



Chicago's Living Roofs

By Kim Bookless
Photos by Carla Bruni

The roof of Chicago's circa 1911 City Hall boasts the 20,000 square-foot City Hall Rooftop Garden.

THE CITY OF CHICAGO is sold on green roof technology. Many businesses are incorporating green rooftops into the design of new and retrofitted buildings, and some residents have begun exploring the environmental and energy saving benefits of adding green roofs to their homes.

Chicago was environmentally conscious long before the word "green" became a verb. The city adopted *Urbs in Horto*, or City in a Garden, as its motto in 1837, and Daniel Burnham's 1909 Plan for Chicago provided for abundant parks and green space. More recently, former Mayor Richard M. Daley installed green roofs on hundreds of buildings, created the Chicago Center for Green Technology and formed the Chicago Climate Action Plan task force to address the city's potential climate change. The task force listed green roofs as one of their eight Mitigation Strategies for 2020, citing a goal of installing 6,000 green roofs in the city in the next decade.

The city's sustainability triumph is the City Hall Rooftop Garden, a 20,000 square-foot botanical wonderland with more than 100 varieties of plants, vines, shrubs and trees. Funded through a settlement agreement between the City and ComEd, the City Hall Rooftop Garden's main purpose was to allow scientists to study how using vegetation on a roof can reduce the Urban Heat Island Effect. About 60 percent of roofs in Chicago are made from dark colored materials that absorb and trap heat, raising both air temperature and pollution levels.

After installing the green roof on the circa 1911 building, scientists compared the City Hall building's rooftop temperature with that of the adjacent Cook County building's black tar roof. On an average August day, with temperatures in the 90s, the ambient air temperature on the City Hall building roof was up to 10 degrees Fahrenheit cooler than the Cook County building roof. Lower roof temperatures resulted in less energy needed to cool the building.

Green rooftops provide a myriad of benefits to the environment, including the ability to help manage storm water runoff. Chicago's aging sewer system is no match for the heavy rains that plague the city several times per year, resulting in local flooding and an excess of pollutants emptying into natural waterways. For Marcus de la fleur, a Chicago environmentalist and landscape architect, green roofs are an important part of a sustainable landscape system. "Green roofs make up about 10 percent of my business, and the majority are on institutional and public projects like condo redevelop-

ment. I saw a need to show homeowners the connection between City Hall and their own homes," he explained. He has installed a green roof on the front porch of his home in nearby Dupage County to serve as a living example of the benefits and rewards of this technology.

Jenn Lassa, co-proprietor of Rooftopia, a Chicago rooftop gardening and landscaping company, added, "Roofs are underutilized space. A green roof or rooftop garden is extremely beneficial to bees, butterflies and birds, especially if you are using native plants." Lassa recommends using a variety of textures in plants, and explains that white, blue and purple flowers are most beneficial to pollinators.

Some Chicago homeowners who have seriously considered adding a green roof are still weighing the environmental benefits against the price of installation. Costs can range from \$15 per square foot for an extensive green roof (a lighter weight garden with shallow growing material, hearty plants and low maintenance) to \$40 per square foot for an intensive one (heavier and deeper growing material supporting more delicate plants that can require irrigation and pruning). City permits, a structural engineering analysis and any construction work necessary to support the increased weight add to the cost.

Owners of historic homes have other considerations when adding a green roof. Carla Bruni is a sustainability and preservation consultant in Chicago with a mission to bridge the gap between historic preservation-

ists and green building advocates. "I spend the majority of my time working on projects that involve making older buildings more energy efficient. Green rooftops are not always appropriate for a historic building. They work best on a structure with a flat roof and high parapet wall so the garden can't be seen from the street," advises Bruni, echoing guidelines found in the Secretary of the Interior's Standards for Rehabilitation.

Bruni explained that Chicago roofs are constructed to handle heavy snow loads, and while structural engineers are still needed to add green roofs to buildings, there might not be as much reinforcement required as one would think. Buildings in other parts of the country might require a bit more retrofitting to bear the weight of a green roof.

An update issued by Mayor Rahm Emanuel's environment committee reminds Chicagoans of the City in a Garden motto and proclaims that the city has long been an international leader in environmental action and preservation. Mayor Emanuel has not yet directly addressed the question of whether his administration will carry on all of the environmental and sustainability work of his predecessor, but Larry Merritt, spokesperson for the Chicago Department of Environment, notes, "With 600 green rooftops built or in development, Chicago has more green roofs than any other city in the U.S. While some of them were mandated in return for private developers receiving tax credits or other financial



The Chicago Center for Green Technology's living roof.

incentives from the city, most were installed voluntarily. Mayor Emanuel used the City Hall Rooftop Garden as the backdrop for a recent media event, which suggests that he will continue his predecessor's work to make Chicago the nation's greenest city."

Chicagoans are hopeful that the new mayor will combine green technology, environmental activism and historic preservation to help the city stay true to Daniel Burnham's vision