

# EnergyWatch



November 2015

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*Winning can be defined as the science of being totally prepared...George Allen*

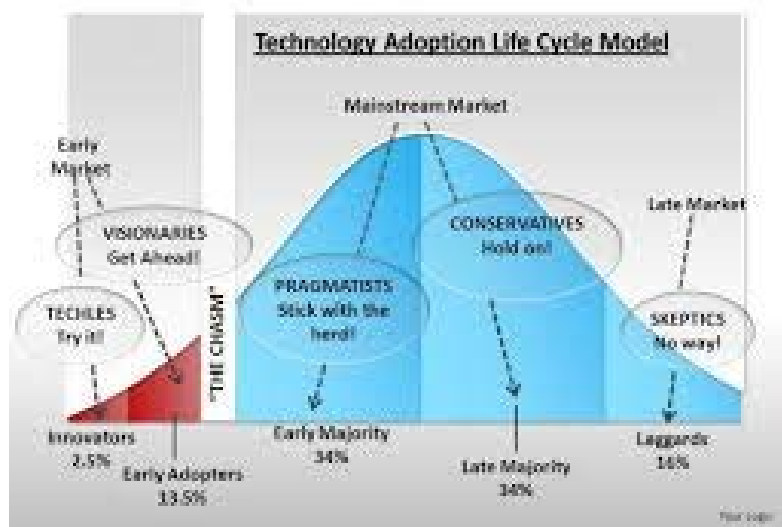
*If I cheated on my roadwork in the dark of the early morning hours...  
I get found out now under the bright lights of fight night. Joe Frazier*

*The fight is won or lost far away from witnesses...but behind the lines, in the gym, and out there on  
the road...long before I dance under the lights. Muhammad Ali*

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*Something to Think About...*

## Technology Adoption Life Cycle Chasm, Part Two Crossing The Chasm



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Ok, where are we? From my last blog: Consumer acceptance, growth and business success can only happen when we cross the CHASM into the mainstream majority markets of 65-70%. If that does not happen, you have nothing. Now I'm not talking about the CHASM between the early market and the laggards. That's not a chasm, that's a thermodynamic black hole. I have high school buddies that have a flip phone for emergency use ONLY! Try telling them that only 10% of a phone is now used as a phone...

### **Early Majority: The Pragmatists**

1. Accepted leaders of the late majority who only follow when the early majority buy-in
2. The Pragmatists are not pioneers, they want the early market players "to debug" the high-tech product
3. They look to make incremental, measurable, predictable progress
4. They manage risk very closely.....receptive to case studies / testimonials to determine how others have fared
5. Increased productivity drives their decisions but natural prudence and budget restrictions keep them cautious
6. They are hard to win over but are very loyal once won
7. New entrants have a hard time selling to Pragmatists because they communicate vertically (B2), references and relationships are very important, want to buy from established businesses
8. Good news for new entrants is once they earn their way, Pragmatists tend to be very loyal and even go out of their way to help start-ups succeed
9. A few driving forces when Pragmatists continue to buy: standardization, quality of the product, infrastructure of support, systems interface, reliability of the service, value-added resellers (VAR) – tend to depend on existing distribution relationships as a single point of control
10. Must be convinced that once they make the decision to buy-in, it's for the long haul
11. They love and encourage competition to keep costs down, provide alternatives, purge the market, establish proven market leaders

We have crossed the CHASM. Here's how I know:

- in 2011 LED lamps were 5% of the lamp market; in 2014 it jumped to 30.7%
- in 2011 LED Outdoor fixtures were 26% of the fixture marketing
- in 2014 it jumped to 54%; in 2011 LED Indoor fixtures was 9% ; in 2014 it was 35%

Lamp sales by major category have been posted on the last page (Monthly Special Feature) of the September monthly summary: (The dollar totals are wrong and will be corrected).

<http://energywatchnews.com/wp-content/uploads/2015/08/EnergyWatchMonthly-Postings-September15.pdf>

A complete breakdown in LED lamps and fixtures sales will be posted in the October monthly summary.... Stay tuned.

As I previously stated, understanding the mainstream market is complex and requires real marketing acumen. The Smart Lighting Industry has many expert players in this field and it is working. The early majority is buying-in in great numbers and my prognostication is that the majority (over 50%) of all lighting in all categories will be SSL by the end of next year. That means we are moving through the Total Adoption Life Cycle rapidly and we are reaching the late majority as we speak.



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## Late Majority: The Conservatives

1. Conservatives are a hard sell because they just do not like discontinuous innovation. Once they find something that works for them, they want to stick to it. High-tech products cause them angst
2. They want to stay on par with the rest of the world but tend to get stung by the new technologies: unfortunately they have a hard time understanding how high-tech products work and the result is they do not work for them, at least initially
3. They like to wait until sheer volume of sales encourages discounted prices
4. Comfort level is most important to Conservatives.
5. After-purchase service is extremely critical to encourage continuing loyalty even if they are unwilling to pay for this service
6. They rely, even depend, on strong distribution channels to provide a “product systems solution” to help them upgrade to something too daunting to handle by themselves
7. Conservatives greatly extend the market for high-tech products that are no longer state-of-the-art
8. You know you are in the MATURE stage of a product life cycle when the Conservatives buy-in in great numbers

The LED Outdoor Lighting Fixture market is already here. Just look around the world and see the many cities that are upgrading their street lighting to LED; more and more Sports Arenas; bridges, roadways, landscape, security, exterior floodlighting, on and on, all going LED. Could grow to 80% by end of next year. The Laggards and my high school buddies will be the only ones left standing. Conservatives are very cautious, and as we see, don't like change very much but as prices continue to be cost competitive, they will join the parade and be very happy they did. This is where I come down on my debate with Chicken Little Chris Brown. Disintermediation will never happen. If we agree on the thinking and buying habits of both mainstream majority markets (70% in total), manufacturers don't want to serve the late majority directly for sure and the early majority poses too many needs they are just not equipped to serve. As Governor Christie would say: FUGGEDDABOUDIT! Manufacturers should focus on the innovators and early adopters to continue to innovate and make the most advanced high-tech products possible. FORTUITY is being in the right place at the right time and the established distribution channels are in the best position to continue to serve the mainstream markets for lighting and it is too important a product category to abandon it. Don't just sit there, make something happen...

## LED Energy Watch...

1. *Philips' Lumileds Sale in Doubt on U.S. Security Concerns* - Royal Philips NV's planned \$2.8 billion sale of a lighting business to Chinese-led investors has come under scrutiny by a U.S. government committee charged with vetting foreign acquisitions to protect national security. Whether the disposal of the Lumileds unit, which makes LED components and automotive lights, goes through is “uncertain” after “unforeseen concerns” were raised by the Committee on Foreign Investment in the United States. The delay in the sale is a blow to Philips as they target to split its lighting and health care businesses in the first half of next year. GO Scale and Philips are working on a solution to address the concerns and still expect to gain approval from the regulatory authority <http://www.bloomberg.com>



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2. **LEducation Announces NEW Date and NEW Venue for 10th Anniversary Event** - Due to overwhelming response and to accommodate more exhibitors and overall general attendance, LEducation 10 will take place on Tuesday and Wednesday, March 29th – 30th, 2016 in New York City at a new event location – The NY Hilton at Midtown (just next door to the Sheraton location from the past 2 years). Reminder: Speaker Submissions are still open until Nov. 15<sup>th</sup>!  
<http://www.leducation.org/>
3. **Lighting the Future: Office Design by Jeff Gavin** - The office of tomorrow is an energy-efficient space designed for employee health and productivity, and today's office is looking more like its future self every day. Lighting plays a key role. As an electrical contractor, if you remake your office to fit the needs of tomorrow, you can be an adviser that comes from a place of personal experience. Skillfully employing natural and artificial lighting can promote employee happiness and productivity. <http://www.ecmag.com/section/lighting-future-office-design>
4. **2015 Lighting for Tomorrow Awards Announced** - *Lighting for Tomorrow* is a competition that challenges manufacturers to develop residential lighting products that successfully incorporate advances in both design and energy efficiency. Awards were presented at the American Lighting Association Annual Conference in Huntington Beach, CA, on October 3rd. The award winning products are showcased in a brochure that highlights the 2015 LED, OLED, and lighting control award recipients. In addition, these products and companies will be featured in videos, publications and trade show exhibits throughout the coming year. <http://lightingfortomorrow.com/media/>
5. **Zhaga Publishes Book 11 for 35-Mm Spotlight LED Modules** - The Zhaga Consortium has announced publication of Book 11 covering 35-mm-diameter LED modules intended for applications such as spotlights and similar luminaires. Book 11 becomes a part of a set of related specifications for round modules with Book 3 describing 50-mm modules and Book 10 describing 75-mm modules. While Book 11, 3, and 10 all define a fixed mechanical size for LED modules, the Books also offer options in terms of the size of the light-emitting surface (LES) or source size characterized by category. Book 11 includes LES 6.3 (4.5 to 6.3 mm), LES 9 (6.3 to 9 mm), and LES 13.5 (9 to 13.5 mm). <http://www.zhagastandard.org/news/174/zhaga-publishes-book-11-specification-for-small-led-spotlight-modules>
6. **Lighting Science Group: Five Health Benefiting Lighting Applications** - Healthy lighting ... it's not just for your home. In fact, it's not just for the planet earth! Or humans, for that matter. Here are five innovative biological correct lighting applications currently helping humans:
  - 1) **NASA International Space Station** - Astronauts function optimally in a normal 24-hour solar light cycle. A LED system aligns with the astronauts' natural timekeepers — circadian rhythms. Even in the depths of pitch-black space, astronauts get the right balance of daytime and nighttime.
  - 2) **Hospital** - Innovative LED natural lighting system, patients experience less anxiety, improved balance, and fewer feelings of uncertainty leading to quicker recoveries.
  - 3) **School** - it can stimulate improved academic performance and student behavior.
  - 4) **Hotel/Spa** - LEDs actually help the human brain produce melatonin, the natural chemical that boosts energy and alertness.
  - 5) **Coastal Lighting** - Sea turtle hatchlings are less confused these days thanks to LEDs. No more tracking artificial light to who knows where. <http://www.ledinside.com>



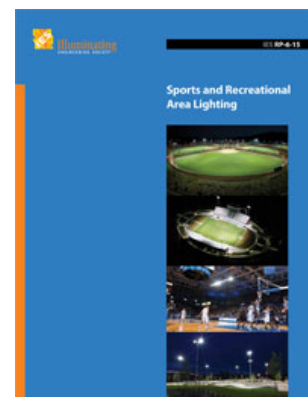
7. ***GE Lighting Disappears in Radical Restructure by Mark Halper*** - How do you make a viable business out of selling price-wracked LED lighting? If you're a big industrial conglomerate like General Electric Co., you basically stop treating the bulbs as a sales and profit item, and instead consider them as a tool and a cost in a radically reshaped model that relies on selling a wide range of industrial and commercial services. That is the take-away message from the \$148.6 billion industrial giant's most recent reorganization of its lighting business in which it moved commercial and industrial LEDs into a broad new \$1 billion “startup” energy services business called Current. Less well-known in the shift: GE also quietly rubbed out its venerable GE Lighting escutcheon, and rebranded it as the Consumer and Conventional Lighting segment, including incandescent and fluorescent lighting as well as residential LEDs. Some observers expect GE to eventually sell that group, which meanwhile will continue to emphasize the sales of bulbs rather than fully embracing the newfangled service ethos of Current. <http://luxreview.com>
  
8. ***G.E. to Spin Off New Energy Technologies in One Company*** - General Electric, which has been moving to shed a number of divisions and return to its roots as an industrial behemoth, is creating a company to house developing energy businesses. The company, to be called Current, will focus on providing products and services in energy efficiency, renewable generation and storage to large customers like hospitals, universities, retail stores and cities. The move is part of the company’s bid to take advantage of seismic shifts in the energy business as customers seek to save money by better controlling energy use and even by making their own power. In recent years, the company has been “quietly incubating” several components of the new business, she said, including solar power, energy storage systems, electric vehicle charging equipment, intelligent LED lighting and software to manage it all. It will spin it off to allow it to develop more quickly. Current will start with \$1 billion in revenue and expects to become a \$5 billion business by 2020. <http://www.nytimes.com> Current will be based in the Boston area and be led by the President and CEO of GE Lighting in Cleveland, Maryrose Sylvester. <http://currentbyge.com/>
  
9. ***GE Announces Predix Cloud™ Service for Industrial Data and Analytics*** - This platform-as-a-service (PaaS) will capture and analyze the unique volume, velocity and variety of machine data within a highly secure, industrial-strength cloud environment. It’s simple: Cutting-edge information technology for leading edge operational technology. Predix provides the technical foundation to power industrial apps that drive outcomes ranging from the reductions of unplanned downtime to improved asset output and operational efficiency. Predix is the foundation for all of GE’s Industrial Internet applications, providing powerful, consistent, secure, and scalable support for the solutions you rely on to optimize your business. Predix Cloud will enable operators to use machine data faster and more efficiently, saving billions of dollars annually. <https://www.ge.com/digital/predix>
  
10. ***GE Lighting and ShotSpotter Announce MOU to Bring Gunshot Detection to Luminaires*** - SST, Inc., developer of the ShotSpotter™ crime detection and location suite, lays ground to embedding sophisticated ShotSpotter technology into GE’s intelligent LED street lights, which features software and sensor-enabled LED lighting powered by Predix™ Through its proprietary acoustic sensors and enterprise-grade software, ShotSpotter detects and locates gunfire in real time. Alerts are then broadcast to 911 dispatch centers, patrol cars and even smart phones, with the precise location, number of rounds fired, multiple or single shooters, and other valuable situational intelligence. These alerts enable first responders to get on scene quickly and safely in order to aid victims, collect evidence and quickly apprehend offenders. <http://lightingcontrolsassociation.org/>



- 11. GE New Lights Will Change Color to Match Time of Day** - The bulb is called C Sleep, and it's one of two new connected light bulbs that GE is introducing today. C Sleep will automatically shift color temperature throughout the day to better match the color of light that the sun is emitting. It has three settings: a bright blue to wake you up in the morning, a standard orange tone for midday, and a softer yellow color for the evening. GE's hope is that by better matching your indoor lighting to the actual lighting outdoors, your body will have an easier time waking up, staying away, and then falling asleep on time. <http://www.theverge.com/2015/10/29/9634368/c-by-ge-lights-smart-bulb>
- 12. Osram Builds USA SSL Factory** - Osram Sylvania has announced expansion of its Hillsboro, NH manufacturing facility and plans for making LED modules in the plant that are targeted at automotive solid-state lighting (SSL) applications. The Osram Sylvania manufacturing announcement is unique in that it brings a manufacturing operation to the US. The SSL modules assembled at the facility generally will use surface-mount device (SMD) LEDs and require precision manufacturing equipment and other resources that required a significant investment by Osram. Osram sees the expanded capabilities in the US as an avenue to work closely with all of the US-based automakers on new exterior lighting designs. <http://www.ledsmagazine.com>
- 13. Osram to Close Pennsylvania Plant in 2016** - Due to a fundamentally changing market that is moving from a traditional lighting business towards one focused on energy-saving LED lighting products, OSRAM worldwide has been implementing steps to position themselves for future growth. As a result, OSRAM SYLVANIA has announced the company will discontinue operations at the Wellsboro, Pennsylvania manufacturing facility, effective September 2016. Approximately 114 employees will be impacted. The closure of the plant is part of OSRAM's previously announced global realignment toward solid state lighting (SSL). <http://www.tedmag.com>
- 18. New Report Explores the Internet of Things Technology & Application Market** - that was worth \$1029.5 billion in 2013, and is expected to reach \$1423.09 billion by 2020. Internet of Things concept has gone beyond machine-to-machine (M2M) communication. IoT has already revolutionized the consumer application industry. Various other IoT applications trends such as connected cars, wearable electronics are also evolving and will further drive opportunities for many industry players across the large, complex IoT ecosystem. Building automation comprises of smart HVAC control, lighting control, security and access control, and other IoT enabled products. Consumer application segment covers various consumer electronic devices such as tablets, smartphones, smart TVs, and others. <http://www.marketsandmarkets.com/pdfdownload.asp?id=258239167>
- 19. New Services and Applications Will Drive Networked LED Street Lights** - The Illuminating Engineering Society (IES) Street and Area Lighting Conference (SALC) took place recently in Savannah, GA and networked LED street lights were once again a hot topic throughout the conference. Still, the motivation for solid-state lighting (SSL)-based network deployment is evolving and changing. In past years, networks have been described as necessary to realize maximum energy savings through aggressive use of dimming. In 2015, however, the value of networks to maintenance and to new services such as safety and security has surpassed the perceived value in incremental energy efficiency. Utility Georgia Power has installed around 500,000 networked LED street lights over the past four years and discussed a number of applications for the networks that have nothing to do with energy efficiency. <http://www.ledsmagazine.com>



**20. IES Releases Sports and Recreational Area Lighting** - The purpose of *IES RP-6-15 Sports and Recreational Area Lighting* is to provide the reader with recommendations to aid in the design of sports lighting systems. Popular sports, such as baseball, tennis, basketball and football as well as recreational social activities, such as horseshoe pitching and croquet are covered. Venues for spectators of amateur, collegiate, and professional sports are complex facilities that should provide not only for the spectators, but also the equipment used in modern sports broadcasting. This document does not address those needs, so the reader should look for guidance from the sports league or the project consultant. <http://www.ies.org/store/product/sports-and-recreational-area-lighting-6368.cfm>



**21. Discover the Automotive LED Lighting Market in America** - that is poised to grow at a CAGR 25.26% by 2019. A lighting system provides vehicle safety and road illumination. It can also display information about the vehicle's presence, position, speed, size, and direction to oncoming vehicles. The Report "Automotive LED Lighting Market in the America 2015-2019" includes growth prospects along with market landscape in upcoming years. The report also covers discussion on the key vendors operating in the Automotive LED Lighting Market in the America Space. An in-depth supply chain analysis in the report will give readers a better understanding of this market. <http://www.pmarketweb.com/automotive-led-lighting-market-in-the-americas-2015-2019/#tabs-2124-0-2>

**22. United States Obstruction Lighting Industry Report 2015** - The obstruction lighting market is driven by a number of key factors, including stringent air safety norms and expanding base of tall buildings worldwide. It is expected to remain buoyant over the coming years, supported by the growing need for aircraft warning lights against a backdrop of rise in construction of tall structures such as skyscrapers, telecom towers, refineries, and a growing number of wind turbines and wind farms across the world. The report focuses on United States major leading industry players providing information such as company profiles, product picture and specification, capacity, production, price, cost, revenue and contact information. Technological advancements in lighting, most notably LEDs, have opened new growth opportunities for the industry. <https://www.whatech.com>

**23. DOE Announces Funding Opportunity for SSL R&D** - Under this funding opportunity (DE-FOA-0001364, "Solid-State Lighting Advanced Technology R&D—2016"), a total of up to \$10.5 million in funding is directed toward all three existing DOE SSL R&D program areas:

- *Core Technology Research*—the application of fundamental scientific concepts to SSL technology
- *Product Development*—using the knowledge gained from basic or applied research to develop or improve commercially viable SSL materials, devices, or systems
- *U.S. Manufacturing*—accelerating SSL technology adoption through manufacturing innovations and improvements that reduce costs and enhance quality and consistency

DOE will select up to 10 projects. Concept papers are due by November 20, 2015, and full applications are due by January 20, 2016. Visit <https://eere-exchange.energy.gov/>

**24. 2016 DOE SSL R&D Workshop** - We are in the midst of a sea change in lighting, one that will reshape the lighting industry as we know it. Rapid advances make it easy to forget that SSL technology is still at a relatively early stage of development, and much of its potential remains untapped. Join DOE at the 13th annual SSL R&D Workshop in Raleigh, NC February 2-4, 2016 for



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three packed days of lively discussions and nonstop networking. Top experts and thought leaders from universities, labs, and companies large and small will converge to share the latest on SSL advances, examine market forces that are shaping SSL technology, and explore how the technology is defining new market opportunities. <http://energy.gov/eere/ssl/2016-ssl-rd-workshop>

## Global LED EnergyWatch... (new feature)

**25. Chinese LED Industry in Deep Waters, Only a Handful of LED Manufacturers to Remain** - With the LED industry entering a mature phase, painful situations have become unavoidable. Price wars are escalating, product quality issues are increasing instead of diminishing, and growing numbers of mergers and acquisitions are intensifying industry restructure. In September these “negative energy” incidents are expected to reach the explosive limit. To escape the brewing crisis in the LED industry, manufacturers are searching for a chance of survival. <http://www.ledinside.com>

**26. EU Drives Take-Up of LED Streetlights Through EPC** - The EU-backed Streetlight-EPC initiative aims to stimulate use of energy performance contracting (EPC) to drive take-up of energy-efficient streetlighting refurbishment. The project hopes to get 36 EPC projects up and running in nine regions across the EU, triggering investments worth €49 million. In Europe, there are more than 56 million streetlighting luminaires in operation, with an estimated electricity consumption of 35 TWh. For municipalities with older, inefficient systems, streetlighting can account for 30-50% of their total electricity consumption. The recent market introduction of LED technology for streetlighting offers high savings with comparatively short payback times. The nine regions in the scheme are Austria, Croatia, Czech Republic, Poland, Ireland, Sweden, Slovenia, Macedonia and Spain. <http://www.luxreview.com/article/2015/09/eu-drives-take-up-of-energy-efficient-streetlights-through-epc>

**27. Dutch Soccer Champs Turn on LED Sports Lighting** - The reigning champions of the Dutch professional soccer league have become the latest major sports team to start playing under LED floodlights. The Philips ArenaVision LED lights at Philips Stadium are the first in Holland's top soccer division to use LEDs to light the playing field. The new LED sports lighting will also improve visibility for spectators and support super slow-motion replays and high-definition television, better than the HIDs — which Philips had also provided. Other benefits: LED stadium lights offer stadium operators “instant on,” rather than having to warm up to full brightness; and they can be programmed to provide light shows that could flash in selected colors when a team scores or goal, or provide a matching mood for an entertainment show. <http://www.ledsmagazine.com>



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**28. CIE Position Statement on CRI and Colour Quality Metrics** - The Colour Rendering Index (CRI), defined by CIE Publication 13.3, is widely used for assessing the colour rendering characteristics of light sources. It was first published in 1965 after fluorescent lamps had emerged, and was last improved in 1974. However, with the rapid uptake of LED lighting, which has greater freedom in spectral design, the need to update the CRI has significantly increased. For some types of light sources, the CIE General Colour Rendering Index,  $R_a$ , does not agree well with overall perceived colour rendering. The CIE investigated the problem and found that the disagreement tends to be significant for LED light sources that contain narrow-band spectral components and concluded that improvements of the CRI are now needed (CIE Publication 177:2007). There are two different technical issues behind the problems of the CRI that have been highlighted by the current situation. Details are at: [http://www.cie.co.at/index.php/index.php?i\\_ca\\_id=981](http://www.cie.co.at/index.php/index.php?i_ca_id=981)

**29. The European Commission (EC) Upholds Decision to Ban Mains-Voltage Directional Halogens in September 2016** - As part of the review of the lighting directive EC 1194/2012, four criteria needed to be assessed before a phase-out could be confirmed. Issues of affordability were under scrutiny, as well performance, equivalence to existing models and compatibility. The EU has confirmed that there is no reason to delay the ban on mains voltage directional halogen lamps, as all these areas have been sufficiently met. Market forces will begin to take over in Europe and LEDs will win through when all halogens are eventually banned. <http://www.luxreview.com/article/2015/10/ec-upholds-decision-to-ban-mains-voltage-directional-halogen>

**30. Renault's Coupe Corbusier Concept Is a Four-Wheeled Homage to 1930s French Cars** - Its design is intended to be a modern-day interpretation of the luxurious French cars that roamed the streets of big European cities during the 1930s. The coupe consequently boasts an exceptionally long hood, an ultra-low roof line and a sporty, fastback-like silhouette. Its front end is accented by thin LED headlights and a hexagonal grille with metal inserts, while the back end gets minimalist LED tail lamps. Renault stresses that the Coupé Corbusier concept is merely a one-off model built to show what its designers like to do in their spare time. It won't be given the green light for production, and it's highly unlikely to influence the firm's upcoming products. <http://www.digitaltrends.com/cars/renault-coupe-corbusier-concept-news-pictures-specs/#/3/>



**31. Four Features of M&A in the Chinese LED Industry in 2015** - Mergers and acquisitions (M&A) are occurring at a rapid pace in the LED industry. Based on incomplete statistics compiled by LEDinside editorial team in China, more than 37 mergers have occurred in the LED industry during first half of 2015, averaging three acquisitions per month. Acquisitions in the industry are maturing, and new M&A trends have emerged. Statistics compiled show the industry's M&As involve the entire supply chain from upstream material and chip makers all way to downstream end product manufacturers. Broken down into supply chain sectors, there have been seven LED chip and sapphire acquisitions, 11 LED package mergers, and 19 LED display and lighting M&As in 2015. Downstream manufacturers comprised the largest group of mergers, amounting to 51.35% of M&As. <http://www.ledinside.com/news/2015/10/four-features-of-mas-in-the-chinese-led-industry-in-2015>



**32. Butterfly Sanctuary Spreads Its Wings With LED Lighting** - Europe's largest butterfly sanctuary can now rival the colour spectacle of its insects after receiving an LED makeover by Philips. The Tropical Butterfly Garden and Insect Museum of Konya in Turkey has installed a computer-controlled LED lighting system that allows it to glow in a host of different colours. The park's main building – constructed in the shape of a butterfly – has now become a prominent feature on the city's night skyline. The



museum is home to more than 6,000 different butterfly species and 20,000 tropical plants, and features the largest indoor butterfly flight area beneath its wing-shaped dome.

<http://luxreview.com/article/2015/10/butterfly-sanctuary-spreads-its-wings-with-led-lighting>

**33. China IoT Service Revenues to Grow Faster Than Any Other Major Country** - China's Internet of Things (IoT) services revenues will grow more than five times in the next five years, exceeding US\$41 billion by 2020. This is the fastest revenue growth rate of any country, according to ABI Research. Besides smart meters, other major segments driving the China IoT market will be home security and automation, OEM telematics, video surveillance, home appliances, aftermarket telematics and home monitoring. Home monitoring is expected to become an important market in China as it attempts to care for its aging population, which will reach nearly 340 million people in 2020 for citizens age 55 and older. <http://www.digitimes.com/news/a20151023PR200.html>

**34. Toshiba Plans to Exit Packaged LED Business as Part of Semiconductor Business Restructuring** - Toshiba Corporation has announced a major restructuring of its semiconductor operation including both the LSI (digital IC) and discrete component sectors. The discrete sector includes the white packaged LED business and Toshiba said it would exit the LED business by the end of 2015. The announcement made no mention of any sale or transfer of Toshiba's gallium-nitride-on-silicon (GaN-on-Si) packaged LED technology developments that have been approaching the performance of sapphire-based LEDs and that presumably could have delivered packaged LED cost reductions. About 33% of Toshiba share values have been wiped out since the start of 2015, according to data compiled by SysJust. <http://www.ledsmagazine.com>

**35. Oxford University's Museum of Natural History – In a Whole New Light** - The University of Oxford's Museum of Natural History is housed in a beautiful 150-year-old neo-gothic building. The lighting team had to get creative to light it without making changes to the listed structure, and have succeeded in transforming the museum into a sought-after evening events venue. Lux chats with the university's Robert Gregg and Richard Francis of Monard Electrical Contractors, to hear how the Lux Award-nominated scheme was achieved. <http://luxreview.com/article/2014/11/oxford-university-s-museum-of-natural-history-in-a-whole-new-light> <http://youtu.be/T2eKwrNgIpg>



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## LED Technology Watch...



**36. Smart Bulbs™ Computer Chip Contains a Unique Circuitry Called Soft Start©** - Smart Electric <http://smartelectric.com> was founded by two executives of a legacy lighting brand, Stan and John Angelo. In the future, Smart Electric plans on introducing its "Smart Technology" into other bulb types, including LED's, compact fluorescent lamps and Smart Lighting Fixtures. Tough coated and shatter resistant, Smart Bulbs can be used in any standard base socket. The current product line features microchip technology in each bulb's base and is available in seven (7) different Smart Bulbs <http://www.buysmartbulb.com> Watch the videos:

- 1) **Full Product Portfolio Loop Video:** <https://www.hightail.com/download/bXBaSmIrK3grV3dpR01UQw>
- 2) **4-Level Dimmer:** <https://www.hightail.com/download/bXBaSmIrK3htUUdLRmNUQw>
- 3) **Auto-Off's:** <https://www.hightail.com/download/bXBaSmIrK3hxRTFqQTIVag>
- 4) **Emergency Flashers:** <https://www.hightail.com/download/bXBaSmIrK3g5bEM5TE1UQw>
- 5) **Good Night Dimmer:** <https://www.hightail.com/download/bXBaSmIrK3hlcEkwTWNUQw>  
**Security Timers:** <https://www.hightail.com/download/bXBaSmIrK3hqY3B2Zk1UQw>

**37. Universal's EVERLINE® Family Expands with Flexibility of DALI Digital Dimming LED Drivers**

The DALI LED Drivers are dimmable to 1% and are available in 30W and 55W linear options from 700mA to 1500mA. The DALI ballasts cover a full line of CFL, T5, T5HO and T8 lamp applications. Now, universal input voltage DALI digital LED drivers will offer the convenience of architectural digital control with the energy efficiency of LED technology. The EVERLINE DALI Drivers are RoHS compliant and UL listed, and come complete with a five-year warranty. For more information, visit [www.unvlt.com](http://www.unvlt.com)

**38. Wesco and Philips Travel Cross-Country in New Lighting Lab on Wheels**

-The WESCO-Philips Truck is an interactive learning lab designed to engage customers about the importance of evaluating their lighting. This mobile application center demonstrates how lighting supports Performance, Safety, Employee Well-Being by using Sustainable, Innovative and Cost-Effective products and solutions. Check out the schedule to see when the WESCO-Philips truck will be in a city near you! Following the tour, visitors can schedule on-site assessments and demonstrations to evaluate lighting options in a real-world setting. <http://www.wesco.com/lighting/wesco-philips-truck.htm>



**39. Lamar R1L/R2L Series LED Lights**

- The R1L/R2L is a versatile volumetric LED troffer that offers even illumination without dark areas common with traditional troffers. Offering the look of contemporary fluorescent lighting with the efficiency and low maintenance of LED technology. With a depth of under 3" it's the ideal choice for use in offices, hospitals and schools. Available in 1x4, 2x2 or 2x4 sizes; in multiple lumen outputs and color temperatures with standard CRI greater than 80 and with 90 CRI; with 0-10V dimming; and a rated life of over 50,000 hours.

<http://www.lamarlighting.com/viewitems/led-lighting-1/ed-mount-lighting-lay-in-r1l-r2l-series-led-lights>



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## National Energy Watch...

### 40. *Five Things You Should Know About Commercial Lighting Rebates* <http://www.briteswitch.com>

- 1) **Wait for the green light** - A majority of rebate programs require pre-approval before new materials are purchased and it may take 29 days on average.
- 2) **Not all products are the same** - Rebate programs usually have specific requirements as to what type of products qualify. Equipment that is OK in one location may be ineligible in another one. Popular requirements are DLC, Energy Star, CEE and Lighting Facts.
- 3) **One size does not fit all** - Small business, direct install, custom, prescriptive, upstream, midstream, downstream...there are many different types of incentives for commercial lighting. You have to investigate your options to choose the one that gets you the most money.
- 4) **It can be hard work** - Getting the funds from the organizations isn't always as easy as you think. It can take 5-6 months to complete the rebate process.
- 5) **It can add up to big money** - Rebates and incentives help reduce the initial upfront cost of lighting projects. Typically, they improve the payback time by 20 – 25%.

### 41. *Lighting Systems Index Sees Increases During Second Quarter with Mixed Component Results* -

Demand for lighting equipment, as measured by NEMA's Lighting Systems Shipments Index, increased by 2.2% year-over-year (y/y) and by 0.4% quarter-to-quarter during the second quarter of 2015. The increase was driven by emergency lighting and luminaires, which gained ground on a year-over-year basis, while the ballast and lamp—large and miniature—components offset these gains with year-over-year declines. [www.NEMA.org](http://www.NEMA.org)

### 42. *ELECTRICAL CONTRACTOR's First App Available Now* - ELECTRICAL

CONTRACTOR magazine has launched an app version to supplement the print and online brand offerings already in place. The app is available now in iOS, Android and Kindle versions through the iTunes Store, Google Play and Amazon App Store. It features a page-by-page version of the monthly magazine, a text-only mobile-friendly version, and a hybrid solution. Downloading the app is easy. Simply click the following link for your respective platform, or search for "electrical contractor" on your platform's app marketplace. <http://www.ecmag.com>



43. *Light and Technology in a New Language at LIGHTFAIR® International 2016* - Light, technology and design will converge to reveal new solutions, new knowledge and new discoveries at LIGHTFAIR® International (LFI®) 2016. The world's largest annual architectural and commercial lighting trade show and conference will be staged for the first time in San Diego at the San Diego Convention Center April 24 – 28, 2016 (Pre-Conference LIGHTFAIR Institute®: April 24 – 25; Trade Show & Conference: April 26 – 28). Trade show floor and pavilion areas will be expanded for the 27<sup>th</sup> annual event with new exhibitors present across multiple categories. The trade show will open at 9 a.m. each day, which is one hour earlier on the first and second day than in years past. <http://www.lightfair.com/lightfair/V40/>



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- 44. Acuity Brands, Inc. to Acquire Juno Lighting Group** - Juno Lighting Group, a unit of Schneider Electric, operates manufacturing facilities in Des Plaines, Illinois, and Fishers, Indiana, and generates current annual revenues of approximately \$250 million. The terms of the agreement reflect a cash purchase price totaling approximately \$385 million, which will be financed utilizing Acuity Brands' available cash on hand. The acquisition is subject to regulatory approvals and other customary closing conditions. Management anticipates the acquisition will be completed in late calendar 2015. <http://finance.yahoo.com/news/acuity-brands-inc-acquire-juno-203202546.html>
- 45. Soon, Power Will be Delivered to Your Device by Air** - Nikola Tesla predicted that power will be transmitted by air as well as information, without wires. Wireless power could enable a whole new class of devices. Energous has a patent on an idea of putting a power transmitter into the base of a light bulb, allowing its technology to cover an entire room, and putting out enough power that a device 15 feet away could absorb one watt. They say it will be mass produced by the end of 2016. Peel & stick light switches are already common in design projects. 10/11 WSJ

## City & State EnergyWatch...

- 46. National Grid States Make Top 10 For Energy Efficiency** - The American Council for an Energy-Efficient Economy (ACEEE) released their 2015 State Scorecard yesterday. Once again the three states in which National Grid U.S. operates--Mass., R.I. and N.Y.--all made the top ten for energy efficiency. Massachusetts ranked #1 for the fifth year in a row, with Rhode Island coming in fourth and New York landing ninth. States Top 10 are 1.Massachusetts 2.California 3.Vermont 4.Oregon 4.Rhode Island 6.Connecticut 7.Maryland 8.Washington 9.New York 10.Illinois 10.Minnesota <http://aceee.org/state-policy/scorecard>
- 47. Kingston, NY Approves \$ 2.1M Loan for LED Streetlights Replacement** The city nicknamed as K-Town in Ulster County, New York. The Common Council approved the city's borrowing of \$ 2.1 million to install 2,420 streetlights LED streetlights throughout the city. Early on, the council approved borrowing \$ 105,000 for design and engineering work for the project. Approximately half of the approved funding will be used to pay Perreca Electric Co. of Newburgh, the bid winner of the new LED streetlights installation project. Central Hudson Gas & Electric Corporation will receive an estimated \$ 500,000 for the light fixtures. 10/9 AP
- 48. DOE Publishes Report on Detroit's Street Lighting Conversion** - Entitled *Restoring Detroit's Street Lighting System*, the report provides an objective review of the circumstances surrounding the system restoration, the processes undertaken and decisions made, and the results to date. By mid-2013, the year Detroit declared bankruptcy, it was estimated that as much as half of the city's 88,000 installed HPS units were not in reliable operating condition. In addition to repair and replacement of most of the streetlights, much of the associated wiring and supporting electrical infrastructure also needed replacement, due to its deteriorated condition. The previous number of fixtures, which included alleyways and residential areas where the population has significantly decreased in recent years, was deemed excessive from a budgetary standpoint, so the new system will be limited to approximately 65,000 LED streetlights. <http://energy.gov/eere/ssl/downloads/detroit-street-lighting-report>



**49. Round Rock Smart LED Street Light Pilot Includes Video and Emergency Beacons** - The city of Round Rock, TX, located near Austin, has announced an LED street and area lighting trial that includes networked luminaires, 360° video cameras for security in two locations, and red LED emergency beacon lighting on the roadway poles for emergency signaling. Planled, US-based partner of Gigatera, led the project that also included ESCO Opterra as a participant. The LED street light pilot will allow the city and its citizens to experience outdoor solid-state lighting (SSL) while also providing a test bed for additional emergency and security services enabled by a networked street light infrastructure. <http://www.ledsmagazine.com>



**50. NRG Energy Announces Completion of Energy Technology Project at NRG Park** - NRG Energy, Inc., an electricity generation and distribution company, has announced the completion of an energy technology project at NRG Park, the 350-acre sports and entertainment complex encompassing NRG Stadium and surrounding facilities. The efficient and renewable energy installations include solar panels, mobile phone power stations, electric vehicle charging stations, outdoor roof lighting and energy-efficient LED lights, making NRG Stadium, home of the Houston Texans the first professional sports venue in Texas to draw upon these advanced features. 10/13 MarketLine

**51. Crews Begin Installing Ephesus LED Lighting System at U.S. Bank Stadium** - The Minnesota Vikings signed a \$1.3 million contract with Ephesus to upgrade the lighting. According to Ephesus, they use a computer-generated model and simulator to coordinate alignment of the lighting to ensure that it is balanced to help player performance and improve the fan experience through improved visibility and the prevention of glare. Controls for the LED system would allow for adjustments based on the amount of sunlight entering the stadium, and would allow the changing of the light's color temperature for different events. Football games are usually best enjoyed under lighting with a medium color temperature, basketball games under a warmer color temperature (yellowish white to red), and hockey games a cooler (bluish white). Ephesus, which is based in Syracuse, New York, makes the system in America. <http://www.solidstatelightingdesign.com>

**52. Xcel Energy Wants to Replace 100,000 Minnesota Streetlights With LEDs** - Xcel Energy, the largest electric company in Minnesota, said Thursday that it intends to replace all of its 100,000 streetlights across the state with energy-efficient LEDs -- part of a proposed \$100 million, five-year streetlight upgrade in all eight states it serves. The utility, which supplies street lighting in Minneapolis, St. Paul and about 200 other Minnesota communities, said the cost of LEDs has dropped significantly, which means the extra cost of installing them is offset by lower energy and maintenance costs. Xcel estimated savings of 3.6 percent to 6.6 percent per month, or \$3,000 to \$5,000 per month for a modest-sized city. 10/16 Star Tribune

**53. DOE Publishes GATEWAY Report on Portland, OR's LED Streetlight Conversion from HPS** - The Portland Bureau of Transportation was an early investigator of LED street lighting and one of the first public agencies to join DOE's Municipal Solid-State Street Lighting Consortium, so learning how the city addressed the challenges it encountered can be especially helpful to other cities that are implementing or considering their own lighting transitions. Projected dollar savings from Portland's completed conversion exceed \$2 million per year and are expected to repay the total \$18.5 million investment in the upgraded system within about eight years. Overall Portland's residents are pleased with the results. <http://energy.gov/eere/ssl/downloads/portland-street-lighting-report-august-2015>



- 54. USA Tunnel to Install Sodium Lamps as ‘LEDs Not Ready Yet’** - A spokesperson for the Washington Department of Transportation said the lighting refit of the Mount Baker and Mercer Island tunnels in Seattle would use SON lamps and not LEDs as the latter had not been proven in tunnel conditions. Drivers who regularly use the tunnels have long complained that the contrast between the dark tunnel and the brightness outside often creates a traffic slowdown with people braking as their eyes adjust to the changed light conditions in the tunnels. However, the decision to use the relatively old technology of HPS vs. LED will be seen as controversial in the lighting industry. Earlier this year, the 10.7 kilometre Toven Tunnel in Nordland, Norway, became the world's longest lit entirely by LED lighting. <http://luxreview.com>
- 55. Does Your Replacement Lamp Qualify for California Utility Rebates?** - CLTC is now the lead organization processing LED product report reviews for the upstream Residential Lighting Incentive Programs conducted by PG&E, SCE, and SDG&E. CLTC staff work with the utility Program Managers to identify product that will be considered for review. If manufacturers have products that are likely to meet the CEC Specification, the manufacturer should contact the utility Program Manager to be considered for participation. Program Managers will determine which products CLTC will review, based on program needs. <http://cltc.ucdavis.edu/cqs-evaluation-program>
- 56. California Wants Renewable Energy for Half Its Power by 2030** - Gov. Jerry Brown dramatically increased California's climate-change goals, committing the state to use renewable energy for half its electricity and make existing buildings twice as energy-efficient in just 15 years. Brown tried for an even stronger measure that also would have enforced a 50 percent drop in petroleum use by 2030, but was defeated by oil interests. He called that a short-term setback, and insisted that the world needs to wean itself off fossil fuels as quickly as possible. Few question whether the new goal of 50 percent is achievable by 2030, but critics worry that the complex regulations needed to speed the transition from fossil fuels will add unknown costs for consumers and businesses. 10/08 AP
- 57. California Proposed Lighting Standard Raises the Bar for Energy Efficiency** - The California Energy Commission <http://www.energy.ca.gov/> released a final staff report proposing the first standards for small-diameter directional lamps and light-emitting diodes (LEDs). Directional lamps are often used in commercial track lighting, while LEDs replace screw-based incandescent bulbs and CFL typically found in homes. Prompted by legislation requiring the Energy Commission to adopt standards to reduce energy use of lighting in homes by 50% and businesses by 25% from the 2007 levels by 2018, the proposed standards will save energy and improve the quality of the light bulbs that Californians are buying every day. [http://docketpublic.energy.ca.gov/PublicDocuments/15-AAER-06/TN206384\\_20151016T114321\\_2014\\_Staff\\_Report.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/15-AAER-06/TN206384_20151016T114321_2014_Staff_Report.pdf)
- 58. Murphy Killed Them Again** - Did you know: there's a new Cub tormentor — no, not Steve Bartman, it's the Mets second baseman Daniel Murphy. The old nemesis was also named Murphy, the infamous goat blamed for the curse of the Cubbies and a World Series drought dating back to 1908. Yes, his name was Murphy. Question: if the Yankees sign Daniel next year, do they have to take the goat too.



**Monthly Special Feature...** For sensors, the largest USA manufacturers are Lutron, Leviton and WattStopper. Wired solutions have historically been the standard solution for most lighting control systems. However, installing some wireless systems can offer some benefits over wired equivalents. Market growth for wireless-enabled controllers is being driven by the increased acceptance of wireless switches and sensors, which in turn is being driven by the lower cost overall of wireless systems. Rather than using separate receiving devices it is anticipated that controllers will increasingly have wireless receiving and transmission capability built-in as standard, while still being able to communicate with other, wired, controllers. Although there are benefits from a completely wireless system, the value proposition of communicating wirelessly between controllers is not as great as wireless communication to field-level equipment such as switches and sensors. Communication between central controllers may require a large amount of bandwidth which requires greater power and is subject to greater wireless interference. Field-level wireless communication is typically low power and does not require much bandwidth. Therefore, IHS forecasts the backbone of the majority of lighting control systems will remain wired while wireless communication to field-level devices will increase.

**Table EX.1  
Executive Summary**

<b>Commercial - End Equipment</b> Revenues (US\$ Millions)			<b>Commercial - Connectivity</b> IC Unit Shipments		
	<b>2013</b>	<b>2018</b>		<b>2013</b>	<b>2018</b>
Controls and Gateways	640	950	DALI	16,095	33,078
Switches and Keypads	324	428	EnOcean	1,726	6,392
Sensors	730	1117	Other Wired	28,994	47,168
Connected Ballasts	1,124	1,344	Other Wireless	2,613	6,298
<b>Total</b>	<b>2,817</b>	<b>3,839</b>	<b>Total</b>	<b>49,429</b>	<b>92,936</b>
<b>Residential - End Equipment</b> Revenues (US\$ Millions)			<b>Residential - Connectivity</b> IC Unit Shipments		
	<b>2013</b>	<b>2018</b>		<b>2013</b>	<b>2018</b>
Controls and Gateways	343	478	Bluetooth	414	2,814
Switches and Keypads	135	190	EnOcean	286	2,461
Sensors	109	153	Insteon	467	1,959
Connected Ballasts	34	55	ZigBee	706	4,714
RF Lamps LED Lamps	18	120	Other Wired	4,163	12,989
Other RF Equipment	5	56	Other Wireless	2,039	4,836
<b>Total</b>	<b>644</b>	<b>1,051</b>	<b>Total</b>	<b>8,075</b>	<b>29,774</b>
<b>Street Lighting - End Equipment</b> Revenues (US\$ Millions)			<b>Street Lighting - Connectivity</b> IC Unit Shipments		
	<b>2013</b>	<b>2018</b>		<b>2013</b>	<b>2018</b>
Light Controllers	94	407	Powerline	695	3,426
Segment Controllers & Gateways	10	40	RF Mesh	414	2,180
			Cellular	0	355
			Other	51	140
<b>Total</b>	<b>104</b>	<b>448</b>	<b>Total</b>	<b>1,159</b>	<b>6,100</b>

Source: IHS

Sep-14



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