it would be hard to pinpoint benefits to one particular city.

And, “smart grid” isn't a well-defined term, she added. Some smart grid projects are more expansive than others, making an economic comparison tricky, she said.

Stephens believes smart grid has the potential to benefit the economy and society in the long run, but she also worries that people might view it as a solution to the U.S. energy problem.

It turns out that an expansive smart grid — and whatever economic benefits it may bring with it — are a ways off.

National Grid recently installed smart meters at 15,000 homes and business in Worcester, which means some consumers are getting experience with the technology.

They might think a smart grid is imminent because of that, Manning said. But smart meters are just one piece of the sometimes blurry definition of the smart grid, which also includes generation, transmission and distribution systems that use consumption data to make system changes in real time and forecast future needs.

“I really do believe that consumers assume we're further along than we are,” Manning said.

Cheri Warren, who leads National Grid's customer and business strategy, said the pilot program and all of the customer usage data it generates will help the utility get a much better grasp on what the smart grid could look like across the state, but she agrees the ultimate vision for the grid is a long way off.

“Even though we're talking about the next generation, I don't think you get to that final state for quite a long time,” Warren said.

While there are technologies on the market and in use today that provide ways to manage buildings in an energy-efficient manner, it will take years and plenty of money to transform a century-old electricity grid into a modern, more efficient system.

The smart grid is “at the beginning of adolescence” in terms of its development, said Ethan Cohen, a practice leader at Bridge Energy Group in Marlborough, which advises utility companies developing their smart grid capabilities.

“I would hesitate to say that any bit of the smart grid is fully mature,” Cohen said. “There is no question these are massive capital projects.”

He said utility companies are going to undergo a major transformation in their equipment, in data collection, and in how they operate.

“This is an information technology advancement as well as a communication technology advancement and a grid technology advancement,” he said. “All of that adds up to a lot of change.”

A study released a year ago by CoR Advisors found that the commercial real estate sector has been somewhat slow to adopt smart grid technologies. Only 19 percent of buildings in the United States are connected to the grid, despite the financial benefits intelligent building systems can bring, the firm said.

But the fact remains that commercial and industrial buildings are the places you would most likely find such systems. That's because large energy users spend a lot of money on electricity, so they understandably place a high importance on it, Manning said.

“The economics are a big driver,” he said.

But not every landlord finds the decision an easy one, Cohen has found.

The cost of the systems sometimes means that a payback period would be longer than the length of a typical lease.

“What they're looking for is a clear benefit stream as well as a clear demand signal from their customer,” Cohen said.

The costs can be more prohibitive for owners of old buildings, who must change or retrofit their existing systems, he added. It's far more common to see the systems installed in new buildings, he said.

Large users are more likely to be linked to the grid in Massachusetts, said Ed White, president of customer strategy at National Grid.

Industrial or `commercial customers can sign up for demand-response programs that give them credit on their energy bills for shutting down operations during peak times of the year. And those companies tend to have employees dedicated specifically to energy management.

“The biggest users are a no brainer,” White said. “They're already invested. They have a bigger stake.”