

# THE FUTURE OF LIGHTING IS HERE: PSE ACHIEVES 72 PERCENT ENERGY SAVINGS WITH LUMINAIRE LEVEL LIGHTING CONTROLS

## **The Problem and Opportunity:**

Puget Sound Energy (PSE) is a utility serving more than one million customers in the state of Washington. In early 2015, after a number of concerns about the lighting in its Bothell location were raised, PSE evaluated the existing lighting system and found the following issues:

- The building's older parabolic fluorescent 32-watt T8 fixtures were outdated for a modern office.
- There were low and inconsistent light levels across the building due to the lighting layout.

With this feedback, Energy Management Engineering Supervisor Michael Lane and Senior Energy Management Engineer Andrew Pultorak recognized a timely opportunity to improve occupant comfort by piloting the newest LED lighting fixtures with integrated controls to hit the market: Luminaire Level Lighting Controls.

## **The Solution:**

At 11,000 sq. feet, the location is home to 80+ employees, and comprised of open office space, private offices and conference rooms. The PSE team could have specified LED fixtures without controls, but Lane recognized the clear business case for LED fixtures with luminaire level lighting controls. With them, his team could significantly enhance employee satisfaction, modernize the building and enable seamless control over different areas. An added benefit was getting the go ahead to install and compare two different systems: Philips DualLED with SpaceWise Technology and Cree ZR series with SmartCast Intelligence. In all, they replaced 67 linear fluorescent fixtures with 100 LED fixtures in the open office areas to better light the entire floorplan.

## **What are Luminaire Level Lighting Controls?**

Luminaire Level Lighting Controls (LLLCs) represent the next generation of lighting controls. LLLCs incorporate embedded sensors into LED light fixtures. Their innovative controls strategies include occupancy sensing, daylight harvesting, continuous dimming, task tuning and more. These cutting-edge systems provide maximum energy savings, easy installation, operational efficiencies and valuable building data to improve occupant comfort and adjust for changes in space utilization.

**“In my 30 years in lighting, I never would have imagined achieving such impressive energy savings with luminaire level lighting controls, but we did. We have improved occupant experience and the simplified maintenance makes my team’s job easier. I’m glad we upgraded to integrated controls when we did. We were able to take advantage of deeper savings and smart capabilities, rather than installing just LEDs that don’t bring other benefits to the table.”**

**– Michael Lane, PSE**



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## Michael Lane's Tips to Maximize the Advantages of LLCs:

### 1. Keep Building Improvement in Mind

When upgrading an existing system to new fixtures, remember that you are likely changing the look of both the fixtures and the look of the space. Make sure that the new look aligns with your building improvement goals.

### 2. Simplify Commissioning

When grouping fixtures together during the set-up of your lighting system, consider grouping fixtures together in rows perpendicular to the window wall in open office areas. This "row" grouping helped the PSE team achieve the "sweet spot" of providing enough light and achieving robust energy savings. It also helped reassure occupants that fixtures had not failed when occupancy sensors automatically turned off the lights.

### 3. Use PSE or Other Utility Incentives

PSE's incentive program pays more when customers opt for lighting systems with integrated controls. PSE already incentivizes LED fixtures, and can also help pay for the cost of these advanced controls, which will enable even deeper energy savings. Other utilities also offer incentives for LEDs and lighting controls.

## The Benefits:

### • Maximum Energy Savings

72% energy savings due to the integrated controls compared to the previous lighting system, including 35% energy savings from the LED fixtures alone.

### • Easy Installation and Control

PSE worked with a local contractor to install the fixtures and wireless integrated controls systems, which took two weeks during summer 2015. The fixture installation was as simple as if fixtures were installed without controls, given that the wireless controls don't require changing the existing circuits or installing separate occupancy or daylight sensors. Adjustments to customize light levels for colleagues were also simple thanks to the system's remote controls.

### • Increased Occupant Comfort

Employees are now more comfortable, and expressed positive feedback in response to the improved light levels and the new system's dimming capabilities. Cleaning crews also take advantage of the system's occupancy sensing, and no longer need to wonder if staff are still in the office when they are working.

