

# Expandable Lighting Solutions

## Today's solutions allow users to upgrade existing systems as a comprehensive retrofit or in careful phases of any scale.

### the facts

There are many cost-effective, expandable lighting solutions for clients with limited budgets, or for those that wish to reduce disruption in working offices. Such solutions may include adding dimmable ballasts to existing fluorescent fixtures and introducing a limited number of sensors. These features allow for remote operation, including light level tuning to meet specific needs, dimming in response to available daylight, and peak period demand response.

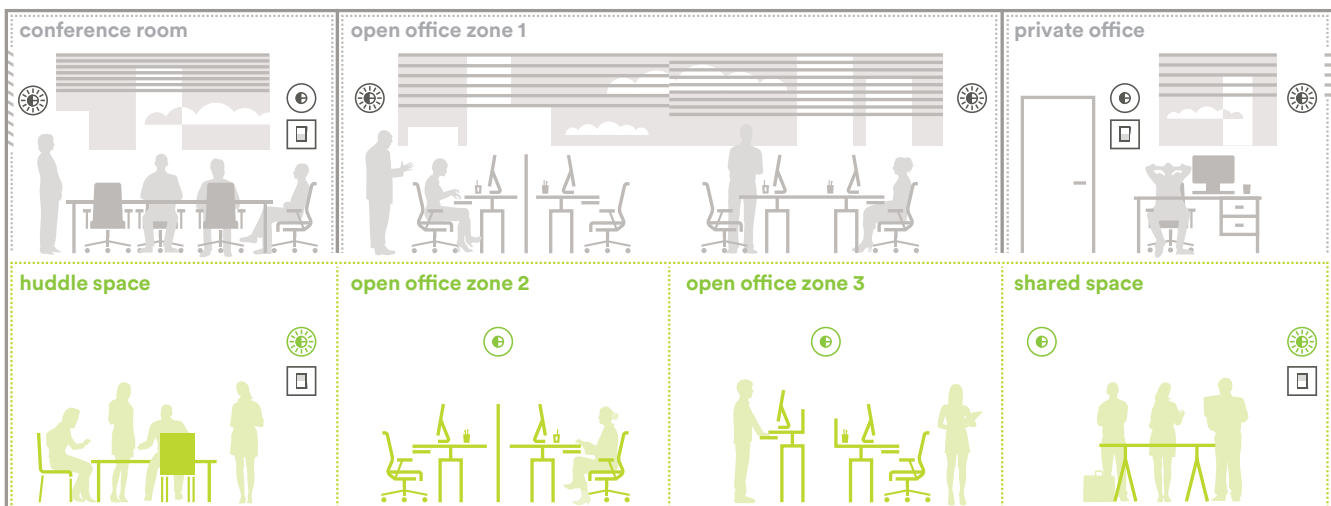
### how it works

Many manufacturers can retro-commission existing lighting systems to improve functionality and ensure energy savings. The amount of savings and granularity of control are directly related to the number of fixtures made dimmable and the number of daylighting and occupancy sensors installed. Upgrades typically also allow for remote operation and integration with energy management systems.

### benefits

- Upgrading an existing lighting system is the simplest form of retrofit
- Simple system selection
- Less disruption to office occupants
- Hard and soft retrofit costs are reduced.
- Updated software and hardware components can allow for improved functionality and remote integration with energy management systems

original sensor control zone



- wall switch
- ⊙ occupancy sensor
- ☀ daylight sensor

expanded sensor control zone (additive)

## living lab link: phasing

### Lutron controls & Selux fixtures

As systems age, it is possible to update software and hardware to capture advances in technology and continue to maximize savings and functionality. In this case study, upgrading the lighting controls and fixtures reduced lighting energy use by 76%.

#### products/systems

##### control system

Lutron's Quantum Total Light management system was installed and tested as part of BE-Ex's *Living Lab* project. The project partners had previously installed Lutron systems and wanted to explore improvements in performance, functionality, and cost achieved over the last decade. The new system includes wired and wireless components, and integrates with the building's energy management system, Hyperion automated shade system, and LED fixtures.

The Lutron control system included the following features:



wireless network



scheduling & tuning



daylight harvesting



occupancy sensors



interactive controls

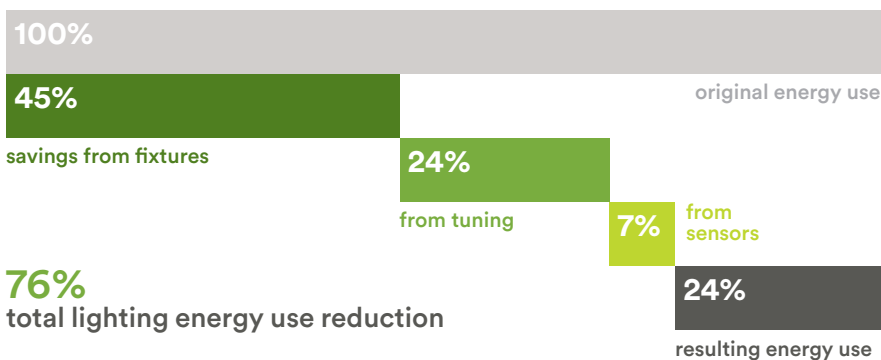


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##### lighting fixture

The Lutron system was paired with linear pendant Selux fixtures. The fixtures are suitable for a wide variety of applications, and feature an uplight with a diffuse satin lens and batwing distribution. The fixtures also include a microprism lens over the downlight component, increasing their efficacy. Companion recessed and surface mount versions provide a complete family of fixtures.

#### primary energy figures



The Selux fixtures reduced lighting energy use in the *Living Lab* space by 52%. The Lutron controls saved an additional 24% through tuning and 7% through use of occupancy and daylight sensors. The total reduction in lighting energy use was 76%.



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The *Living Lab* demonstration project was a collaboration between BE-Ex and Lawrence Berkeley National Lab. The project installed and tested multiple lighting technologies at Goldman Sachs' flagship Manhattan office, 200 West Street.

Learn more at:  
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