

Dunbar High School

A LEADER IN D.C. GREEN ENERGY INITIATIVES.

IN AUGUST OF 2013, THE DISTRICT OF COLUMBIA Public Schools (DCPS) opened the doors of the newly constructed, 280,000-square-foot, \$128-million Dunbar Senior High School in the hopes of reviving its commitment to leadership and excellence, a cornerstone of the historic school since the late 19th century.

For a school that pioneered education for African Americans and produced leaders such as Anna J. Cooper, Dr. Charles Drew and Congresswoman Eleanor Holmes Norton, it is no surprise that once again Dunbar is on the front line of what is now a series of district-wide sustainability initiatives. In 2010, as part of the Healthy Schools Act, the Council of the District of Columbia passed legislation requiring all new construction within the DCPS portfolio achieve at a minimum a Leadership in Energy and Environmental Design (LEED) for Schools - Gold certification. Dunbar was the first school to reach for a LEED Platinum certification, higher than gold, making them the first D.C. public school to reach this level (expected summer 2014).

Some of the major components of the design contributing to the platinum certification include a pair of 20,000-gallon underground cistern tanks for storm water reclamation to be reused throughout the building to flush toilets. The glazing throughout the building allows an abundant amount of natural light to infiltrate classrooms and common areas and regional, recycled, and low-emitting building materials were used. The school also boasts the largest geothermal well field in the city. It is a 500-foot deep, 362-well geothermal system that allows the building to use the earth's constant temperature of 59 degrees as a starting point for heating and cooling, greatly minimizing energy costs.

But the most impactful feature of the new Dunbar design is the school's roof mounted, 428-kW photovoltaic (PV) array, utilizing the 200-plus sunny days that Washington, D.C. has per year. The Department of General Services (DGS), an agency created in October of 2011 under current Mayor Vincent C. Gray (a graduate of Dunbar High School himself), is responsible for the management and construction of the district's entire 400-plus building portfolio, including municipal buildings and all DC public schools.


Under the leadership of DGS Director Brian Hanlon, and the commitment from the Department's Energy and Sustainability Division led by Sam Brooks, the district was able to execute its first-ever power purchase agreement (PPA), enabling the implementation of the PV array on the roof of Dunbar High School 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 a 428 kW PV array on the roof of the new Dunbar High School and to sell the electricity produced to the district at a rate of \$0.085 per kWh, a discount of nearly one third from the tariff rate charged by Pepco, Washington's leading energy supplier. This rate will increase over the 20-year agreement term at fixed 1.5 percent increments, including built-in not-to-exceed amounts each year.

"Bringing solar to the district's portfolio is a big step forward in the Agency's strategic effort to lower costs, reduce risk and decarbonize energy supply — and it goes a long way to support the Mayor's vision of a sustainable DC," says Hanlon of the public-private partnership with Constellation. As part of the agreement, Constellation will provide Green-e Energy renewable energy certificates to fulfill the U.S. Green Building Council's LEED requirements.

With over 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 kWh per year, accounting for roughly 20 percent of the buildings 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 will be useful in using the new building as a teaching tool, another important aspect of the LEED agenda.

The PV array at Dunbar officially went into operation on Dec. 27, 2013 and since the execution of the PPA in spring of 2013, DGS has leveraged the positive reception into greater district-wide renewable energy initiatives. These initiatives include the procurement of an approximately 50MW wind farm and another 10MW solar PPA which will allow DGS to distribute renewable energy resources throughout its portfolio.

Besides the obvious benefits of renewable energy sources for the environment, PPAs allow property owners to reduce energy costs and eliminate the majority of upfront construction costs for comparable systems. The management team for Dunbar was able to take the estimated \$2-million construction cost of the rooftop solar array and re-allocate the funds elsewhere within the project. The results are staggering, and it is no wonder why Dunbar has once again become a pillar of the D.C. public school system. 

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