Going Green

In home and at work

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BRIEFS

Great White Way is going green

NEW YORK (AP) — The Great White Way is going green.

Mayor Michael Bloomberg — with the help of green friends like "Wicked" witch Elphaba — launched the "Broadway Goes Green" initiative last month that includes plans to use energy-saving bulbs and recycle stage sets.

The aim of the campaign is to reduce Broadway's carbon footprint, a measure of greenhouse gases produced by human activity.

Ten theaters already have replaced some 10,000 bulbs with more energy-efficient ones. And within the next 12 months, all of Broadway's theaters will have made the switch.

"By this time next year, the lights on Broadway will burn just as bright, but the energy bills and our city's carbon output will be lower," Bloomberg said.

The initiative is part of the mayor's PlanNYC goal to reduce the city's carbon footprint 30 percent by 2030.

Am. Superconductor tempers '09 outlook

DEVENS (AP) — Energy equipment supplier American Superconductor Corp. has reaffirmed its fiscal 2008 outlook but gave a 2009 revenue outlook below Wall Street's expectations.

For the year ending in March, the company still expects to post a loss of 30 cents to 35 cents per share on sales of $175 million to $185 million.

Analysts, on average, are expecting a loss of 34 cents per share on sales of $176.6 million, according to a survey by Thomson Reuters.

The company said it expects a profit in the fourth quarter.

For fiscal 2009, the company forecast revenue of more than $225 million, and said it expects to be profitable but did not give a specific profit guidance.

Analysts expect sales of $261.8 million.

"We expect growth in China's wind energy market to continue to be a primary contributor to our revenue growth in fiscal 2009," said Greg Yurek, founder and chief executive, in a statement.

Beacon raises $4.1M in private stock sale

TYNGSBORO — Beacon Power Corp., which is developing flywheel energy storage technologies, said it has landed in $4.1 million in net proceeds after selling about 8.9 million of its shares to an undisclosed investor.

Each unit consists of one share of the company's common stock and a warrant to purchase one share of common stock at an exercise price of 74 cents a share. Earlier this year, Beacon stock sold for as high as $2.18 a share.

The company said the cash would be used for ongoing operations, including flywheel manufacture, and the continued development of the company's New England facility.

Beacon Power, which employs about 65 people locally, creates flywheel energy storage systems that provide uninterruptible electric power for communications networks, computers and manufacturing applications.

Its systems draw electrical energy from a power source, such as a grid, and then store it. Power can then be delivered as needed when a primary energy source either fails or is disrupted.

Developer R. Carter Scott, president of Transformations Inc., is overseeing the construction of 41 green homes — 12 of which are designed 40B affordable housing — in Townsend.
SUN PHOTOS / DAVID BROW

Zero net-energy homes

Townsend builder: Energy efficiency doesn't need to be expensive

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TOWNSEND — Take a step into the blue farmhouse on Coppersmith Way, and you'll see an open-concept kitchen overlooking a bright living room, an outdoor deck and all the amenities that house-hunters look for.

But what makes this new three-bedroom home unique are the features behind the nooks and crannies.

Extra-deep window sills reflect a big cavity created between the exterior and interior walls to allow for "super insulation" with 18-inch thick forms. Complete with 30 solar panels on the roof, this ultra-airtight house only requires two units of Mitsubishi Mr. Slim, a skinny wall-mounted ventilator, to heat and cool it year round.

Just imagine two 1,500-watt hair dryers and an 80-watt bulb turned on, said R. Carter Scott, the developer. That's all the power it takes to keep this house at 70 degrees Fahrenheit inside, even when it's 6 degrees outside.

Welcome to a "zero net-energy" house, an ultimate energy-efficient home designed to produce all the energy one needs to live there.

This house is set up for the owner to sell any solar energy left unused during the day to the electric company — though one needs to buy it at night and on cloudy days. Thus, the "net use" of energy from the grid — which relies on carbon-emitting power sources like coal — over the course of a year is zero.

This house, currently a front-runner for the $25,000 top prize in Massachusetts New Homes with Energy Star's Zero Energy Challenge, is the first of its kind on Coppersmith Way, a 41-unit "green" subdivision that Scott, 46, has been working on. With a lifelong mission to fight global warming, he has spent the past 15 years experimenting with construction methods that help minimize emissions of "green house gas" — such as carbon dioxide and nitrous oxide that trap heat in the atmosphere.

R. Carter Scott shows how an artificial rock hides a septic cover for one of his "green" homes in Townsend.

On Coppersmith Way, all but one house have energy-efficiency features and come with Leadership Energy and Environmental Design (LEED) certificates, a seal of approval from the U.S. Green Building Council.

What's more, Coppersmith Way is an affordable housing project permitted under state law Chapter 40B. Cost-efficiency is often the most important issue in 40B projects because the law requires developers to sell at least 25 percent of units at prices affordable to low and moderate-income residents. On Coppersmith Way, 12 of the 41 homes, or 29 percent, qualify as affordable.

Many developers regard eco-friendly homes as a budget-buster. Scott says it's a myth. He said going green saved money, and that one only needs to think "out of the box" to achieve it.

The Evergreen Spruce solar panels mounted on the house produce up to 5.7kW. These panels convert up to 50 percent of the heat from the sun into useful energy — compared to a typical 10 to 15 percent — thanks to a water-heating system called the SunDrum Collector attached underneath them. The SunDrum pumps water through the collector, thus capturing much of the heat from the panels — before it's lost to the air — while cooling the solar panels to enhance their performance. Heating the water this way for five hours a day saves 150 gallons of heating oil — and reducing carbon dioxide emission by 5 tons, according to SunDrum Solar, LLC, maker of the product.

The house also comes with a Singular Residential Wastewater System, a septic tank that Scott says makes wastewater as clean as tap water by removing 85 percent of the nitrogen in it.

Dual-flush toilets allow for use of a small or large amount of water, depending on need.

Overall, he calculated that construction of the zero-energy house cost him $9,193 more than a conventional house would. But that balance would turn in Scott's favor if he wins the $25,000 prize for the zero-energy challenge. (See chart at right for the full expenditures and savings.)

House buyers would also save up to 100 percent in utility costs, according to Scott — a savings that can amount to $6,000 a year when moving from a conventional four-bedroom home. Scott believes that's the reason the Townsend home was snapped up even before construction.

More green for your green

Utilizing various federal and state rebates, R.Carter Scott was able to limit cost increases on his 41-unit "green" development on Coppersmith Way in Townsend. Some of the extra expenditures required for construction of each of the two kinds of homes Scott built, as well as the savings derived from incentive programs, are as follows:

House 1

Affordable Needham design
Three bedrooms, 1,232 square feet
Price: $195,200
Green-related expenditures
• Framing double-studded walls, rafters, $1,670
• Super-insulation, $5,970
• Photovalaic system: $7,800 ($33,000 minus $25,200 rebate from Massachusetts Technology Collaborative)
• SunDrum hot water heating system: $6,500
• Energy efficient windows: $689
Total additional expenditures: $22,629
Green-related savings
• One-inch rigid on outside of the house: $2,258
• Trim on windows: $1,328
• Painting: $300
• Heating system: $3,550
• 2008 federal and state tax rebates: $6,000
Total savings: $13,436
Net extra costs: **$9,193**

House 2

Market-rate Greek Revival home
Three bedrooms, 2,108 square feet
Price $389,900
Green-related expenditures
• Framing double-studded walls: $1,500
• Super insulation: $3,800
• Photovaltaic system: $22,410 ($38, 610 minus $16,200 rebate from Massachusetts Technology Collaborative)
• SunDrum hot water heating system: $6,500
• Energy-efficient windows: $1,700
Total additional expenditures: $35,588
Green-related savings
• One-inch rigid on outside of the house: $2,500
• Trim on the windows: $1,600
• Painting: $400
• Heating system: $10,650
• 2009 federal tax rebate: $13,583
• 2009 state rebate: $2,000
Total savings: $30,773
Net extra costs: **$4,855**

Builders: Going modular is good way to go green

BOSTON (AP) — It took six days for builders to put together a modular classroom with wood panels and walls of windows on a concrete plaza in Boston last month.

But the temporary classroom — built in pieces at a factory, then transported and finished at the Boston Convention & Exhibition Center — has little in common with the aesthetically deadening modular buildings of lore. Its 40 windows direct sunlight inside at angles that keep the building cool in the summer and the heating system uses natural convection to keep people comfortable in winter.

To builder Project Frog of San Francisco, it's a demonstration of how modular construction can be used to construct green buildings cheaper, faster and better.

"I think it's a huge and neglected part of green building," said Mark Miller, the company's chief executive officer.

More people are already paying attention to green modular buildings. The National Homebuilders Association of America recently released its green standards for modular homes.

But building modular has real limitations, not the least of which is the perception of being cheap and ugly. Art Breitenstein of All-American Homes says he's accustomed to seeing the "little wrinkle in the nose" when potential customers find out his company's solar homes are pre-made.

But proponents of modular building say such thinking is outdated. They take pains to differentiate modular buildings from manufactured portable buildings, such as trailer homes.

Breitenstein compares modular building techniques to how a high-performance car is made. Each piece of the home can be specially designed and fitted, using materials produced with the least environmental impact for maximum energy efficiency and health.