Pacific Gas and Electric Company®

October 13, 2008

Ms. Jackalyne Pfannenstiel
Chairman and Associate Member, Efficiency Committee

Mr. Arthur Rosenfeld
Commissioner and Presiding Member, Efficiency Committee

California Energy Commission
Buildings and Appliances Office
1516 Ninth Street, MS-25
Sacramento, CA 95814-5512

Subject: PG&E Comments on Title 20 45-Day Language for Metal Halide Luminaires;
RE: 2008 Rulemaking on Appliance Efficiency Regulations;
Docket No. 08-AAER-1A; Metal Halide Luminaires

Dear Ms. Pfannenstiel and Mr. Rosenfeld:

These comments are divided into two parts:

Part 1. Background supporting PG&E's metal halide luminaire recommendations; and

Part 2. Specific recommended changes to Title 20 45-Day Language for metal halide luminaires.

We appreciate your consideration.

Sincerely,

Patrick Eilert
Program Manager, Codes and Standards
Pacific Gas & Electric Company

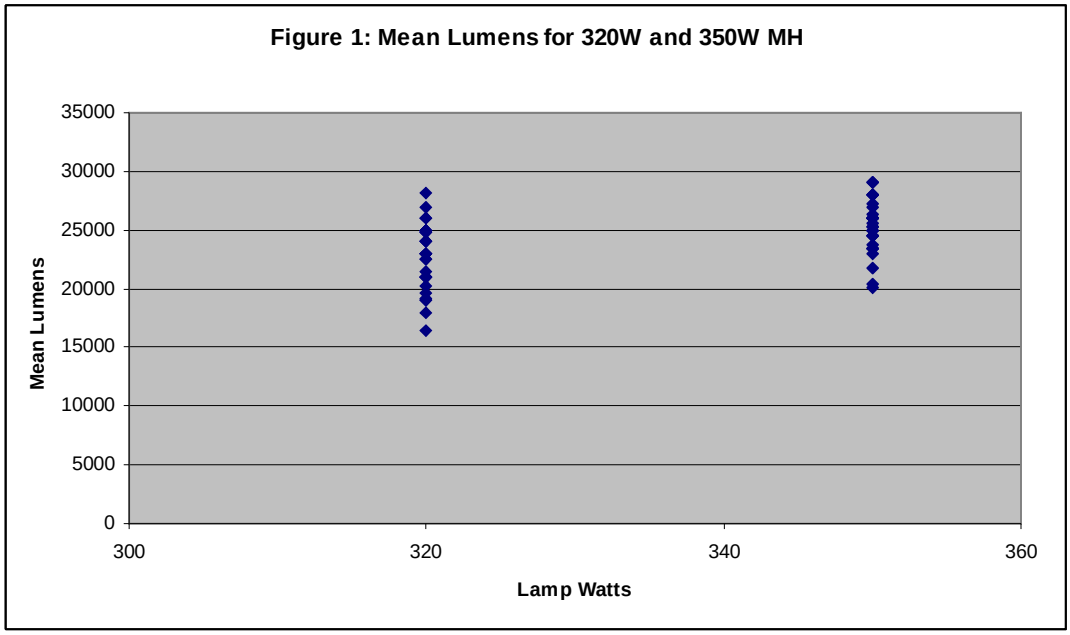
Part 1: BACKGROUND SUPPORTING PG&E'S METAL HALIDE LUMINAIRE RECOMMENDATIONS

In general, PG&E supports the approach for the metal halide luminaire standard in the 45-Day Language with some modifications. This approach offers flexibility in the near term by providing three compliance pathways and guarantees additional longer-term energy savings by strengthening the standard in future years to take advantage of improvements in metal halide technology. We recommend several modifications that will increase energy savings while providing greater flexibility for consumers and lighting designers installing metal halide lighting systems.

Our written comments address issues raised by PG&E at the September 17th hearing as well as responses to the strawman proposal circulated by CEC staff on September 25th. Specifically, we address 1) wattage ranges for the low-wattage lamp compliance option; 2) a mechanism to allow for the use of high-efficacy, higher-wattage lamps; and 3) inclusion of Tier 2 requirements to replace the sunset provision for the low-wattage lamp option.

1. Revise the wattage ranges proposed for the low-wattage lamp compliance option

The low-wattage lamp compliance option (Section 1605.3(n)(2)(B)3) establishes wattage ranges for products seeking to meet the standard through the use of lower wattage lamps. Pulse-start metal halide lamps within these ranges provide the same light output as conventional probe-start lamps (e.g., 175W, 250W, 400W). As illustrated in Figure 1, many currently available 320W lamps provide mean lumen levels equivalent to those of the 350W lamps. As a result, we recommend reducing the upper bound of the 280W to 350W range to 335W. We were pleased to see this change made in the strawman proposal circulated by CEC staff, dated September 25, 2008.



Note: n=32 for 320W lamps, n=29 for 350W lamps.

2. Provide an exception for the use of high-efficacy, higher-wattage lamps

In some applications, the use of higher-wattage lamps (the most common are 400W) can reduce overall energy consumption by increasing fixture spacing and reducing the number of fixtures used in the space. This saves consumers money on energy and upfront installation costs. To capture these savings and allow for greater design flexibility in all applications, we recommend that the CEC include an exception for luminaires rated for use with 336W to 500W lamps, within the low-wattage compliance option, provided that these luminaires ship prepackaged with a metal halide lamp with a minimum efficacy of 80 mean lumens per watt. At present, three manufacturers offer pulse-start quartz metal halide lamps which meet these efficacy requirements. In order to achieve the desired energy savings from this provision, it is critical to establish a mean lumens per watt requirement to ensure the lumen maintenance needed to effectively increase fixture spacing and reduce overall wattage. There are lamps available that provide superior initial lumens, but experience rapid lumen depreciation.

We believe this approach is preferable to that in the September 25 strawman proposal which effectively bans new metal halide luminaires designed to operate lamps over 335W by requiring the use of reduced wattage lamps *and* either high efficiency ballasts as specified in Section 1605.3(n)(2)(A) or lighting controls as specified in Section 1605.3(n)(2)(B)1 or Section 1605.3(n)(2)(B)2.

3. Include separate requirements for interior and exterior luminaires in lieu of the sunset provision for the lower wattage lamp option

Section 1605.3(n)(2)(B)3 of the 45-Day Language includes a sunset provision, that effectively serves as a Tier 2, eliminating the low-wattage lamp compliance option as of January 1, 2014. In lieu of the sunset, we propose separate Tier 2 requirements for interior and exterior luminaires. Specifically, we recommend that CEC adopt a Tier 1 standard for interior and exterior luminaires allowing the three compliance pathways outlined in the 45-Day Language with the modifications described above (i.e., revised wattage range of 280W to 335W and exception for 336W to 500W luminaires shipped with lamps meeting minimum 80 lumens per watt). For interior fixtures, a Tier 2 requirement effective January 1, 2012 would require the use of reduced wattage lamps (with the exception for high-efficacy, higher wattage lamps) *and* either high efficiency ballasts or lighting controls as outlined in the September 25 strawman proposal. For exterior fixtures, the same Tier 2 requirements would take effect January 1, 2016. This change will provide some additional time for further development of high-efficiency ballasts and control strategies for interior applications (which account for more than 80% of metal halide energy consumption), yet allow California to capture some of the savings lost by delaying requirements for exterior luminaires until 2016.

We believe this approach addresses industry concerns about the near-term availability of electronic ballasts or controls for all interior applications and the need for further development of electronic ballasts (including means of addressing the impact of transients and other reliability issues) and/or appropriate control strategies for exterior applications. We acknowledge the issues raised by industry and the remaining uncertainty about when these technical challenges will be overcome, however we believe these challenges are not insurmountable and have confidence that the 2016 effective date will allow sufficient time for the necessary technical improvements. At the same time, we strongly urge the CEC to adopt Tier 2 standards to take advantage of the one-

time window provided by Congress's limited exception from pre-emption for California to establish more stringent standards for metal halide luminaires.[1]

PART 2: SPECIFIC RECOMMENDED CHANGES TO THE TITLE 20 45-DAY LANGUAGE FOR METAL HALIDE LUMINAIRES

1604(n)(2) IESNA LM-51-00 is the industry standard test procedure for determining the electrical and photometric performance of HID lamps.

1602(n) "Outdoor Metal Halide Luminaire" means a metal halide luminaire that is rated only for use in wet locations, as specified by the National Electrical Code 2002, Section 410.4(A), contains a ballast that is rated to operate only at ambient air temperatures above 50 degrees C, as specified by UL 1029-2001, and is labeled, "Only for use in outdoor applications" or similar language.

1605.3(n)
(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 Section 1605.3(n)(2)(A) or Section 1605.3(n)(2)(B) or 1605.3(n)(2)(C):

(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 Section 1605.3(n)(2)(B)1 or Section 1605.3(n)(2)(B) 2:

1. Shall have an Occupant Sensor which is an Integral Control as defined in Section 1602(n) of this Article, shipped with the factory default setting to automatically reduce lamp power through dimming by a minimum of 40 percent within 30 minutes or less after the area has been vacated.

2. Shall have an Automatic Daylight Control which is an Integral Control as defined in Section 1602(n) of this Article, shipped with the factory default setting to automatically reduce lamp power through dimming by a minimum of 40 percent. This compliance option can only be used for metal halide luminaires rated for only indoor use.

~~3.~~ (C) ~~Shall be manufactured on or after January 1, 2010 and before December 31, 2013 and s~~ Shall be equipped with a ballast able to

[1] The CEC may set adopt a standard for metal halide lamp fixtures on or before January 1, 2011. *H.R. 6 Energy Independence and Security Act of 2007*, Sect. 324 Metal Halide Lamp Fixtures, Subsection (f)(2)(9). Accessible at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_bills&docid=f:h6enr.txt.pdf

operate only 150-160 watt, 185-225 watt, or 280-~~350~~335 watt lamps and that has a ballast efficiency of at least 88%.
~~This compliance option shall not be available for luminaires manufactured on or after January 1, 2014.~~ Exception: If rated for use with 336 – 500W lamp, shall have a minimum ballast efficiency of 88% and must ship prepackaged with a lamp with a minimum efficacy of 80 mean lumens per watt.

(3) Energy Efficiency Standard for Metal Halide Luminaires. Metal halide luminaires rated for 150 to 500 watts manufactured on or after January 1, 2012 shall not have probe-start ballasts and shall comply with Section 1605.3(n)(2)(C) and either Section 1605.3(n)(2)(A) or Section 1605.3(n)(2)(B). Exception: Outdoor metal halide luminaires manufactured before January 1, 2016.

EXCEPTIONS to Sections 1605.3(n)(2)(A) and 1605.3(n)(2)(B):
The following metal halide lighting systems shall not have probe-start ballasts and 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 for use only 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.