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July 23, 2008

Mr. Gary Flamm
Docket No. 07-AAER-3
California Energy Commission
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

Subject: Title 20 2008 Metal Halide Luminaire – Proposed code language

Dear Mr. Flamm,

Again, we thank you for discussing the metal halide luminaire code proposal with the NEMA Lighting Division members this week. We appreciate your commitment to promoting open dialog on the proposed regulation. Our comments and concerns are outlined below along with proposed code language at the end.

- During the Title 20 process, CEC indicated an interest in expanding the existing MH Luminaire regulation to achieve additional energy savings equivalent to what would be achieved with high efficiency electronic ballasts.
    - NEMA outlined a variety of technical concerns associated with requiring electronic ballasts for MH luminaires and all possible applications for these products. The most significant of these concerns are the lack of reliable operation of electronic ballasts in conditions with unregulated power quality such as outdoor lighting and high ambient temperature applications.
    - NEMA is committed to helping CEC achieve the necessary energy reductions required in AB1109. We have indicated that increasing ballast efficiency may not be the most aggressive approach to reducing overall energy consumption for MH luminaires. We proposed an option to use electronic ballasts or lighting systems with controls. When the option for controls is used to meet compliance, the energy reductions will be significantly more than using electronic ballasts, typically achieving energy savings of over 50% as compared to lighting systems without controls. High efficiency electronic ballasts will result in only a 4% power reduction with an incremental 5% increase in lamp efficacy if lumen maintenance is considered. Combined benefits still result in only 9% energy savings, at an incremental cost much higher than the energy benefits.
- We contend that the "menu" of options outlined in the 1/1/2010 requirements meet the objective of achieving energy savings in excess of what can be achieved with high efficiency electronic ballasts, therefore the proposed regulation for 2010 substantially exceeds the original CEC expectations for energy savings.
    - The 2014 proposal for high efficiency ballasts with additional requirements for controls or reduced wattage lamps does not resolve the technical issues associated with power quality or high ambient temperature. We cannot project when, or if, electronic ballasts can be designed to provide reliable performance under these conditions.
    - The most recent revised proposal for 2014 removed the menu options for controls or reduced wattage lamps, allowing only luminaires with a high efficiency ballast to meet with the regulation. This would actually result in higher energy use than the 2010 requirements

since controls offer the substantially more energy reduction than high efficiency electronic ballasts.

  - NEMA is interested in promoting the increased use of controls in California, but the appliance standard must offer options so that the most appropriate energy saving option can be used for a specific application. The discussions over the last several months regarding Title 20 reinforces our ongoing requests to utilize Title 24 standards where the energy solution varies based on the lighting application. We have seen no evidence to support that there are significant sales of these products that would not be covered by Title 24 enforcement for new construction or major renovations. Since there is a strong interest by CEC to resolve this Title 20 approach, NEMA will only support a regulatory approach that offers the "menu" of options to comply with the standard. In addition, we would like to continue to evaluate the definition of "integral control" during the 45-day language to determine if there is a modified definition that would provide a greater incentive for the optimal use of controls with MH luminaires.
  - We have added a control option for outdoor "part night" systems. These systems automatically schedule the lights to be reduced or turned off at times throughout the night. This would not currently be covered under the definition of an occupancy sensor or automatic daylight control, yet they can provide energy savings of 50%.
  - NEMA will not support either proposal presented in the last week for the 2014 requirement for Metal Halide luminaires.

- In order to ensure that manufacturers are not burdened with the expense and disruption to our business associated with ballast failures associated with electronic ballasts; we must include an exemption from the use of high efficiency electronic ballasts for outdoor and high ambient temperature applications. In their April CASE report, ACEEE recommended an exemption for outdoor lighting to prevent the marketplace from "backsliding" from MH to HPS fixtures.
- We believe the current CEC language that allows the use of reduced wattage lamps is very clumsy, e.g. 150-155w, 195-210w, 320-350w. However, this option may be the most appropriate for applications where electronic ballasts or controls are not advantageous. We have therefore modified the wattage ranges to allow lamp products in a broader range of wattages to allow higher lamp efficacies.
- If these issues cannot be resolved during the 45-day review, then we recommend that CEC adopt the Federal EISA standards for MH luminaires based on ballast efficiency and we will work with CEC to include control options in the next version of the Title 24 building standard for applications where the controls are most appropriate. This approach would in fact provide a greater assurance of product compliance in California.

We appreciate the opportunity to evaluate the proposed language prior to the 45-day publication. The following proposal for the 45-day code language will provide California with substantial energy reductions for MH luminaires, while allowing manufacturers and designers the flexibility to choose compliance options that best suit the requirements of the intended application.

1602 (n)

"Integral Control" means an Occupancy Sensor, Automatic Daylight Control or a Part Night Control that is packaged and shipped with the luminaire, and is integrated into the luminaire at the factory in one of the following three methods:

1. Is integrated directly into the luminaire housing and hardwired to the lighting system; or
2. Is hardwired to one end of a wire whip, where the other end of the wire whip is hardwired directly to the lighting system in the luminaire; or
3. Uses a wireless radio controlled sensor, where a wireless control is hardwired directly to the lighting system.

"Occupant Sensor, Lighting" is a device that automatically reduces lighting or turns lights off soon after an area is vacated.

"Automatic Daylight Control" is a control that automatically reduces lighting in response to available daylight. This control typically uses photosensors to detect changes in daylight illumination and then change the electric lighting level in response to the daylight changes.

"Part Night Control" is a control that automatically reduces lighting for outdoor luminaires during the nighttime hours. This control automatically schedules the lighting to be reduced or turned off so that the lights do not operate at full light output throughout the nighttime hours.

1605.3 (n) Luminaires.

(2) Energy Efficiency Standard for Metal Halide Luminaires

Metal halide luminaires rated for 150 to 500 watts manufactured on or after January 1, 2010 shall not have probe-start ballasts and shall comply with either A or B:

A. Shall have a minimum ballast efficiency as follows:

1. 90 percent minimum ballast efficiency for 150 to 250 watt lamps

2. 92 percent minimum ballast efficiency for 251 to 500 watt lamps

B. Shall have a minimum ballast efficiency of 88 percent and shall comply with either 1, 2, 3 or 4:

1. Metal halide luminaires having an Occupant Sensor which is an Integral Control as defined in §1602(n), shipped with the factory default setting to automatically reduce nominal lamp power through dimming by a minimum of 40 percent within 30 minutes or less after the area has been vacated. This compliance option can be used for metal halide luminaires rated for indoor, outdoor, or both indoor and outdoor use.

2. Metal halide luminaires having a Part Night Control which is an Integral Control as defined in §1602(n), shipped with the factory default setting to automatically reduce nominal lamp power through dimming by a minimum of 40 percent. This compliance option can be used for metal halide luminaires rated only for outdoor use.

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3. Metal halide luminaires having an Automatic Daylight Control which is an Integral Control as defined in §1602(n), shipped with the factory default setting to automatically reduce nominal lamp power through dimming by a minimum of 40 percent. This compliance options can be used only for metal halide luminaires rated only for indoor use:

4. Luminaire shall be equipped with a ballast able to operate only 150-160 watt, 185-225 watt, or 280-350 watt lamps.

Exceptions to Section 1605.3(n)(2):
The following metal halide lighting systems are not required to meet the minimum ballast efficiency requirements:

1) Luminaires that use regulated lag ballasts;
2) Luminaires that use electronic ballasts which operate at 480 volts; or
3) Luminaires that meet all three of the following requirements:
   a. Are rated only for use with 150 watt lamps, and
   b. Are rated for use in wet locations, as specified by the National Electrical Code 2002, Section 410.4(A); and
   c. Contain a ballast that is rated to operate at ambient air temperatures above 50 degrees C, as specified by UL 1029-2001.
4) Luminaires rated for outdoor use with a non-probe-start ballast with a minimum ballast efficiency of 88%.
5) Luminaires rated for use in ambient air temperatures of 55 degrees C or higher, as specified by UL 1598 - 2004, Section 12.4, with a non-probe-start ballast with a minimum ballast efficiency of 88%.

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Section 1606 – Table V (N)

Metal Halide Luminaires	Compliance Method Used	1. ≥ 90/92% efficient ballast 2. ≥ 88% efficient ballast with integral control 3. ≥ 88% efficient ballast able to operate only 150-160 watt, 185-225 watt, or 280-350 watt lamps
	Lamp Rating (watts)	
	Ballast Type {only applies to models manufactured on or after January 1, 2006}	Probe-start electronic, probe-start magnetic, pulse-start electronic, pulse start magnetic, other (specify)
	Minimum ballast efficiency	percentage
	Rated Use	Indoor, Outdoor, Both
	Integral Control Type	Occupancy Sensor, Part Night Control, Automatic Daylight Control, Not applicable
	Integral Control Method	1. Directly into luminaire housing 2. Hardwired to wire whip 3. Wireless radio controlled sensor 4. Not applicable
	Integral Occupancy Sensor will be shipped with the factory default setting to automatically reduces nominal lamp power through dimming by a minimum of 40 percent within 30 minutes or less after the area has been vacated.	Yes/No/ Not applicable
	Integral Automatic Daylight Control will be shipped with the factory default setting to automatically reduce nominal lamp power through dimming by a minimum of 40 percent.	Yes/No/ Not applicable

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NEMA appreciates the attentiveness and cooperation of the CEC throughout this rulemaking. As always, if you have any questions, please feel free to contact Dain Hansen at (703) 841-3200.

Sincerely,

Kyle Pitsor

Kyle Pitsor
Vice President,
NEMA Government Relations