

LIGHTING SAVINGS FOR HOWARD HUGHES

A CHELSEA GROUP CASE STUDY

“BUT IT’S A NEW BUILDING...”

TAKE AWAY

Concept

- Replace new but inefficient lighting
- Parking garage as starting point

Features

- New, attractive LED fixtures
- Wireless control interface
- Occupancy sensing
- Daylight sensing
- Time of use setback

Benefits

- Improved and remote control of lighting
- Better light quality
- 93% lighting energy reduction
- Payback in less than 1.2 years

Owner and developer Howard Hughes Corporation is transforming their Ward Centers property in Honolulu in some big ways. A project completed in 2011 included a new “high gloss” retail center with a multi-story parking structure. Architectural aesthetics were critical.

Once the building was operational, it was clear that the 24/7 metal halide lighting fixtures were running up a big utility bill. Chelsea Group, already advising Ward Centers on other energy issues, suggested a solution: a new design of LED lighting that would meet the high aesthetic design standards and

reduce energy use by more than 50% -- in what turned out to be a significant under-promised concept.



OVERCOMING THE “NEW TECH” CHALLENGES

Chelsea Group was engaged by the Howard Hughes Corporation to quantify the problem and design and manage a solution. The property was surveyed and lighting usage quantified based on the utility bill data available. Simultaneously, three lighting vendors were engaged to obtain proposals for equipment selection and unit costs. LED remains a bit of the “wild west” when it comes to claims, so each vendor’s product was reviewed for veracity of technical claims as well as cost considerations.

With design in hand, Chelsea and Howard Hughes reviewed equipment types, features, benefits, and costs. The clear leader on features and benefits was NSTech, whose equipment was superior in appearance, efficiency, and controllability. A linear fixture with machined aluminum casing and a tube shaped diffuser was tested for appearance and light quality and passed the aesthetic inspection.



Other Hawaii and mainland installations of NSTech equipment were reviewed by the project team and extensive information was reviewed by decision makers at Howard Hughes. There was a significant concern about putting new technology in a Hawaii property. But all concerns were conquered by the NSTech team and supported by solid Chelsea technical data and analysis.

BEFORE AND ...

AFTER



CONTROL: THE ICING IN THE CAKE

Providing an equivalent or better appearance while lowering energy consumption was the cake. The control of lighting provided the icing on top. After measuring actual energy usage before and after, the fixture and bulb change resulted in about a 75% reduction in wattage – dropping from 200 Watts per fixture to 26 Watts per fixture. It looked great, too. But more opportunity was available by applying daylighting control and motion sensing. Each area was adjusted based on actual need. Typically that is 17 Watts. Per fixture. During daylight conditions the LED lights drop to as low as 6 Watts per fixture. And it's 6 Watts again when no one is around, jumping back immediately to 17 Watts when someone enters the garage. Plus the controllers monitor actual energy use and report results.

THE BOTTOM LINE

Measured energy use reduction for the parking garage dropped by 93%. That translates pretty clearly – for every dollar spent before the retrofit, the same or better quality result is delivered for seven cents.

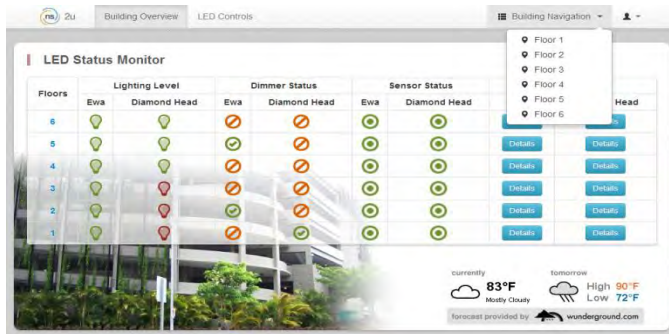
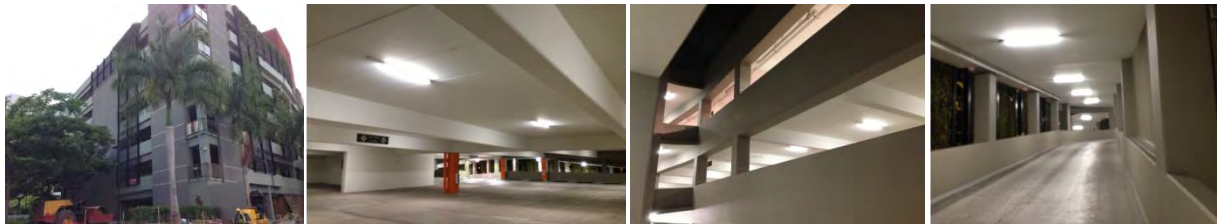
The simple payback on this investment was calculated at 1.2 years. The measured results suggest that the final simple payback after utility rebates will be as short as 7 months.



Ward Village Parking Garage: Case study

Background:

In August 2013, Chelsea Group Ltd. managed the installation of 700+ NSTech LED fixtures and ~100 motion and ambient light sensors at the 7 story Ward Village Parking Garage in Honolulu, Hawaii. NSTech ZigBee based wireless control technology provides the garage a demand driven lighting system with remote access and alerts. The lighting system control is based on solar harvesting, motion sensing, and pre-defined schedules.



NS LED with ZigBee Advantages:

- 1: Electrical savings of 80% ~ 90%+
- 2: Enhanced light quality
- 3: Minimum maintenance for 50,000 hrs+
- 4: Wireless demand-driven control
- 5: Secure remote access with monitoring & control capabilities

KW Consumption before and after LED installation:

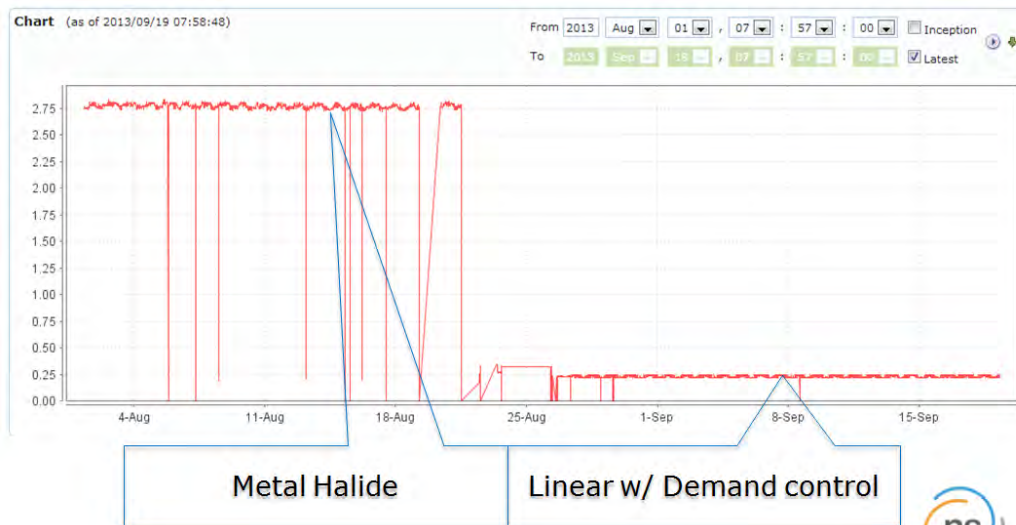


Chart illustrates actual savings on one row of lights with 14 fixtures based on "one to one" replacement.

