

SHOWCASE PROJECT: NATIONAL CANCER INSTITUTE

SOLUTION OVERVIEW

The project was designed to support the mission of the National Cancer Institute, focusing on the overall well-being of employees and the creation of a workplace that enhances employee comfort, productivity and health through thoughtful interaction of space, natural daylight, and visual connection to the outdoors.

Through thoughtful interaction of space, natural daylight, and visual connection to the outdoors, JBG was able to create a workplace that enhances the comfort, productivity, and health of National Cancer Institute (NCI) employees. The project demonstrates the National Institutes of Health's commitment to environmental stewardship and supports the mission of NCI to conduct research, clinical testing, and state-of-art treatment practices based on the principles of holistic wellness.

The net-of-electric lease allows NCI to prioritize energy efficiency and JBG works directly with GSA to receive the tenant's utility bills and benchmark the project in ENERGY STAR Portfolio Manager. The project design team led an effort to identify top energy savings opportunities and support energy management efforts at the NCI headquarters. Managing energy use is a key requirement of the lease –as well as achieving the U.S. Green Building Council's LEED[®] certification. Although LEED Silver was the original target, the project team committed to going the extra distance to achieve Gold certification, focusing on sustainable sites, water use reduction, and indoor environmental quality.

As of spring 2015, the building's current ENERGY STAR score is 94, demonstrating superior energy efficiency for this large research facility.

SECTOR TYPE

Commercial

LOCATION

Maryland

PROJECT SIZE

580,000 Square Feet

SOLUTIONS

The parking garage at NCI took top honors in two new construction categories for the DOE's Lighting Energy Efficiency in Parking (LEEP) Awards. The innovative LimeLight Twist HDM wireless

lighting control system uses advanced lighting technology and live feedback to automatically adjust light levels. At night the system can keep lighting low and immediately react to vehicular or pedestrian motion to restore full lighting if needed.

The project management team utilized building information modeling (BIM), an integral tool for designers and construction contractors, allowing coordination of critical base building systems and tenant space build out requirements in advance of any construction to avoid system redundancy and ensure maximum efficiency. With a better understanding of the base building capabilities, the team was able to minimize field modifications, which resulted in a dramatic savings in both time and cost for the tenant improvement portion of the construction.

JBG realized a major energy savings opportunity for efficiency by installing innovative LimeLight Twist HDM wireless lighting control systems in NCI's parking garage. The advanced exterior lighting technology provides real-time feedback on lighting use and can automatically adjust light levels as needed. At night, when the parking garage is less frequently used by employees, the system keeps lighting low and immediately reacts to vehicular or pedestrian motion to restore full lighting as needed. This lighting system includes daylight harvesting and motion detection and received two [Lighting Efficiency in Parking \(LEEP\) awards](#) in 2014 for *Highest Percentage Energy Savings in a New Construction Single Parking Structure* and *Highest Absolute Annual Energy Savings in a New Construction Single Parking Structure*.

Additional energy efficiency measures implemented at this facility include the following:

- Energy-efficient chillers with Variable Frequency Drives (VFD)
- VFDs on AHUs (Air Handling Units) and pumps
- Water-side economizer, providing free cooling heat exchanger
- Exhaust recovery system that uses exhaust air to pretreat outside air
- CO2 sensors that monitor and control outside air intake

OTHER BENEFITS

Enhanced control of indoor lighting systems, including sensors and shade rollers, combined with a floor plate configuration that included glass partitions and placed enclosed offices on interior walls, allowed excellent access to daylight for all building occupants.

The interior lighting systems installed not only saved energy, they improved natural lighting and employee comfort. The team installed lighting sensors to control overhead lighting and automated roller shades to maximize the use of natural light in open office spaces, with occupant-controlled individual task lighting at workstations. Enclosed offices are located in the interior, allowing maximum daylight and views in the open workstations and public spaces such as the cafeteria. The lobby and fitness center also have extensive views of the outdoors.

Annual Energy Use

(Source EUI)

BaselineASHRAE 90.1
2007()

147 kBtu/sq.ft.

Actual(2013)

63 kBtu/sq.ft.

Energy Savings

57%

Annual Energy Cost

BaselineASHRAE 90.1
2007()

\$3,500,000

Actual(2013)

\$1,470,000

Cost Savings

\$2,030,000



LEED® New Construction Gold



ENERGY STAR® label received October 2014



LEED® Dynamic Plaque Recertification scheduled for 2015