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Painting the workplace green **Energy-efficient practices help Colo. firms save cash**

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Every day is casual-dress day at New Belgium Brewing Co., where employees with titles such as "vibe writer" and "sustainability goddess" are encouraged to ride bicycles to work.

Yet behind the Fort Collins brewery's neo-hippie veneer is a sophisticated and aggressive campaign to save energy and supplement the profits from selling beer.

With concepts as simple as skylights and shady eaves to as advanced as electricity generation from brewing waste, New Belgium uses 40 percent less energy than the average American brewer to produce a barrel of beer.

New Belgium is on the vanguard as it looks for ways to fight record-high energy prices with conservation and efficiency.

"Energy-efficient design made sense five years ago when natural gas was much cheaper," said Howard Geller, executive director of the Southwest Energy Efficiency Project in Boulder. "But with gas prices as high as they are now, it just makes so much more sense."

From the brewery to office towers in downtown Denver to a new golf clubhouse on the Western Slope, energy-efficiency improvements are driving the design of new buildings and the retrofit of older structures.

The conservation projects save enough energy that in many cases their upfront costs are paid off within one to five years.

The side benefits are a sense of environmental do-goodism and improved corporate esteem. But it's the bottom line that drives the move to efficiency.

"Energy costs are a huge issue and a huge expense for building owners," said Jeannie Bernard, executive vice president of the Denver Metro Building Owners and Managers Association. "Anything we can do to reduce the expense is worth the effort."

At New Belgium, maker of the popular Fat Tire Amber Ale, energy efficiency began as a natural impulse from brewery co-founder and former electrical engineer Jeff Lebesch.

"Jeff is the kind of guy who likes thermodynamic calculations and heat-transfer technology," said his wife, Kim Jordan, who founded the brewery with Lebesch in 1992. "Our bent is toward doing energy-responsive things because we want to."

In 1999, New Belgium became the first U.S. brewery and one of the first Colorado businesses to buy all its electricity from wind power. That's one of the company's few energy initiatives that fail to provide an economic return because New Belgium pays a small premium for wind energy compared with conventional power.

Other brewery projects are intended to save money once the capital costs are recovered.

Among the most ambitious is a \$5 million system that collects methane from brewing wastewater and uses it to fire a 290-kilowatt electric generator.

When the generator is running - typically 10 to 15 hours a day - it supplies up to 60 percent of the brewery's power. New Belgium saves \$2,500 to \$3,000 a month by generating its own electricity.

But the system's biggest savings came from avoiding the steep fees that would be assessed by the city of Fort Collins to treat the brewery's nutrient-rich wastewater.

With the combination of self-generated power and reduced wastewater fees, the methane-collection system paid itself off in three years.

"Our (efficiency) projects have to make good business sense," said Hillary Mizia, New Belgium's sustainability outreach coordinator.

"The social and environmental impacts are as important as the financial impact, but the financial impact is what keeps us in business," Mizia said.

In other Colorado businesses, examples of energy-efficiency improvements show the broad range of the projects:

Agilent Technologies installed a \$4,000 dew-point sensor in its Fort Collins plant that eliminated the need to dehumidify air during winter months, saving \$20,000 a year.

Boulder Community Foothills Hospital was built with high-efficiency windows and lights, occupancy sensors for turning lights on and off, carbon-dioxide detectors for building ventilation and high-efficiency fans and motors. The efficiency upgrades save 28 percent in energy costs compared with conventional equipment. The hospital also was the country's first to earn the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification.

Paonia-based Chaco Inc., a maker of high-end sports sandals, installed a \$160,000 geothermal heating and cooling system. Chaco estimates its annual energy costs to be \$4,800 compared with \$12,100 using conventional heating and cooling equipment.

The system works by running air through pipes buried underground, where temperatures remain constant. In the winter, the ground warms the air; in the summer, the ground cools it.

Also known as geexchange, the system cost about \$30,000 more than conventional heating and cooling but paid itself off within three years with lower utility bills.

The new First National Bank building in Montrose also features an underground geothermal system.

The system cost \$160,000 compared with \$80,000 for conventional heating and cooling, but lower energy costs will make it pay off within six or seven years.

Longmont semiconductor firm Xilinx Inc. uses under-floor air distribution instead of conventional ceiling air ducts. The system allows chilled air flow to be controlled by each office worker, thereby eliminating what Xilinx describes as "over-conditioning."

Ball Aerospace's research and development facility in Westminster is served by a large evaporative cooler, saving energy and money compared with conventional air-conditioners or industrial chillers.

Similar to but larger than a home "swamp cooler," Ball's unit uses the cooling power of evaporated water in place of more costly electric-powered chillers.

The Denver Place office complex launched a series of efficiency projects that have reduced energy costs by about \$300,000 a year.

The improvements made Denver Place the first buildings in Colorado to earn an "Energy Star" efficiency rating and also earned a LEED certification.

Improvements include new natural-gas-fired boilers to supplement electric heat, conversion to more efficient fluorescent tubes and ballasts, and natural-gas parking-ramp snowmelt systems instead of electric.

Despite recent increases in natural-gas costs, gas-fired equipment generally is cheaper to operate than electrical appliances.

The \$1.3 million heating- system retrofits at Denver Place were subsidized by \$550,000 in rebates from an Xcel Energy conservation program.

The program was designed to save 124 megawatts of power over five years, enough to serve about 100,000 households, by spending \$75 million on conservation and efficiency improvements.

The program not only helps businesses save money on energy costs but benefits all Xcel customers because the utility spends less to purchase power or build new power plants, said Bill Gruen, an Xcel energy- saving manager.

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Saving power at Denver Place

The Denver Place office complex downtown saves about \$300,000 a year with a series of energy-efficiency projects. Shown are the projects' cost and payback period.

| Project | Cost | Payback period |
|--|---------------|-----------------------|
| Install gas-fired appliances to supplement electric heat | \$1.3 million | 3.2 years |
| Replace 68-watt interior lights with 51-watt fixtures | \$450,000 | 3.6 years |
| Convert parking garage lighting from high-pressure sodium to fluorescent | \$136,000 | 2.8 years |
| Turn off heating and air-conditioning at 6 p.m. instead of 8 p.m | none | immediate |
| Use automatic shut-off of office lights | none | immediate |

Source: Denver Place

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