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Do luminaire level lighting controls live up to their promise?

Slipstream evaluated ENERGY SAVINGS, COST, AND OCCUPANT AND OPERATOR SATISFACTION of the Cree SmartCast lighting system. This system integrates occupancy and photosensor controls into each fixture, and also includes task tuning.

PROBLEM Lighting retrofits traditionally focus on LEDs without controls.



ENERGY SAVINGS: 69% OF LIGHTING ENERGY, 2.5 kWh/ft²

Through analyzing the daily profiles across each space, we calculated that **48% of the energy savings was attributable to the switch to LEDs. THE REMAINING WAS FROM THE CONTROLS;** 9% from tuning light levels, 3% from occupancy and 9% from daylighting.



Note that savings would be different in spaces with more variable occupancy or different daylight availability.

COST SAVINGS: UTILITY BILL SAVINGS: \$0.42/ft2



However, cost effectiveness for demonstration project remains challenging. **20-year simple payback**.

Other demonstration projects show more favorable economics (approaching 8 years). Trend is continued reduction in cost, which will continue to improve economics.

OCCUPANT SATISFACTION

The results of our **occupant satisfaction survey have been overwhelmingly positive**, even with the overall light levels generally being reduced. Here are the pre- and post-retrofit results when we asked how satisfied occupants were with their light levels.



Overall score improved from 2.5 to 1.6 (1 = Extremely satisfied, 5 = Extremely dissatisfied)

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Schuetter, S., "LED fixtures and integrated controls for advanced holistic lighting solutions", ESTCP Project EW-201722.