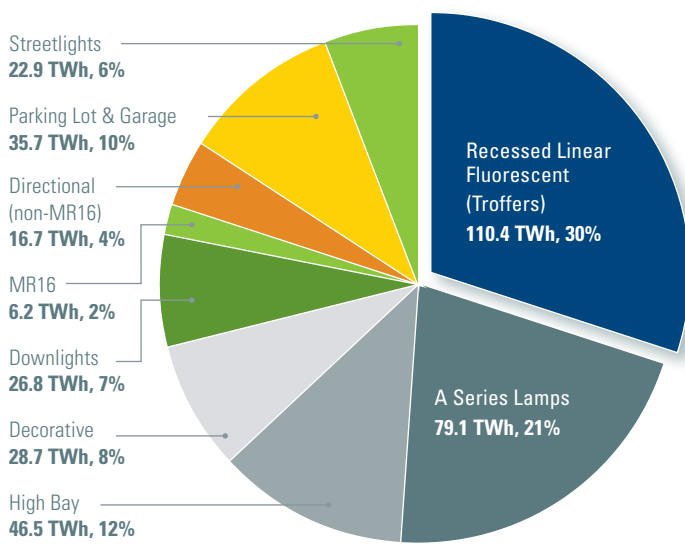


LED FIXTURES WITH INTEGRATED ADVANCED LIGHTING CONTROLS

OPPORTUNITY

How much energy could be saved annually in the U.S. by converting recessed linear fluorescents to LED?



110.4 TWh SAVED¹

EQUIVALENT TO 10 MILLION HOMES

1 TWh = average annual energy use of approximately 92,000 U.S. households

TECHNOLOGY

How do LED Fixtures with Integrated Controls work?

LED FIXTURES WITH ONBOARD SENSORS DYNAMICALLY MANAGE LIGHTING

USING OCCUPANCY SENSING AND DAYLIGHT HARVESTING; INTEGRATED CONTROLS REDUCE COMPLEXITY OF INSTALLATION AND SETUP

M&V

Where did Measurement and Verification occur?

LAWRENCE BERKELEY NATIONAL LABORATORY assessed plug-and-play LED fixtures with Advanced Lighting Controls (ALC) provided by Philips Lighting at the Ralph H. Metcalfe Federal Building in Chicago and the Peachtree Summit Federal Building in Atlanta.

RESULTS

How did LED Fixtures with Integrated Controls perform in M&V?

69% ENERGY SAVINGS
OVER GSA AVERAGE
41% from LED
28% from ALC²

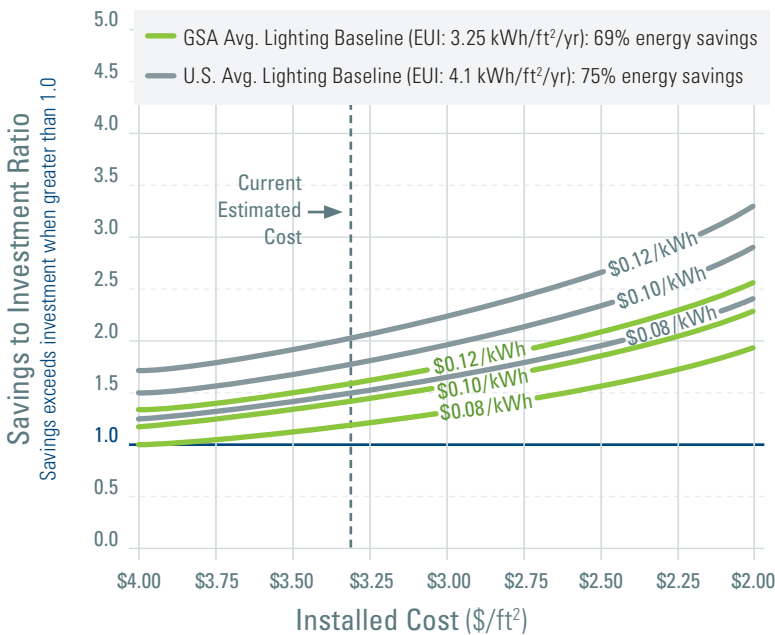
40% RETURN ON INVESTMENT
FOR GSA RETROFITS
1.4 SIR at current estimated cost and utility rate of \$.10 kWh³

25% OF COST SAVINGS
DUE TO REDUCED MAINTENANCE
LEDs last twice as long as fluorescent lamps⁴

Positive Return on Investment for Both Retrofits and Renovations

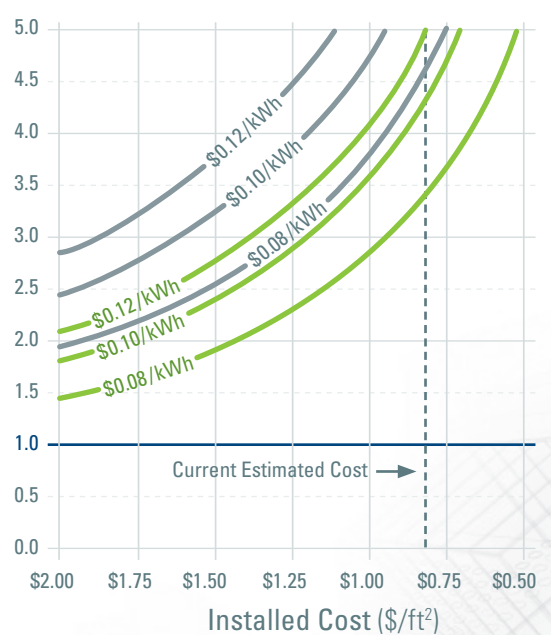
Retrofit SIR

Current cost with GSA average lighting use and \$.10/kWh
1.4 SIR—savings exceeds investment by 40%



Renovation and New Construction SIR

Current cost with GSA average lighting use and \$.10/kWh
4.4 SIR—savings exceeds investment by 340%



DEPLOYMENT

Where does M&V recommend deploying LED Fixtures with Integrated Controls?*

RECOMMENDED FOR RENOVATIONS

Consider for retrofits; prioritize facilities with minimal lighting controls, lighting energy use > 3.25 kWh/ft²/yr and utility rates > \$.10/kWh (national average)

¹Navigant Consulting Inc. April 2013 (Revised May 2013). *Adoption of Light-Emitting Diodes in Common Lighting Applications*.

²Retrofit Demonstration of LED Fixtures with Integrated Sensors and Controls, Francis Rubinstein (LBNL), July 2015, p.77 ³Ibid, p.16

⁴Ibid, p.18 *Subject to evaluation and approval by GSA-IT and Security.