



RAISE THE ROOF

GREEN ROOFS AND SOLAR PANEL SYSTEMS ARE AMONG NORTH AMERICA'S HOTTEST ROOFING TRENDS.

BY JEFF BOND



Trends in fashion and food may typically begin on either coast, but when it comes to **rooftops**, the leader in sustainable sensibilities is smack dab in the middle of the country.

According to Toronto-based non-profit Green Roofs for Healthy Cities, Chicago has the highest number of green roofs in the United States. Under the leadership of former Mayor Richard Daley, the Windy City leads the nation in developing green roofs on the city's downtown skyscrapers, installing more than 500,000 square feet of roof space covered by plants in 2010 alone. That's the equivalent of more than 14 football fields.

One of Chicago's most impressive green developments is the rooftop garden on City Hall. The vegetated roof 11 stories up reduces storm runoff and energy use, naturally controls building temperatures, increases the lifespan of the roofing materials and even reduces that old carbon footprint.

According to Steven Peck, founder and CEO of Green Roofs for Healthy Cities, Chicago has become the leader of the movement in the United States because Daley was convinced about a decade ago that promoting a green city would not just be good for the air, water and the city's carbon footprint, it would be good for business.

"Daley understood that if you create a vibrant environment in your city, such as the promotion of a green initiative, you attract the creative class of people who will help generate greater economic activity for the city," Peck says.

While Chicago is the clear leader in North America in the number of green roofs, it has competition. Other metropolitan areas, such as Washington, D.C., New York, Philadelphia, Portland, Ore., and Seattle have seen major

increases in the square feet of roof space turned green. Canada has also caught green fever: Toronto's city government implemented one of North America's most aggressive green policies last year, when it called for all new buildings and retrofits to include green roofs.

Peck's industry association, which promotes the development of green roofs throughout North America, recently reported that the green roof industry grew by nearly 29 percent in 2010 alone. That surge in business follows the industry growing by 16 percent in 2009.

Angie Durhman, the national green roof manager for Tecta America, the nation's largest commercial roofing company and the leader in green roofing, says that during the past decade, her division of the Skokie, Ill.-based company has grown from developing one or two green roofs a year to now being involved with 20 to 30 large-scale projects annually.

"When Tecta first started installing these roofs back in 1999, it was very novel," Durhman says. "Building owners were interested in the idea but they were often too nervous to give it a try. Today, it's much more mainstream."

GREEN ROOF 101

While the idea of green roofs may be relatively new in America, Durhman points out that the technology is old-school for many European governments and property owners that have been installing vegetated roofs for more than 100 years.

According to Tecta officials, a green roof—also known as a vegetated roof—is a plant-filled rooftop system that offers an energy-saving plant layer on top of a conventional rooftop. The Tecta system begins with the application of waterproof roofing materials, overlaid by a membrane to prevent damage to the roofing system. Next, a drainage layer is added to store water, followed by a filter mat that allows the water to pass through. Dirt or some other plant media is put on top of the mat. The last layer is made up of plants that are chosen for the location and climate.

Green roofs are more expensive than traditional roofs. They also require more planning and long-term maintenance to cultivate and preserve the vegetation, so they are only as good as the maintenance systems designed to care for them. In the early years of green roofing, many building owners found that improper maintenance resulted in the death of the vegetation, adding costs and management headaches.

There are many variables to the process, including the number of layers used, specifications about drainage and the amount of soil. And designers need to consider whether or not the roof will be used by people as an outdoor space. But, in general, added costs can be reduced by storm water credits and tax incentives. Tax breaks for green roofing vary across the country, but some cities, including Portland, Ore., and New York, offer tax incentives that can add up to about \$5 a square foot.



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THE BENEFITS OF GOING GREEN

But not all the savings are in tax breaks. Green roofs can also save property owners money by reducing energy costs and extending the life of roofing materials.

For instance, the Tecta website uses the example that on a 90-degree day, the temperature on a typical roof can reach 160 degrees. But the same green roof would reach only about 95 degrees, saving the energy needed to cool the building that additional 55 degrees. Experts also contend that green roofs can double the lifespan of roofing materials. Durhman says the green roofs may even increase the lifespan of a given roof by more than double.

Then there are the environmental factors. Green roofs are an excellent way for any building operator to receive points toward the increasingly important Leadership in Energy and Environmental Design (LEED) certification, an internationally recognized, green building certification system.

“If you are trying to achieve gold or platinum-level LEED certification, more than likely you are incorporating the roof in your plan,” Durhman says. “In fact, there is almost no way around it.”

SUN POWER

Of course, the one green roofing technology that has recently gained the most appeal is solar power. Tecta, which is also among the leaders in developing roof solar systems, is seeing increased demand across the country, but most acutely in the 23 states that offer some form of tax incentives to build a solar roof system.

Katie Riedo, the solar development manager for Tecta America, says that states such as Massachusetts, New Jersey and California are among those leading the way for solar installations.

Tecta officials use the example of an 80,000-square-foot system of solar panels that would produce 500 kilowatts of energy a year. In 2010, the system in Massachusetts would cost about \$2.25 million to install. But with the federal government’s 30-percent investment tax credit,

the price was reduced to \$1.575 million. The system also benefits from a five-year, accelerated depreciation schedule and Massachusetts’ own market-based incentive program. Tecta officials estimate that with all these benefits, the system would pay back the investment costs in about five years. After 10 years, the system would produce an after-tax rate of return of about 12 percent.

While such tax breaks vary greatly, in the right circumstances, solar power can be a good deal for the right company with the right facilities.

Riedo says that beyond tax incentives, solar technology continues to improve, with manufacturers creating more efficient panels more cheaply. Such innovations are lowering the cost of the panels and making the systems increasingly more cost-effective. And more innovations are expected.

“There are companies out there that are pushing the technology envelope and creating more and more efficient cells,” Riedo says. “The cost of the materials is dropping. Solar is definitely becoming more mainstream.”