

# Extensive Energy Efficiency Measures for the Maryland Stadium Authority

The MSA scores big with energy savings—and earns M&T Bank Stadium Gold LEED certification



## Challenge

In 1987, the Maryland General Assembly established the Maryland Stadium Authority to build, manage and maintain quality facilities, as well as to keep Major League Baseball in Baltimore. Shortly thereafter, the MSA and the Baltimore Orioles struck a deal to build a stadium at Baltimore's Camden Yards.

Oriole Park at Camden Yards officially opened its gates in April 1992 to rave reviews from fans and the architectural community alike, prompting resurgence in the design and build of traditional, retro-style ballparks across Major League Baseball. Following the success of Camden Yards, the original mission of the MSA evolved and expanded to encompass the building and management of other entertainment facilities across the state.

In 1995, more than a decade after the Colts' midnight departure from Maryland, the National Football League announced that an NFL team would finally return to Baltimore, thus creating the need for a new stadium to replace the city's aging Memorial Stadium, dating from 1922. M&T Bank Stadium opened in 1998 to the delight of football fans across the Baltimore region, rounding out the MSA's Camden Yard complex.

Already aware of its need to become more energy efficient, in 2008 the MSA removed the cathode ray JumboTron and incandescent light bulb matrix boards at Oriole Park, replacing them with LED video boards. This alone brought the stadium a 66% energy savings—reducing energy consumption by 284,000 watts.

In the same year, the Maryland General Assembly passed the EmPOWER Maryland Energy Efficiency Act, setting a target of 15% reduction per capita in energy consumption and demand by 2015. In order to contribute toward these goals, the MSA decided to update its aging energy infrastructure—at this point, Oriole Park was almost twenty years old and M&T Bank Stadium was nearing ten—through energy efficiency efforts.

## Solution

Pepco Energy Services, Inc. (recently acquired by Exelon, Constellation's parent company, and now organized under Constellation) was chosen to implement a comprehensive energy performance contract (EPC) for the MSA's Camden Yard complex, which includes Oriole Park at Camden Yards, home to Baltimore's Major League Baseball team; M&T Bank Stadium, home to the NFL's Baltimore Ravens; the B&O Warehouse at Camden Yards, housing office space, banquet rooms, meeting spaces, pubs and full-service restaurants; Aramark refreshment facilities; and the parking lots.

This customer was unique due to the event-dependent nature of the facilities' energy usage and the fact that the MSA consists of a tenant environment in which the MSA provides utility services. The tenants reap benefits from the savings associated with upgrades, as savings are assigned to each individual occupant. In addition, Oriole Park sees its highest energy usage during the summer months, when long, hot days require additional air conditioning, while M&T Bank Stadium uses



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## Highlights

### Project

- Total contract amount of \$12.2 million
- \$16.9 million projected energy savings over term of contract
- 16.7% projected energy reduction over term of contract
- 48% water reduction over term of contract
- 23.8% energy and water cost reduction over term of contract

### Technical

- Energy audits
- Development, design and lighting upgrades
- Daylight harvesting
- Demand response
- Domestic water conservation
- Sewer exemption header and meters
- EMCS upgrades
- Demand response, chiller plant, heating plant (heat recovery from condensate, piping insulation, domestic water heating control valve), air systems, and envelope upgrades

the bulk of its energy during the fall and winter, when days are short, lighting demand is high and heat is necessary to keep fans comfortable.

As part of the more than \$12 million contract, Constellation provided high-efficiency lighting, controls upgrades, water conservation measures, replacement of heating and cooling equipment, building envelope upgrades, and ventilation system improvements. In a subsequent project (Phase II), Constellation also replaced all of the parking lot lighting with state-of-the-art LED technology.

Oriole Park and M&T Bank Stadium had previously used independent energy management control systems from two different vendors. A portion of this project focused on integrating the two systems into a common open protocol platform for ease of operation and common energy management strategies. This effort also included optimization of the common chiller plant, which is used by both stadiums, and its pumping processes. Constellation upgraded the chiller plant with a new chiller and cooling towers, replaced control valves and added variable speed drives to the pumps.

After the crowds disperse, part of the cleanup process includes washing down the stadiums from top to bottom. Large quantities of water are necessary to accomplish this task, after which the water empties into the storm drain and not the sanitary sewer. Previously, the MSA had been billed for both water and sewer usage based on the amount of water used, despite the water's not emptying into the sewer system. Now, with the installation of the new water meters, which verify the water's drainage path to the storm drains, the authority receives a

sewer usage credit, bringing significant cost savings.

As a result of these upgrades, M&T Bank Stadium ranks among the NFL's most energy-efficient stadiums. Additionally, it was the first professional outdoor sports facility in the United States to receive a Gold LEED certification from the U.S. Green Building Council.

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