SHOWCASE PROJECT: COLUMBIA ASSOCIATION: SUPREME SPORTS CLUB

SOLUTION OVERVIEW

Supreme Sports Club (SSC) is a 100,000-square-foot fitness facility that operates 24 hours per day in Columbia, Maryland, and is Columbia Association's most energy intensive facility. Built in 1986, the facility contains three pools, a large basketball/skate arena, locker and shower rooms, staff offices, a laundry facility, and cardio and other exercise equipment. Approximately 1,500 members visit the facility each day. Building renovations, lighting retrofits, and mechanical upgrades have been implemented to reduce overall energy consumption and greenhouse gas emissions while improving member experience.

The electrical demand at SSC is driven by space conditioning, lighting, pump, and plug loads. Gas demand is connected to pool heating, laundry, and showers. Because of this operational profile, a significant amount of electricity and natural gas is consumed continuously at this facility.

SECTOR TYPE

Commercial

LOCATION

Columbia, Maryland

PROJECT SIZE

100,000 Sq. Ft.

FINANCIAL OVERVIEW

Project Cost: $404,000*

SOLUTIONS

With a 24-hour operating schedule, SSC is Columbia Association's primary target for energy management projects. Lighting – both interior and exterior – and cogeneration were the focus for the renovation and retrofits. Nearly all lighting at SSC was converted to LED through this project. The new cogeneration system significantly improved the source energy use intensity of the facility and lowered operating costs.

Savings Measure	Total Cost	Annual Savings Achieved	Notes
Combined Heat and Power Generator	$250,000	$25,000	Installed 60kW CHP genera electricity and water hea
LED Troffers	$70,000	$10,600	Replaced 320 fixtures with troffers

Parking Lot lighting	$37,000	$10,300	Replaced 80 metal halide pa lights with LED fixture
HOT5 Arena lighting	$25,000	$10,500	Replaced 58 HID fixtures arena with HOT5 fixtur
HOT5 Pool fixtures	$22,000	$3,300	Replaces 24 HID natatoriur with HOT5 fixtures

Interior lighting retrofits resulted in high energy savings due to the facility's 24-hour schedule. These projects consisted of:

- Replacing high-intensity discharge (HID) metal halide fixtures with High Output T5 (HOT5) fluorescent fixtures in high-bay applications, and
- Replacing T8 fluorescent troffers with LED fixtures and dimming controls.

Exterior lighting was also a priority due to the high return on investment. A full conversion from HID metal halide fixtures to LED was completed, including the parking areas.

Due to the 24-hour operating schedule, as well as electric and thermal demands, the facility was well-suited for small-scale cogeneration. A 60-kW combined heat and power generator was installed to simultaneously provide electricity and heating for the pools, domestic hot water, and the natatorium space.

The savings measures above were supported with financial incentives in the form of rebates from the local utility totaling $109,125. Specifically, Columbia Association participated in a Combined Heat and Power program, and also received prescriptive incentives for new HOT5 and LED lighting projects. Columbia Association also replaced eight aged rooftop units with models that met or exceeded ENERGY STAR® standards as part of general facility repair and rehabilitation.

OTHER BENEFITS

This project generated several ancillary benefits beyond energy use reduction and cost savings. Lighting quality was improved throughout the building with uniform color temperature, instant restrike, and a reduction in lamp failures. Reduced maintenance costs have also been realized with the longer lifespan and more reliable LED and HOT5 fixtures.

Overall aesthetics of the facility have been improved with the new interior fixtures and the full cut-off exterior LED fixtures significantly reduced light pollution. The project also provided opportunities for Columbia Association staff to discuss energy efficiency with the local community. For example, numerous members have inquired about LED lighting for home and business use.

*The project cost does not include rebates and incentives from the local utility totaling $109,125.

Annual Energy Use

Baseline(2012)
377.3 kBtu/sq. ft.

Actual(2016)
293.7 kBtu/sq. ft.

Energy Savings

22%

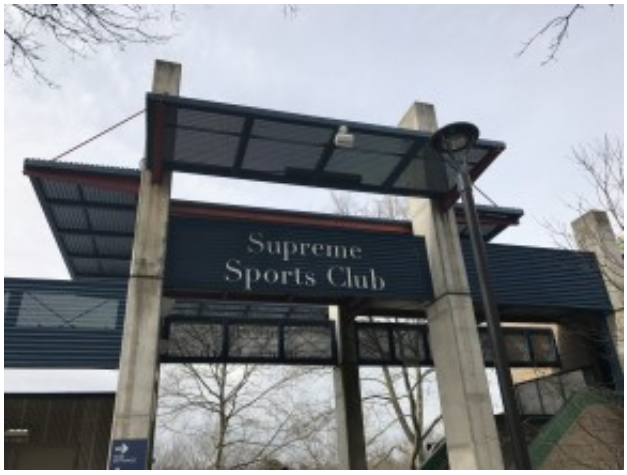
Annual Energy Cost

Baseline(2012)
$399,000

Actual(2016)
$302,500

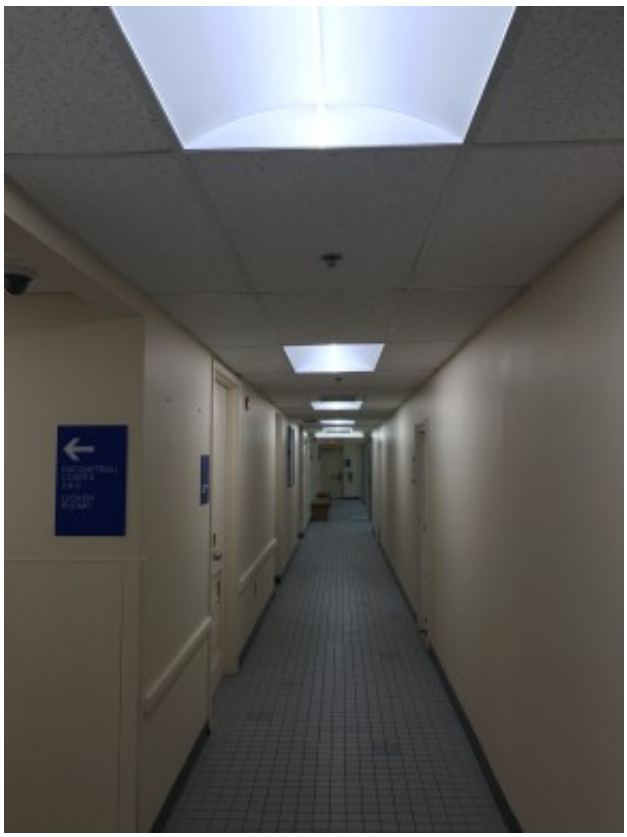
Cost Savings

$96,500



Main entrance with LED lighting.

60kW combined heat and power generator.



New 32W LED troffers.