

TLED LIGHTING RETROFITS
WITH DEDICATED DRIVERS

OPPORTUNITY

How much energy could GSA save by converting LFLs to LEDs?

134 GWH
ELECTRICITY/YEAR

REPLACING 1.53 MILLION LINEAR
FLUORESCENT LAMPS (LFLS)
\$15 MILLION ANNUAL SAVINGS

at national average utility rate of \$0.11/kWh¹

TECHNOLOGY

How do these LED Retrofits work?

REPLACE LAMP AND LED DRIVER

USING EXISTING LENS & FIXTURE; NO NEED TO ALTER CEILING GRID
Compatible with advanced lighting controls (ALCs)

M&V

Where did Measurement and Verification occur?

PACIFIC NORTHWEST NATIONAL LABORATORY assessed two LED retrofits (“LED-A” and “LED-B”) provided by NEXT Lighting and Cree in three federal buildings: GSA’s regional headquarters in Auburn, Washington; the Cabell Federal Building in Dallas, Texas; and the Veterans Administration Center in Philadelphia, Pennsylvania

RESULTS

How did LED Retrofits perform in M&V?

27-29%
ENERGY SAVINGS²

Additional savings possible with ALC

EASY
INSTALLATION

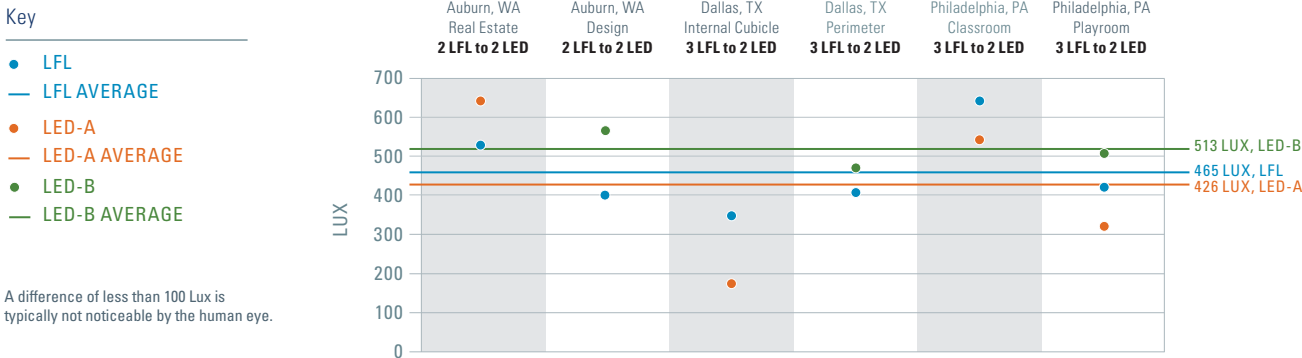
Similar to LFL lamp and ballast replacement³

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YR PAYBACK

At Nat’l avg. utility rate (\$0.11/kWh) & \$50 fixture cost⁴

Average Light Levels Across Test-Bed Sites

LED retrofits had similar illuminance levels but different light output (LED-A, 4500 lumens; LED-B, 4400 lumens)



DEPLOYMENT

Where does M&V recommend deploying LED Retrofits?

FIXTURES WITH LENSES AND SOCKETS IN GOOD CONDITION

And where ALC is desired or useful. To assess fit, light levels, color temperature and glare, test a small number of lights before committing to purchase.

LED Retrofit Options Assessed During M&V

Consider compatibility and controls when selecting an LED replacement

	PROS	CONS	COST*
LED-A Replacement lamp uses alternative mounting, LED driver	<ul style="list-style-type: none">Lamps can be repositioned in the fixtureDimming & ALC possible	<ul style="list-style-type: none">Performance depends on optics & lens of existing fixtureSelf-tapping screws could cause electrical problemsWire harnesses won't always fit legacy situationsNot compatible with master/remote configurations or shunted lamp holders	Equipment: \$40–\$70 Installation: \$34–\$68
LED-B Replacement lamp uses existing socket, LED driver	<ul style="list-style-type: none">Familiar installation processCompatible with shunted and unshunted lamp holdersDimming & ALC possible	<ul style="list-style-type: none">Performance depends on optics & lens of existing fixture	Equipment: \$40–\$70 Installation: \$34–\$68

* 50% and 100% RS Means derived labor estimates; similar cost to lamp + ballast replacement

¹Linear LED Lighting Retrofit Assessment, EE Richman, JJ McCullough, TA Beeson (PNNL), September, 2016, p.2 ²Ibid, p.5

³Ibid, p.61 ⁴Ibid, p.10