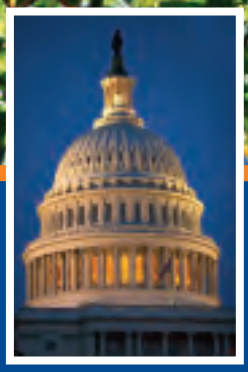


The Impact of EPAct 2005

Your Guide to the Lighting Efficiency Standards and Tax Deduction Provisions of Section 1331 of H.R. 6, The Energy Policy Act of 2005

OSRAM SYLVANIA

Energy Policy Act of 2005

On August 8, 2005, the Energy Policy Act of 2005 [H.R. 6; Public Law 109-58] was signed into law. This landmark piece of legislation represents the most significant overhaul of the nation's energy policy since EPAct 1992 mandated the phased elimination of several of the most commonly produced types of fluorescent and incandescent lamps and triggered deregulation of the electric power industry. The main goals of EPAct 2005 are to promote energy efficiency and conservation while supporting an increase in domestic energy production, including energy from renewable resources. While EPAct 2005 is less stringent on the energy demand side than on the supply side, it does include a number of energy conservation provisions, supported by the National Electrical Manufacturers Association (NEMA), which are significant for the lighting industry. Those provisions allow for attractive tax deductions of up to $1.80 per square foot for commercial building owners who invest in energy efficient building systems. Given that many buildings contain inefficient, outdated lighting systems, these products and systems are ideally positioned to capitalize on the tax deductions. OSRAM SYLVANIA has provided this guide to help you understand the tax benefits afforded by EPAct 2005 and to develop strategies that ensure compliance and reap the financial benefits of using our industry-leading products in your lighting system upgrades.

Efficiency Standards for Lighting Products

There are provisions in EPAct 2005 that specifically impact lighting products. The bill sets new efficiency standards as follows:

Effective January 1, 2006

- Illuminated exit signs in new installations must meet ENERGY STAR® Version 2.0 efficiency levels (input power of ≤ 5 Watts per face). This standard will move the industry towards newer lighting technologies such as LEDs, that have combined properties of high brightness and low wattage.

- Torchiere type fixtures will be limited to using light sources that total not more than 190 Watts. Since many torchieres use halogen lamps, the rationale is to encourage the use of more energy-efficient light sources, such as compact fluorescent, or at the very least, to require halogen bulbs of lower wattage than lamps typically found in these fixtures.

- Bare bulb and covered (not reflector type) medium screw base self ballasted compact fluorescents (CFLs) must meet Energy Star performance requirements that became effective August 9, 2001. The performance aspects covered are minimum initial efficacy, lumen maintenance at 1000 hours, lumen maintenance at 40 percent of rated life, rapid cycle stress tests and lamp life. Color rendering index (CRI), power factor, operating frequency, and startup time may be incorporated into future requirements.

ENERGY STAR

- All newly manufactured traffic signals must meet or exceed Energy Star performance requirements for Traffic Signal Version 1.1, which essentially mandates that LEDs will be used.

Effective January 1, 2007

- All ceiling fan light kits with medium base sockets must be packaged with compact fluorescent lamps that meet Energy Star Version 3.0 performance requirements, or with another light source of equal or greater lumen-per-watt efficacy than CFLs. Pin base socket fixtures must meet Energy Star Residential Light Fixture Version 4.0 performance requirements, and these kits must be packaged with pin base lamps. Other requirements are effective as of January 1, 2009.

Effective January 1, 2008

- Mercury vapor ballasts designed for general illumination applications may not be manufactured or imported. A recent entry into the Federal Register confirms that this also extends to ballasts incorporated as part of a lighting fixture.

Effective January 1, 2009

- New efficiency requirements for electromagnetic ballasts that operate reduced wattage “energy-saver” type fluorescent lamps will go into effect. On that date, manufacturing of electromagnetic ballasts for use in new fixtures must cease. Electromagnetic ballasts for use in new fixtures may not be sold after October 1, 2009. Electromagnetic replacement ballasts can be sold up until July 1, 2010, but must be labeled “For Replacement Only” and may not exceed 10 pieces per package. Exempt from these requirements are ballasts designed to dim to 50% or less of the maximum light output, ballasts designed for use with 2 F96T12/HO lamps at ambient temperatures of 20°F or less and for use in outdoor signs, and ballasts of less than 0.9 power factor designed and labeled “For Residential Use Only”.

- All ceiling fan light kits manufactured after January 1, 2009, with any socket type other than medium screw base or pin-base compact fluorescent shall not be capable of operating with lamps that total more than 190 watts and shall be packaged with lamps that do not total to more than 190 watts. The other socket types would include candelabra screw-base sockets, intermediate screw-base sockets, 2-pin halogen sockets, bayonet sockets and all socket types other than medium screw base or pin-based for fluorescent lamps.

EPAct 2005 Tax Deduction Provisions

Federal Buildings

EPAct 2005 sets out requirements for federal buildings targeted to raise energy efficiency and reduce energy consumption. These requirements present further opportunity for the proliferation of energy efficient technologies in federal facilities. New construction federal building performance standards call for new buildings to comply with the 2004 IECC* for residential buildings and to beat ASHRAE/IESNA** Standard 90.1-2004 by 30% for commercial and multi-family, high-rise residential buildings for which design for construction began on or after January 3, 2007 if it is life-cycle cost effective. If a 30% reduction is not life-cycle cost effective, the design of the buildings shall be modified to achieve an energy consumption level at the maximum level of energy efficiency that is life-cycle cost effective, but, at a minimum, complies with ASHREA/IESNA 90.1-2004. This requirement covers lighting, space heating, space cooling, ventilation, service water heating and all other energy consuming systems normally specified as part of the building design except for receptacle and process loads.

Additionally, sustainable design principles must be employed in the design and construction of all new and renovated buildings. All existing federal buildings have been given energy management reduction targets. They must achieve a 20% reduction in gross per square foot energy consumption using 2003 consumption level as the baseline. This 20% reduction is to be achieved at a rate of 2% per year starting in 2006 and culminating in 2015.

With these new standards come new benefits. Facility managers at government buildings will be permitted to reinvest the budget dollars saved through compliance with the increased efficiency standards for energy, water, and wastewater improvements. The only stipulation is that these savings must be reinvested 100 percent in the same three types of improvements.

Other Federal Requirements.

For individual states to receive assistance under EPAct 2005, the state is required to have a conservation plan in place that targets a 25% improvement in efficient use of energy by 2012 over 1990 levels. Residential rebate programs must specify ENERGY STAR® rated products to replace older products. New commercial construction must exceed the latest IECC or state adopted codes by at least 30%. Renovations of existing buildings must demonstrate a 30% reduction of energy use compared to the level prior to renovation.

Commercial Buildings

Under current law, the cost of energy saving investments must be capitalized and depreciated over time. EPAct 2005, Section 1331 states, "There shall be allowed as a deduction an amount equal to the cost of energy efficient commercial property placed into service during the taxable year." Energy efficient property is defined as commercial property that is certified to reduce annual energy and power costs to at least 50% less than buildings satisfying ASHRAE/IESNA Standard 90.1-2001. Under EPAct 2005, owners of commercial buildings can take advantage of one-time or partial tax deductions for property put into service between January 1, 2006 and December 31, 2008 inclusive. Properties must be otherwise depreciable property, located in the United States and all applicable costs must be borne by the taxpayer seeking the deduction.

Using EPAct's Whole Deduction Method, building owners can claim a one-time tax deduction of up to $1.80 per square foot for buildings that beat the ASHREA/IESNA 90.1-2001 benchmark by 50% or more (see Figure 2). Investments can be for new construction or renovations and must include the building envelope, interior lighting, HVAC and hot water systems.

Using EPAct's Partial Deduction Method, owners can claim up to a $0.60 per square foot deduction for renovation or new construction of any one system that beats ASHRAE/IESNA 90.1-2001 by a prescribed percentage. This method is useful when not all building systems can comply with a 50% energy reduction. One major stipulation is that the total deduction claimed may not exceed the total cost of the new construction or renovation (design, labor, materials, etc.). **Specific guidelines have been set for interior lighting systems, as explained in the next section.**

* International Energy Conservation Code

** American Society of Heating, Refrigeration and Air Conditioning Engineers/Illumination Engineering Society of North America

EPAct 2005 Partial Tax Deduction—Interim Rules for interior Lighting Systems

EPAct 2005 has established interim rules for commercial building interior lighting systems that are in effect until such time that the Secretary of the Treasury issues the final guidance document designating the energy-saving targets for lighting systems. With the issuance of IRS Notice 2006-52, the interim rules for lighting remain in effect through December 31, 2007. Congress passed H.R. 6111, extending the tax deduction program through December 31, 2008. OSRAM SYLVANIA fully expects the interim rules for lighting to be extended through December 31, 2008.

FIGURE 1
Estimated Tax Deduction per Square Foot

Percent of Lighting Power Density Reduction Beyond ASHRAE/ IESNA 90.1 2001	Amount of Eligible Tax Deduction per Square Foot
<25%	$0.00
25%	$0.30
26%	$0.32
27%	$0.34
28%	$0.36
29%	$0.38
30%	$0.40
31%	$0.42
32%	$0.44
33%	$0.46
34%	$0.48
35%	$0.50
36%	$0.52
37%	$0.54
38%	$0.56
39%	$0.58
40%	$0.60
>40%	**$0.60**

The Interim Rules for Interior Lighting Systems set the lighting system energy-savings target to be a lighting power density 25-40% lower than the minimum requirements of ASHRAE/IESNA 90.1-2001. Energy-efficient lighting can be used to achieve up to 1/3 of the tax deduction or $0.60 per square foot: (see figure 2 – next page)

- From $0.30/sq. ft. for beating ASHRAE/IESNA 90.1-2001 by 25%
- Up to $0.60/sq. ft. for beating ASHRAE/IESNA Standard 90.1-2001 by 40%

A "sliding scale" approach is used for savings between 25% and 40%. **An exception: warehouses can qualify for $0.60 per square foot but the lighting system must beat ASHRAE/IESNA 90.1-2001 by 50%.** It's all or nothing.

Using Figure 1, let's assume that the redesign of the interior lighting in a 20,000 square foot office building achieves a lighting power density 40% lower than the minimum standards of ASHRAE/IESNA 90.1-2001. The maximum possible tax deduction is: $0.60 per square foot (not to exceed cost of the redesign). The result in this example is that the building owner earns a maximum gross tax deduction of $0.60 per square foot, or $12,000. If the owner pays $12,000 or more in design, material, and labor to do this retrofit, then $12,000 can be written off in the year the building was commissioned and the balance would be depreciated in the normal fashion. But, if the owner pays less than $12,000 for the retrofit—let's say $10,000---then the deduction is capped at $10,000, but the benefit is that the $10,000 can be written off in one year instead of having to depreciate it over time.

EPAct 2005—Additional Requirements for Lighting Systems

Besides meeting IESNA recommended minimum design light levels, lighting systems must also meet the following requirements:

- **New buildings** must include all ASHRAE/IESNA 90.1-2001 control provisions, including automatic lighting shutoff in all occupancies of buildings greater than 5000 square feet. Retrofits do not have to incorporate automatic shutoff for lighting; however, if lighting controls are replaced or if 50% or more of the luminaires in a space are replaced, the lighting controls must meet the requirements of ASHRAE/IESNA 90.1-2001.
- **Bi-level switching** is required in all spaces except in hotel/motel guest rooms, store rooms, restrooms, and public lobbies. Bi-level switching is defined as "manual or automatic control (or a combination thereof) that provides two levels of lighting power in a space (not including off). A space is defined as an area enclosed by four or more floor to ceiling walls. Dimming or switching would satisfy this definition."** Use of an occupancy sensor to turn all lights in a space either "on" or "off" together is not enough to qualify as bi-level switching.

** Per FAQ section of www.efficientbuildings.org, recognized as an authoritative source on this issue by NEMA and by the Tax Incentives Assistance Project

The Building Area Method and the Space-by-Space Method

The Building Area Method is the simpler of two methods in ASHRAE/IESNA Standard 90.1 used to calculate the total wattage allowed for lighting in the entire building. For example, when lighting a 100,000 square foot office building, one could use the Building Area Method and multiply 1.3 watts per square foot x 100,000 square feet. The result is an allowed maximum of 130 kilowatts of lighting load. Alternatively, one could use the Space-by-Space Method and multiply the square footage of each different type of space by its unique power density. So if the office building had 30,000 square feet of enclosed offices, 50,000 square feet of open offices, 10,000 square feet of training rooms, and 10,000 square feet of conference rooms, each of these areas would be multiplied, respectively, by 1.5, 1.3, 1.6 and 1.5, per the Space-by-Space Method power density values. Generally speaking, the Space-by-Space Method yields more generous wattage allowances, making it worth the effort to use this method.

ASHRAE/IESNA Standard 90.1 is a "maximum power density" standard that is continually evolving. EPAct 2005 stipulates the 2001 version of 90.1 as the baseline for commercial building tax deduction purposes. For lighting, this means that various building types or spaces must have lighting systems that "beat" the watts per square foot maximum values from 90.1-2001 by at least 25% in order to qualify for any tax deductions. Fig. 2 gives a partial list of maximum lighting power densities in watts per square foot for commonly used spaces, as well as the densities needed to achieve 25% and 40% reductions beyond the baseline.

Figure 2

Building Area Method	Lighting Power Densities		
	2001 Standard	Reduced by 25%	Reduced by 40%
Automotive Facility	1.50	1.13	0.90
Convention Center	1.40	1.05	0.84
Court House	1.40	1.05	0.84
Dining: Bar Lounge/Leisure	1.50	1.13	0.90
Dining: Catering/Fast Food	1.80	1.35	1.08
Dining: Family	1.90	1.43	1.14
Dormitory	1.50	1.13	0.90
Exercise Center	1.40	1.05	0.84
Gymnasium	1.70	1.28	1.02
Healthcare-Clinic	1.60	1.20	0.96
Hospital	1.60	1.20	0.96
Hotel	1.70	1.28	1.02
Library	1.50	1.13	0.90
Manufacturing Facility	2.20	1.65	1.32
Motel	2.00	1.50	1.20
Motion Picture Theatre	1.60	1.20	0.96
Multi-Family	1.00	0.75	0.60
Museum	1.60	1.20	0.96
Office	1.30	0.98	0.78
Parking Garage	0.30	0.23	0.18
Penitentiary	1.20	0.90	0.72
Police/Fire Station	1.30	0.98	0.78
Post Office	1.60	1.20	0.96
Religious Building	2.20	1.65	1.32
Retail	1.90	1.43	1.14
School/University	1.50	1.13	0.90
Sports Arena	1.50	1.13	0.90
Theater Performing Arts	1.50	1.13	0.90
Town Hall	1.40	1.05	0.84
Transportation	1.20	0.90	0.72
Warehouse (*Must exceed by 50%)*	1.20	0.60	0.60
Workshop	1.70	1.28	1.02

Space-by-Space Method*	Lighting Power Densities		
	2001 Standard	Reduced by 25%	Reduced by 40%
Classroom/Lecture/Training - except for Penitentiary	1.60	1.20	0.96
Conference/Meeting/Multipurpose	1.50	1.13	0.90
Dining Area – many building types	1.40	1.05	0.84
Food Preparation	2.20	1.65	1.32
Hospital/Health Care – emergency room	2.80	2.10	1.68
Hospital/Health Care – nurse station	1.80	1.35	1.08
Hospital/Health Care – patient room	1.20	0.90	0.72
Hospital/Health Care – operating room	7.60	5.70	4.56
Lobby	1.80	1.35	1.08
Lodging – hotel/motel guest room	2.50	1.88	1.50
Lodging – dormitory room	1.90	1.43	1.14
Manufacturing – general low bay	2.10	1.58	1.26
Manufacturing – general high bay	3.00	2.25	1.80
Office – enclosed	1.50	1.13	0.90
Office – open	1.30	0.98	0.78
Retail – general sales area	2.10	1.58	1.26
Retail – accent specific display – valuable merchandise	3.90	2.93	2.34
Storage – active	1.10	0.83	0.66
Storage – inactive	0.30	0.23	0.18
Warehouse – fine material storage	1.60	0.80	0.80
Warehouse – medium/bulky storage	1.10	0.55	0.55

** Not all space types are listed.* These tables are copyrighted. Complete tables are available by purchasing the ASHRAE/IESNA 90.1-2001 standard from ASHRAE or the IESNA.

- 2001 Standard values are the LPD values as originally published.
- EPAct 2005 uses ASHRAE/IESNA Standard 90.1-2001 values as of April 2, 2003 (as published).
- Other code compliance may require use of the more recent ASHRAE/IESNA 90.1-2001 Addendum "g" as published in August 2003.
- Always check for correct table
- Warehouse must exceed by 50%

Other Things You Need to Know

What Is My Window of Opportunity?

The building or retrofit must be placed into service between January 1, 2006 and December 31, 2008 inclusive. Congress may, at its discretion, extend the window by an act of legislation. The National Electrical Manufacturers Association (NEMA) is planning to advocate for this extension by demonstrating the success of the tax incentives in stimulating energy savings.

Who Gets the Deduction?

The tax deduction for private buildings goes to the building owner. In the case of commercial properties where the owner is a federal, state, or local government entity, the person primarily responsible for the design of the property can claim the tax deductions. In the case of commercial building tenants who make improvements, the tenant and landlord would have to determine who the building owner is, for tax purposes. In the case of lighting, whoever carries the lighting fixtures as an asset on their books is most likely to be considered the "owner" for tax purposes.

How Do I Count the Watts?

"System" wattage must be used, which means that the total input wattage of the lamp/ballast combination must be used for fluorescent and HID. In the case of fluorescent systems that use energy-saving T8 linear lamps, the system wattage should be calculated assuming that the energy-saving lamp is in the socket – not a full wattage lamp such as 32W – provided that these energy-saving lamps are actually installed. The energy-saving T8 lamps should be clearly specified in the bill of material for the project (needed for purchasing and certification) and, if possible, it is recommended that permanent labels be added to the inside of the luminaires specifying the lamp to be used. This would also be true for compact fluorescent luminaires using pin-based lamps where more than one wattage lamp can be used in the luminaires. For luminaires with medium screw base sockets, ASHRAE/IESNA Standard 90.1 is very clear that the maximum wattage on the luminaire label must be used, no matter what lamp is initially installed. For line voltage track lighting, 30W per linear foot is assumed, no matter what is installed. For low voltage track lighting, the wattage rating of the transformer is used.

Who is Qualified to Certify Compliance?

Per IRS Notice 2006-52, "A qualified individual (1) is not related to the taxpayer claiming the deduction, (2) is an engineer or contractor that is properly licensed in the jurisdiction where the building is located, and (3) has represented in writing to the taxpayer that he or she has the requisite qualifications to provide the certification." Certifications do not need to be sent in with the tax return, but must be held in the taxpayers' files in case of audit.

Do I Need to Use an Approved Software Program to Demonstrate Compliance?

Per IRS Notice 2006-52, you must use an approved software program if you are dealing with all three building systems (the Whole Deduction Method) or if you use a fairly complex alternate partial deduction method described in the notice. For lighting, if you abide by the Interim Rules (recommended), you do not have to use an approved software program. For those who are interested in finding a list of approved software, go to http://www.eere.energy.gov/buildings/info/tax_credit_2006.html.

What Certification Information Should be Included by the Certifier?

- Name, address & telephone number of the qualified person
- Address of the building
- Prescribed statement for energy efficient lighting property that satisfies the requirements of the rules
- Statement that reduced energy has been determined under the IRS rules
- Statement that field inspections were conducted and that the building has – or will – meet the energy saving targets contained in the plans and specifications
- Statement that the building owner has received an explanation of the energy efficiency features of the building and projected annual energy costs
- Statement that qualified computer software was used, if applicable
- List of components of the interior lighting system installed in the building
- Prescribed statement declaring the certifier believes the facts presented to be true, correct and complete

The National Electrical Manufacturers Association (NEMA) has issued guidelines for certification documents. To find these guidelines, please go to **http://www.nema.org/gov/efficientbuildings**.

The National Renewable Energy Laboratory (NREL), at the direction of the Federal Treasury Department, has issued guidelines for modeling and inspection of commercial buildings for the EPAct 2005 tax deductions. These guidelines can be found at **http://www.nrel.gov/docs/fy07osti/40228.pdf**.

Remember, **tax deduction rules are very complex**, especially where depreciable property is concerned. We recommend that building owners consult a tax expert.

This is a tax **deduction** provision, **not a tax credit.** Tax deductions are applied to reduce taxable income, whereas tax credits are applied to reduce the amount of tax.

Energy rebates from your local utility may be applied and will further accelerate the payback from the energy efficiency measures undertaken.

Why Lighting Upgrades Are Worthwhile Investments

Lighting can account for as much as 40% of a building's entire annual electricity bill. And if a facility's lighting systems are outdated the impact can be even greater. Lighting upgrades represent a fast and simple way to reap the tax deductions offered by EPAct 2005. Combine the tax breaks with lower utility bills and it's easy to see how lighting improvements can yield a great return on your investment. From the global sustainability point of view, NEMA estimates that the potential energy savings for lighting alone is about 312 Megawatts of electricity over the original two year provision (2006 & 2007), resulting in the elimination of about 6 billion pounds of CO_2 emissions from the atmosphere. With the provision extended for a third year (2008), the savings is expected to grow by 50%

OSRAM SYLVANIA Has Answers

As the Number One lighting supplier in North America we can provide you with all the resources you need to understand the details and provisions of EPAct 2005 and take advantage of the tax incentives for lighting.

Expertise

We are a lighting company run by lighting professionals. From our experienced Industrial Commercial sales and National Account representatives, to our Commercial Lighting Engineers, we have the expertise to help you understand EPAct and the products to help you get a tax deduction for your next energy efficient lighting upgrade.

Our SYLVANIA Lighting Services (SLS) organization can offer highly knowledgeable lighting design consultants and project managers who will work side-by-side with your construction team to provide a host of turnkey audit and maintenance solutions to ensure that your lighting system meets EPAct standards and operates in the most energy-efficient way.

As a wholly owned subsidiary of OSRAM SYLVANIA, SYLVANIA Lighting Services realizes the importance of doing business with an environmentally friendly focus. SLS takes great pride in being the **first** lighting service company to recycle lamps at the end of life, sending over 8.5 millions lamps annually to certified recycling facilities.

Online Resources

Help is only a mouse click away. We have assembled a wealth of online resources to assist you at both our company website **www.sylvania.com** and our customer website **www.mysylvania.com**. You'll find quick links to our white papers, product literature library and multimedia presentations. In addition, there are links to our industry partners' websites such as NEMA and the Commercial Building Tax Deduction Coalition and to federal guidelines. Look for news about upcoming webinars and training programs hosted on the web and at our LIGHTPOINT® customer training centers.

In addition to our resource database, we provide interactive online calculators that help take the mystery out of calculating your tax benefits. You'll find practical examples of open office, industrial & warehouse, and classroom applications and interactive what-if scenarios that illustrate how the tax deductions apply using different combinations of SYLVANIA lamps and ballasts.

SYLVANIA Lighting Solutions

There are many SYLVANIA branded industry-leading lighting products and lighting systems that will meet the ASHRAE Density Reduction requirements for tax deductions as set by EPAct 2005.

Product Type		Key Features
Linear Fluorescent Systems		
OCTRON XP® & XPS® High Performance T8 Lamps and QUICKTRONIC® PSX Xtreme PROStart® Programmed Start Electronic Ballasts		• PROStart programmed start ballasts provide longest lamp life for occupancy sensor applications • 40% more efficient that T12 magnetic ballast systems • Universal voltage (120 – 277 VAC)
OCTRON T8 Lamps and QUICKTRONIC QHE High Efficiency Instant Start Electronic Ballasts		• Lowest power instant start systems • Provide 30-50% energy savings compared to F40T12 magnetic systems • Save up to 6% (2 - 7 Watts) of energy over standard electronic ballasts. • Universal voltage (120-277 VAC)
OCTRON T8 Lamps and QUICKTRONIC POWERSENSE™ Dimming Ballasts		• The industry's first dimming ballast that operates on 2-wire fluorescent dimmers or 0 - 10V controls. • High efficiency fluorescent dimming of OCTRON T8 lamps over wide (100 - 5%) dimming range • Universal voltage (120 - 277 VAC) • Fully compatible with occupancy sensors • Compatible with daylight harvesting strategies and integration with building control systems
PENTRON® T5 Lamps and QUICKTRONIC Professional T5 PROStart Electronic Ballasts		• Universal voltage (120 – 277 VAC) • Programmed Start ballasts suitable for use with occupancy sensors • 30-40% more efficient that standard metal halide for warehouse and industrial applications
PENTRON® T5 HO Lamps and QUICKTRONIC Helios™ PHO DIM PROStart T5 Dimming Ballasts		• Operate PENTRON® T5 HO, T5 HO Circline and DULUX® L T5 lamps over a wide (100-1%) dimming range on standard low voltage controls (0 – 10Vdc) • Almost twice the light output of T8 systems allowing for fewer and more compact fixtures • Compatible with daylight harvesting strategies and building control systems
Compact Fluorescent Systems		
DULUX D/E and T/E Pin Base Lamps and QUICKTRONIC CF Universal Electronic Ballasts		• Programmed Start ballasts suitable for use with occupancy sensors • Universal voltage (120 – 277 VAC) • QUICKSENSE® end-of-lamp-life detection • Great for down lights, sconces and recessed ceiling fixtures
DULUX L T5 Pin Base lamps and QUICKTRONIC QHE HIGH EFFICIENCY Instant Start DL40 ballasts		• Operate DULUX T5 lamps with maximum efficacy and high lumen output • Up to 14% energy savings compared to standard FT40DL Instant Start systems • Universal voltage (120 - 277 VAC)
High Intensity Discharge Systems		
METALARC® POWERBALL® Ceramic Metal Halide Lamps and QUICKTRONIC MH Universal Voltage Electronic Ballasts		• Energy saving alternative for incandescent and halogen sources • Up to four times longer life than incandescent and halogen, improved CRI and color consistency • Includes industry's highest color rendering 3000K metal halide lamp • Operate on QUICKTRONIC MH Professional Series electronic ballasts for optimal system performance and 15% energy savings over magnetic systems.
METALARC Pulse Start Metal Halide Lamps		• Improved metal halide technology for increased lumen performance versus standard metal halide lamps of higher wattage • Potentially longer life • Reduced color shift over lamp life

Application Examples

Classroom

For example, a classroom uses 2 ft. x 4 ft. lensed 277 volt troffers or suspended T5 luminaires and a 9.5 ft. ceiling for an IESNA recommended maintained light level of 40-50 footcandles in all example scenarios. Annual hours of operation are 1620 and utility rate is $0.10 per kWh. Lighting Power Density for a classroom is 1.5 Watts/sq. ft. maximum using the ASHRAE/IESNA Standard 90.1-2001– Building Area Method of calculation.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq. ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft.	Percent	$/sq. ft.	$/sq. ft.	Percent
Base System	SYLVANIA SUPERSAVER® 34 Watt T12 – 3 Lamps	2 – Magnetic Ballasts	121	1.45	3%	$–	$0.23	0%
Basic Upgrade	OCTRON® 32 Watt T8 700 Series Standard – 3 Lamps	Basic Electronic Instant Start Ballast – Normal Ballast Factor (0.88)	86	1.03	31%	$0.42	$0.17	29%
Enhanced Upgrade	OCTRON XP® 30 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC® QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.88)	77	0.92	39%	$0.58	$0.15	37%
Enhanced Upgrade	OCTRON XP 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.88)	72	0.86	43%	$0.60	$0.14	41%
Ultimate Upgrade	OCTRON XP 30 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Low Ballast Factor (0.78)	68	0.82	45%	$0.60	$0.13	43%
Ultimate Upgrade	OCTRON XP 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Low Ballast Factor (0.78)	63	0.76	49%	$0.60	$0.12	48%
Ultimate Upgrade plus Occupancy Sensor*	PENTRON® T5 28 Watt Premium Series – 2 Lamps	QUICKTRONIC PS Professional Programmed Start Ballasts – Normal Ballast Factor (1.0)	63	0.63	58%	$0.60	$0.10	56%
Ultimate Upgrade plus Occupancy Sensor*	OCTRON XPS® 32 Watt T8 800 Series Premium Extreme Performance Longest Life – 3 Lamps	QUICKTRONIC PSX Professional Programmed Start Ballasts – Low Ballast Factor (0.71)	71	0.85	43%	$0.60	$0.14	41%

*Occupancy sensor compatible for additional energy savings.

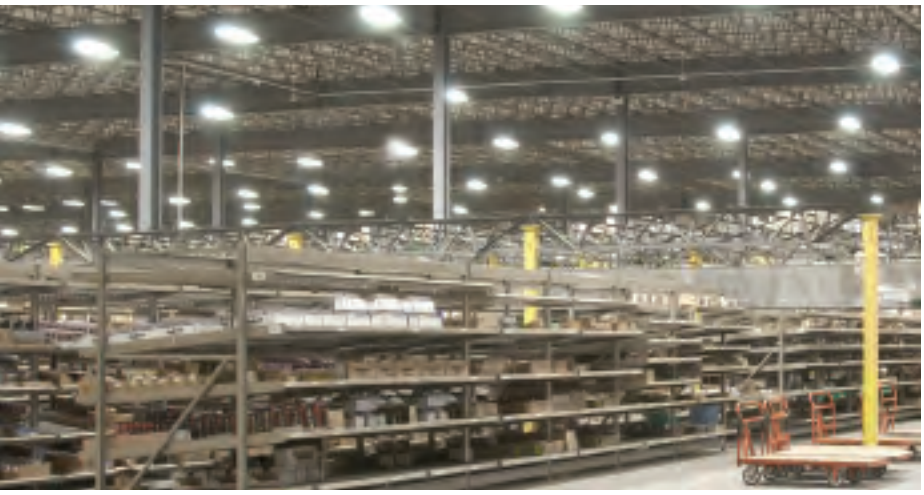
Healthcare Facility

For example, a healthcare nursing station area uses 2 ft. x 4 ft. parabolic 277 volt troffer luminaires and a 9.5 ft ceiling for an IESNA recommended maintained light level of 40–50 footcandles in all example scenarios. Annual hours of operation are 8760 and utility rate is $0.10 per kWh. Lighting Power Density for Healthcare is 1.6 Watts/sq. ft. maximum using the ASHRAE/IESNA Standard 90.1-2001 – Building Area Method of calculation.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq. ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft.	Percent	$/sq. ft.	$/sq. ft.	Percent
Base System	SYLVANIA SUPERSAVER® 34 Watt T12 – 3 Lamps	2 – Magnetic Ballasts	121	1.45	9%	$–	$1.27	0%
Basic Upgrade	OCTRON® 32 Watt T8 700 Series Standard – 3 Lamps	Basic Electronic Instant Start Ballast – Normal Ballast Factor (0.88)	86	1.03	36%	$0.51	$0.90	29%
Enhanced Upgrade	OCTRON XP® 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC® QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.88)	72	0.86	46%	$0.60	$0.75	41%
Ultimate Upgrade	OCTRON XP 30 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Low Ballast Factor (0.78)	68	0.82	49%	$0.60	$0.72	43%
Ultimate Upgrade Occupancy Sensor*	OCTRON XPS® 32 Watt T8 800 Series Premium Extreme Performance Longest Life – 3 Lamps	QUICKTRONIC PSX Professional Programmed Start Ballasts – Low Ballast Factor (0.71)	71	0.85	47%	$0.60	$0.74	41%
Ultimate Upgrade Occupancy Sensor*	OCTRON XP 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC PSX Professional Programmed Start Ballasts – Low Ballast Factor (0.71)	62	0.74	54%	$0.60	$0.65	49%

*Occupancy sensor compatible for additional energy savings.

Application Examples



Industrial Manufacturing

For example, an industrial manufacturing space uses standard metal halide or fluorescent 277 volt hi-bay luminaires and a 30 ft. ceiling for an IESNA recommended maintained light level of 50 footcandles in all example scenarios. Some scenarios require fixture repositioning for existing retrofits. Annual hours of operation are 5840 and utility rate is $0.10 per kWh. Lighting Power Density for Industrial is 2.2 Watts/sq. ft. maximum using the ASHRAE/IESNA Standard 90.1-2001 – Building Area Method of calculation.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft.	Percent	$/sq. ft.	$/sq. ft.	Percent
Base System	METALARC® 400 Watt Clear Metal Halide – 1 Lamp	Magnetic HID Ballast	458	2.29	–	$–	$1.34	0%
Enhanced Upgrade	METALARC 250 Watt Pulse Start Clear Metal Halide – 1 Lamp	Magnetic HID Ballast	290	1.45	34%	$0.48	$0.85	37%
Ultimate Upgrade	METALARC POWERBALL 320 Watt Ceramic Metal Halide – 1 Lamp	Magnetic HID Ballast	353	1.32	40%	$0.60	$0.77	42%
Ultimate Upgrade	OCTRON XP® 32 Watt T8 800 Series Extended Performance Energy Saving Long Life – 6 Lamps	QUICKTRONIC® QHE High Efficiency Instant Start Ballasts – High Ballast Factor (1.20)	218	1.09	51%	$0.60	$0.64	52%
Ultimate Upgrade Occupancy Sensor*	PENTRON® T5 HO 54 Watt Premium Series – 4 Lamp	QUICKTRONIC PHO Professional Programmed Start Ballasts – Normal Ballast Factor (1.0)	236	1.18	46%	$0.60	$0.69	48%

*Occupancy sensor compatible for additional energy savings.

Retail

For example, a retail store uses 2 ft. x 2 ft. parabolic 277 volt fixtures and adjustable accent luminaires on a 12 ft. ceiling for an IESNA recommended maintained light level of 50 footcandles and one-for-one fixture replacement/retrofit in all example scenarios. Annual hours of operation are 5100 and utility rate is $0.10 per kWh. Lighting Power Density for retail is 1.9 Watts/sq. ft. maximum using the ASHRAE/IESNA Standard 90.1-2001 – Building Area Method of calculation.

The Building Area Method of calculation provides no additional lighting power allowance for accent lighting used for the display of merchandise. The more detailed Space by Space Method of calculation does provide an additional lighting power allowance for accent lighting in retail applications. Under EPAct 2005 only the baseline power density must be "beaten" by 25% or more. Showcase lighting is exempt from ASHRAE Standard 90.1-2001 and is, therefore, not included in this calculation.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq. ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft.	Percent	$/sq. ft.	$/sq. ft.	Percent
Basic Upgrade	DULUX® L 40 Watt Compact Fluorescent – 2 Lamp	Basic Electronic Instant Start Ballast – Normal Ballast Factor (0.96)	75	1.64	14%	$–	$0.84	0%
	CAPSYLITE® IR 100 Watt Halogen PAR38	None	100					
Enhanced Upgrade	DULUX L SUPERSAVER® 28 Watt Extended Performance Energy Saving Long Life Compact Fluorescent – 2 Lamp	QUICKTRONIC® DL40 Electronic Instant Start Ballast – Normal Ballast Factor (1.08)	69	1.18	38%	$0.55	$0.60	28%
	METALARC® POWERBALL® 39 Watt Ceramic Metal Halide PAR – 1 Lamp	QUICKTRONIC MH Professional Electronic Metal Halide Ballast	44					
Ultimate Upgrade	DULUX L SUPERSAVER 28 Watt Extended Performance Energy Saving Long Life Compact Fluorescent – 2 Lamp	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (1.07)	63	1.1	42%	$0.60	$0.56	33%
	METALARC POWERBALL 39 Watt Ceramic Metal Halide PAR – 1 Lamp	QUICKTRONIC MH Professional Electronic Metal Halide Ballast – Normal Ballast Factor (1.0)	44					
Ultimate Upgrade	OCTRON 1 5/8" CURVALUME® SUPERSAVER 29W Extended Performance Energy Saving Long Life Fluorescent – 2 Lamp	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.99)	57	1.02	47%	$0.60	$0.52	38%
	METALARC POWERBALL 39 Watt Ceramic Metal Halide PAR – 1 Lamp	QUICKTRONIC MH Professional Electronic Metal Halide Ballast – Normal Ballast Factor (1.0)	44					

Application Examples

Warehouse

For example, a warehouse uses standard metal halide or fluorescent 277 volt hi-bay luminaires and a 30 ft. ceiling for an IESNA recommended maintained light level of 15-20 footcandles in all example scenarios. Annual hours of operation are 6240 and utility rate is $0.10 per kWh. Lighting Power Density for Warehouse is 1.2 Watts/sq.ft. maximum using the ASHRAE/IESNA Standard 90.1-2001 – Building Area Method of calculation. In order to qualify for the Gross Tax Deduction, the final Lighting Power Density must not exceed 50% (0.6 Watts/sq.ft.) of the ASHRAE value.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft	Percent	$/sq. ft.	$/sq. ft.	Percent
Base System	METALARC 400 Watt Clear Metal Halide – 1 Lamp	Magnetic HID Ballast	458	0.86	22%	$-	$0.54	0%
Ultimate Upgrade	METALARC POWERBALL 320 Watt Ceramic Metal Metal Halide – 1 Lamp	Magnetic HID Ballast	353	0.59	51%	$0.60	$0.37	31%
Ultimate Upgrade	OCTRON XP® 32 Watt T8 800 Series Extended Performance Energy Saving Long Life – 6 Lamps	Quicktronic QHE High Efficiency Instant Start Ballasts – High Ballast Factor (1.20)	218	0.41	63%	$0.60	$0.26	52%
Ultimate Upgrade Occupancy Sensor*	PENTRON® T5 HO 54 Watt Premium Series – 4 Lamps	Quicktronic PHO Professional Programmed Start Ballasts – Normal Ballast Factor (1.0)	236	0.44	60%	$0.60	$0.27	49%

*Occupancy sensor compatible for additional energy savings.

Open Offices

For example, an open office uses 2 ft. x 4 ft. 277 volt parabolic or T5 troffer luminaires and a 9.5 ft ceiling for an IESNA recommended maintained light level of 35–45 footcandles in all example scenarios. Annual hours of operation are 3000 and utility rate is $0.10 per kWh. Lighting Power Density for offices is 1.3 Watts/sq. ft. maximum using the ASHRAE/IESNA Standard 90.1-2001 – Building Area Method of calculation.

System Description	Lighting System		System Wattage	Lighting Power Density	% below ASHRAE 90.1 2001	Gross Tax Deduction per sq. ft.	Annual Energy Cost per sq. ft. @$0.10/kWh	Annual Energy Cost Savings Over Base Case
	Lamp	Ballast	Watts/ luminaire	Watts/ sq. ft.	Percent	$/sq. ft.	$/sq. ft.	Percent
Base System	SYLVANIA SUPERSAVER® 34 Watt T12 – 3 Lamps	2 – Magnetic Ballasts	121	1.21	7%	$–	$0.36	0%
Basic Upgrade	OCTRON® 32 Watt T8 700 Series Standard – 3 Lamps	Basic Electronic Instant Start Ballast – Normal Ballast Factor (0.88)	86	0.86	34%	$0.48	$0.26	29%
Enhanced Upgrade	OCTRON XP® 30 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC® QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.88)	77	0.77	41%	$0.60	$0.23	36%
Enhanced Upgrade	OCTRON XP 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Normal Ballast Factor (0.88)	72	0.72	45%	$0.60	$0.22	40%
Ultimate Upgrade	OCTRON XP 30 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Low Ballast Factor (0.78)	68	0.68	48%	$0.60	$0.20	44%
Ultimate Upgrade	OCTRON XP 28 Watt T8 800 Series Extended Performance Energy Saving Long Life – 3 Lamps	QUICKTRONIC QHE High Efficiency Instant Start Ballasts – Low Ballast Factor (0.78)	63	0.63	52%	$0.60	$0.19	48%
Ultimate Upgrade plus Occupancy Sensor*	PENTRON® T5 28 Watt Premium Series – 2 Lamps	QUICKTRONIC PS Professional Programmed Start Ballasts – Normal Ballast Factor (1.0)	63	0.63	52%	$0.60	$0.19	48%
Ultimate Upgrade plus Occupancy Sensor*	OCTRON XPS® 32 Watt T8 800 Series Premium Extreme Performance Longest Life – 3 Lamps	QUICKTRONIC PSX Professional Programmed Start Ballasts – Low Ballast Factor (0.71)	71	0.71	45%	$0.60	$0.21	41%

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OSRAM SYLVANIA
Headquarters
100 Endicott Street
Danvers, MA 01923

OSRAM SYLVANIA
National Customer
Service and Sales Center
18725 N. Union Street
Westfield, IN 46074

Industrial Commercial

Phone: 1-800-255-5042
Fax: 1-800-255-5043

Consumer Products

Phone: 1-800-842-7010
Fax: 1-800-842-7011

SYLVANIA Lighting Services

Phone: 1-800-323-0572
Fax: 1-978-646-6651

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