The Tax Aspects of Airport LED Lighting

By Charles Goulding, Jacob Goldman and Kenneth Wood

Charles Goulding, Jacob Goldman and Kenneth Wood discuss how LED lighting can be used at airports to significantly reduce energy costs and qualify for tax deductions under Code Sec. 179D.

As result of their large facility complexes, high maintenance costs and 24/7 operation, LED lighting is increasingly being used for all aspects of airport lighting. The opportunity for lighting tax deductions under Code Sec. 179D (as enacted by the Energy Policy Act of 2005 (EPAct))[1] helps to further accelerate the airport LED lighting conversion process. Energy is the largest operating expense at an airport, exceeded only by personnel.[2]

Code Sec. 179D Tax Provisions

Pursuant to Code Sec. 179D and the underlying American Society of Heating and Air Conditioning (ASHRAE) building energy provisions, commercial buildings are eligible for energy efficiency tax deductions of up to $1.80 per square foot. If a building's energy reducing investment doesn't qualify for the full $1.80 per square foot deduction, deductions are available for any of the three major subsystems, including:

1. lighting;
2. heating, ventilation and air conditioning (HVAC); and
3. the building envelope.

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Each component can qualify for up to 60 cents per square foot EPAct tax deductions. The building envelope is anything on the perimeter of the building that touches the outside world including roof, walls, windows, doors, foundation and related insulation layers.

Parking Garage LED Applications

Airport parking garages are normally the first airport structures to install LEDs since the LED parking garage product technology is widely available and the overall economic payback is very favorable.[3] These are large physical spaces where the energy and maintenance savings are substantial and where the EPAct tax savings, which are based on square footage, works particularly well.[4]

There are perpetual maintenance savings when using LEDs as the lamps do not need to be replaced as often. The U.S. Department of Energy defines the difference between the lengths of life for different types of lighting, giving a length in hours. Linear fluorescents have a maximum rated life of 30,000 hours while LEDs have a maximum useful life of 50,000 hours.

The difference in standards between rated and useful life are the two accepted ratings, since LEDs are actually projected to last longer than 50,000 hours.[5] The difference in language is due to the expectation that linear fluorescents will completely fail after 30,000 hours, its "rated life" and the expectation that LEDs will function well beyond 50,000 hours, but will be at the end of

Table 1.

Names of Carriers Merging	Dates of Merger or Merger Announcement
United Airlines and Continental Airlines	October 10, 2010
Delta Airlines and Northwest Airlines	October 2008
Southwest Airlines and AirTran Airways	September 27, 2010

their "useful life" which is defined by the LED only producing 70 percent of its original output.[6]

With nearly double the maximum light producing hours, LEDs need to be changed less frequently. Fluorescents also denigrate when turned on and off frequently, reducing their actual lifespan. The denigration problem with fluorescents also makes LEDs better candidates for occupancy sensors and daylighting applications as they may be dimmed and turned off frequently without impacting the LED's length of life. Parking garages typically use one of three lighting technologies when retrofitting, including LEDs, induction lighting or fluorescents.[7]

Main Terminal Buildings

Main airport terminal buildings are large structures and at major airports they are essentially cities unto themselves. Access to all terminal spaces is subject to time consuming security processes which makes lighting lamp replacement and repair substantially more expensive than in other building spaces.

The large reception, ticketing areas, gateways and passage process areas present equally large opportunities for energy savings and EPAct tax deductions. Many of these areas have high ceilings where longer life lamps save substantial costs related to using aerial platform equipment. Airports have extensive lattice networks of walkways and hallways where LED strip lighting is a perfect application for replacement or new construction.

Rapid Airline Industry Consolidation

The U.S. airline industry is rapidly restructuring and consolidating, which results in major facility realignment and upgrades. This includes major hub point centralization, terminal restructuring, including gateways and baggage area, and consolidation of administrative centers, data center operations and eventually corporate offices. The three most recent large-scale airline mergers are presented Table 1. Speculation is that American Airlines, Jet Blue Airways and U.S Airways are now more likely merger candidates.

Airport Support Services

Within airports there is an increasing amount of support services including restaurants, retailers, newsstands and duty-free shops. Many of these businesses have their own LED lighting initiatives, particularly the national food-service providers. National food chains with major LED initiatives often found at airports include Starbucks and McDonald's. Airport management may want to consider lease terms requiring tenants to meet energy-efficient standards at the better of the local building energy code or their most current energy-efficient prototype structure.

Airport Exterior LED Lighting

Airports use a tremendous amount of exterior lighting for facilities, grounds, parking lots and runways. Although these applications of energy-efficient LED lighting are not eligible for tax savings, they produce comparable energy and maintenance cost savings and are often eligible for large utility rebates.

Turning the Airport Focus to HVAC

HVAC is by the far the largest building energy user in airports. Once the current wave of LED lighting upgrades peak, the high cost of airport HVAC energy consumption will be even more apparent. Airports are perfect candidates for highly efficient, large-scale central plant systems such as central chillers,[8] thermal storage[9] and geothermal.[10] These highly efficient systems typically generate very large EPAct tax deductions. To achieve the airport HVAC tax deduction, the building must be modeled in IRS-approved modeling software.

LEED Airport Buildings

Many new and expanding airport facilities are achieving the coveted LEED certification. Since LEED buildings have already been modeled, the new lower wattages from LEDs lighting upgrades should be inserted into the existing EPAct tax model to see if multiple tax deductions are available. Table 2 presents the LED lighting, HVAC and building envelope deductions typically available for some selected airport LEED facilities.

Table 2. LEED Airport LED Lighting Tax Deduction Opportunities

Facility	LED Rating	Square Footage	Lighting		HVAC Max. Deduction	Building Envelope Max. Deduction	Total
			Min. Deduction	Max. Deduction			
Terminal A, Logan International Airport (Boston, MA)	Certified	646,000	$193,800	$387,600	$387,600	$387,600	$1,162,800
Northwest Florida Beaches Int'l Airport (Panama City Beach, FL)	Registered	105,000	$31,500	$63,000	$63,000	$63,000	$189,000
New Indianapolis Int'l Airport & Control Tower (Indianapolis, IN)	Certified	1,200,000	$360,000	$720,000	$720,000	$720,000	$2,160,000
Port of Portland Headquarters, Portland Int'l Airport (Portland, OR)	Gold	205,500	$61,650	$123,300	$123,300	$123,300	$369,900
Terminal 2, Oakland International Airport (Oakland, CA)	Certified	233,000	$69,900	$139,800	$139,800	$139,800	$419,400
Hangar 25, Bob Hope Airport (Burbank, CA)	Platinum	70,000	$21,000	$42,000	$42,000	$42,000	$126,000
Rental Car Facility, Seattle-Tacoma Airport (Seattle, WA)	Registered	2,100,000	$360,000	$720,000	$720,000	$720,000	$2,160,000
Warehouses, Dallas Fort Worth Int'l Airport (Irving, TX)	Certified	316,500	$94,950	$189,900	$189,900	$189,900	$569,700
Koll Airport Professional Center, John Wayne Airport (Santa Ana, CA)	Silver	40,000	$12,000	$24,000	$24,000	$24,000	$72,000
San Jose Airport Terminal B (San Jose, CA)	Silver	380,000	$114,000	$228,000	$228,000	$228,000	$684,000

Conclusion

Energy-efficient airports benefit all Americans. LED interior lighting technology and EPAct square footage tax deductions fit perfectly with large airport facility complexes. Airport business managers and lighting designers should be sure to act on all of their interior LED lighting projects before the EPAct statute expiration on December 31, 2013.

Endnotes

1 Energy Policy Act of 2005 (P.L. 109-58).

2 Michael Winegard, *Efficient LEDs Take off at Airports*, National Parking Association's: PARKING, Nov. 2009, at 28.

3 Charles Goulding, Jacob Goldman, D. Malcom Thomas, *Multiple Lighting Technologies Drive Large EPAct Tax Deductions for Parking Garages*, The Parking Prof., Aug. 2010, at 22-24.

4 *Id.*

5 "LED Application Project Brief: Logan International Airport | BetaLED," *LED Lights: Flood, Interior, Streetlights, Parking, Canopy, Security, LEDway, Essential | BetaLED*, Nov. 11, 2010, available online at *http://www.betaled.com/us-en/LEDApplications/Airports/Logan-International-Airport.aspx*.

6 *Id.*

7 *Using Light-Emitting Diodes: Measuring Light Source Life*, U.S. Department of Energy, available online at *http://www1.eere.energy.gov/buildings/ssl/life_measuring.html*.

8 Charles Goulding, Jacob Goldman and Joseph Most, *Energy Tax Aspects of Chillers*, Corp. Bus. Tax'n Monthly. Oct. 2010, at 15.

9 Charles Goulding, Jacob Goldman, and Taylor Goulding, *The Tax Aspects of Thermal Storage and Time-of-Day Pricing*, Corp. Bus. Tax'n Monthly, Nov. 2009, at 13.

10 Charles Goulding, Joseph Most and Spencer Marr, *The Energy Tax Aspects of Geothermal Heat Pumps*, Corp. Bus. Tax'n Monthly, Dec. 2010, at 13.