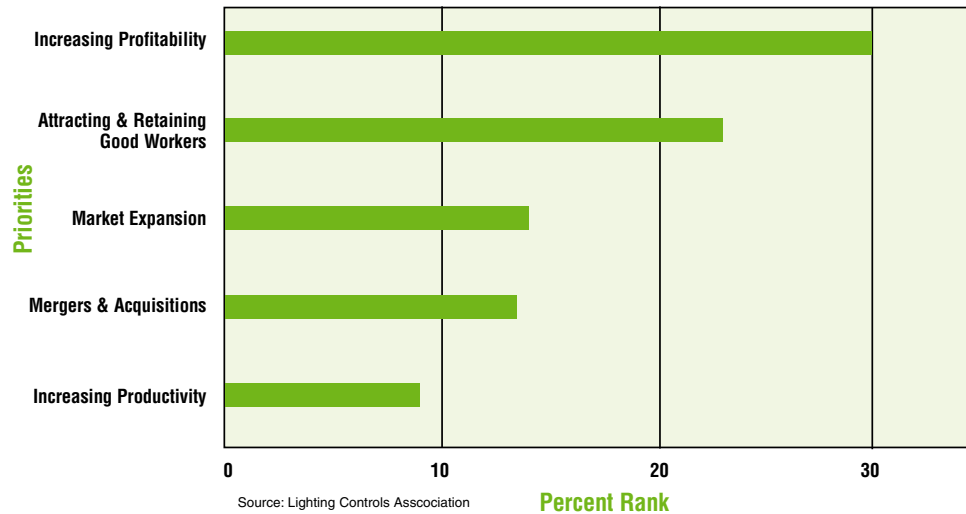




# Lighting Upgrades Boost Workplace Productivity

A recent survey of corporate executives by Canadian Business magazine revealed that CEOs considered “attracting and retaining high-caliber employees” to be second only to “increasing profitability” as a top corporate priority. “Increasing productivity” was also considered a top priority.

**Survey: Top Five CEO Priorities** (Canadian Business Magazine, 1999)



Design of the work environment has long been known to play a role in influencing employee satisfaction and productivity, and quality lighting is a major element contributing to optimal workplace design. In addition to reducing energy consumption and costs and benefiting the environment, optimal lighting can play a role in boosting workplace ambiance and efficiency. As a result, improvements in lighting design have been increasingly linked to an escalation in employee satisfaction and productivity.

Employee productivity is classically defined as the level of output received from an employee based on the investment made in them. Significantly influenced by the workplace environment, employee productivity can positively increase as the result of a lighting upgrade and this boost in productivity can dramatically improve a company’s bottom line, as shown in the following real-life examples:

## Did you know?

A recent North American study revealed that brighter office lighting can increase employee performance by more than 10%. Subjects tested in varying lighting conditions were found to be more alert and to experience mood elevation under brighter lighting.

## Productivity estimated at \$400,000 - \$500,000 per year

A famous \$300,000 renovation within the Reno, Nevada Main Post Office involved an upgrade from the older, harsh, direct downlighting previously in place to a system of softer, indirect, more efficient, and longer lasting bulbs. Not only did workplace morale improve, but so did productivity – to the tune of a sustained 6% increase, as measured by the number of pieces of mail that the group was able to sort per hour before versus after the upgrade. In addition, employee error rates fell to the lowest level in the region. While the energy cost and maintenance savings resulting from the upgrade amounted to \$50,000 a year, it was the value of the gains in productivity – estimated at \$400,000 - \$500,000 per year – which more than covered the cost of the initial investment in less than one year's time.

## 5% boost in productivity and a 40% reduction in absenteeism

The Verifone Company, a California-based manufacturer of electronic verification systems, tracked the results of its “Costa Mesa Experiment,” the impact on employees which resulted from the 1993 upgrade of Verifone's expansion facility to “healthy building” status. Following a building overhaul, which involved the aggressive use of skylights and lighting controls to maximize the use of natural daylighting, the company experienced a 5% boost in productivity and a 40% reduction in absenteeism.

## 5% boost in productivity valued at \$1.5 million annually

Metal Industries, an Elizabeth, PA-based manufacturer of metal-framed windows and doors, proactively capitalized on the opportunity to upgrade to a higher-quality and more energy-efficient lighting configuration. The company's 100,000 square-foot facility relied on an outdated fluorescent lighting system that threw off too little light, resulting in a high error rate, periodic accidents, and a degree of absenteeism related to the accidents. Following an upgrade involving HID lighting technology, Metal Industries experienced an over 5% increase in productivity, which was valued at \$1.5 million annually to the company. In addition, accidents became essentially non-existent, saving the company over \$6,000/year on workman's compensation claims and reduced insurance rates, and subsequent absenteeism dropped, saving the company an additional \$225,000 annually.

## Employee productivity improved by 3%, valued at over \$1.3 million a year

The San Diego Federal Building and Courthouse, originally built in 1976, relied on an outdated system largely comprised of T12 fluorescent lamps and magnetic ballasts to light its offices, courthouse, correctional, and post office spaces. In pursuit of a more modern lighting system that could reduce energy costs while improving productivity and safety levels, the facility subsequently embarked on a \$1.3 million upgrade involving the conversion to T8 fluorescent lamps driven by electronic ballasts. In addition to achieving annual energy cost savings of over \$275,000, employee productivity improved by 3% in office areas and by 15% in the courthouse, correctional, and post office spaces, a benefit which was conservatively valued at over \$1.3 million a year.

### Did you know?

A Cornell University study conducted within a Xerox facility in upstate New York found that one out of four workers experienced a loss in work time based on vision problems and discomfort caused by poor lighting. The lost time amounted to 15 minutes per day or over an hour a week per employee, the eventual equivalent of a full week of lost time per affected employee per year. Therefore, improvements in the average office lighting system can make employees over one hour more productive per week – resulting in 3-5% gains in employee productivity.

A landmark 2007 office lighting field study involving 90 workers within four floors of an open-plan office building in Canada determined that occupancy sensing, daylight harvesting and individual occupant dimming control worked together in the building to produce average energy savings of 47% while correlating with higher occupant environmental and job satisfaction. Concluded researchers from the Lighting Controls Association, “the study demonstrates that sophisticated lighting control strategies can be combined successfully to generate persistent, large energy savings in open-plan offices while improving occupant satisfaction with their jobs and workspace.”

According to studies by the Department of Energy, the vast majority of the nation's 5 million commercial, industrial, and institutional buildings contain out dated lighting configured before the availability of a host of innovative new lighting technologies as well as before the onset of the computer era.

As a result, lighting (either too much, too little, or the impact of lighting glare) in conjunction with computer use has been implicated as the cause of most eyestrain disorders, driving related losses in employee efficiency by as much as 20%. According to a recent survey by Steelcase, nine out of ten employees surveyed believed that making lighting improvements to the workplace would reduce eyestrain and headaches. And three out of four workers in the same survey confirmed that they would like more control over their lighting.<sup>(1)</sup>

Fortunately, a range of high-performing and energy-efficient new lighting technologies readily available in the marketplace can both enhance worker comfort and productivity as well as reduce energy costs. Standard lighting upgrades usually involve some combination of indirect ambient lighting to reduce glare, task lighting to support focused work, and accent lighting to highlight space or fill in lighting voids. Upgrades involving high-efficiency T8 fluorescent lamps and electronic ballasts and/or the conversion of existing fixtures to dimmable lamp and ballast systems can attune lighting levels to the tasks being performed in the space and enhance employee comfort while reducing lighting costs by up to 30-50% and total facility energy consumption and costs by as much as 20-25%.<sup>(2)</sup>

## Did you know?

A recent field simulation study conducted by the Light Right Consortium revealed that office workers appreciate quality lighting and have preferences consistent with prior research in this area. In the study, subjects demonstrated greater satisfaction with a direct/indirect scheme that includes wallwashing at the perimeter—and even greater satisfaction, as well as improved motivation, with the addition of personal control — versus traditional approaches. The study indicates a causal relationship between lighting quality and worker satisfaction and motivation.

In addition to the tremendous financial, environmental, and aesthetic benefits that lighting upgrades can deliver to a facility, the aforementioned studies and case histories demonstrate the significant boost to employee satisfaction and productivity that lighting upgrades can offer...and the tremendous positive impact on morale and financial performance this boost can have.

Overall, the seemingly inconspicuous and often overlooked lighting system can be a primary source for significant cost savings in today's competitive market. In an effort to encourage users to tap into these comprehensive benefits, many utility companies and state energy offices across the nation offer financial incentives, product rebates, or energy grants to reward the use of energy-efficient lighting technologies such as lamps, ballasts, and lighting controls. And with the additional 2006-2008+ availability of government-sponsored tax deductions on qualifying upgrades through the Federal 2005 Energy Policy Act as well as the enactment of other landmark energy-related legislation such as the 2007 Energy Independence and Security Act, there has never been a better time to reduce your energy costs, improve your facility's lighting quality and ambiance, elevate employee productivity, or benefit the environment. Don't wait to capitalize on the benefits that an energy-efficient lighting upgrade can offer your employees and facility!

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### Sources:

(1) Based on findings from the 1999 Commercial Buildings Energy Consumption Survey (CBECS), published by the U.S. Department of Energy and the Energy Information Administration, as well as the 2002 U.S. Lighting Market Characterization (Volume I), published by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy

(2) The Energy Cost Savings Council's Analysis of 1,000 Electrical Product Upgrade Projects (1998)



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