

Nation's Capital Leads in Sustainability

By Greg Benson and Sarah Hasselmann

The U.S. Green Building Council (USGBC) recently ranked the top 10 states for Leadership in Energy and Environmental Design (LEED). Although Washington, D.C., is a federal district and not considered a state, it far surpassed all 50 states in square feet of LEED-certified space per resident. For the second year in a row the state of Illinois ranked first in the nation with 3.31 square feet of LEED-certified space per resident but Washington, D.C., significantly raises the bar with 29.44 square feet per capita. Over the past decade, the Department of General Services (DGS), the District of Columbia Public Schools (DCPS), and the District Department of the Environment (DDOE), have been able to join forces with other D.C. government agencies to make sustainability a major component of Washington, D.C.'s new infrastructure and development. In 2010, as part of the Healthy Schools Act, the District of Columbia required that all new and renovated school construction had to achieve a minimum of LEED Gold certification. This sparked several citywide initiatives and led to unique opportunities for the district.

DGS, an agency with the mission to elevate the quality of life in Washington, is responsible for the maintenance, construction and operation of the district's building portfolio that includes schools, parks, recreation centers and any other district-owned building. Within DGS there is a Sustainability and Energy Management Division, led by Mark Chambers, charged with creating and managing sustainability initiatives for the district's buildings, including energy, water and waste management. Some of these initiatives include energy acquisition, renewable energy and energy efficiency.

City wide, energy use evaluations are being done on existing buildings. These evaluations will be used to determine if cost savings can be realized by retrofitting those buildings with new green technology such as solar photovoltaic (PV) panels, geothermal wells and stormwater management systems. To help this effort, DGS utilizes a website, Build Smart DC, to share its projects' energy consumption and performance. "We're trying to set an example and continue to tangibly demonstrate leadership," Chambers said. "Because it's not just what we do with our portfolio, it is how our portfolio fits into the larger context of the city and how we make it palatable for the private sector as well." Sharing this information creates "a level of accountability when it comes to performance management," Chambers added.

DGS has been installing more efficient heating, ventilation and air conditioning (HVAC) systems throughout schools, recreational centers and other district buildings to ensure that building maintenance and management profes-

sionals are trained with the knowledge necessary to reduce the energy consumption of their buildings. This includes occupant-centered conservation protocols and proper system maintenance. A prime example is Ludlow Taylor Elementary School, which was able to significantly reduce its building's energy consumption with minor changes to how the HVAC system was programmed during unoccupied times. By maintaining more neutral set points on thermostats, and metering the light loads on Saturdays and Sundays, the school reduced its energy consumption load by 15 percent.

In the summer of 2013, DDOE released new stormwater regulations with the intent of developing a robust stormwater management program in the district and taking a leading role in the reduction of stormwater pollution. Coinciding with the release of these new regulations was an opportunity for some much-needed site improvements at DCPS' Simon Elementary School. It was a chance to showcase the new stormwater management regulation with a tangible project. By executing a memorandum of understanding between DGS and DDOE the two agencies were able to team up to design — and ultimately construct — a low-impact development playground on the nearly 200,000 square feet of existing schoolyard at Simon. Because the schoolyard was completely covered with impervious concrete and asphalt prior to construction, the storm runoff drained

almost directly into Oxon Run, a stream less than a football field away from the school. Now the site is designed to retain just over 12,700 cubic feet of water, far exceeding the new minimum requirement of capturing and holding a 1.2-inch storm over a 24-hour event. The site not only serves to improve the water quality in Oxon Run, but stands as a teaching tool for the school and district residents as it incorporates one of the largest bio-retention systems in the city, a parking area with pervious pavers and various bio-swales.

Just as the Simon playground project has served to demonstrate new stormwater reduction efforts across the city, Dunbar High School has become a pioneer for some of the district's newest sustainability initiatives. Some of the major components of Dunbar's design include a pair of 20,000-gallon underground cistern tanks for stormwater reclamation to be reused throughout the building to flush toilets. The school also boasts the largest geothermal well field in the city; a 500-foot-deep, 362-well system that allows the building to use the earth's constant temperature of 59 degrees as a baseline for heating and cooling, greatly minimizing energy costs.

The most impactful feature of the new Dunbar design is the school's roof-mounted, 428-kilowatt photovoltaic (PV) array. The district was able to execute its first-ever power purchase agreement (PPA), enabling the implementation with no capital cost or debt incursion for the city. This PPA between the district and Constellation

Solar DC LLC (Constellation) stipulates that Constellation is required to install the full PV array on the roof of the new Dunbar High School and sell the electricity produced to the district at a rate lower than that charged by Pepco, Washington, D.C.'s leading energy supplier.

With more than 1,900 photovoltaic panels, the solar array at Dunbar is the largest on a single building in the district and includes a variety of trellis-mounted panels, roof-ballasted panels and thin film applied directly to the roof membrane. Collectively, the panels will produce an estimated 534,995 kilowatt-hours per year, accounting for roughly 20 percent of the building's annual energy needs. With the assistance of Pepco, the system is fully integrated into the local electricity grid. Resources have also been allocated to track energy production, which is useful in using the building as a teaching tool.

Greg Benson and Sarah Hasselmann are both assistant project managers with Brailsford & Dunlavey, a Washington-based program management firm.

Linked in

Join the School Construction
News group: <http://linkd.in/PaYDKj>

The Easiest Way To Build

Precast Concrete Buildings For All Your School Needs
VERSATILE • DURABLE • FAST • ECONOMICAL • SECURE

Standard and custom plans, styles, colors, finishes • Sizes from 10' x 12' to 50' x 250'
Pre-engineered, Pre-assembled, Pre-plumbed, Pre-wired • Minimal site preparation
Outperforms all other materials • Resistant to rot, vandalism, fire, blast, and storms
Installation in just hours • Available nationwide from a network of Licensed Producers

Classrooms • Concessions • Dugouts • Electrical/Mechanical • Hazmat • Maintenance Sheds • Press Boxes
Pump Houses • Restrooms • Locker Rooms • Field Houses • Security Shacks • Shelters • Storage & more!

EASI-SET BUILDINGS
Online Quote Form
EasiSetBuildings.com
866.252.8210

Circle #104 on reader service card.