Forbes
ELECTRONICALLY REPRINTED FROM MAY 8, 2006

Mavericks

Power Brokers

To most people an air conditioner is a power-hungry appliance. To Tim Healy and David Brewster, it's a tiny generator | By Monte Burke

THE FOURTH WEDNESDAY OF JULY 2005 WAS the fifteenth day of a searing heat wave in the Northeast. Late that morning, as the mercury hit the mid-90s and air conditioners cranked on across the region, electrical grid operators anxiously watched the demand needle. In New England customers were pulling down 27 gigawatts of juice, 23% more than their average demand. If nothing was done, the region would suffer rolling brownouts and maybe a wide blackout.

Just before 1 p.m. both the New England and New York grid operators sent e-mails to David Brewster, 34, and Timothy Healy, 37, who run EnerNOC, a tiny Boston company with a very valuable computer network. "We knew it was game on," says Brewster.

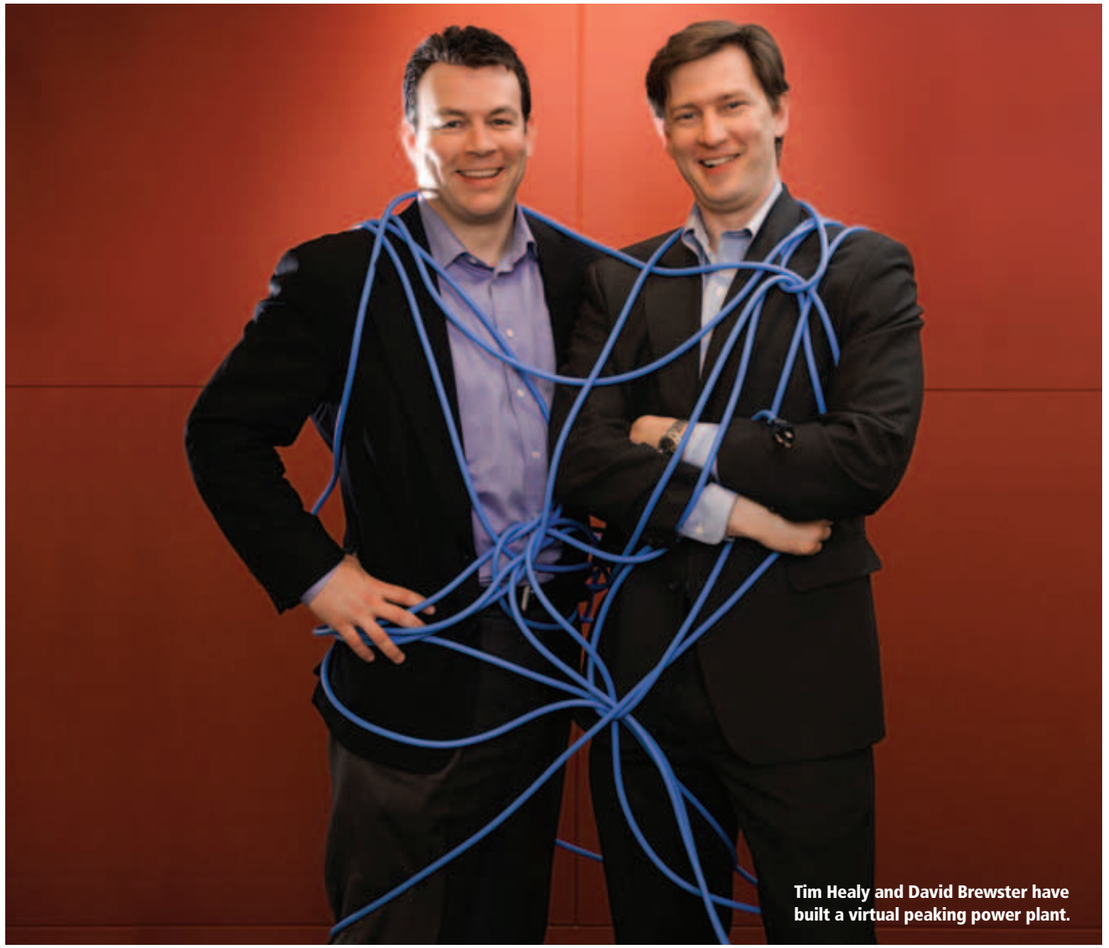
EnerNOC's computers sent commands to control units at 250 commercial and industrial buildings in the region. Within minutes backup generators had switched themselves on at Western Connecticut State University in Danbury and at Pitney Bowes in Stamford. At 23 Pathmark grocery stores, overhead lighting dimmed to nighttime shelf-stocking mode. All told, EnerNOC delivered 130 megawatts (an eighth of a gig) back to the grid in half an hour, the demand equivalent of 100,000 houses. "To the generators, it felt like we turned on a peaking power plant," says Healy.

With EnerNOC, Brewster and Healy are pioneering a business idea that may save the U.S. from wasting a lot of capital on the power plants used to supply electricity during seasonal peaks. The way utilities now meet demand spikes is to attach an extra natural-gas-fired generator or two to the grid and let it sit idle for most of the year. "That's like building churches just for Christmas and Easter," says Brewster. And that's if you can get construction approval past the Nimbys, not to mention the Bananas (Build Absolutely Nothing Anywhere Near Anything).

EnerNOC builds a virtual peaking plant, able to strip demand away at a moment's notice in times of crisis. To the grid, lowering demand is the same as adding supply. A dimmer lightbulb is a generating asset. This idea, called "demand response," has been practiced for years by individual large consumers like aluminum smelters and big factories, which get a price break on so-called interruptible power. But offices and hospitals loaded with computers lack that flexibility.

EnerNOC's job is to turn smaller commercial accounts into interruptible ones by paying them to do so. They get paid for either firing up backup generators or for agreeing to targeted brownouts. "We're just taking advantage of latent assets that are out there waiting to be used," says Healy.

Brewster and Healy have already aggregated 200 megawatts of demand from 500 commercial and industrial clients in California, New York and New England, with plans to hit 1,000 megawatts by 2009, adding Ontario, New Jersey and Washington, D.C. The grids pay EnerNOC an annual fee. It can surpass $100 per kilowatt promised in places such as Long Island or in Manhattan. (Gas-fired peaking plants cost in the neighborhood of



Tim Healy and David Brewster have built a virtual peaking power plant.

$400 per kilowatt.) EnerNOC shares that fee with its customers. If and when the promised power is taken offline, EnerNOC gets paid again, at a market rate per kilowatt-hour, sharing that with clients, too. Say a commercial account is paying 10 cents a kilowatt-hour for power. By dimming its lights in an emergency it saves the 10 cents and gets paid another 50 cents or so per kilowatt-hour as a bumping fee. EnerNOC also gets 50 cents.

EnerNOC has been called upon 21 times in California to help prevent rolling blackouts like the ones that hit in 2001. This winter it rounded up 100 megawatts in New England in anticipation of a cold spell coupled with high natural gas prices. Healy says the company's revenue rose from $1 million in 2004 to $10 million last year. The firm expects to break even this year.

"They are young and energetic and out to change the world," says Scott Johnson, a venture capitalist at Draper Fisher Jurvetson New England, which kicked in $4 million of EnerNOC's $10 million in equity and debt financing. "They are exactly the kind of company that has made DFJ a lot of money in the past."

EnerNOC's growth could be inhibited by the slow pace of energy deregulation; their scheme works better when state regulators open their grids up to competition. Fewer than half the states have. Nevertheless, other companies have jumped into the field. Comverge in New Jersey has created a business focused on tapping air conditioners in homes and small businesses. Big power marketer Constellation New Energy has a demand-response program under way. The U.S. Department of Energy estimates that demand-response networks could safely handle 20 gigawatts of power, roughly 2% of the country's 900 gigs of generation capacity. "Effective demand response has great potential to lower consumer costs and dampen market volatility," says Joseph Kelliher, chairman of the Federal Energy Regulatory Commission.

Healy and Brewster thought of the idea for EnerNOC while at Dartmouth's business school in 2000. They still look like students dressing for job interviews, in loafers and pressed oxford shirts (but no ties). Brewster's spare office has a computer, a lonely bookshelf and a huge whiteboard, the better for brainstorming sessions.

Healy grew up in Hebron, Conn., the son of an engineer at International Fuel Cells (now a division of United Technologies). "We literally sat around the dinner table talking about clean-energy issues," says Healy. Brewster, who grew up in Boston, came to the field as a green entrepreneur, wanting to find something "that would get me pumped up to get out of bed every morning," he says. He attended Duke's Environmental Leadership Program and worked at Beacon Power, a renewable energy company.

Healy stopped Brewster in the hallway one day after class, with the seedling of an idea for selling electricity back to a grid, something he had chewed over with his father. Within a week the duo had commandeered a conference room (with a whiteboard) and made it their unofficial headquarters. "By that time we were part-time students and full-time entrepreneurs," says Healy.

In mid-2001 Healy and Brewster entered their idea in two contests, one for entrepreneurship and another for venture funding. They lost both. "We weren't really prepared," says Healy. "But that got us focused and reminded us that we like to win."

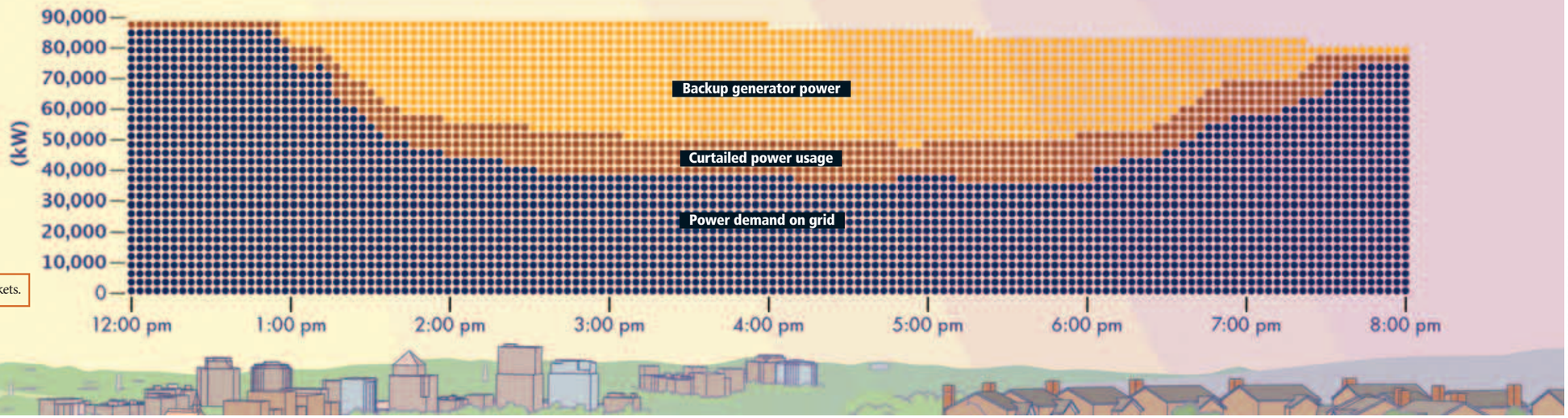
Unlike most of their Dartmouth business school peers, Healy and Brewster graduated in 2002 without jobs. It was EnerNOC or nothing. They filed for a patent for their technology for tying users back into the wholesale electricity market. But funding had vanished for startups in the wake of the dot-com bust. With no money or employees, they went hunting for customers. "We had to ring the cash register first," says Brewster.

In early 2003 they signed up Hannaford Brothers, a northeastern grocery chain (owned by Delhaize Group), and the town of Fairfield, Conn. to five-year deals. Then they hired an engineer to fash-

Off the Grid

EnerNOC contracts with commercial and industrial electricity users to reduce their load on the power grid in times of need. When called upon, its clients turn on backup generators or dim their lights. On a hot July day last year EnerNOC took 130 megawatts off the New England and New York electrical grids for six hours, averting potential rolling blackouts.

● = 2500 kw, the equivalent power used by 7 supermarkets.



PHOTOGRAPHS BY JARED LEEDS FOR FORBES
DIAGRAM BY JOHN KOCON FOR FORBES

EnerNOC monitors the Metro New York grid from its Boston offices.

ion a meter with relay switches and a communications port.

EnerNOC has since signed on 123 more companies to four- and five-year contracts, including ESPN, AT&T and the Massachusetts Institute of Technology. Brewster and Healy are now able to curtail demand by BlackBerry, handy for dealing with brownouts from the seats at Fenway. "At the rock-crushing plants they literally blow the whistle, Fred Flintstone-style, and everyone goes home for the day," says Brewster.

Healy and Brewster dream of people someday driving a fuel-cell car up to an EnerNOC meter during peak demand and pumping electricity back into the grid. "And they'd get paid for it," says Healy, who'd get paid for it, too. **F**