Lab Lighting Controls Upgrade

Chris Abbamonto, UC Irvine
Laboratory Lighting Controls Upgrade

- New Laboratory Building Biological Sciences 3
- Beat Title 24 Energy Standard by 20%+
- Challenge to reduce annual energy consumption from lighting by ~50%
- Extremely low Lighting Power Density (LPD)
  \[ \text{LPD} = \frac{\text{Lighting Watts}}{\text{Square Foot}} \]
- Lab Environment with ~50 Foot-candle Requirement
- Reducing true LPD not a probable option
Lab Area LPD = 1.1
Lab Prep LPD = 0.9
Prep Room LPD = 2.0
Corridor LPD = 0.6

BEFORE
Manual Switch to Occupancy Sensor

50% Auto On - Manual to 100% - Auto Off

A-B CIRCUITING
Auto on to 50% Light Level
Lower Blinds to Allow for Daylighting
Photocell to Control Window Fixture
Fixture Closest to the Window is OFF
Lab Area SAVE +50%
Lab Prep SAVE 40%
Prep Room SAVE +50%
Corridor SAVE +50%
Summary

• Project Is Scalable (floors, buildings, campuses)
• Simple Payback Period in the 2.3 to 3.4 year range
• Savings Based on Controls not LPD!
• Consider under cabinet task lighting at the work surface to augment overhead lighting
• Consider perforated blinds to increase light and reduce glare through “views” portion of fenestration

Chris Abbamonto, UC Irvine, cabbamon@uci.edu, (949) 285-3172