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AcuityBrands™

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Mr. Gary Flamm
California Energy Commission
Buildings & Appliances Office
1516 Ninth Street – MS-25
Sacramento, CA 95814-5512

Subject: Title 20 – Proposed Tier II Standards for MH Luminaires

Dear Gary:

Acuity Brands Lighting is the largest manufacturer of luminaires and lighting equipment in North America, with over $1.4 billion in annual sales. The California lighting market is estimated at just under $1 billion and represents around 11% of the total US market. Acuity Brands Lighting provides one of the widest selections of lighting products by offering more classes of product lines and product diversity to commercial, industrial, institutional and residential channels. We are a primary supplier of luminaires to California through sales agencies, electrical distributors, showrooms and home centers. We strongly support initiatives focused on promoting new, energy efficient technologies with high efficiency luminaries and advanced design strategies.

The California Energy Commission approved a requirement in the April 2005 Title 20 for Metal Halide Luminaires which will go into effect in January 2006. Title 20 2005 establishes a requirement that all MH luminaires using a lamp rated 150-500 watts and operating in a vertical burning position shall not contain a probe-start metal halide ballast. On October 29, 2004 NEMA submitted comments based on input from luminaire manufacturers with regard to the MH luminaire requirements indicating that legislation eliminating probe start systems and requiring MH electronic ballasts was premature, requesting a delay in these proposals. The technology in the market place has not changed since those comments were submitted.

As CEC considers expanding the regulation for MH luminaires, I offer comments and data in the following 6 areas:

1) Technology studies for Metal Halide luminaires
2) Pulse Start lamp availability
3) Pulse Start system performance and reliability
4) Impact of Metal Halide luminaire regulations on outdoor luminaires
5) Electronic Metal Halide ballasts
6) Building standards versus appliance standards

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1) Technology Studies for Metal Halide Luminaires

I am not aware of any energy and cost effectiveness studies that have been published by CEC for the Metal Halide luminaire regulations. There have not been any energy and cost effectiveness studies published for Pulse Start technology in vertical base up, vertical base down or horizontal burning positions. There have not been any studies published for Metal Halide ballast efficiency. Furthermore, the CEC has not studied the dynamics on demand and supply pressures this legislation will create. I inquired about the technical basis of the MH luminaire regulations last fall. CEC staff has not been able to answer these questions. It is unclear what the technical basis is that has driven CEC to propose either the pulse start or ballast efficiency regulations. Where are the numbers justifying these proposed measures and what is the expected impact on demand? Our company is more than willing to assist the CEC in developing studies that will evaluate the current availability of products, energy savings, cost impacts, performance and supply / demand scenarios. If such a study exists, please publish it for public review.

2) Pulse Start Lamp Availability

Acuity Brands supports and encourages the use of Pulse Start technology for applications where it provides superior value. We have provided tools on our website to help designers calculate the savings associated with Pulse Start systems. However, Pulse Start was originally designed to address indoor industrial applications. While the technology is now expanding into other applications, availability of products suitable for applications such as outdoor lighting is extremely limited. ***Appendix A*** shows a matrix of current availability of Pulse Start lamps by wattage and burning position. You will notice that other than the 150 watt system, there are significant gaps in product availability for luminaire types with lamps in a horizontal or vertical base down burning position. Venture has a fairly comprehensive Pulse Start product offering; however CEC has not done any studies that I am aware of to determine if a single vendor can supply the entire demand created by this regulation. This also raises serious questions regarding legislation that would favor one manufacturer over others. One significant wattage for outdoor lighting is the 175w, which has no Pulse Start availability in horizontal or vertical base down. While there is a speculation that the 150w can be used as a substitute, the 150w is a less efficacious lamp. Therefore CEC would obsolete a more efficient 175w probe start with a 150w pulse start simply because it uses pulse start technology. This seems to be contrary to the objectives of California energy standards. It is inappropriate at this time to regulate a product that is not available in all necessary wattages and burning positions from multiple vendors.

3) Pulse Start System Performance and Reliability

Lamp manufacturers have indicated that they are working on additional wattages and burning positions, and expect to have a broader line of lamps available in 2008. However, it is unclear exactly what wattages and burning positions will be available. Furthermore, luminaire manufacturers do not have data today to determine what the performance will be - including light output, thermal characteristics, color characteristics, life, lumen maintenance and component reliability. This information is critical for luminaire manufacturers to provide an efficient, cost effective and reliable product to the market place. There is no cost data available for these yet to be developed products to conduct a

cost effectiveness study. New technologies typically ramp up from low volume, which is essential to evaluate field performance and implement minor design revisions. Legislation at this early stage of the product would force an immediate conversion in the market place without sufficient data regarding field performance. It is completely unreasonable for the CEC to proceed with a regulation for products that do not exist, or have not existed in the market place for a sufficient period of time to ensure the performance and reliability of the products.

4) Impact of Metal Halide Luminaire Regulation on Outdoor Luminaires

Appendix B provides a summary of the major classes of products that are impacted by the CEC Metal Halide luminaire regulations.

April 2005 regulation: For indoor lighting, products are primarily available with the lamp in a vertical base up position, and Pulse Start lamps are commonly available for this type of luminaire. Pulse Start is an excellent solution for these types of products. However, you see that an estimated 6% of the MH market (over 80,000 units annually) uses lamps in a vertical base down position. In January of 2006 these products must use Pulse Start systems and ***Appendix A*** shows that lamps for these products are likely to be available from only one lamp vendor. There are few substitutes for this class of product that will maintain the optical and aesthetic requirements with the lamp in a position other than vertical base down.

Proposed Tier II regulations: Expansion of the standard to include luminaires for horizontal burning position will impact an estimated 49% of the outdoor market (over 1.4 million units annually). Furthermore there are no lamps available for the 175w horizontal position and lamp manufacturers have not indicated any plans to develop a 175w pulse start lamp. This is a very common wattage for outdoor products. As mentioned previously, this product would be replaced with a 150w Pulse Start system, but will deliver fewer lumens per watt than the current probe-start 175w system, reversing California efforts to reduce energy consumption. Future lamp development may improve the efficacy of the 150w Pulse Start lamp, but we cannot base current regulatory proposals on unknown future product development. Clearly, this regulation will impact a high volume of outdoor products in California where limited or no lamps are available to support these luminaire sales.

5) Electronic Metal Halide Ballasts

As mentioned in item 1), it is unclear what the technical basis is for the proposed ballast efficiency requirements. Electronic ballast technology is immature and many manufacturers are still studying the performance characteristics to refine the design of these ballasts. These ballasts are also more expensive. They provide many favorable performance characteristics, but do not provide similar energy savings potential as fluorescent electronic systems. It is also unclear if it was the intent of CEC to exempt outdoor luminaries from the electronic ballast efficiency requirements. Table N-1 provides an exemption for outdoor luminaries, however the definition of an "exempted outdoor luminaire" requires the luminaire to be rated for wet locations and contain a ballast rated to operate at an ambient air temperature above 55 degrees C. Most outdoor lighting is wet location rated but does not contain a ballast rated to operate above an ambient temperature of 55 degrees C. Therefore outdoor products will be required, as currently

proposed, to meet the Metal Halide ballast efficiency requirements in Table N-1. The CEC should continue to monitor the energy savings potential of electronic metal halide ballasts and implement regulations when the energy savings and cost impact are justified. You must not regulate products based on expectations of future technology development.

6) Existing California Building Standards

In December 2004 I questioned the CEC actions regarding Metal Halide luminaires in Title 20 since the power density limits in the Title 24 Building Standards were based on Pulse Start performance for various applications. The response I received from CEC staff stated: *"Building standards apply only to new buildings and to major alterations; appliance standards apply to all manufactured equipment. The building standards set an LPD rather than requirements for specific technologies. It would be consistent with historical practice for some jobs to comply with the LPDs using lower efficiency products."* I fail to understand why an application cannot use a lower efficiency product when that product has other features that are best suited for the application and meets established energy performance requirements. There are a few, limited situations where this type of product would be sold through retail rather than traditional construction channels of distribution and would not be regulated by Title 24. For MH luminaires, this represents a very limited class of product and extremely low volume. If a high volume of products were sold through retail, they are likely to be used in an application where a building permit is required and would be required to meet the Title 24 requirements. Covering Metal Halide products in both Title 20 and Title 24 will create confusion. It also makes it difficult for progressive manufacturers to implement energy efficiency strategies when we do not know whether energy standards will focus on products or applications. This makes a significant difference in how we plan our product designs.

Product specific standards such as those in Title 20 tend to limit design flexibility and the use of new technologies since they cannot cover all types of applications. Building standards such as Title 24 allow designers or facility managers to evaluate the products that best meet their specific situation, while meeting established California power density limits for that application. I am resubmitting my request for CEC to focus your regulatory efforts on Title 24 for commercial, industrial and institutional applications – rather than product standards for Metal Halide Luminaires. You can evaluate new technologies based on the application and adjust power density downward based on the new technology achieving energy savings without creating a situation where limited components are available to meet the appliance standard requirements for all applications.

Recommendations for CEC Regulation of MH Luminaires

- Conduct and publish the required energy and cost effectiveness studies for MH technologies. These studies should include the energy saving impact, cost impact, projections for product demand and supply, performance and reliability. Our company will be glad to assist with this study.
- Repeal or modify the existing 2005 standard for MH luminaires to cover only indoor products - or - only vertical base up lamp orientation since there will not be sufficient availability of vertical base down lamps by January 2006 for outdoor post top and floodlighting products.
- Do not proceed with an expansion of the Title 20 regulations for MH luminaires for all burning positions. As demonstrated in the Appendices, this will have a devastating impact in California on outdoor luminaires that use lamps in a horizontal burning position.
- Continue to evaluate the progress of Metal Halide ballast efficiency. Work with industry to determine the appropriate time and regulatory approach to promote increased use of these products.
- Focus all future regulation of MH luminaires on the power density limits defined in Title 24. This will provide the flexibility in lighting design and product development and has the greatest potential for significant energy reductions through the use of technologies appropriate for the application.

Acuity Brands Lighting is anxious to help support the transition of the Metal Halide luminaire market to Pulse Start systems and electronic ballast technologies as quickly as possible. However, the information I present here provides a clear illustration that regulating probe start ballasts for all burning positions and regulating ballast efficiency is premature at this time. Thank you for your time and consideration of these comments.

Best regards,

Cheryl R English

Cheryl English
Vice President, Engineering Services & Industry Relations
Acuity Brands Lighting

Appendix A – Availability of Pulse Start Lamps

Lamp Wattage	Position	GE	OSI	Philips	Venture	NOTES
150	Vertical BU					Universal burn available for Vertical Base Up
	Vertical BD					Universal burn available for Vertical Base Down
	Horizontal					Universal burn available for horizontal position
	Universal	X	X	X	X	
175	Vertical BU	X	X	X	X	
	Vertical BD					No vendors available for Vertical Base Down
	Horizontal					No vendors available for Horizontal
	Universal					
200	Vertical BU		X		X	Only two vendors for Vertical Base Up
	Vertical BD				X	Only one vendor for Vertical Base Down
	Horizontal				X	Only one vendor for Horizontal
	Universal					
250	Vertical BU	X	X	X	X	
	Vertical BD				X	Only one vendor for Vertical Base Down
	Horizontal				X	Only one vendor for Horizontal
	Universal					
300	Vertical BU				X	
	Vertical BD				X	Only one vendor for Vertical Base Down
	Horizontal				X	Only one vendor for Horizontal
	Universal					
320	Vertical BU	X	X		X	
	Vertical BD				X	Only two vendors for Vertical BD / Universal
	Horizontal		X		X	
	Universal			X		
350	Vertical BU	X	X	X	X	
	Vertical BD				X	Only one vendor for Vertical Base Down
	Horizontal				X	Only one vendor for Horizontal
	Universal					
400	Vertical BU	X	X	X	X	
	Vertical BD	X	X		X	
	Horizontal			X	X	Only two vendors for Horizontal
	Universal					
450	Vertical BU				X	Only one vendor for Vertical Base Up
	Vertical BD				X	Only one vendor for Vertical Base Down
	Horizontal					No vendors for Horizontal
	Universal					

Appendix B – Analysis of Estimated California MH Luminaire Market

Product Type	Burning Position			Estimated CA Market		Impacted by Horiz		Impacted by VBD	
	Vertical BU	Vertical BD	Horizontal	Units	%	Units	%	Units	%
Indoor Industrial	100%	0%	0%	327,463	23%	-	0%	-	0%
Indoor Commercial	90%	0%	10%	303,207	21%	30,321	2%	-	0%
Outdoor Shoebox	25%	0%	**75%**	173,008	12%	129,756	9%	-	0%
Outdoor Wallpack	0%	0%	**100%**	284,756	20%	284,756	20%	-	0%
Outdoor Post Top	0%	**90%**	**10%**	30,843	2%	3,084	0%	27,759	2%
Outdoor Floodlights	0%	**20%**	**80%**	263,315	18%	210,652	15%	52,663	4%
Outdoor Roadway	10%	0%	**90%**	49,973	3%	44,976	3%	-	0%
Total				1,432,566	100%	703,545	49%	80,422	6%

Notes:

- *Highlighted items illustrate areas with insufficient pulse start lamps available to support luminaire types*
- *Bollards are not included since the majority are less than 150 watts*
- *Floodlights with vertical base position typically require universal lamps due to aiming effects*

Examples of Product Types

Indoor Industrial

Indoor Commercial

Outdoor Shoebox

Outdoor Wallpack

Outdoor Post Top

Outdoor Floodlights

Outdoor Roadway