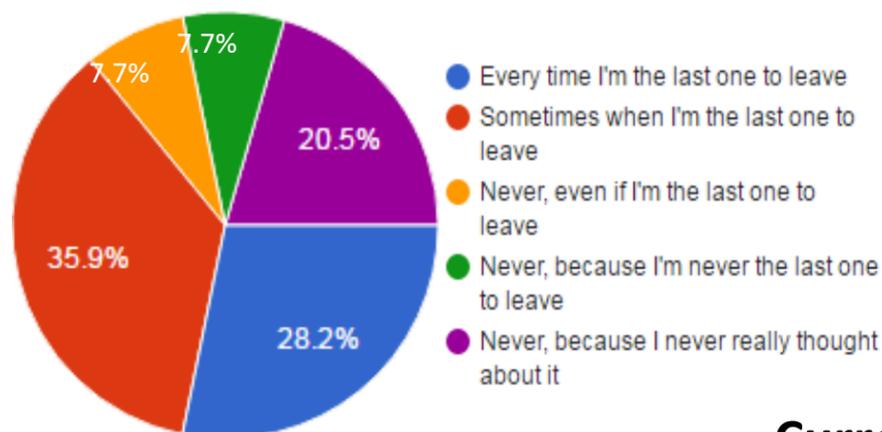


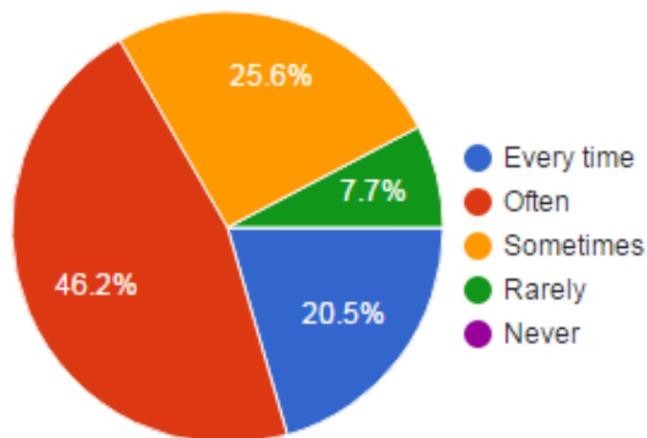
The ISSUE

Inefficient Lighting Control System



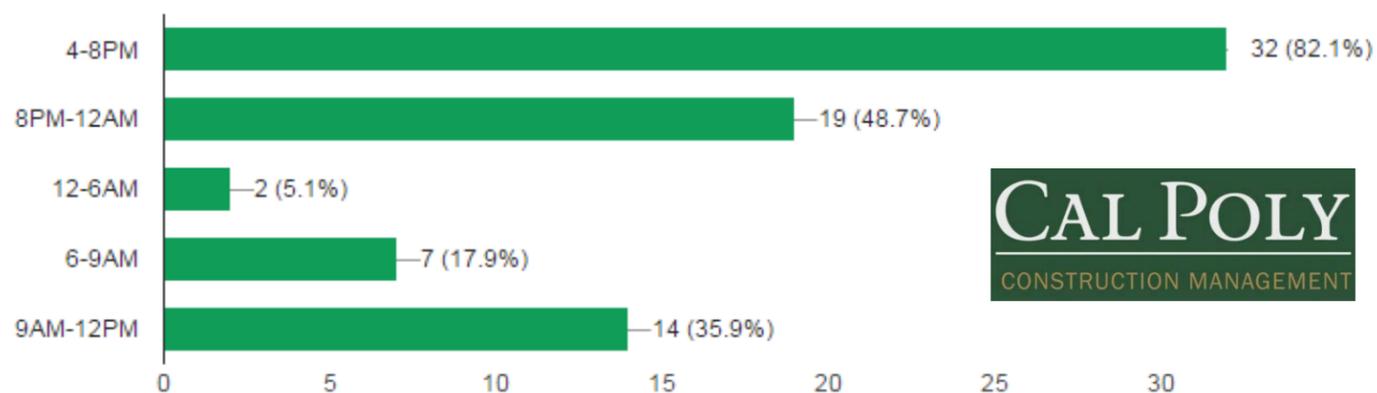
Frequency that Students Turn Off Lights

- 64.1% do not turn lights off all the time
- 20.5% never even consider the lights



Rooms Unoccupied with Lights On

- Students MOSTLY find unoccupied rooms with lights on at full capacity



Daily Use of CIC Lab Classrooms

- High probability that lights are left turned on

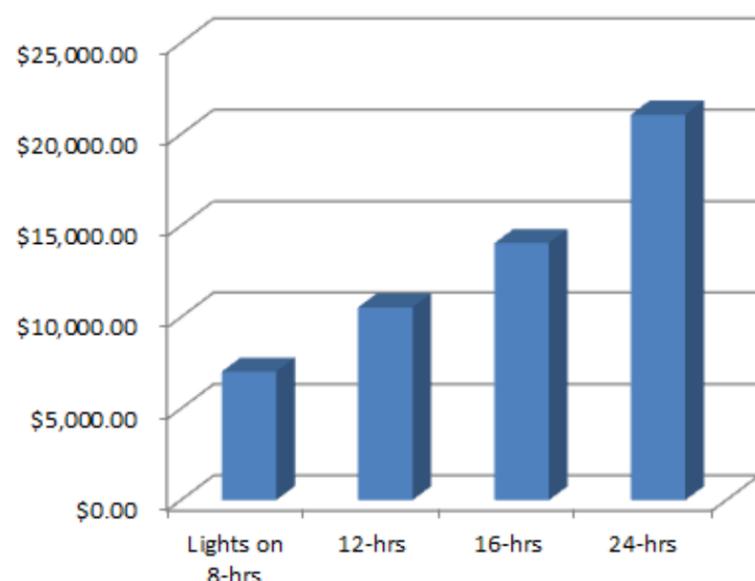
Implementing Lighting Occupancy Sensors in Cal Poly CIC Lab Classrooms

Abstract

The Cal Poly Construction Management program exemplifies excellence in construction education, as represented in the Construction Innovations Center (CIC) each day. One focus of the program is sustainability, where students learn to build efficiently for a greener future. Since the CIC strived to achieve LEED-EB certification as an existing building in 2012, it has not taken advantage of one of the simplest techniques to reduce consumption and increase savings, which is an automated lighting control system. Currently, the lab classrooms of the CIC utilize manual toggle switches that are assigned to specific lights in each lab. Due to the developing technology in the lighting controls industry, the current system is not only outdated, but relies too heavily on human control. CIC lab classrooms during non-lecture hours usually have all light fixtures turned on at full capacity with very few, and sometimes zero, occupants inside. To combat this, Cal Poly must install a new automated lighting control system, such as occupancy sensors. The Lutron Energi TriPak occupancy sensor system provides easy setup, spectacular performance, and vast savings at a low upfront cost. With this Lutron system, Cal Poly will reap many benefits, reduce our carbon footprint, and exemplify how it is a forerunner in green construction education.

Currently Wasting Currents

CIC Lighting Cost Per Year (\$0.11/kW-h)



The SOLUTION

LUTRON® Energi TriPak System

- + Wireless = fewer materials, simple installation
- + Low service cost, easily movable
- + Low materials cost = \$432.00 per room
- + Lutron occupancy sensors can typically **save 30 percent—and up to 60 percent—**of lighting energy (Von Neida)

LUTRON® TriPak Line-Up



Radio Powr Savr Sensor

- + Turns on lights when occupants enter
- + Up to 1500 sq. ft. coverage of minor motion, 3000 sq. ft. for major motion



PowPak Relay Module

- + Relays power from sensor to each control button
- + Softswitch feature is more reliable



Pico Wireless Control

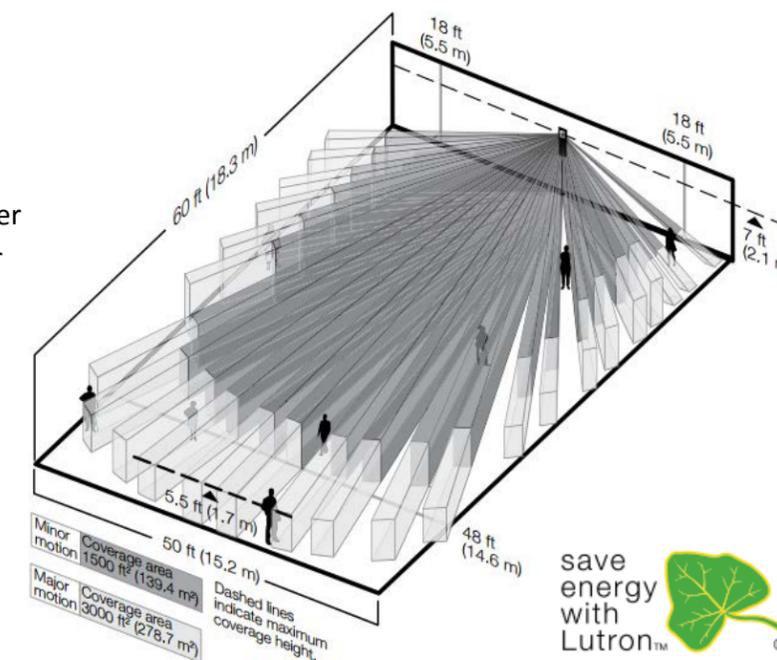
- + Turns on various lighting “zones”
- + Qty. (2) needed for each room



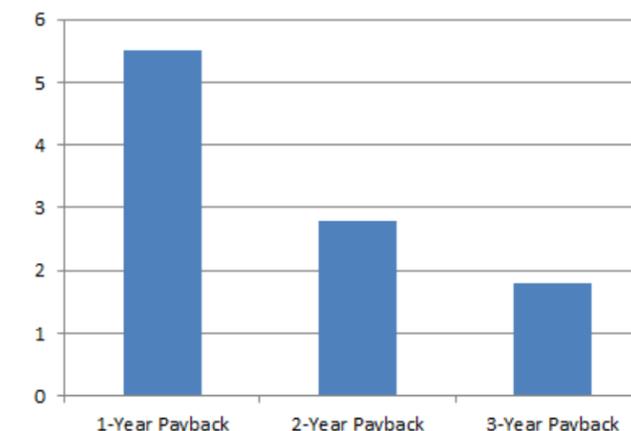
Pico Faceplate

- + Mounts wireless Pico Remotes on wall
- + Satin Nickel color matches current plates (also available in Arctic White)

For about **\$500 per classroom** (labor + materials), Cal Poly will save money for the CIC lifespan



Hours Per Day of Lights Off



Payback Period – Based on 308 school days per year, and 12-hours per day of non-lecture hours with lights on

Von Neida B, Maniccia D, & Tweed A, 2000. An analysis of the energy and cost savings potential of occupancy sensors for commercial lighting systems. Proceedings of the Illuminating Engineering Society, Paper #43.