GPG FINDINGS **037**

NOVEMBER 2018

ADVANCED LIGHTING CONTROLS AND LED

OPPORTUNITY

How can advanced lighting controls (ALC) support LED?

LED'S DIGITAL NATURE PROVIDES MORE PRECISE DIMMING

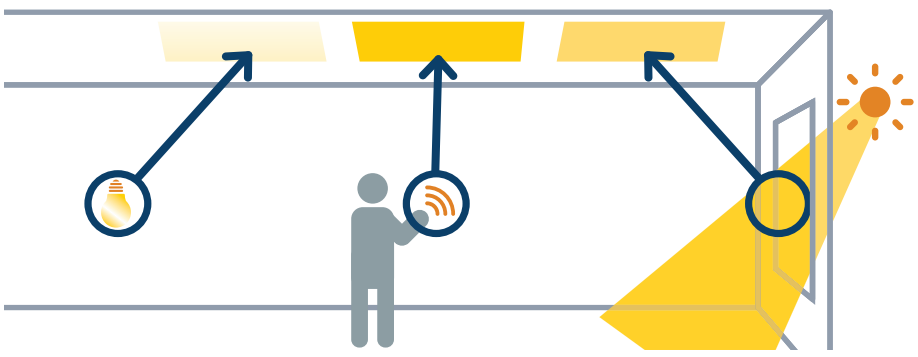
MAKING ALC MORE EFFECTIVE

TECHNOLOGY

What advanced lighting control strategies were assessed?

3 CONTROL STRATEGIES

LIGHT-LEVEL TUNING, OCCUPANCY SENSING, DAYLIGHT HARVESTING



M&V

Where did Measurement and Verification occur?

PACIFIC NORTHWEST NATIONAL LABORATORY (PNNL) assessed five different LED and advanced-control systems in open-plan offices at the Fort Worth Federal Center, Fort Worth, Texas

RESULTS

How did the advanced lighting controls perform in M&V?

43%

CONTROL SAVINGS

from LED baseline, even with minimal daylight availability[1]

TUNING

IS CRITICAL

The ability to dim initial light levels significantly increased occupant satisfaction[2]

ROI

VARIABLE

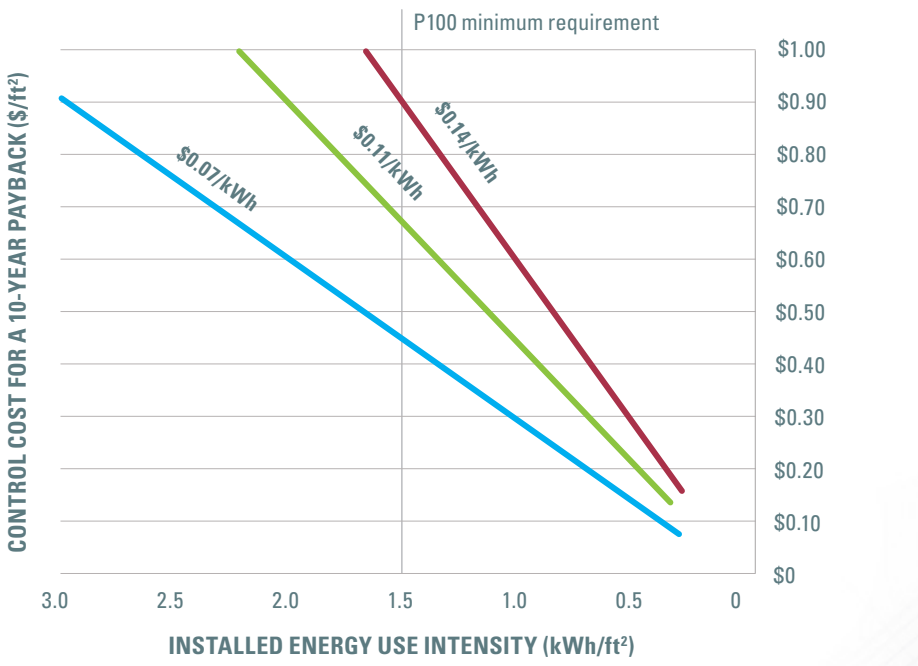
Can be cost-effective when the added cost of controls is <$70 per fixture @ GSA avg. utility $0.11/kW[3]

ALC Costs Needed for a 10-Year Payback*

The more efficient the lighting, the more challenging for ALC to achieve positive ROI

ALC calculator at gsa.gov/gpg can help determine site-specific payback

*Assuming a 10-hour, 5-day work week and 43% ALC savings



DEPLOYMENT

Where does the study recommend deploying advanced lighting controls?

FACILITIES WITH HIGH UTILITY RATES

Full-featured ALC will be most cost-effective for facilities with high utility rates and/or rebate opportunities and in open offices where occupants are engaged in a variety of tasks.

If ALC is not cost-effective, choose LED systems with dedicated 0-10V drivers that provide dimming. Tuning can be key to occupant satisfaction.

[1]Evaluation of Advanced Lighting Control Systems in a Working Office Environment, M. Myer, Pacific Northwest National Laboratory, (PNNL-27619), September 2018, p.3 [2]Ibid, p.26 [3]Ibid, p.35