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November 13, 2009

Mr. Robert Parks, Director  
IDA Government Affairs & Public Policy  
717 D Street, N.W., Suite 300  
Washington, D.C. 20004

Subject: NEMA Lighting Systems Division Member Comments and Recommendations  
Regarding the Proposed IDA Position Statement on Blue-Rich White Light

Members of the Lighting Systems Division (LSD) of the National Electrical Manufacturers Association (NEMA) are pleased to submit these comments on the proposed IDA position statement regarding 'Blue-Rich White Light' and its implications regarding outdoor lighting.

Outdoor electric lighting provides many obvious and accepted benefits to society, including the ability to safely travel on roadways, facilitate commerce, enable outdoor activities including recreation, provide for the lighting of architecture and landmarks, and provide for social and personal security.

These comments are intended to continue a constructive and collaborative relationship between members of the NEMA LSD and IDA. NEMA LSD members propose to arrange a follow-on meeting with IDA members to discuss these comments, the IDA draft, and the specific concerns of IDA members regarding this particular subject. NEMA LSD members wish to have a detailed and constructive technical dialogue on the matters covered in the IDA draft since both organizations stand to benefit from a frank discussion of this topic.

#### **Factors Influencing NEMA's Point of View**

NEMA LSD members and IDA member share the same fundamental concerns regarding the need for energy conservation, night sky preservation, potential ecological impacts of outdoor lighting, and the growing body of research that seeks to understand and explain the interplay of the light-dark circadian cycle with human health.

NEMA LSD members support ongoing efforts by IDA and others to minimize the amount of outdoor electric lighting needed to achieve functionality and specifically to reduce unnecessary stray light including the likelihood of light trespass, nighttime sky glow, and excess energy consumption associated with inefficient lighting. NEMA member lighting companies are committed to provide improved lighting solutions that, if implemented on a broad scale, achieve objectives that both organizations would support. Members of NEMA have been actively working on the development of the IDA IES Model Lighting Ordinance to promote quality lighting standards for municipalities. Members are also actively working in collaboration with the IESNA Roadway Lighting Committee (RLC) regarding this general topic. Many NEMA members have been aggressive in developing and promoting the types of outdoor lighting products and practices that are endorsed or recommended by IDA, including sharp cutoff luminaires and lighting controls. NEMA members also support the adoption of sensible generic outdoor lighting ordinances and specific requirements that are sometimes tailored to localities that have particular concerns, such as disruption of sea turtle habitats.

Collaborative activity between NEMA and IDA is the best way to achieve future outdoor lighting changes which will benefit global climate, ecology, astronomy, and, potentially, human health.

However, NEMA LSD members have a major concern with the proposed IDA Draft Position Statement (DPS) and a recent press release ('Blue Light Threatens Animals and People', October 5, 2009) by IDA that seeks to portray 'white' outdoor lighting as a 'threatening' technology, and, seems aimed at sensationalism rather than informed discourse.

Several of the subjects covered in the proposed IDA statement are scientifically complex and are not yet fully understood even by the scientific community such that specific technical recommendations of the type proposed in the draft cannot be made, particularly regarding outdoor light source spectral content.

The DPS proposes to establish a technical requirement regarding spectral content that is essentially based on precautionary philosophy. NEMA LSD members, while sympathetic to the underlying concerns of some IDA members, contend that technical recommendations which have the potential to impact lighting products, emerging technologies, outdoor lighting design and architectural practices, lighting codes, and legislation must be based on fully mature expert consensus and sound science. By definition, sound science must include adequate replication of results and the validation of theories and hypotheses in the form of supporting measurements and data—not simply in a laboratory environment, but under real world field conditions. Only in this manner can sufficiently detailed technical and mathematical relationships be developed that can form the basis of actionable practices and standards.

The topic of lighting color is complex and involves many factors beyond CCT. Promoting specific CCT may have unintended consequences on overall lighting quality.

The proposed IDA statement does not meet these criteria.

Outdoor lighting products, technologies, and practices have a long tradition of being strongly engineering based, measurements and data driven, and this scientific-engineering tradition must continue, especially if future recommendations of the type proposed by IDA can be expected to credibly drive changes in how outdoor lighting is practiced, how emerging technologies such as solid state lighting are treated, and how future product offerings are configured.

LSD members do fully support many of the outdoor lighting recommendations contained in the DPS including:

- use of light control options such as motion sensing, time-of-night dimming, and stepped switching (including an appropriate use of complete shutoff for some applications)
- luminaire shielding to curtail excessive up light, glare, and light trespass
- limiting illumination to the specific task or targeted area
- designing for the minimum light levels and connected power load necessary for the task

*However, NEMA LSD members cannot accept the IDA recommendation that outdoor lighting systems 'minimize use of light sources with a CCT above 3000K'.*

*Such an approach is technically incorrect and, ultimately, too simplistic.*

Neither can NEMA LSD members accept a recommendation that 'that blue-rich light sources not be used, or if used, the light sources filtered to eliminate the light emissions in the 400-500nm region'. The term 'blue-rich' is not quantitative and therefore not actionable from a product engineering perspective. To 'fully eliminate' light emissions in the 400-500 nm region is not practical for some very commonly used outdoor light sources. Thus, it is clear NEMA LSD members and IDA members need to have further technical discourse on this subject.

The subject stated in DPS has been widely discussed in the industry beyond NEMA. IESNA has conducted many forums of discussions with information and collected data presented from wide range of researchers and laboratories. There are no confirmed conclusions within IESNA on these matters. This represents another reason it is not advisable to publish the IDA DPS. More studies must be conducted and scientific data must be collected in order for industry to establish agreed corresponding actions.

The DPS greatly oversimplifies the ecological tradeoffs that are inherent with any proposal to limit outdoor lighting to 3000K or below. Such a recommendation does not recognize the ironies of such a spectrum choice, namely, that 'red' light purportedly may disturb certain bird migrations while 'blue' light distracts sea turtles. How is such a trade-off to be reconciled between species?

Surely a more informed discussion is necessary.

### **NEMA LSD Position and Recommendation on a Collaborative Way Forward**

NEMA LSD members, several who are also IDA members, and all of whom have the same underlying desire to save energy, stem climate change, view the night sky with families and friends, protect wildlife and the ecology, reduce outdoor lighting glare and light trespass, and develop sound actionable recommendations regarding the interplay of light, lighting practices, and human health, strongly urge IDA to withhold the publication of any recommendation regarding the spectral content of what the DPS describes as blue-rich white light.

*The DPS incorporates an insufficiently justified rationale for a technical requirement for outdoor spectral source and luminaire content that is premature in its underlying assumptions and which is not sufficiently based on sound science, field data, and measurements. As a result, the proposed recommendation cannot be endorsed by NEMA LSD members. In addition, even if NEMA accepted the underlying assumptions behind the IDA recommendations, the technical aspects of the recommendation are not written in a way that is actionable.*

NEMA LSD members suggest instead a good faith effort to initiate an ongoing discussion with IDA members on the spectral content of outdoor lighting, including implications associated with such content and the specific nature of the research that is required to further determine if spectral content recommendations are warranted, including working cooperatively to achieve suitable research. If sound research determines such restrictions become advisable, then NEMA LSD members stand ready to promote the adoption of such requirements in a variety of product and application standards and in the manner that is necessary for technical implementation.

Further, NEMA LSD members seek to fully understand exactly what IDA is seeking to accomplish with its proposed position statement. 'Outdoor lighting' is a large application area made up of very specific application and product segments: exterior building lighting, neighborhood street lighting, security lighting, road and highway lighting, sports lighting, parking lot lighting, landscape lighting, and so forth. A shotgun approach of the type described in the proposed IDA draft position is not actionable across all segments in a practical manner. In addition, clearly all segments do not pose the same concerns to IDA members. Better progress could be made by discussing IDA concerns related to *specific outdoor application segments* based on a prioritized achievement of specific desired outcomes. If such an approach were followed it may be possible to develop collaborative approaches that would be much more effective in achieving common goals. This can only be done via a candid discussion.

**Proposed Next Steps**

NEMA LSD members propose that IDA hold in abeyance its efforts to progress the current draft position statement on bluish-white light. NEMA and IDA staff should arrange a collaborative one day meeting as described previously. The meeting should focus on specific concerns in a prioritized manner, particularly driven by application segments so that technical details can be addressed in a way that would potentially be actionable from a practical manner. IDA is invited to prepare an initial agenda for consideration and iteration by both organizations. NEMA offers to host such a meeting on a mutually agreeable date. We look forward to a reply at your earliest convenience so planning may commence.

Sincerely,

A handwritten signature in blue ink, appearing to read "Alex P. Boesenberg", with a long, sweeping horizontal line extending to the right.

Alex P. Boesenberg  
NEMA Lighting Systems Division  
Technical Program Manager

cc: Ms. Rowena Davis, Writer, Editor  
Mr. Terry McGowan, EE, FIES, LC