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# Advanced Lighting

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US Industry Study with Forecasts for **2011 & 2016**

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*By 2011, CFLs are expected to replace incandescents as the dominant choice in residential building applications, with LEDs posing a longer term threat to CFLs in this market.*

## US demand to rise 13.6% annually through 2011

US demand for advanced lighting products is forecast to rise nearly 14 percent per year through 2011, reaching \$4.4 billion. Gains will be fueled by consumer desires for more energy efficient lighting, which will boost demand for compact fluorescent lamps (CFLs). By 2011, CFLs are expected to replace incandescents as the dominant choice in residential building applications. Development of improved light emitting diode (LED) technology will create opportunities for these products in lighting applications. Already gaining share in the motor vehicle market, LEDs pose a longer term threat to CFLs in building applications.

## Compact fluorescent lamps, LEDs to lead gains

Compact fluorescent lamps are expected to post the fastest gains through 2011. The US Department of Energy estimates that 30 percent of energy use in businesses and homes is for lighting, causing increased interest in "green" technologies. Consumer awareness of CFLs has exploded since 2005, driven by exposure on television and in print media. This trend is expected to continue, as major retailers such as Wal-Mart aggressively market these products in an effort to boost their own environmental image. Although more expensive than traditional incandescent lamps, compact fluorescents offer superior energy efficiency and longer lifespans. These products will continue to gain



significant media exposure through the efforts of environmental activists, and may even benefit from potential bans on incandescents in a number of states. Manufacturers are addressing environmental concerns about CFLs by designing improved models with reduced mercury content.

LEDs are also expected to see healthy growth. Gains will result from increased penetration in motor vehicle applications such as rear lighting. LEDs are currently used in exterior applications in some models, and their penetration is expected to rise due to their strong performance characteristics and low power usage. High brightness LEDs offer long term potential for penetration into building illumination markets. LEDs offer superior energy efficiency and long

lifespan even in comparison to CFLs. In addition, LEDs may potentially benefit from the fact that CFLs contain mercury, which complicates their disposal.

## Building applications to post strongest advances

Among markets, building applications are expected to post the strongest gains, as CFLs take market share from traditional incandescents. Demand in the motor vehicle market will benefit from the rising use of high intensity discharge lamps in headlamp applications. In addition, rising light vehicle production will boost gains as a matter of course. Signage applications will present opportunities, as LEDs supplant neon in many areas.

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## Sample Text, Table & Chart

### PRODUCTS

#### Motor Vehicles - Demand for LEDs in motor vehicle

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Demand for LEDs in motor vehicle is expected to grow at a rate of 3 percent annually through 2016. This growth is driven by rising per vehicle usage. LEDs will increasingly be used in indicator lights, taillights, and eventually headlamps. In addition, the use of LEDs in license plate illumination will boost gains. However, the overall market will be constrained by slowing heavy truck production.

**SAMPLE TEXT**

The vast majority of sales from the use of LEDs in motor vehicles are derived from indicator lights, center high-mounted stop lamps (CHMSLs), taillights, turn signals, and side markers for trucks and buses. Red and amber LEDs are the most popular type of LED used in motor vehicles, as the higher price of blue and white devices remains somewhat prohibitive. White LEDs are being developed for use in license plate illumination and reverse lights, however, and these products hold significant potential for headlamps in the long term. The motor vehicle market accounted for about one-third of the total LED market in 2006.

The high penetration of LEDs in the motor vehicle market largely derives from their small size, long life, durability and low power consumption. The small size of the devices is a particularly significant advantage because the units take up less room than traditional lamp and reflector assemblies, thus increasing design flexibility. Use of LEDs as CHMSLs and taillights also benefits from their ability to reach full brightness almost instantaneously, which increases safety.

Despite these advantages, LED use in the motor vehicle market will remain somewhat limited by the high cost of the units in comparison to miniature incandescent and halogen lamps. Because of these higher prices, LEDs have achieved greater penetration in less price-sensitive markets such as the motor vehicle aftermarket. The devices also

TABLE IV-1

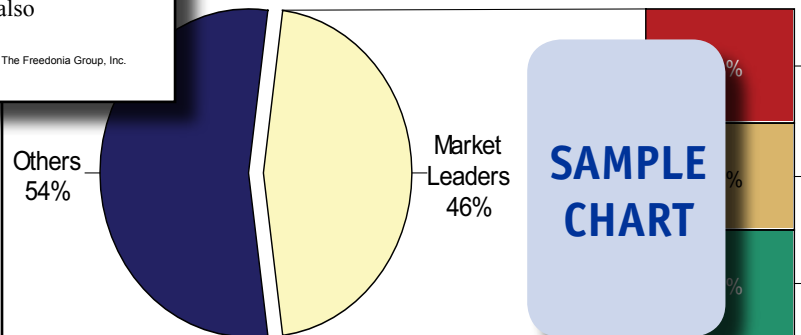
ADVANCED LIGHTING SUPPLY & DEMAND  
 (million dollars)

Item	1996	2001	2006	2011	2016
Gross Domestic Product (bil \$)	78	100	130	160	170
\$ advanced lighting/mil \$ GDP					67
Advanced Lighting Demand					00
LED					00
High Intensity Discharge					90
Specialty Fluorescent					10
Other					00
- net imports					00
Advanced Lighting Shipments	89	124	150	165	170

**SAMPLE TABLE**

TABLE VI-1

ADVANCED LIGHTING MARKET SHARE BY COMPANY, 2006  
 (\$2.3 billion)



**SAMPLE CHART**

## Sample Profile, Table & Forecast

**TABLE V-2**  
**BUILDINGS MARKET FOR ADVANCED LIGHTING**  
 (million dollars)

Item	1996	2001	2006	2011	2016
Building Stock (bil 2000\$)	1				10
\$ advanced lighting/mil \$ stock					09
Advanced Lighting Demand					5
By Sector:					
Residential					0
Nonresidential					5
By Type:					
Specialty Fluorescent					0
Other					5
% buildings					4
Total Advanced Lighting Demand					00



### COMPANY PROFILES

**Cree Incorporated**  
 4600 Silicon Drive  
 Durham, NC 27703  
 919-313-5700  
 http://www.cree.com

Revenues  
 US Revenues  
 Employment

Key Products: High-power packaged light emitting diodes

**SAMPLE PROFILE**

Cree develops and manufactures semiconductor materials and devices based on silicon carbide (SiC), gallium nitride (GaN) and related compounds. It's products include light emitting diodes (LEDs), materials, high-power products and near ultraviolet (UV) lasers.

The Company competes in the advanced lighting industry through the production of LEDs, which accounted for 81 percent, or approximately \$345 million, of Cree's FY 2006 revenues. Cree produces LED chips and high-power packaged LEDs. LED chips from Cree include blue, green and near UV devices made from GaN and related materials grown on SiC substrates. The Company sells these chips to original equipment manufacturers (OEMs) that use them in mobile products, video screens, digital cameras, traffic signals, gaming displays and automotive backlighting, among other applications. Specific products encompass EZBRIGHT, XBRIGHT, XTHIN, XR230, XB900 and XB500 high-brightness LED chips in blue, green and near UV wavelengths; and SUPERBRIGHT, MEGABRIGHT, UT230, RAZERTHIN and ULTRABRIGHT mid-brightness LED chips, which offer less than 20 milliwatts of brightness.

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"Residential demand for advanced lighting products is forecast to rise nearly 30 percent per year through 2011 to \$1.3 billion. Advances will result from the growing use of compact fluorescent lamps. In addition, design trends toward greater use of lighting fixtures and, as a result, lamps per residence will boost gains. However, demand will be limited by slowing in ..."

--Section V, pg. 117



**OTHER STUDIES**

**Lamps**

US demand for lamps will grow 5% annually through 2011. Growth will be driven in part by a shift toward more expensive, energy-efficient lamps such as compact fluorescents (CFLs). Fluorescent lamps will enjoy the largest gains while incandescents will remain a key component of lamp demand going forward. This study analyzes the \$5.4 billion US lamps industry, with forecasts for 2011 and 2016 by product and market. It also considers market environment factors, details market share and profiles major players.

#2265 ..... 11/2007..... \$4500

**Circuit Breakers & Fuses**

US circuit breaker and fuse demand will grow 3.7% per year through 2011, supported by stronger outlooks for construction of nonresidential buildings and electric utilities. Circuit breakers will outpace fuses, led by strong growth in power circuit breakers. High-power fuses will pace the fuse segment. This study analyzes the \$3 billion US circuit breaker and fuse industry, with forecasts for 2011 and 2016 by product and market. It also evaluates company market share and profiles leading industry competitors.

#2252 ..... 10/2007..... \$4400

**World Power Tools**

Global demand for power tools will grow 4.1% annually through 2011. The developing countries of Asia, especially China, will see the fastest growth based on rising incomes and advances in residential and nonresidential building construction activity. Cordless electric tools will continue to lead gains. This study analyzes the \$23.4 billion global power tool industry, with forecasts for 2011 and 2016 by product, market, world region and for 25 countries. It also evaluates company market share and profiles major producers.

#2212 ..... 08/2007..... \$5400

**World Lighting Fixtures**

Global lighting fixture demand will grow 5.1% yearly through 2010 based in part on a shift toward higher-end types (e.g., electronic ballasts, HID lighting, LEDs, fiber optics). Fastest gains will occur in developing areas, particularly China and India. Remodeling and retrofit activities will drive growth in developed markets. This study analyzes the \$71.5 billion world lighting fixture industry to 2010 and 2015 by product, market, world region and 22 countries. It also details market share and profiles major players.

#2145 ..... 12/2006..... \$5400

**Solar Energy Products**

US demand for photovoltaic modules will more than triple by 2010, driven by innovations, economies of scale and government subsidies. Crystalline silicon cells will remain dominant while thin films will post stronger growth. Thin films use little or no silicon and can integrate photovoltaics within roofing shingles and other building materials. This study forecasts US solar energy product demand to 2010 and 2015 by product, market and region. It also evaluates market share and profiles major producers.

#2126 ..... 12/2006..... \$4300

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