PG&E's Property Manager Guide to Office LED Lighting Upgrades

Turn your building into a sustainable asset one tenant at a time with LED lighting

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Together, Building a Better California

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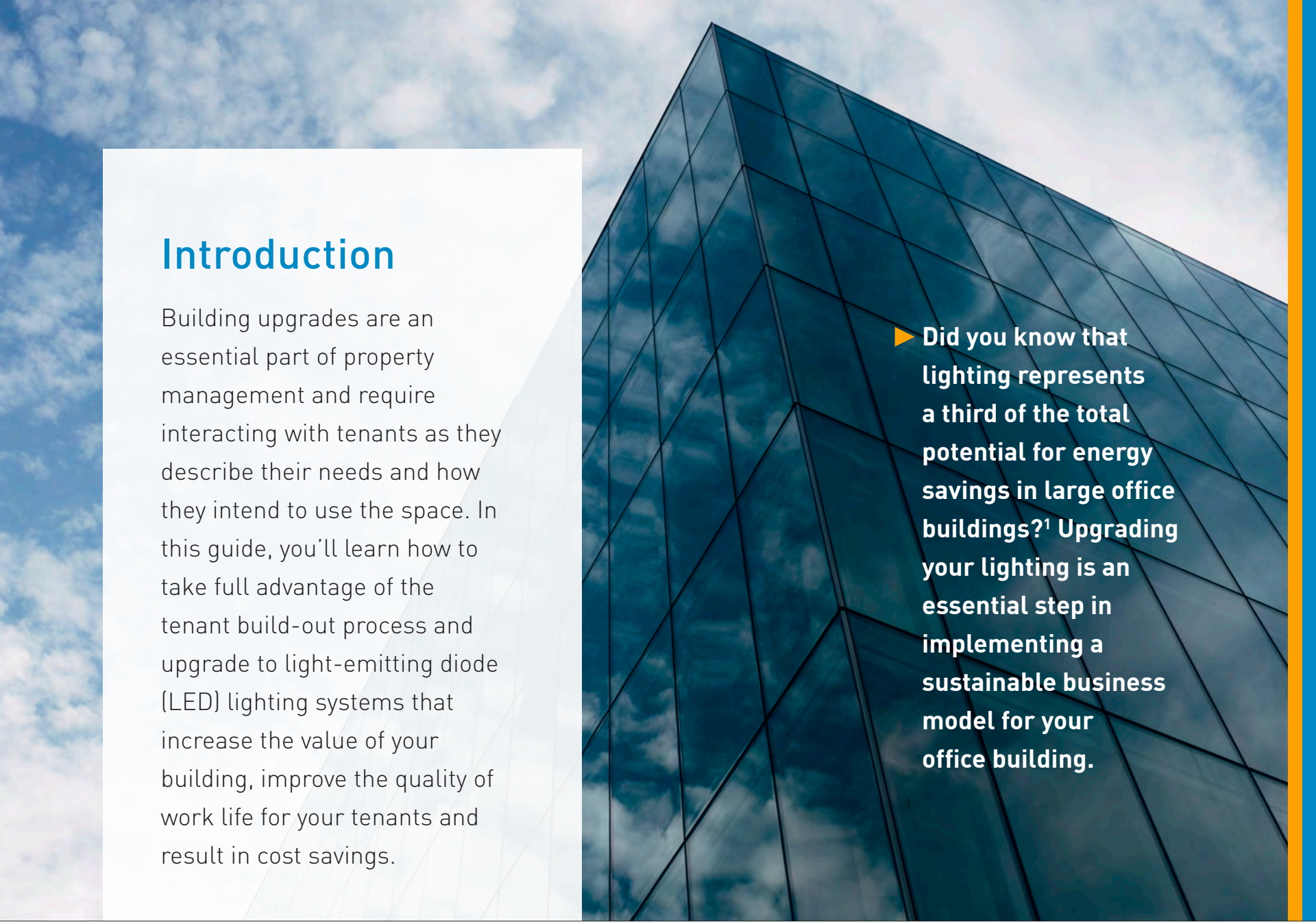
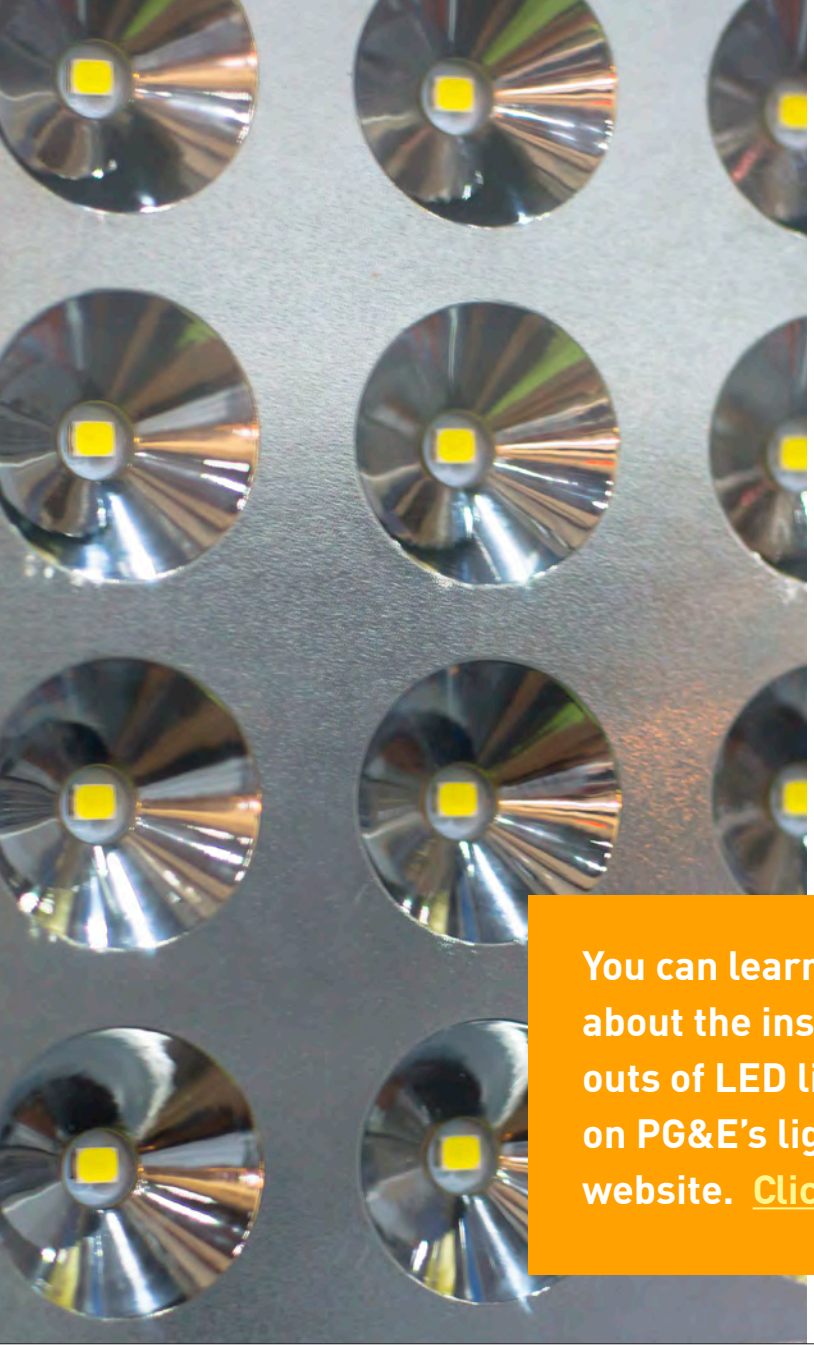
Introduction

Building upgrades are an essential part of property management and require interacting with tenants as they describe their needs and how they intend to use the space. In this guide, you'll learn how to take full advantage of the tenant build-out process and upgrade to light-emitting diode (LED) lighting systems that increase the value of your building, improve the quality of work life for your tenants and result in cost savings.



Did you know that lighting represents a third of the total potential for energy savings in large office buildings?[1] Upgrading your lighting is an essential step in implementing a sustainable business model for your office building.

[1] https://www.energystar.gov/products/lighting_fans/light_bulbs/learn_about_led_bulbs



What Is LED Lighting?

LED lighting uses semiconductors to convert energy into visible light. This technology lasts much longer than traditional incandescent and fluorescent alternatives and has other benefits like controllability and performance. Furthermore, LED lighting can work with advanced lighting controls so you or your tenants can regulate lighting and manipulate energy use strategically. That means you can turn off lighting in unoccupied spaces or dim lights to take advantage of daylight.

LED Benefits: [1]

- Longer Lifetimes
- Low Maintenance
- Energy Savings
- Instantaneous Switch-On
- Expanded Controllability
- Increased Property Value
- Improved Workplace Aesthetics

You can learn more about the ins and outs of LED lighting on PG&E's lighting website. Click here.

[1] http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/lighting_catalog_final.pdf

The LED Switch: Who Benefits?

Property Managers

Property managers are choosing LED upgrades over traditional alternatives because of the benefits they deliver to their clients. These benefits include a decrease in energy costs, reduction in maintenance fees, increase in property value and a hand in meeting California energy efficiency requirements.

LEDs reduce costs because they operate more efficiently than older lighting systems. This affects the bottom line for property managers who are operating under a gross or full-service lease with tenants and maximizes budget. Savings are passed on to other management needs or realized as additional profit.

continued

Upgrades also help property value appreciate and can help attract higher quality clients. What's more, property managers can justify an increase in rent from one lease to another as a result of the operational benefits and utility savings passed on to tenants. Whether management intends to oversee the building for some time or a sale is on the horizon, LED improvements are desirable because they help retain and attract clients and can raise the asking price during negotiations.

LED lighting lasts 35 to 50 times longer than incandescent bulbs and two to five times longer than fluorescent lighting,[1] translating into a dramatic savings in building upkeep.

Because LEDs last longer, they reduce maintenance fees incurred by management. LED lighting lasts 35 to 50 times longer than incandescent bulbs and two to five times longer than fluorescent lighting, translating into a dramatic savings in building upkeep.

continued

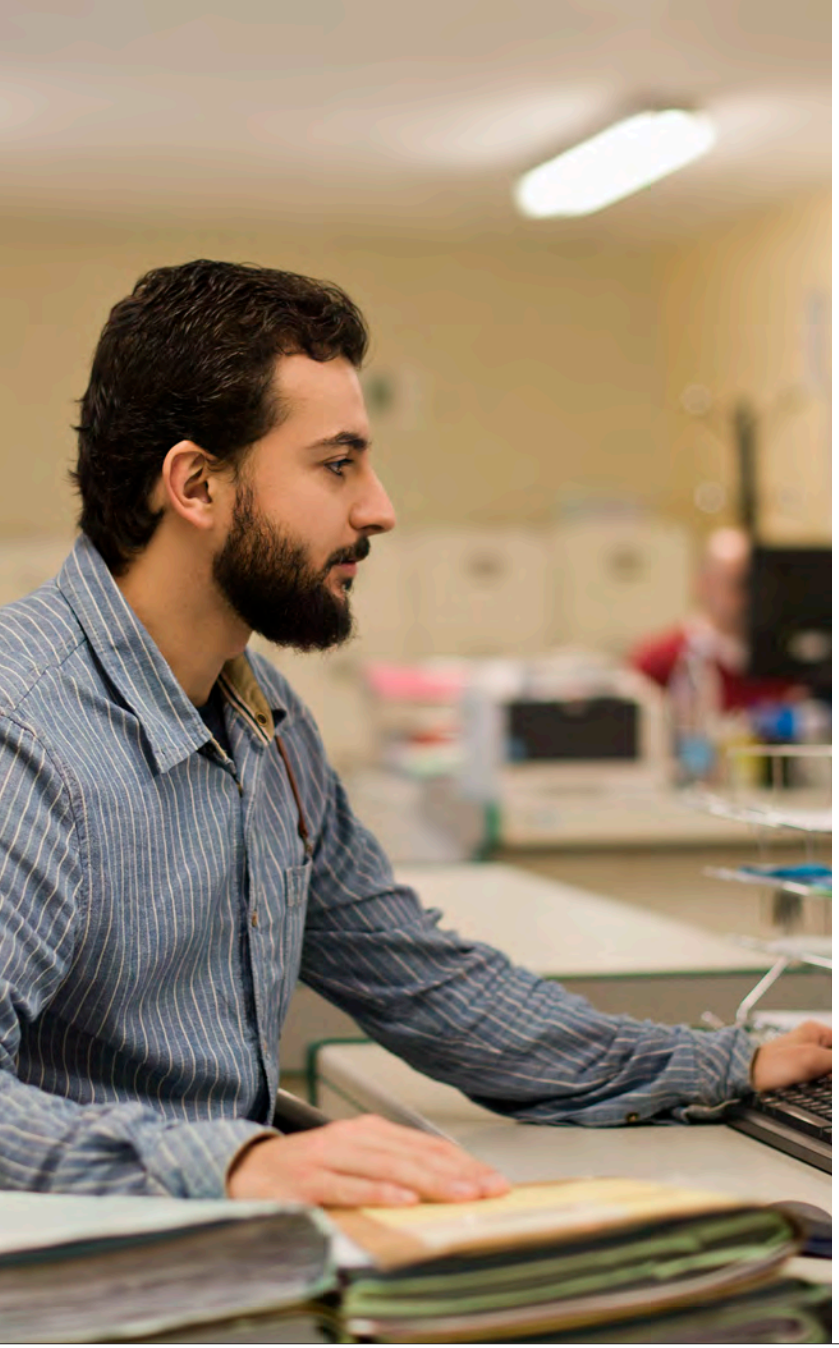
[1] https://www.energystar.gov/products/lighting_fans/light_fixtures/why_choose_energy_star_qualified_led_lighting

Property managers also benefit from an improved image as a result of maintaining greener office spaces. Running a sustainable building boosts the reputation of building management to existing and potential clients and creates a pleasing environment to work and do business in.

LEDs help meet the compliance requirements in California's Building Energy Efficiency Standards (Title 24, Part 6). Title 24, Part 6 includes space-by-space lighting power limits and includes outline specific requirements for lighting controls. LED components and advanced lighting control systems play a crucial role in meeting and exceeding these standards and elevating a lighting system for easier, more cost-effective future renovations.

California's new nonresidential Building Energy Efficiency Standards, which including lighting, will go into effect January 1, 2017."
Learn more Click here.

Lastly, LED lighting attracts tenants who care about efficiency and the environment. A sustainable office signals to potential tenants that yours is a well-run business that values high quality and resourcefulness, making them much more likely to give you their business.



The LED Switch: Who Benefits?

Tenants

Tenants enjoy some of the same benefits of LED upgrades as property managers, like lower energy costs, but also gain from working in LED environments that boost employee productivity and improve wellness, provide opportunities for customization and aesthetics, and attract customers.

With LEDs, tenants who pay for their own electricity have the opportunity to reduce energy bills and realize long-term cost savings with quick payback. What's more, LED lighting lasts longer than fluorescents, turns on and off instantly and can be equipped with dimmers and motion controls for an even greater reduction in energy use.[1]

continued

[1] http://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/incentivesbyindustry/lighting_catalog_final.pdf

Additionally, studies have shown that LEDs in office spaces can increase worker output and well-being. This is because LED controllability allows office lighting to be adjusted in ways that can reduce worker fatigue and increase performance.[1] Whether it's adjusting the color of LEDs in general or creating artificial skies, adjusting office light to mimic natural changes in daylighting may energize the workplace.[2]

The ability to customize and beautify with LED lighting is a key selling point for tenants who are using specific applications, colors and controls available with LEDs to make a space more inviting while saving energy. Among the many eye-catching uses for LEDs: display lighting to highlight awards, and lobby signage to help direct a visitor's eye and communicate company messaging.

LED display lighting captures the attention of office visitors, directing them through the office and highlighting achievements along the way.

[1] http://www.ledsmagazine.com/articles/print/volume-12/issue-10/features/designer-s-corner/first-do-no-harm.html
[2] http://www.ledsmagazine.com/articles/print/volume-12/issue-11/columns-departments/last-word/keeping-the-existing-lighting-can-do-harm.html

Photo Credit: California Lighting Technology Center, UC Davis

LED Lighting Options for the Office

It's important to understand the LED upgrade options available to make the best decisions for your space. LED lighting falls into three basic categories for office spaces:

- **Ambient lighting**
- **Task lighting**
- **Accent lighting**

Ambient lighting provides overall light to a large area like a conference room, whereas task lighting illuminates a specific work area – desk lamps are a good example – and accent lighting draws visual interest and creates mood (like in the case of award lighting). The following sections detail the options available within each of these categories and highlight key features, value and ideal use.

For interior lighting solutions, troffers and integrated troffer retrofit kits provide the opportunity for the most savings potential.

Ambient Lighting

LED Troffers

Troffers are rectangular light fixtures that you usually see in dropped ceiling grids that line hallways, rows of cubicles or large conference rooms. They are the most common fluorescent fixture used in today's offices, and as such they provide the greatest opportunity for savings.

Key features of LED troffers include better lighting quality and higher energy savings in addition to longer-lasting lighting and reduced maintenance. Upgrades are relatively painless, with LED luminaires often easily replacing existing linear fluorescents. What's more, rebates are available.*

Upgrades to LED troffers are ideal for renovations that allow for simple redesign or a reduction in fixture layout; large and small offices; open concept areas, like over cubicle spaces; meeting and conference rooms; and bathroom and kitchen areas.

continued

*Rebates are subject to change; click here for the most up-to-date information.

Integrated Troffer Retrofit Kits

Integrated troffer retrofit kits are sets that can be inserted into existing troffers so you essentially upgrade only the guts of the system. These kits replace existing fluorescent lamps, sockets, ballasts, lenses and frames and can be purchased and replaced per fixture. These are best for property managers and tenants who want to do product replacements one at a time, rather than a complete redesign.

Key features of integrated troffer retrofit kits include the same benefits of LED troffers and are less expensive. These replacements provide a repeatable, efficient retrofit solution for the majority of troffers, and it takes less time to perform a retrofit than to replace the entire fixture.

continued

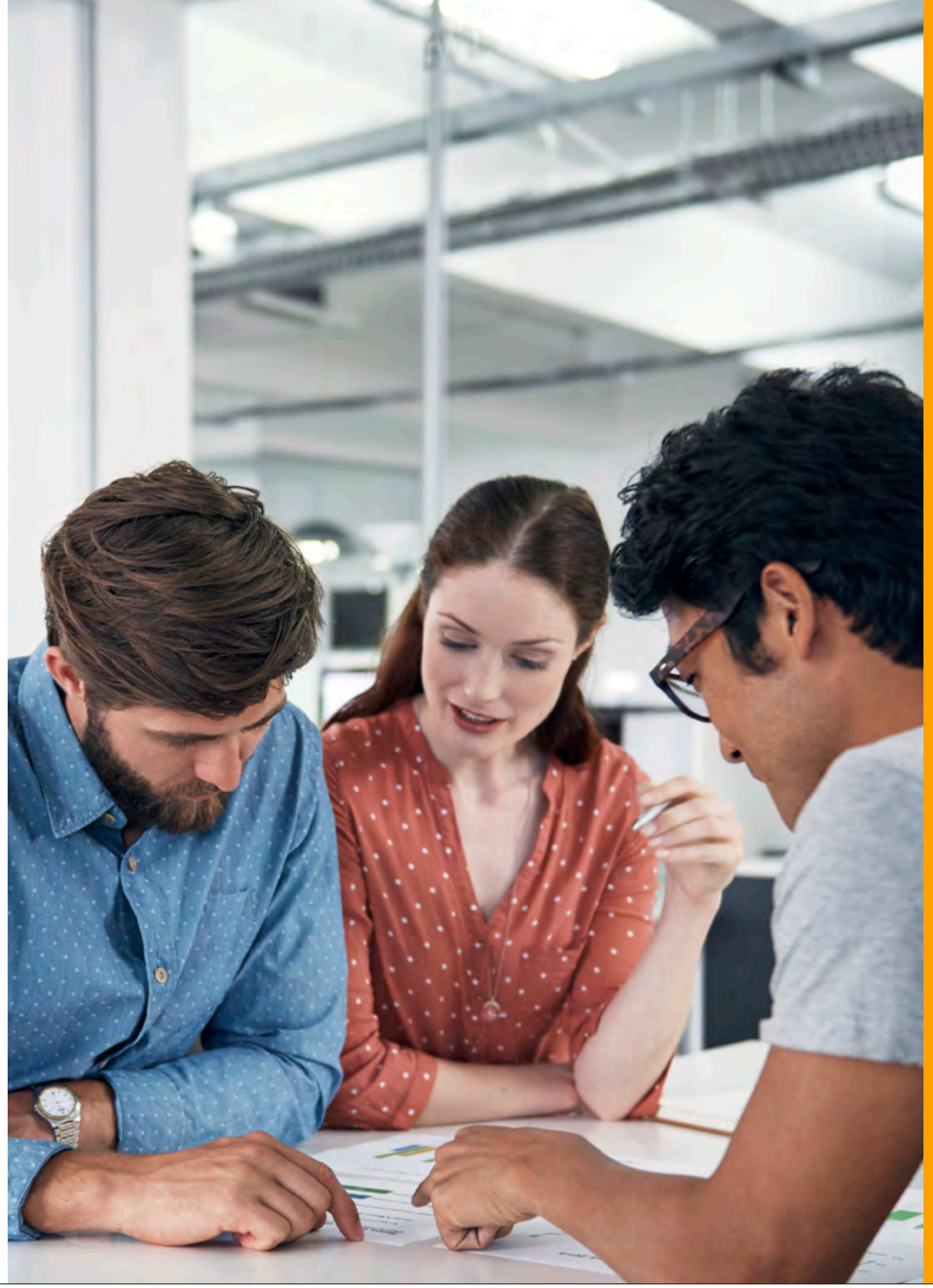
Shared Value

- LEDs last longer than traditional light sources.
- Energy savings (44% more efficient than typical fluorescent troffers).[1]
- Realize greater maintenance savings with a longer lifetime.
- Improve lighting quality with modern optics and appearance.
- Fine-tune lumen output to reduce waste with integrated controls.
- Position for future technology upgrades that build off of LED solutions.

[1]https://www.pge.com/includes/docs/pdfs/mybusiness/energysavingsrebates/rebatesincentives/ref/lighting/lightemittingdiodes/Linear_LED_BuyersGuide.pdf

Additionally, they look the same as a new luminaire, so a space can have a mixture of both during transition without being visibly jarring. They are also good for properties with ceiling access concerns (LED troffers demand more from an installation standpoint). Those offices for which integrated troffer retrofits are ideal should look for kits that are continuously dimmable down to 10%.

Upgrades to LED integrated troffer retrofit kits are ideal for spaces with worn fixture components where a full renovation is not possible or where there are ceiling access limitations; large and small offices; open concept areas; over cubicle spaces; meeting and conference rooms; and bathrooms and kitchen areas.



Task Lighting

LED lamps

LED lamps are can be used to light desktops and work areas and can be used to completely replace non-LED alternatives.

LED lamp-style retrofit kits

LED lamp-style retrofit kits upgrade existing non-LED lamps by changing the electrical wiring, replacing the ballast or altering existing holders.

For both these options, it's important to note that LED illumination levels can vary from fluorescent lamps. For best results, consider how much light is recommended for the application, then match the situation with an appropriate replacement.

continued

Value

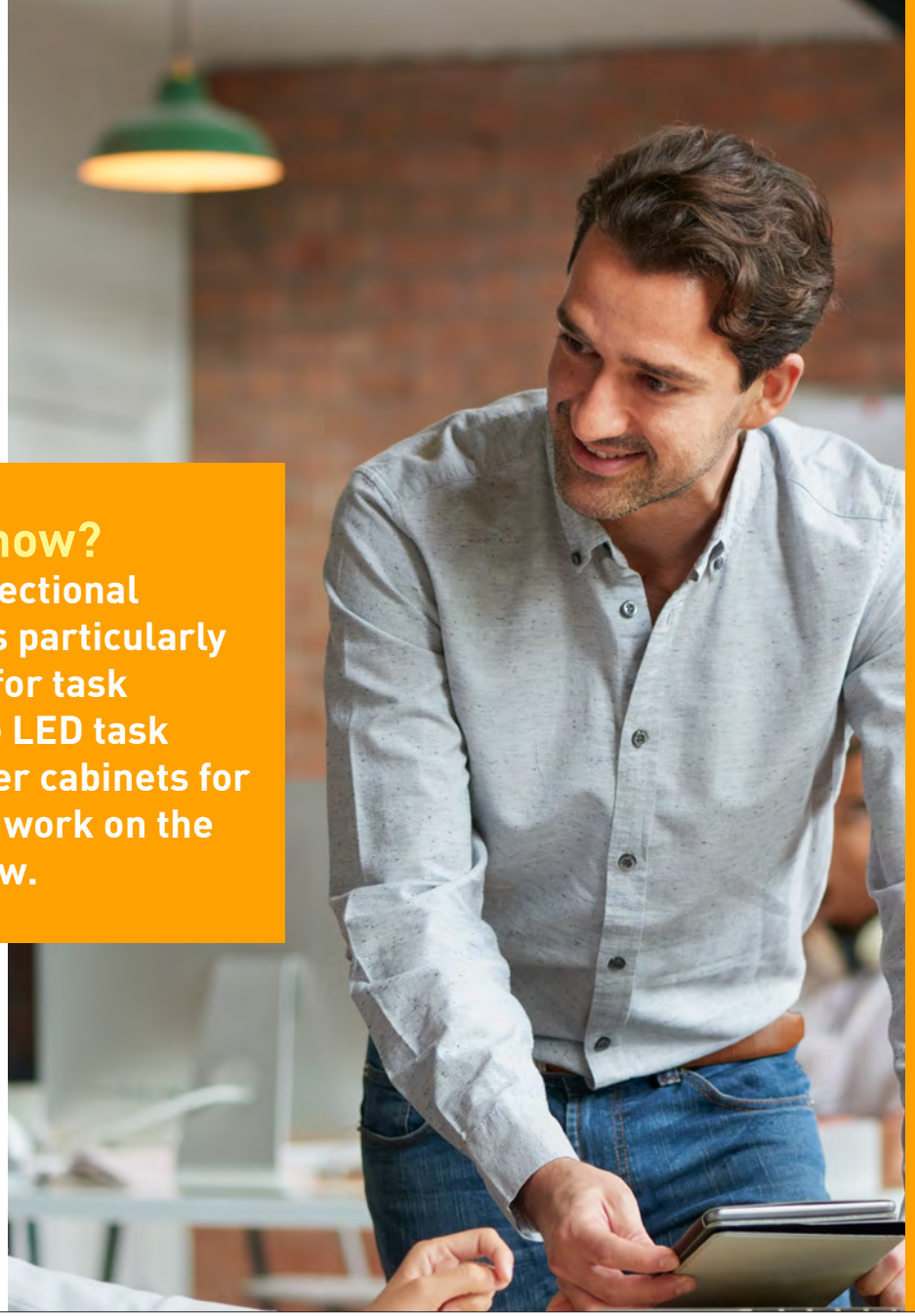
- **High-quality, energy efficient lamps and retrofit kits reduce energy costs.**

Key features of linear LED lamps and lamp-style retrofit kits include higher energy savings compared to linear fluorescent lamps; an opportunity to upgrade in stages (e.g., per room) as dimming capabilities; and budget and time allow.[1]

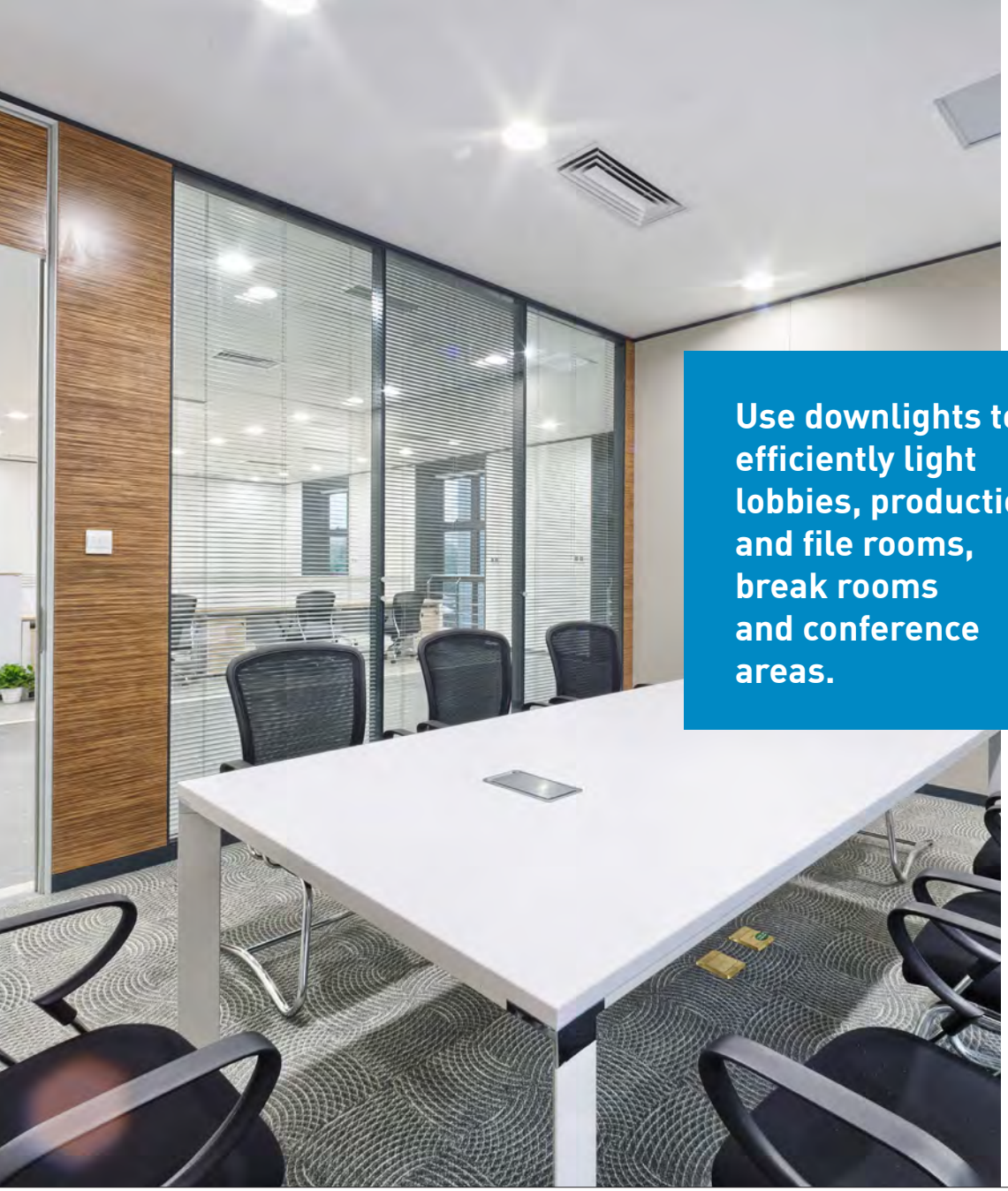
Upgrades to linear LED lamps and LED lamp-style retrofit kits are ideal for personal work spaces, public workstations and desk lighting.

Did you know?

LEDs are directional light sources particularly well-suited for task lighting. Use LED task lighting under cabinets for illuminating work on the surface below.



[1] http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/led_directional_lamps.pdf



Use downlights to efficiently light lobbies, production and file rooms, break rooms and conference areas.

Downlights

Downlights direct light from a ceiling or under cabinet space to a work surface, such as beneath a kitchen. They can be mounted onto the ceiling (these are known as surface lights), recessed into the ceiling (recessed downlights) or suspended like a pendant (pendant downlights).

Key features for LED downlight upgrades include easy installation that varies little from traditional downlights if you are making complete replacements. However, retrofit installations

continued

can vary. For some retrofit situations, an LED module may use the existing screw base and clip into the existing housing (sometimes a trim kit is added). In other retrofit applications, the existing downlight lamp and housing are fully removed and the retrofit unit is installed in the same location.

Downlight upgrades are ideal for lobbies and reception; production or file rooms; kitchen and break rooms; and conference rooms.

Value

- LED surface, pendant or recessed downlights deliver optimal light control with high energy efficiency.
- LED downlights offer longer lifetimes and reduced maintenance costs as compared to existing fluorescent or incandescent sources.
- With some products currently exceeding 80 lm/W, LED downlights can offer considerably better efficacy than conventional downlight luminaires.[1]

[1] http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/recessed_downlight.pdf

Accent lighting

Track Lighting or Mono-point Luminaires

Traditional track lighting and mono-point luminaires are among the easiest upgrades that yield big results. They are typically used as mood lighting and to direct attention to awards to create an impressive display. Retrofit options include LED lamp replacements or full retrofit of track heads with dedicated LED units.

A key feature of track lighting is its exceptional energy savings. Because lamps used in track lighting are predominantly incandescent, halogen or metal halide, switching to LEDs can reap deep benefits. Four studies showed energy savings from 60% to 80% resulted from making the switch.[1] It's also easy to change the direction of the light by using the pivot base.

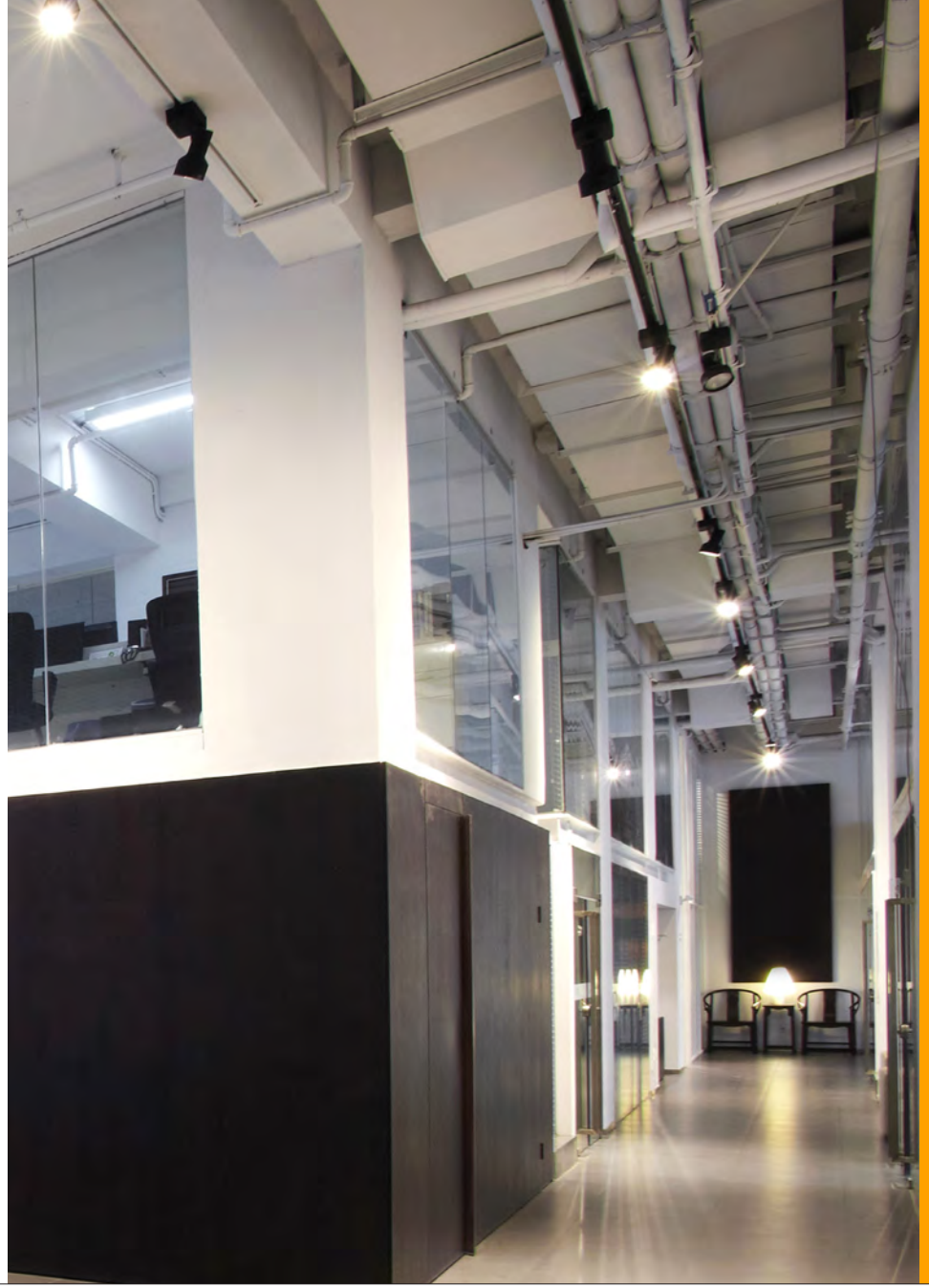
[1] Large Commercial Lighting Matrix Plan 2015.

Track lighting upgrades are ideal for waiting and reception areas; highlighting awards, photos and signage; and displaying artwork.

In all applications, LED systems require less maintenance, which translates directly to cost savings.

Value

- **LEDs can reduce damage to organic materials, like precious artwork, that is caused by ultraviolet radiation and is more prevalent with incandescent and halogen sources.**



Advanced Lighting Control Systems

Lighting control systems automate, analyze and control lighting. Advanced systems enable light sources and controls to work in tandem by connecting each light source, sensor and switch to a network. The system runs on software that operates the network and utilizes functions like scheduling, task tuning, occupancy sensing and daylight harvesting to optimize lighting and save energy.

Advanced lighting control systems are ideal for large office spaces with many lights to manage. Lighting controls can incorporate light sources from a number of spaces like conference and production rooms, office areas, break and rest rooms, and parking garages to manage your lighting and energy needs efficiently.

The Benefits of Advanced Lighting Control Systems

- Preprogrammed functions allow tenants to focus on their business while the controls take care of improving efficiency.
- They provide real-time data that allows decision makers to track and analyze energy use and adapt accordingly.
- Controls modify lighting in separate areas, depending on lighting demands.
- They extend LED lifetimes by dimming or switching off lights when not in use.
- Combinations of measures are shown to save, on average, more than 50% as compared to systems with only manual controls.[1]

[1]CTLC Case Study, Watermelon Music.

Financial Solutions for LED Upgrades

Pacific Gas and Electric Company (PG&E) makes it easy for you to build a sustainable future through integrated LED networks with a range of incentives and rebates, engineering services and technology centers.

A comprehensive description of lighting rebate options and exact dollar amounts of potential lighting rebates can be found in the PG&E Lighting Rebate Catalog.

* You can check the lumen output of devices to estimate savings and find additional rebate information about specific LED lighting equipment

Click here

Remember to contact a PG&E representative to look over any savings and rebates incentives that your contractor** brings to your attention

Click here

**PG&E is vendor/contractor/trade professional neutral.

On-Bill Financing

On-Bill Financing helps eligible customers pay for energy-efficiency retrofit projects with zero-percent-interest loans. The program works in conjunction with PG&E's energy efficiency rebate and incentive programs. After project completion, PG&E will lend the money for the retrofit, and customers will pay the loan—interest free—through their monthly utility bills. Get PG&E involved before you start a project to utilize an On-Bill Financing loan.

**PG&E is vendor/contractor/trade professional neutral.

Program benefits for business customers:

- Financing from $5,000 to $100,000 of the project cost, after incentives
- Loan terms up to five years
- Zero interest
- No minimum credit requirements
- Loan repayment is based on projected energy savings

**PG&E is vendor/contractor/trade professional neutral.

Additional Resources

Contact a PG&E Representative

Talk to a PG&E Energy Solutions and Service representative or a PG&E Business Customer Advisor who works in your area.

Click here

Get Rebates and Incentives

PG&E's customized rebates and incentives program can help reduce project costs.

Click here

Learn About On-Bill Financing

Click here

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