



The Financial Benefits of Lighting Upgrades

Did you know?

A seemingly inconspicuous and often overlooked element within a building's infrastructure, lighting actually accounts for as much as 30-40% of a typical commercial building's energy costs and can be a primary source of significant cost savings in today's competitive market.⁽¹⁾

For anyone who has questioned the magnitude of the lighting upgrade opportunity, consider these facts:

Fact: The nation's estimated five million commercial, industrial, and institutional buildings consume nearly 900 billion kilowatt-hours of energy and spend over \$40 billion a year in electricity bills to operate their lighting systems alone.⁽²⁾

Fact: According to the Department of Energy, roughly 90% of these five million buildings were built prior to 1986, before many of the popular energy-efficient electrical products of the last decade were even introduced. As a result, in their initial construction, most of these buildings could not have taken advantage of the range of high-quality energy-efficient products that are now readily available in the marketplace and often standard in today's new construction – such as T8 and T5 fluorescent lamps, electronic ballasts, compact fluorescent lamps, lighting controls, electronic HID lighting systems, LEDs, etc. Experts believe that less than half of these buildings have undertaken upgrades and that the majority still contain outmoded lighting systems which could readily be upgraded to reduce lighting costs by up to 30-50% and total facility energy expenditures by as much as 20-25%.

Fact: Analysis by the Energy Cost Savings Council reveals that nearly 90% of the total cost to run a fluorescent lamp over its lifetime is accounted for by the electricity to operate it (e.g., product and maintenance costs amount to only 10-15%). Therefore, measures taken to reduce the energy consumed by lighting products — such as conversion to more energy-efficient technologies — represent the most significant way to reduce total usage costs.

% of Costs to Run a Fluorescent Lamp



Source: Energy Cost Savings Council

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Significant Savings Driven by A New Generation of Lighting Products

Lighting technology has evolved tremendously over the past one-two decades and has resulted in the broad availability of a host of exciting, high-performing, and highly-efficient new lighting products. At the commercial level, for example, new high-efficiency T8 fluorescent lamp and electronic ballast systems can reduce total system wattage by over 45% relative to the use of older, less efficient T12 fluorescent lighting systems driven by magnetic ballasts. At the retail level, new ceramic metal halide systems driven by electronic HID ballasts stand as an attractive, long-life, and cost-efficient alternative to their older halogen counterparts. And at every market segment and application in between, the market's range of lighting options delivers a more powerful package of efficiency and uncompromised performance than ever before.

The broad availability of a new generation of high-quality and efficient new lighting products has enabled end users nationwide to reap the tremendous financial benefits of an energy-efficient lighting upgrade. Consider this fact:

Fact: A recent analysis of over 1,000 upgrade projects conducted by the Energy Cost Savings Council found that energy-efficient lighting upgrade projects routinely pay themselves back within 2-3 years and can deliver 30-50% returns on investment. These types of returns typically exceed the capital hurdle rates within most companies, making upgrades some of the most financially attractive investments available.

Relatively easy to undertake, energy-efficient lighting upgrades can significantly reduce a facility's energy consumption and costs. As an example, the following tables illustrate how much energy and subsequent cost can be saved by upgrading from the popular older configuration of T12 fluorescent lamps driven by magnetic ballasts to a more modern and efficient T8 fluorescent lamp system incorporating electronic ballasts:

Upgrade Opportunities: Based on A Standard Configuration of Four 34-watt T12 Lamps Driven by Two Magnetic Ballasts

If you are currently using:

Base System Lamps	Base System Ballasts	Input Watts	Ballast factor	Light Output vs. T12	Savings vs. T12	Net System Lumens/Watt*
(4) 34 W T12	(2) Energy-Saving Magnetic	144	.88	100%	N/A	56.2

Consider this upgrade option if you need more light output:

System Lamps	System Ballasts	Input Watts	Ballast factor	Light Output vs. T12	Savings vs. T12	Net System Lumens/Watt*
(4) 32 W T8	(1) High-efficiency electronic	106	.87	116%	26%	88.6

Consider this upgrade option if you need roughly the same light output:

System Lamps	System Ballasts	Input Watts	Ballast factor	Light Output vs. T12	Savings vs. T12	Net System Lumens/Watt*
(4) 32 W T8	(1) High-efficiency Low Watt electronic	95	.77	103%	34%	87.5

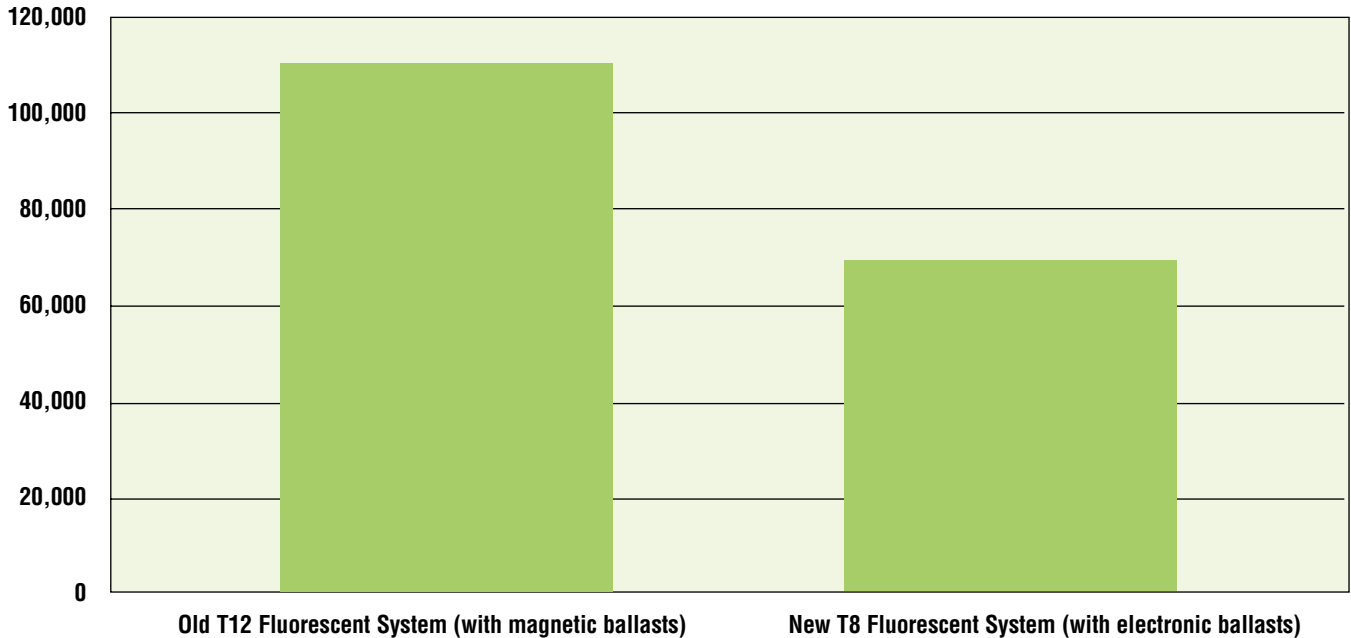
Consider this option if you are willing to sacrifice some light output to maximize energy savings:

System Lamps	System Ballasts	Input Watts	Ballast factor	Light Output vs. T12	Savings vs. T12	Net System Lumens/Watt*
(4) 25 W T8	(1) High-efficiency Low Watt electronic	75	.77	87%	48%	93.6

When analyzed within the full context of actual utility kWh costs and hours of operation, such energy-efficient lighting options can routinely deliver dramatic energy cost reductions, as shown in the following graphic:

Annual Energy Cost Comparison: T8 vs. T12 Fluorescent Lighting Systems

(Based on 4-6,000 hours of operation at \$.08 per kWh cost within a 100,00 square foot facility)



Other Cost Savings and Benefits

And the savings from lighting upgrades extend beyond significant reductions in energy costs. Upgrades involving today's variety of long-life, high quality lighting products can also offer tremendous benefits in the area of maintenance. The use of lamp and ballast technologies that optimize each other's performance and extend each other's lifespan can minimize the number of failures that need to be attended to and drive overall significant reductions in maintenance requirements. In addition, the installation of a more efficient lighting system can directly reduce air conditioning costs, as a high-efficiency lighting system runs cooler and results in less strain on a building's HVAC system. Overall, lighting upgrades deliver not only sizable returns quickly, but continue to drive a full spectrum of savings for the entire life of the products, which typically spans from 4-20 years. And improvements in a facility's energy costs and lighting quality make great strides towards differentiating a facility space as well as increasing the valuation of a tenant-lease facility in today's competitive marketplace.

Did you know?

If your net income as a percentage of sales is 5%, saving \$5,000 per year on energy costs is the equivalent of an increase of \$100,000 in top-line sales!

Financing Your Upgrade: A Host of Options

A variety of financial incentives are currently available to help encourage and/or subsidize the pursuit of lighting upgrades. For example, many utility companies across the nation offer financial incentives or product rebates to reward the use of energy-efficient technologies such as lamps, ballasts, and lighting controls. While upgrade projects are extremely attractive investments all on their own, the potential addition of utility rebates into the equation can only "sweeten the deal," hastening payback periods and elevating returns on investment.

In addition, there are many ways in which a lighting upgrade project can be funded, from undertaking the entire capital improvement expenditure to financing it through conventional loans, leases, or shared savings plans with a third party. A variety of other resources are also available to help defray the cost of an upgrade...from loans designed especially for upgrade projects to state and local grants earmarked for such activities. Your state's Energy Office can provide more information on their programs and resources offered and how to qualify for these benefits

As an added benefit, the 2006-2008+ availability of commercial tax deductions for eligible 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 provides an even more compelling reason to pursue an energy-efficient lighting upgrade in your facility today. As a result, 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!

As the #1 ballast manufacturer in North America, Philips Lighting Electronics is uniquely positioned to provide end users with the power to make a difference through sustainable lighting options. When you see the Philips Advance brand name, you can count on 60+ years of experience making the most preferred ballasts in the business.

As part of our effort to support environment responsibility, we're proud to offer Smart Solutions™ - products, services, and expertise to help you achieve your lighting sustainability goals at every level. For more information, visit www.philips.com/advance.

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 1), 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)

The Financial Attractiveness of Lighting Upgrades

A standard approach to assessing the lifelong returns on investments is by using the internal rate of return (IRR) method. IRR is the annual percent return on the original investment in a project that's required to generate the projected dollar returns of that project in future years. IRR is usually calculated using financial tables and takes into account the effects of inflation and interest rates.

Consider a lighting upgrade that will cost \$100,000 and save a company \$40,000 in energy costs for each of the next five years (the life of the lamps) – e.g., this investment will be recouped in 2.5 years. Total nominal savings amount to \$200,000 (\$40,000 per year for five years) over the life of the lamps. The IRR of this investment – 29% – is significantly higher than the standard 18-20% corporate IRR for capital investments. (Your company's financial professionals can help calculate IRR; they will need information on the size of the investment and future savings from the project).

There's another easy way to use IRR to fully convey the magnitude of the financial return on an upgrade. In the above example, the initial investment needed to generate \$200,000 in savings by the end of five years using a standard corporate IRR of 18% is \$125,000. In the lighting project described above, however, the investment required is only \$100,000. By undertaking the lighting upgrade, the company gets an instant "reward" of \$25,000, or 25%. This "instantaneous rate of return" approach can help CFOs rank all of their investments and better comprehend the financial attractiveness that a lighting upgrade investment represents!



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