



Gates, Harvard Join \$1.5 Billion Energy-Recycling Investment

By Peter Robison

Nov. 15 (Bloomberg) -- A private-equity fund backed by Bill Gates and Harvard University will make a record private investment of as much as \$1.5 billion in a technology that enables manufacturers to recycle waste heat.

The commitment from Boston-based Denham Capital Management LP, to be announced today, will fund installation of turbines that reuse energy vented from smokestacks, cutting power bills and greenhouse-gas emissions. The projects will be managed by Tom and Sean Casten, a father and-son team who run Recycled Energy Development LLC in Westmont, Illinois.

Green investing is accelerating as fuel costs soar and lawmakers mandate more use of renewable energy. A California law signed in September requires energy-intensive businesses to cut discharges of greenhouse gases -- those that contribute to global warming -- by 25 percent over 14 years.

"As the markets recognize that these drivers are now permanent, if not very long-term, that's allowing much bigger capital deployments than we've seen," said John Balbach, a managing partner at research firm Cleantech Group LLC in Brighton, Michigan.

Harvard Management Co., custodian of the world's largest university endowment with \$34.9 billion, has identified itself as a Denham investor. Gates's Cascade Investment LLC also put up money, said a person familiar with the funding.

"We do not discuss relationships with outside managers," Harvard spokesman John Longbrake said. A Cascade spokesman didn't return calls seeking comment.

'Time Has Come'

Cascade is the private investment fund of Gates, the billionaire Microsoft Corp. co-founder who dropped out of Harvard in 1975. Cascade also formed a venture last year to build and acquire power assets in Texas and other Southwestern states.

Denham will invest \$500 million in cash and borrow as much as \$1 billion to fund the Castens' projects over the next few years, participants in the deal said.

The full amount would surpass the \$1.1 billion that private and venture capitalists invested all of last year in energy efficiency, according to a June report by the United Nations Environment Programme. Last year's \$1.1 billion was a 54 percent jump from 2005, according to the report.

“I just think its time has come,” said Riaz Siddiqi, a senior managing director at Denham, referring to the venture. “The real exciting feature is reducing the carbon footprint of U.S. industry, profitably.”

Waste Heat

Denham, started by former Harvard endowment managers, has a portfolio of \$2.3 billion in energy and commodities investments.

Tom and Sean Casten have led 250 power projects since 1977, installing systems at companies including General Motors Corp., Eastman Kodak Co. and the steelmaker ArcelorMittal.

Most industrial processes waste heat. Coke ovens and glass furnaces vent hot exhausts that can be used for power. The simultaneous production of heat and power, also known as cogeneration, has been used at Harvard and other colleges.

A 2005 study for the U.S. Department of Energy found almost 100,000 megawatts of untapped industrial waste energy across the U.S., equivalent to 19 percent of energy demand and almost equal to the output of U.S. nuclear plants.

“The business case is that it is less capital, less operating cost, less fuel and less pollution to recycle waste energy than to follow the silly path we're on,” Tom Casten, 65, said in an interview.

Silicon and Steam

One project is with a U.S. silicon maker, which the company wouldn't identify. Silicon, used in computer chips, is made by mixing quartz and coal in a furnace. Heat streams from the molten metal, resembling a scene from the “Terminator” action films, said Sean Casten, 35.

He plans to install a steam coil. As heat rises it will evaporate water in the coil and drive a steam turbine to make 40 megawatts of power, a third of the plant's needs.

“You've now got electricity with no additional fuel use,” he said. “And you can do that at basically every silicon plant in the world.”

Cogeneration hasn't caught on widely among U.S. companies, partly because of the up-front expense. There wasn't as much incentive when energy costs were lower. Big utilities have resisted because of the potential for lost revenue.

“The utilities haven't done a great job of integrating cogen into the resource mix, for obvious reasons -- self- protection,” said Jim Harding, a consultant in Olympia, Washington, who is a former executive of the local utility Seattle City Light.

Half of Coal's Cost

Denham and the Castens will jointly own a new holding company that manages the projects. The fund will put up capital to install the new equipment in return for long-term power supply contracts.

Tom Casten estimated installation costs for a metals plant at \$35 million to \$60 million. That's \$1,200 a kilowatt hour, half the cost for new coal plants, he said.

An energy bill passed in August by the U.S. House of Representatives included cogeneration among methods for obtaining 15 percent of U.S. electricity from renewable sources by 2020. The provision wasn't in a Senate version, and the final legislation hasn't passed.

Tom Casten formed Recycled Energy after last year's sale of his previous company, Primary Energy Ventures LLC, to Canada's EPCOR Power LP.

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