

EnergyWatch



October 2015

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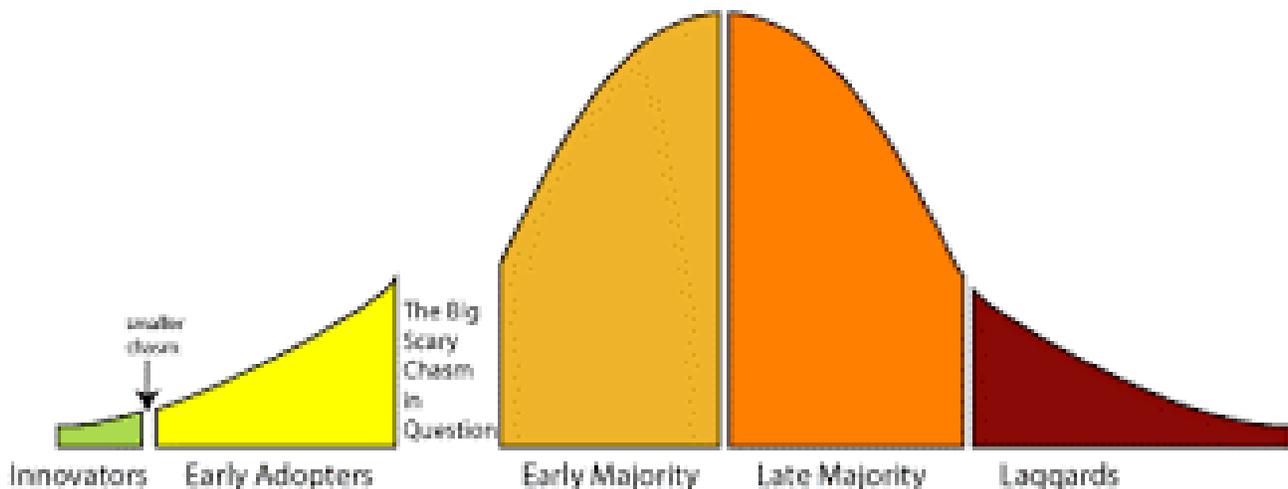
The only limit to our realization of tomorrow will be our doubts of today. Franklin D. Roosevelt

Excellence can only be attained if you:

- *Care more than others think is wise*
 - *Risk more than others think is safe*
 - *Dream more than others think is practical*
 - *Expect more than others think is possible*
-

Something to Think About...

Technology Adoption Life Cycle Chasm, Part One



This is a follow up to my blog on Welcome to the Innovation Era and the book by Geoffrey A. Moore on Crossing the Chasm (marketing and selling disruptive products to mainstream customers). I contend that we have crossed that big scary chasm in the Smart Lighting industry. Let me explain...

First, wearing my academia hat, markets are not products, they are people who buy those products and those people have to be connected in order to be identified as a market. Got it? The Technology Adoption Life Cycle identifies the high-tech market into five (5) categories per the above image. In reading Mr. Moore's book, I keep thinking about how we can apply his thinking to the fortuitous Smart Lighting industry now emerging. How big is that CHASM between the early markets and the mainstream markets...?

The initial / early market for a disruptive technology is made up primarily of innovators and early adopters. We start the marketing process by understanding how these customers think and more importantly why they buy. Only then can we re-position our business model and develop the marketing strategies to serve the new needs of our customers. The emphasis is on "the new needs"...

Innovators: The Techy Enthusiasts

1. They love and buy the new technologies for its own sake
2. They will spend hours to make it work even when the product is not ready for prime time
3. They make great critics because they truly care
4. They are the gatekeepers...those competent enough to do the early evaluation
5. Marketing must pay them heed. They will provide great feedback and will start to build support

Small in numbers (2-5% of the market), the solid state lighting (SSL) technology got complete buy-in from this group. The techy enthusiasts love Smart Lighting because lighting is not just about illumination anymore. The techies evaluated and appreciate the superiority of the new high-tech lighting sources over their traditional alternatives.

Early Adopters: The Visionaries

1. They are the "dreamers" that look to take quantum leaps forward
2. They love disruptive innovation...not looking for just improvements but breakthroughs
3. Visionaries really drive the high-tech industries
4. They alert the business community to pertinent technological advances
5. Easy to sell but very hard to please...dreamers always want more and can be unreasonable
6. They love test pilot projects "to go where no man has gone before"
7. Highly demanding, impatient, see windows of opportunity as fleeting, buy in early or not at all, instant gratification not fast enough anymore

Market size estimated at 13-15%, so it's significant and is a valuable source to court in the Smart Lighting market. I believe the industry is managing the expectations of the visionaries by working on not only LEDs but OLEDs, plasma, white lasers, nanowires, graphene, IoT, connectivity, Li-Fi, on and on. Visionaries are the ones who gave Smart Lighting our first big break...FORTUITY! Being in the right place at the right time. The dream is alive and doing rather well.

The market starts to unfold as it should when the techies connect with the visionaries. They start to foresee an order-of-magnitude with the innovation that they see as achievable but we are talking about maybe 20% of the total available target market. 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. Obviously, things get a lot more complex when we deal with the dynamics of the mainstream markets. Stay tuned as I plan to cover that in my next blog: Technology Adoption Life Cycle Chasm, Part Two.



God bless you Yogi...you were one of the greatest!

It ain't over till it's over

Yogi Berra
1925 - 2015



<http://ftw.usatoday.com/2015/09/the-50-greatest-yogi-berra-quotes>

LED EnergyWatch...

1. ***The 10 Biggest Trends Transforming Workplace Lighting*** - LUX recently posted an article identifying the top 10 trends transforming workplace lighting:

<http://www.luxreview.com/article/2015/06/the-10-big-trends-transforming-workplace-lighting>

- | | |
|-------------------------------------|-------------------------------|
| 1. Upgrades that pay for themselves | 6. Power to the people |
| 2. Controls | 7. Wellbeing and productivity |
| 3. From T5 to LED | 8. Monitoring |
| 4. The end of the louver? | 9. Beyond light (Li-Fi) |
| 5. Adapting to new working patterns | 10. Internet of Things (IoT) |

2. ***Smart Lighting Products to Dominate the Industrial-Commercial Market*** - Alumage Advisors <http://www.alumageadvisors.com/smart-lighting-reports> has released its latest LED Smart Lighting Report, including a free version for end-users, highlighting 40 product features of interest for 1,000 commercial and industrial (C&I) luminaires worldwide. Alumage expects the C&I market for high lumen products to increase to \$11-14B by 2020, with smart lighting offering a more compelling value proposition versus fluorescents. Since introducing our first reports in 2013, we added a smart lighting focus, as 77% of the products we track are dimmable, 59% offer motion sensors and 49% now offer network/controls options, representing a 100%+ increase in the last 12 months.

<http://lightingcontrolsassociation.org/>



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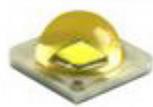
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3. **Osram Launches LED Retrofit Headlight for Audi A4** - Osram has developed and produced the LEDriving Xenarc headlight, its first full retrofit headlight. The front lighting on the Audi A4 is equipped with a combination of xenon and LED technologies. Osram is the only manufacturer so far to offer the option of a legal upgrade to xenon light without the need for costly reconstruction of the front of the vehicle. LEDriving Xenarc is suitable for the Audi A4 B7 manufactured between 2004 and 2008. Compared with standard halogen lamps, modern Xenarc technology from Osram provides up to 110 percent more light on the road. <http://bizled.co.in/osram-launches-led-retrofit-headlight-for-audi-a4/>



4. **Saving Energy in Buildings with Adaptive Lighting Systems / Solutions for the Retail Sector** -The California Lighting Technology Center has produced a new report covering the current state of retail lighting and the extraordinary energy savings potential that can be achieved with adaptable lighting control systems. The retail sector, which represents 13 percent of California's lighting electricity use, has historically not embraced the use of lighting controls to save energy. To address the slow adoption of adaptive lighting solutions in the retail sector, researchers developed and demonstrated an optimized retail lighting control strategy based on a set of control layers specifically designed to deliver maximum lighting energy savings and minimal negative impacts. <http://cltc.ucdavis.edu/sites/default/files/files/publication/201506-saving-energy-adaptive-lighting-systems-retail-sector.pdf>

5. **LED Package Diversity** - Central to any LED lighting product is the LED package, because that's where the light is generated. Initially, the goal was to develop one type of LED package that would be suitable for any application – an approach that would reduce costs through high volume. But for the past seven or eight years, it's been increasingly apparent that such an approach is not viable, because the requirements of the various lighting applications are so diverse as to demand a similar diversity in LED package types in order to ensure high performance. That's why the development of new types of LED packages has been a priority in the DOE SSL R&D Plan: <http://energy.gov/eere/ssl/downloads/solid-state-lighting-rd-plan>



High-power



Mid-power



Chip-on-board



Chip-scale

6. **Defining and Implementing Your Enterprise IoT Strategy** - Enterprise IoT (Internet of Things) is set to disrupt a large number of industries, enabling new business models, creating new revenue streams, reducing costs, extending and enhancing relationships with end customers, and improving product development processes. The world will see 25 billion Internet-connected things by 2020 and will produce close to \$2 trillion of economic benefit globally. In this Strategy Report, Machina Research says that IoT must be on the enterprise's strategic agenda and effort must go into identifying and prioritizing specific opportunities. Further, the enterprise must understand the technology and business requirements of IoT, including the potentially transformative effect it might have on its business model, and it must establish the relevant partnerships. Above all, Enterprise IoT is a continuous process of development and evolution. <https://machinaresearch.com/reports/iot-strategies/reports/>



7. ***LED Therapy Improves Wellbeing of Racehorses*** - Now LED lighting is being tried on animals. Two racehorses in Britain, who were kept under LED lighting for six weeks, showed improvement in their wellbeing and performance. Valoya LED B-series Full Spectrum lights were installed in two of the stables to stimulate the release of adenosine triphosphate (ATP), the major carrier of energy to all cells that provides the energy driving the chemical reaction of the cell. When ATP is increased, it allows cells to use nutrients faster as well as get rid of waste products faster by increasing the energy level in the cell. Some studies in Singapore and Italy showed that LED lights can also heal strains and wounds. <http://bizled.co.in/led-therapy-improves-wellbeing-of-racehorses/>
8. ***LED MR16 Lamps: Despite Progress, Room to Improve*** - According to the recent DOE report [*Adoption of Light-Emitting Diodes in Common Lighting Applications*](#), the installed penetration of LED MR16s and other small directional lamps more than doubled over the past two years, increasing from 10% in 2012 to 22% in 2014 – the highest of any LED lighting product. But DOE's CALiPER program has identified a number of issues in this popular and fast-growing category. CALiPER [*Application Summary Report 22*](#), which was published last year and investigated the photometric performance of 27 LED MR16 lamps compared to benchmark halogens, found that while all of the LED MR16s offered some efficacy advantage over the halogens, the range in efficacy among the LED MR16s was substantial (38 lm/W to 90 lm/W), many equivalency claims were inaccurate, and a majority of the products had CRIs in the low 80s.
9. ***LED T8 Tubes Tops North America Recall Lists in 2015*** - Several large lighting brands have made large scale recalls over the past three months in the North America market, such as Cree, Osram Sylvania and IKEA. LED T8 tube lights recalled in the U.S. and Canada this year reached an astounding 761,500, and comprise the largest volume of withdrawn products. In comparison, LED emergency lights and wall mounted lights consisted the largest volume of recalls in 2014. Cree's massive recall of LED tube lights manufactured in China on Aug. 25, 2015 contributed to nearly 93.43% of the tube light recalls this year. This was followed by Osram Sylvania's recall of some 50,000 LED tube lights that were manufactured by a Korean OEM in early September. Electric shock and burn hazards remains the top cited reasons. <http://www.ledinside.com>
10. ***Lighting Changes Proposed for ASHRAE/IES Energy Standard*** - Twenty-three addenda to ANSI/ASHRAE/IES Standard 90.1-2013, Energy Standard for Buildings Except Low-Rise Residential Buildings, are now open for public comment until October 4, 2015. To access the online comment database either to review documents currently posted for public review and comment or to respond or reply to comments from previous public reviews: <https://www.ashrae.org/standards-research--technology/public-review-drafts>
11. ***Greenvity Develops Hybrid Powerline and Wireless Lighting Network*** - Greenvity Communications has announced the HybridMesh networking technology that the company has realized in a single IC and that supports both RF wireless and powerline communication (PLC) networks media. The company asserts that the hybrid unified network will enable seamless communications between a mix of nodes connected via IEEE 802.15.4 RF mesh links and/or connected by PLC links. The PLC capability can bridge wireless networks where range or obstacles limit reception and will further simplify the development of controllers for LED-based products that implement both ZigBee and PLC types of lighting networks. Greenvity will offer the technology to developers through modular controllers in printed-circuit board (PCB) form that can be integrated into SSL products. <http://www.ledsmagazine.com>



- 12. IES Publishes New Method for Evaluating Color Rendition TM-30-15** – While CRI enjoys widespread use, its limitations are well recognized, and the need for a viable alternative is increased by the proliferation of SSL, which offers tremendous scope for spectral engineering and optimization. TM-30-15 addresses many of the CRI's limitations, providing more information with greater accuracy. With two main numerical parameters and other visualization tools for better understanding the rendition of specific hues, it provides a more complete characterization of color rendition than a fidelity metric alone can. <http://energy.gov/eere/ssl/events/webinar-understanding-and-applying-tm-30-15>
- 13. Battle Lines Drawn Over Color Rendering Method** - The lighting industry appeared to be gearing up for another of its periodic format wars as battle lines were drawn this week over a proposed replacement for the Color Rendering Index. The Illuminating Engineering Society in the US has unveiled a replacement metric dubbed TM-30, which has won the backing of the US DOE. But industry opinion is divided over the proposed method. In a statement last week, the Global Lighting Association – which represents 5,000 lighting equipment makers – appeared to pour cold water on the unveiling of the new method. It said it wanted to keep the existing and familiar CRI method which has been around since the 1930s, but it would welcome an addition to it. However, critics say the CRI doesn't work well with LEDs. The new Tm-30 method will be explored in a special presentation at the LuxLive 2015 event in London in November. To register: www.luxlive.co.uk
- 14. Inside the New IES Method for Color Evaluation by Craig DiLouie** - The color quality of light sources is critical in a broad range of applications, from making colors pop in retail merchandise to promoting social interaction by properly rendering skin tones. To evaluate, predict and discuss color quality, the industry relies on two metrics, correlated color temperature (CCT) and the color rendering index (CRI). Varying these metrics can dramatically change the visual appearance of objects and spaces. <http://www.lightnowblog.com/>
- 15. Xicato Publishes IES TM-30-15 Color Rendering Data for LED Modules** - Xicato®, a leading manufacturer of intelligent light sources, published today on its website TM-30-15 Color Rendering results for its entire product range of XTM and XIM modules. TM-30-15 is a new method for quantifying color rendering properties of light sources that was recently published by the Illuminating Engineering Society. It distinguishes both color fidelity and color gamut and provides a framework for interpreting chroma and hue shift associated with light sources. <http://www.xicato.com/>
- 16. DOE Announces Two New CEMI R&D Efforts** – As part of the Clean Energy Manufacturing Initiative (CEMI) and may be of interest to the SSL community. The two efforts—a national laboratory-industry collaboration pilot and a competitive solicitation to leverage national labs' high-performance computing capabilities:
- 1) **Technologist in Residence Selections.** Seven "technologist" pairs have been selected to receive \$2.6 million to participate
 - 2) **High Performance Computing Program.** DOE announced up to \$3 million available for qualified industry partners to participate in the High Performance Computing for Manufacturing Program (HPC4Mfg), led by Lawrence Livermore, Oak Ridge, and Lawrence Berkeley National Laboratories. <http://energy.gov/eere/cemi/clean-energy-manufacturing-initiative>



- 17. DOE's CALiPER Report 23: Photometric Testing of White-Tunable LED Luminaires** - The advent of SSL has already brought substantial change to the lighting industry, and one recent development that's especially intriguing is color-tunable luminaires <http://energy.gov/eere/ssl/led-color-tunable-products> – that is, luminaires that can change their spectral power distribution (SPD). Although versions of this product type have been around for years, LEDs make color-tunable luminaires much more practical, even though at present they remain a niche market segment. With potential benefits including improved health and wellbeing, increased productivity, enhanced mood or alertness, and higher occupant satisfaction, there's reason to believe that color-tunable luminaires will gain market share. But at this point it's important to understand the tradeoffs, limitations, and issues, so that the industry can work together to maximize the rate of product maturation. <http://energy.gov/eere/ssl/downloads/report-23-photometric-testing-white-tunable-led-luminaires>
- 18. Cree 4Flow LED (2015) CNET Review** - Cheaper isn't necessarily better. That's Cree's message in a year where LED prices are plummeting, and where new arrivals from Philips and GE can be had for less than \$5 each -- an eyebrow-raising comparison to the \$8 Cree 4Flow LED, which sits right next to them on Home Depot shelves. You get what you pay for, Cree warns -- those cheaper competitors aren't dimmable, and they don't last nearly as long as the 4Flow LED, either. <http://www.cnet.com/products/cree-4flow-led-2015/>
- 19. The Climate Group Calls for All City Street Lighting to Switch to LED by 2025** - The Climate Group, which is hosting its annual Climate Week NYC, launched its new major global campaign LED = Lower Emissions Delivered, to encourage local governments, cities and utilities to embrace the carbon and cost benefits of switching to LED. A new report, The Big Switch: Why it's time to scale up LED street lighting, published by The Climate Group today, reveals that major cities around the world want to upgrade to LED. Technological barriers for switching to LED have now been overcome. However, in the run-up to COP21, cities want more support from government and financial institutions to refine business models and financing options to help make the switch. <http://www.theclimategroup.org>
- 20. Light Conversation – Visible Light Communication by Craig Dilouie** - Wi-Fi is not the only means of transmitting data these days. Another unique method you may not have heard of is visible light communication (VLC). VLC is a free-space optical wireless communication technology that uses visible light to transmit data across distances. The advent of light-emitting diode (LED) technology in general lighting is creating new opportunities for VLC in the built environment, and major new product offerings are under development. The principle of optical communication using modulated light is simple. Varying the pattern of a light beam's intensity encodes information. The light then transmits that information over distances at a speed of 186,000 miles per second. <http://www.ecmag.com/section/light-conversation>
- 21. Lighting Isn't Just About Lighting Anymore By Chris Brown** - Lighting used to be about lumens, foot candles, color temperature, CRI and, oh yes, energy efficiency. Today we talk about sensors, controls, connectivity, IoT, IoE, data mining, Smart Lighting, Intelligent Lighting, Lighting as a Service, etc. And who knows what new word or phrase we will hear tomorrow? But still, lighting has to be about light, and not just any lighting, but about quality of lighting appropriate to the specific applications. Defining what lighting qualities are appropriate is primarily subjective, but let's try to get our arms around the broader concepts of quality lighting. <http://www.tedmag.com>



22. Lighting Control Up 50 Percent in New Homes - Across the board, installed technologies play a key role in new construction, but some technologies—like lighting controls—are playing an even more important role than others these days. The biggest growth categories among builders are led by automated lighting controls (up 50 percent in 2014 vs. 2013), stand-alone video surveillance (up 60 percent) and energy management systems (up 25 percent). Other categories showing growth in 2014 were central vacuum, intercoms and structured wiring. Still, lighting control is under-penetrated in new homes compared to other technologies.

http://www.cepro.com/article/lighting_control_up_50_in_new_homes/

23. EW's Top 10 LED Product Picks for October 2015 - LED products from Acuity Brands, Cree, Hubbell Lighting, Edge Lighting, Espen Technology, JESCO, Litetronics, Nicor, Nora Lighting and Nordeon made EW's picks for the October 2015 Top 10 LEDs.

http://ewweb.com/gallery/sneak-preview-ews-top-10-led-product-picks-october-2015#slide-0-field_images-27131



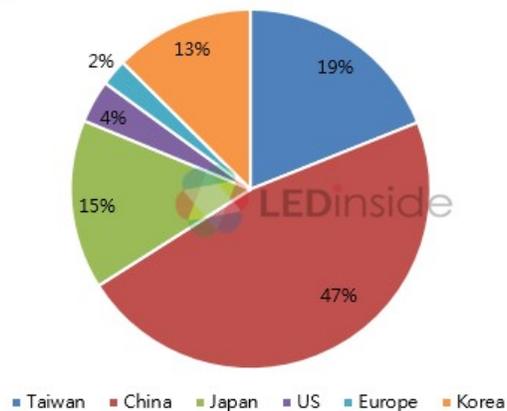
Global LED EnergyWatch... (new feature)

24. LED Chip Market Sees Oversupply as China Accounts for 47% of Global MOCVD Capacity -

According to the latest *2015 Global LED Industry Supply and Demand Database*

Report by LEDinside, a division of TrendForce, capacity expansion efforts of Chinese LED chip manufacturers have resulted a supply glut with this year's LED chip supply-demand ratio reaching 22%. LEDinside also estimates that the global MOCVD installed volume in 2015 will grow to 3,130 chambers, among which 1,473 are located in China and will account for 47% of this year's global MOCVD capacity (MOCVD systems used in the calculation are of the K465i model).

Figure: 2015 Worldwide MOCVD Installation Volume



Source: LEDinside, Sep., 2015

http://www.ledinside.com/intelligence/2015/9/ledinside_led_chip_market_sees_oversupply



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25. Top Three Emerging LED Markets with Huge Economic Potential - LEDinside's editorial team compiled data from China's customs and other research organization reports to present an overview of market conditions of certain popular oversea markets. The following market evaluations are for reference purposes.

- 1) Egypt is Africa's third largest economy, and the largest consumer market in Middle East and Africa. It is also one of the fastest growing emerging markets and economies. Lighting's energy consumption amounts for 25% of the country's energy consumption, while household and commercial lighting consumption makes up the majority 73%. Egypt plans to roll out a massive lighting upgrade after 2020, and use energy efficient products to replace traditional lighting. The country has procured 250 million LED bulbs for residential lighting applications.
- 2) UAE's architectural industry is recovering after the disastrous real estate crash in 2008. The reviving real estate market has created many new construction projects leading to a prospering lighting market. The UAE LED market is showing strong growth, and its market value is estimated to increase US \$224 million by 2019, and projected to increase at a CAGR) of 20% from 2014 to 2019. Additionally, Dubai will be hosting the World Expo in 2020.
- 3) India is the world's second most populated country, with huge market size and economic growth. The Indian government started encouraging the public to use LED bulbs to replace the current 750 million incandescent bulbs and some 35 million streetlight bulbs. India is preparing to swap all conventional residential lighting and streetlight products to LEDs in more than 100 cities before March 2019. The LED luminaire market value is estimated to reach US \$1 billion by 2020.

http://www.ledinside.com/outlook/2015/9/ledinside_top_three_emerging_led_markets_with_huge_economic_potential

26. A Look into Major LED Manufacturers Global Strategy - Globalized competition is inevitable in the LED industry with an increasing number of overseas LED companies entering Chinese market and vice versa. Chinese LED companies acquire renowned international manufacturers, fewer companies receive government funding. Acquisition is fairly common in the Chinese LED industry, and some have merged with some long established global players. With the emerging Asian LED companies continually gaining market share with low-price products, European and the U.S. companies are therefore forced to restructure in order to survive in the new market.

http://www.ledinside.com/news/2015/8/a_look_into_major_led_manufacturers_global_strategy

27. LED Lighting: Global Outlook - LED prices have declined to a point where this type of lighting is becoming the economical choice in almost every application. As such, the adoption of LED lighting is ramping up across all major end uses: commercial buildings, residential buildings, industrial buildings, and outdoor applications. Vehicle headlights are seeing a sharp increase in the use of LEDs, as well. According to Navigant Research, global unit shipments of LED lamps and modules are expected to grow at a compound annual growth rate (CAGR) of 19.0% between 2015 and 2024. This Navigant Research report analyzes the global market for LED lamps and modules across all major space lighting uses. The study provides an analysis of the market issues, including drivers and trends, barriers, cost issues, and technological developments, associated with LED lighting.

<http://www.navigantresearch.com/research/led-lighting-global-outlook>



28. *MLS Buys 11 Percent Stake in Kaistar Lighting* - Forest Lighting announced that its parent company, MLS, will purchase 10.91% of the outstanding shares of stock in Xiamen, China-based Kaistar Lighting. Kaistar Lighting is a joint venture established in 2011 by Epistar, Evertop, and Country Lighting. MLS is the largest LED package manufacturer in China, with \$2 billion in annual revenue. Kaistar, with approximately \$84 million in annual revenue, provides LED wafers, LED packaging and LED lighting products to the global market. In July 2015, Kaistar acquired US-based Bridgelux, whose intellectual property includes 750 patents in LED chips and package technologies. www.tedmag.com

29. *VolkerHighways Helps Illuminate Bournemouth and Poole* - VolkerHighways has been awarded a £21 million contract to maintain nearly 41,000 streetlights in Bournemouth and Poole over the next 10 years. As part of the contract, 17,500 streetlights will be replaced in Poole with energy efficient LED lanterns and integrated central management system (CMS). This will involve the installation of 8,500 lanterns on existing lamp posts between November 2015 and March 2016 and the replacement of the remaining 9,000 complete lamp posts over the next two to three years. <http://www.volkerhighways.co.uk/en/news/detail/volkerhighways-helps-illuminate-bournemouth-and-poole>

National Energy Watch...

30. *New Mobile App: EC Cat Connection—Your Link to Manufacturer’s Catalogs* - ELECTRICAL CONTRACTOR magazine is partnering up with ElectricSMARTS to offer you an iPad app that contains hundreds of manufacturer’s catalogs. When you want pricing or product information, fire up the app and search by category or manufacturer name. This new reader service connects you with product and manufacturer data anytime and anyplace you have wireless service. Go to the app store to download the EC Cat app now. <https://itunes.apple.com/us/app/ecmag-catalog-connection-app/id987463482?mt=8>



31. *NEMA Reaffirms New Standards* - www.NEMA.org

- ☀ **NEMA Reaffirms ANSI C78.1406-2004:** P28 Single-Contact Medium Prefocus-Based Projection Lamps for Base-Down Operation—Dimensions. This standard establishes the dimensions essential to interchangeability of single-contact medium prefocus-based projection lamps of T10 and T12 bulb sizes.
- ☀ **NEMA Reaffirms ANSI C78.1407-2004:** Condenser-Reflector, Four-Pin Prefocus-Base Projection Lamps—Dimensions. This standard specifies the dimensions essential to the interchangeability of condenser-reflector lamps having four-pin prefocus bases, T12 or T14 bulbs, and used in 8 mm motion-picture projectors.
- ☀ **NEMA Reaffirms ANSI C78.1408-2004:** CBA Projection Lamp. This standard provides information on the description, ratings, restrictions, physical characteristics, dimensions, life, illumination, seal temperature, and operating temperature of a lamp that has been designated as a CBA projection lamp.
- ☀ **NEMA Reaffirms ANSI C78.379-2006:** Classification of the Beam Patterns of Reflector Lamps. This standard describes a system for classification of beam patterns and beam angles of reflector lamps. A method of describing light output also is defined.



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32. *Marketing Momentum: Masterful Interviewing for Case Studies, Part 1* by Katrina Olson -

Customer Profile. Success Story. Case Study. No matter what you call it, crafting a compelling one requires details that will bring your writing to life and fill in blanks in the reader's mind. To do this, you'll need to be a master interviewer. Here's how:

- 1) Research your subject and topic before the interview.
- 2) Develop a list of appropriate and relevant questions.
- 3) Schedule an interview time and confirm the day before.
- 4) Conduct the interview.
- 5) Type/clean up your notes.
- 6) Let it sit.
- 7) Write, edit (repeat).

Next we'll delve deeper into what specific questions to ask to align with the structure of your written case study. <http://www.tedmag.com/>

33. *Marketing Momentum: Masterful Interviewing for Case Studies, Part 2* by Katrina Olson -

The most important part of a case study is the middle—the challenge, the solution and the results. So you want to ask the right questions while you have your subject's (hopefully) undivided attention in the interview. Of course, you can always follow up later, but to make the process as easy as possible for your subject, try to get all of the information you need from them in this one interview. But be sure to leave the door open by asking permission to contact them or their staff in the future. In the next Marketing Momentum, we'll cover how to organize and write a case study. <http://www.tedmag.com/>

34. *Marketing Momentum: Writing Powerful Case Studies* By Katrina Olson - You've researched the company and interviewee, conducted the interview, and typed and cleaned up your notes. Now it's time for the hard part—writing your case study. An effective and powerful case study is not a listing of facts; it's a story told from your customer's perspective. Find a theme that ties it all together and provides a benefit for readers. When you're ready to write, follow these guidelines:

- | | |
|-----------------------------------|-----------------------------|
| 1) Draw them in. | 6) Be real. |
| 2) Provide a roadmap. | 7) Get to the point. |
| 3) Put it in context. | 8) Be specific. |
| 4) Describe the challenge. | 9) Dress it up. |
| 5) Tell a story. | |

Details at <http://www.tedmag.com/>

35. *NEMA Announced That ANSI Accredited Standards Committee (ASC) C82 Revised ANSI C82.6 -*

American National Standard for Lamp Ballasts—Ballasts for High-Intensity Discharge Lamps—Methods of Measurement. This standard is now updated to provide industry-wide consistency for products that have the technological advantages of electronic ballasts and can be paired with existing low frequency lamps. ANSI C82.6 describes the procedures to be followed and the precautions to be taken in measuring performance of low-frequency ballasts (electromagnetic and electronic ballasts that operate at less than 400 Hz) for high-intensity discharge (HID) lamps. www.NEMA.org

36. *Philips Recalls Halogen Bulbs* -

The lens of the bulb can shatter in the lamp or the lens can fall and shatter, posing a laceration and burn hazard. This recall involves Philips 60W PAR 16 120V halogen bulbs manufactured from November 2013 to March 2015. Date codes that represent the month and year of production are painted on the bulb glass along with “PHILIPS Halogena PAR 16,” “China” and “60W/120/V.” <http://www.cpsc.gov/en/Recalls/2015/Philips-Recalls-Halogen-Bulbs/>



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City & State EnergyWatch...

- 37. 2015 NEEP Northeast Industrial Efficiency Summit** - November 12-13, in Omni Mt. Washington Resort, Bretton Woods, NH. The industrial sector uses more energy than any other sector of the economy yet the movement towards implementing energy efficiency into industrial processes has seen a low adoption rate. NEEP is hosting industrial experts, utility program administrators and other advocates to share best practices, receive training from the DOE on Strategic Energy Management and celebrate the successes of the 2015 Northeast Business Leaders for Energy Efficiency. The 2 day summit will feature: <http://www.neep.org/events/2015-northeast-industrial-efficiency-summit>
- 38. Chicago Smart Lighting Project Request For Information** - Interested parties are invited to respond to a comprehensive streetlight modernization initiative intended to: a) Deliver an energy efficient street, alley, viaduct, and pathway lighting grid and lighting control network to the City and Parks under a design, build, and finance framework, and b) Potentially utilize the City's and Parks' existing outdoor lighting infrastructure for other services that enhance safety, quality of life, and reduce Chicago taxpayer expenditures, and c) Potentially utilize Chicago's lighting infrastructure to expand the City's fiber optic network allowing for the modernization of streetlight controls and the expansion of other City of Chicago digital technologies The City maintains an extensive roadway lighting system of approximately 232,100 streetlight fixtures, 72,000 alley light fixtures, and 23,500 viaduct fixtures. A combined inventory of over 327,500 lighting fixtures. http://shapechicago.org/wp-content/uploads/2014/10/ChicagoSmartLightingRFI-Final_20150917.pdf
- 39. Company Tackles Challenge of LED Upgrade at Art Museum in Kansas City** - The internationally recognized Nelson-Atkins Museum of Art, in Kansas City, Mo., has more than 33,500 art objects and is best known for its Asian art, European and American paintings, photography, modern sculpture, and new American Indian and Egyptian galleries. So when it considered upgrading its halogen lamps to LEDs to save energy, the museum wanted to ensure that any new light maintained a true rendering of the art, and that as the mediums were illuminated, the artists' message or creation were not dulled. Clint Paugh implemented a thorough testing process that lasted more than eight months and started with more than 15 lighting manufacturers. SYLVANIA ULTRA PRO HD PAR38 LED lamps were selected for illuminating the Nelson-Atkins because of the products' superior beam characteristics, compared to other LED lamps, and the fact that the high-quality light maintained the look of the previous halogen lamps. <http://www.facilitiesnet.com>
- 40. LEDs Illuminate Jerry World and the Nashville Predators NHL Arena** - Musco Lighting has announced that it supplied LED-based lighting to AT&T Stadium, home of the Dallas Cowboys of the NFL. The installation is based on Musco's SportsCluster Green system. The company said it used custom optics to focus the light on the playing surface while not creating glare for players or spectators. LEDs allowed the team to increase light levels by 42% while reducing energy usage by 76%. Meanwhile Ephesus Lighting has announced another sports-lighting project with SSL being installed at the Bridgestone Arena in Nashville, TN. The company has prior experience lighting a professional-level ice arena, having supplied sports lighting products to the home of the Ottawa Senators in 2014. The Bridgestone project includes interior sports lighting with color-tuning capability and the company's Prism full color luminaires are deployed both inside and outside of the arena. A DMX control system will allow the team to generate dynamic and colorful light shows. <http://www.ledsmagazine.com>



Monthly Special Feature... *LED CROSSES THE CHASM TO MAINSTREAM*

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
LAMPS				
LED "A" LAMPS	12%	10%	30%	38%
Units (000s)	820	3000	12700	51000
Dollars (000s)	\$17,000	\$30,500	\$172,000	\$411,000
AUP	\$20.73	\$10.17	\$13.54	\$ 8.06
LED R & PAR	71%	70%	51%	45%
Units (000s)	3,000	8,000	13650	25000
Dollars (000s)	\$100,000	\$225,000	\$296,000	\$478,500
AUP	\$ 33.33	\$ 28.13	\$21.68	\$15.14
LED (Decorative and all other)	17%	20%	19%	17%
Units (000s)	1,200	4,500	9000	18000
Dollars (000s)	\$23,000	\$65,000	\$110,000	\$185,000
AUP	\$19.17	\$14.44	\$12.22	\$10.28
TOTAL LAMP DOLLARS (000)	\$140,000	\$320,500	\$578,000	\$1074,500
FIXTURES	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
OUTDOOR				
Total Outdoor Market (m)	\$1,820	\$1,940	\$2,100	\$2,400
LED OUTDOOR	26%	34%	42%	54%
Dollars (m)	\$475	\$650	\$875	\$1,300
INDOOR				
Total Indoor Market (m)	\$5,150	\$5,125	\$5,300	\$5,700
LED INDOOR	9%	13%	19%	35%
Dollars (m)	\$475	\$675	\$1,000	\$2,000
TOTAL FIXTURE \$ (000)	\$7,920,000	\$8,390,000	\$9,275,000	\$11,400,000
Ballast Market Dollars (m)	\$1,010	\$975	\$870	\$740
LED Systems Market Dollars (m)	\$200	\$300	\$400	\$500
Total Ballasts and LED Systems	\$1,210	\$1,275	\$1,270	\$1,240

