
THE WALL STREET JOURNAL.

Corporate Focus

Utilities See Hot Market in 'Used Coal' --- Out of the Ashes of Electricity Generation Come Lighter, More-Durable Building Products

By Rebecca Smith

1,016 words

26 December 2006

The Wall Street Journal

D6

English

(Copyright (c) 2006, Dow Jones & Company, Inc.)

JOHN WARD'S son, Adam, asked him to speak at his middle school's career day a couple of years ago. It wasn't easy to follow a police officer and a firefighter, so Adam's introduction was brief: "This is my dad. He sells used coal."

Specifically, Mr. Ward sells the stuff left behind after coal is burned to make **electricity**. It's called fly ash, bottom ash or boiler slag, depending on the weight and density. More than 120 million tons are created each year by the U.S. power industry, enough to fill one million railroad cars.

Despite Adam's lack of enthusiasm, there's some urgency to find buyers for the sooty stuff. Utilities are planning to build more than 100 coal-fired power plants in the U.S. during the next decade. The potential for rising amounts of fly ash compounds the environmental concerns surrounding coal, which supplies more than half the U.S.'s electricity but emits substantial amounts of carbon dioxide, the main gas blamed for global warming.

Fly ash, if not used in other applications, fills up landfills -- one ton of ash takes up the same amount of space as the solid waste produced by the average American in 450 days, according to the American Coal Ash Association, a trade group in Aurora, Colo. Putting ash in landfill is expensive and can create an environmental hazard if harmful materials leach out of the ash, such as arsenic, selenium, lead or mercury, contaminating ground water.

"Everyone is out hunting for the magic-bullet application," says Debra Pflughoeft-Hassett, a researcher at the Energy and Environmental Research Center at the University of North Dakota, a leader in coal-related research.

Last year, 41% of the coal ash produced by U.S. power plants made its way into new products, a slight increase over 2004, according to the coal-ash association. The Environmental Protection Agency is partnering with utilities to get it to 50% by 2011. "Reuse of fly ash is a very high priority for us," says Matt Hale, director of the EPA's Office of Solid Waste in Washington.

Growing interest in "green" building materials is raising awareness about the environmental and practical benefits of coal-ash use. Coal byproducts are being used in the manufacture of wall board, carpet backing, mortar, shingles and fake rock for building facades. When used to make Portland cement, the most common use, it can significantly reduce carbon-dioxide emissions.

That creates opportunities for Mr. Ward and others, who reach out to cement makers, building-products companies, architects and engineers to show how inclusion of ash can make products stronger, lighter or more finely detailed. "We approach the materials as valuable products, not waste," says Mr. Ward, vice president at Headwaters Inc., a big seller of coal-combustion products in South Jordan, Utah.

Complicating the industry's efforts to recover fly ash are environmental requirements calling for pollution-control equipment to reduce nitrogen-oxide and mercury emissions. Lower boiler temperatures sometimes cut nitrogen-oxide emissions from power plants but have the unintended result of producing a blacker ash with more unburned carbon. Cement makers can't use ash if the carbon level is too high, making concrete prone to water intrusion and weakening.

Two utilities that have experienced success with coal-ash reuse are Great River Energy, Elk River, Minn., and Milwaukee-based Wisconsin Energy Corp. Great River's Coal Creek generating station in North Dakota is expected to sell its entire fly-ash output this year. Not only is Wisconsin Energy selling all the ash its power plants produce, but it is also mining older landfill sites to extract ash with the most unburned carbon.

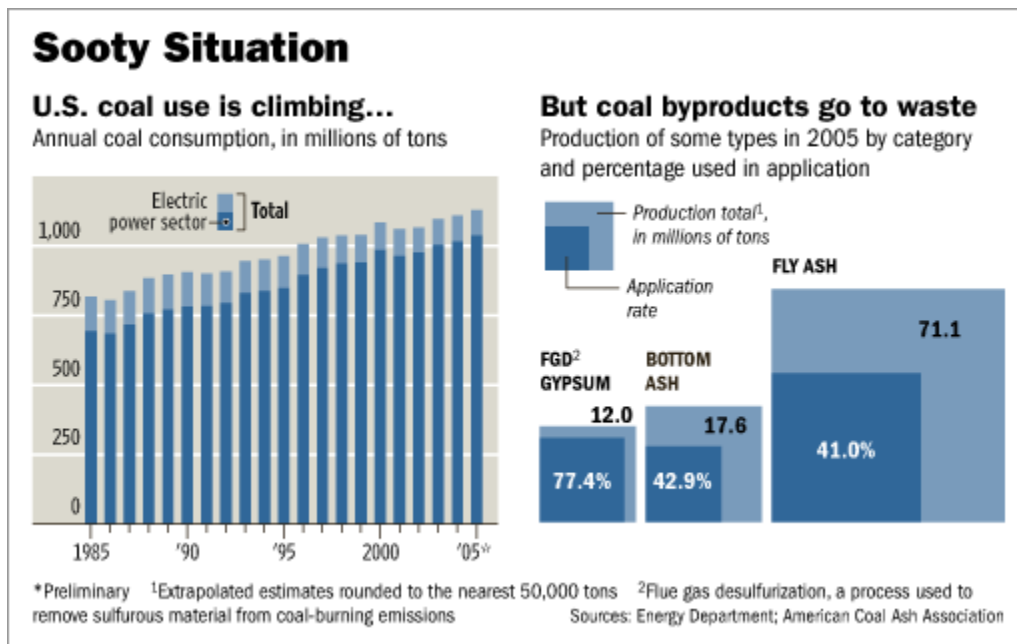
It hauls the recovered ash to its Pleasant Prairie generating station in southeastern Wisconsin where it is mixed with new coal and burned. By putting ash through a second burn cycle, the utility gets free fuel and a higher-value final ash. "We squeeze that last little bit of energy out of the ash," says Bruce Ramme, the company's manager of land quality.

Wisconsin Energy reaps \$3 million to \$4 million a year from ash sales, avoids \$20 million or so in landfill costs and chips away at its fuel bill. It is building two new coal-fired plants with no permitted landfill sites because it expects to sell all the ash they produce.

Another utility, Progress Energy Inc. in Raleigh, N.C., owns a subsidiary with a "carbon burn out" technology that incinerates ash a second time. The unit, called Progress Materials, sells small burn-out plants that can be built adjacent to coal-fired power plants. Heat extracted through a second burn cycle can be used to make more electricity and the ash is better suited to cement mix. Big utility Dominion Resources Inc., Richmond, Va., put two such plants in operation this year, in Massachusetts and Virginia, to cut landfill costs by boosting ash sales.

Even though California doesn't have much coal-fired power, it requires that state-funded roads contain fly ash, making the roads harder and more durable. In San Francisco, a new span for the Bay Bridge that connects Oakland to San Francisco contains many cement types, including one used in bridge footings that's 50% fly ash. That makes the concrete more resistant to salt-water attack. Another plus is that fly ash contains microscopic particles with a glassy, rounded shape that makes it slippery and easier to pump long distances.

Until recently, says Headwaters' Mr. Ward, most challenges to the industry were on the demand side, chiefly to persuade manufacturers to use fly ash. Now, he says, challenges largely are in delivering supply to customers. Headwaters is expanding its storage capability, putting terminals closer to end users and making sure ash silos are full when construction activity heats up in the spring and summer.



[License this article from Dow Jones Reprint Service](#)

Document J00000020061226e2cq0002f