

Overview

The Howard Hughes Corporation upgraded the lighting for the parking structure at the Ward Centers in Honolulu, Hawaii. Currently, the Ward Centers is occupied by 130 national retailers, local shops and restaurants in five shopping districts. The Ward Centers parking structure is seven stories high, and encompasses nearly 300,000 square feet and houses over 800 parking spaces.

The parking structure is a 2014 Lighting Energy Efficiency in Parking (LEEP) Campaign Award winner for Best Use of Lighting Controls in a Single Facility as the new lighting system uses both LED and fluorescent fixtures along with various lighting controls. The Ward Centers was able to achieve 75% in energy savings.

Keys to Success

Howard Hughes Corporation worked with the consultant, Chelsea Group, and the manufacturer, NS Tech, to install more than 800 NSTech LED fixtures and about 100 motion and ambient light sensors at the 7-story Ward Village Parking Garage. NS Tech also installed a wireless demand-driven LED controls system (ZigBee protocol) with motion and ambient light sensors. The occupancy and light sensors save energy by reducing the lighting in the area when occupants are not present or ample daylight is available. In addition to the sensors, a time scheduler is also employed.

Bobbie Lau, Senior General Manager for Hawaii properties at Howard Hughes Corporation said the primary focus of the project was to reduce energy costs and that it helped to partner with Chelsea Group, having worked with them previously.

“As a property, the Ward Center looks for opportunities to reduce energy costs. The parking garage is relatively new, built 4 years ago, but the lights were inefficient metal halide outdated technology.”

Bobbie Lau, Senior General Manager for Hawaii Properties, Howard Hughes Corporation



Ward Village Shops, Honolulu, HI. Image courtesy: Howard Hughes Corporation

Results	
Energy Savings	500,000 kWh, a savings of 75%
Lighting Power Density (W/sq. ft.)	0.10, a reduction of 75%
Simple Payback	1.2 years (includes utility rebates)
Technologies Installed and Maintenance	Installed 800 NSTech LED fixtures, 100 motion and ambient light sensors, and a wireless demand-driven LED controls system (ZigBee protocol) with motion and ambient light sensors.
Overall Performance & Benefits	Howard Hughes Corporation was very satisfied with the overall look of the parking garage in addition to the energy cost savings. The new LED fixtures coupled with the dimmers and sensors help balance reduced energy use and improved overall lighting quality in the garage.

Another important factor was aesthetics: the parking garage welcomes consumers to the retail stores of Ward Centers.

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Other features include LED fixtures installed on the ramps of the garage and in the stairwells. The parking ramps had LED fixtures installed that detect vehicles before they enter the ramp, triggering an increase in light levels. Once the vehicles pass, the fixtures reduce output and save energy. The stairwell fixtures are connected to occupancy sensors that detect movement and will only increase the light level at that specific location within the stairwell. Lastly, ambient light sensors were included in the project to help reduce fixture light output in response to available daylight.

Lessons Learned

- ▶ The lighting controls provided significant savings on top of the LED retrofits, increasing overall savings by 14%.
- ▶ In addition, the aesthetics were better than expected. The original parking garage had a lot of glare that was reduced by the motion and ambient light sensors.
- ▶ The simple payback for the project was just over 2 years at an electric rate of \$0.32 kWh in Hawaii. However, the \$130,000 rebate from Hawaii Electric Company reduced the payback to 1.2 years—quicker than anticipated.
- ▶ Howard Hughes Corporation has been pleased with the reduced maintenance as the lighting controls are easy to schedule and control and overall usability has improved lighting in the entire garage.
- ▶ The primary challenge for the contractor was installing the wireless controls to work in the concrete parking garage. NS Tech had to use a greater number of gateways than anticipated to get controls to work properly. However, NS Tech was able to work around the problem and the project did not suffer any major setbacks. The project was completed within 6 months.

LEEP Award Winning Site	
Location:	Ward Village Shops Honolulu, HI
Parking Area:	300,000 sq. ft. (830 spaces and 1140 fixtures)
Solution:	Installation of LED fixtures and wireless demand-rive controls system with sensors
LEEP Award:	Best Use of Lighting Controls in a Single Facility

Next Steps

As a large developer, Howard Hughes Corporation owns, manages, and develops commercial, residential, and mixed-use real estate in 16 states from New York to Hawaii and will explore possible opportunities to replicate the success of the Ward Centers Parking Garage retrofit. Two other sites are currently in the preliminary stages and set to begin in 2015.

Learn More

Through the [Better Buildings Alliance](#), members across different market sectors work with the U.S. Department of Energy's (DOE) exceptional network of research and technical experts to develop and deploy innovative, cost-effective, energy-saving solutions that lead to better technologies, more profitable businesses, and better buildings in which we work, shop, eat, stay, and learn.

Learn more about how to join the Better Building Alliance's Lighting Energy Efficiency in Parking Campaign, at www.leepcampaign.org/. LEEP Participants are collectively saving over 120 million kilowatt-hours and over \$10 million annually across 430 million square feet of lots and garages by upgrading to high efficiency parking lighting.

Find more resources and guidance on lighting in the [Better Buildings Solution Center](#).