

## COUNCIL ACTION FORM

**SUBJECT: ZONING ORDINANCE TEXT AMENDMENT – OUTDOOR LIGHTING CODE**

**BACKGROUND:**

Staff is proposing two changes to the outdoor lighting code that will allow them to more effectively administer this ordinance and to ease the burden on our customers as they install compliant outdoor lighting fixtures.

The Outdoor Lighting Code (Section 29.411) of the Zoning Ordinance regulates, among other things, the amount of light emitted in the glare zone of outdoor light fixtures. The glare zone is defined as the area between “15 degrees below the horizontal to the horizontal plane through the lowest direct light emitting part of the luminaire.” This is the area measured from 75 degrees from horizontal to 90 degrees from horizontal. The amount of light that can be emitted in this 15 degree angle is no more than 5 percent of its total lumens, and no light can be emitted above the horizontal plane.

In determining whether a luminaire meets these limits, staff relies on information provided by the manufacturer or the vendor. The lighting industry has several firms that measure light output of luminaires and provide a standard display of that information in a Photometric Report. The Luminaire Classification System (LCS) summary provides luminaire lumens output over a range of angles. These ranges of angles are: 0 degrees (straight down) to 30 degrees; 30 to 60 degrees; 60 to 80 degrees; 80 to 90 degrees (horizontal); 90 to 100 degrees; and 100 degrees to 180 degrees (straight up). The LCS summary details the number and percent of luminaire lumens that are found within each range, from the front of the lamp and the rear of the lamp. An example of the LCS summary is attached to this report.

The range of angles of the LCS summary providing information that most closely matches the requirements of the ordinance is the 80 to 90 degree range, while the City of Ames ordinance regulates the 75 to 90 degree range. **In order to determine whether a luminaire is compliant, staff must extrapolate data from LCS summary in the 60 to 80 degree range and add it to the data in the 80 to 90 degree range. This is not an exact mathematical exercise, since light does not fall evenly within any of the range of angles. Sometimes staff has to guess or apply best judgment to determine whether a luminaire meets the requirements of the lighting ordinance.**

The City’s outdoor lighting code also requires that information on the lighting fixtures be submitted at the time that a site development plan is submitted. Staff has repeatedly heard from architects, engineers, and developers that the owner of a building may not yet know what his outdoor lighting fixtures will be at the site development stage, but that those details oftentimes evolve as the project progresses.

In response to these customer suggestions, staff asked the City Council to refer this item for a recommendation, and that was done on January 12, 2010. Two changes to the outdoor lighting ordinance are now being proposed.

**One change is to amend the code to allow no more than 5 percent of total lumens to fall within the 10 degree below horizontal to horizontal plane. This is the 80-degree to 90-degree range that is the industry standard for glare zone, bringing our regulatory requirement into alignment with the industry standard. It also removes any opportunity for error in extrapolating lighting information in the 15 degree glare zone and would remove any ambiguity as to whether a fixture meets the standards.**

**The second change is to allow an applicant to either supply the requested information at the time of site plan submittal or to note on the plan that the information will be submitted to the Planning and Housing Department prior to installation.**

Staff discussed these changes, as well as other options, with interested customers at a quarterly meeting in April. Based upon that discussion, staff prepared draft amendments and e-mailed them to local developers, architects, and engineers for review and comment.

Staff also discussed these options with Dave Speer of Lighting Analysts, Inc. His firm evaluates luminaires and generates lighting information for manufacturers. Mr. Speer confirms that the 80 to 90 degree range is the industry standard for glare zone regulations. While the 75 to 90 degree range can certainly be evaluated, his firm has no plans to generate that data.

Staff also contacted David Oesper and Ed Engle. Both were members of the committee that initially developed the outdoor lighting ordinance for Council's adoption. Both indicated that it is important to maintain some regulation over lumens that are emitted in the glare zone and both believed that changing the standard from no more than 5 percent in the 80 to 90 degree range would have a negligible impact on light pollution from the existing standard of no more than 5 percent in the 75 to 90 degree range. Both indicated support of the proposed changes.

**Recommendation of the Planning & Zoning Commission.** At its meeting of August 4, 2010, with a vote of 6-0, the Commission recommended approval of the Zoning Ordinance text amendments presented by staff. These amendments are included as an attachment to this report. No one attended the meeting to speak in opposition to or support of the proposed changes.

#### **ALTERNATIVES:**

1. The City Council can adopt the amendments as proposed and attached.
2. The City Council can adopt the proposed amendments, with modifications.

3. The City Council can choose to not adopt the proposed amendments.
4. The City Council can refer this back to staff for additional analysis.

**MANAGER'S RECOMMENDED ACTION:**

The proposed amendments respond to customer and staff concerns about the unavailability of information to determine compliance with the City's outdoor lighting ordinance. The amendments will require the submittal of information that is readily available from manufacturers or vendors of lighting fixtures. The current practice relies on extrapolation of data that sometimes is imprecise.

The amendment also allows customer an option when submitting a site plan application. The customer will be able to submit necessary lighting information with the application or else note on the plan that lighting will be approved later. This will allow customers to determine the actual lighting fixtures at a later date while still requiring staff to evaluate the fixtures prior to installation.

Therefore, it is the City Manager's recommendation that the City Council accept Alternative #1, which is to adopt the attached changes to the City's outdoor lighting code.

## Photometric Report (Type C)

Filename: ekg501-4-250s-hs.ies

[TEST] kl01416

[ISSUEDATE] 08\_13\_07

[MANUFAC] KIM LIGHTING

[LUMCAT] EKG501-4\_250HPS-E18\_HS

[LUMINAIRE] EKG CONVENTIONAL SHOEBOX LUMINAIRE DIE  
CAST ALUM REFLECTOR SYSTEM WITH HIGH SPECULAR PANELS  
EXTRUDED ALUMI HOUSING AND LENS FRAME CLEAR FLAT GLASS LENS

[LAMP] 250 WATT CLEAR, HPS E18 LAMP, HORIZONTAL

POSITION, RATED AT 28500 INITIAL LUMENS



Maximum Candela = 9226 at 51.5 H 72.5 V

### Classification:

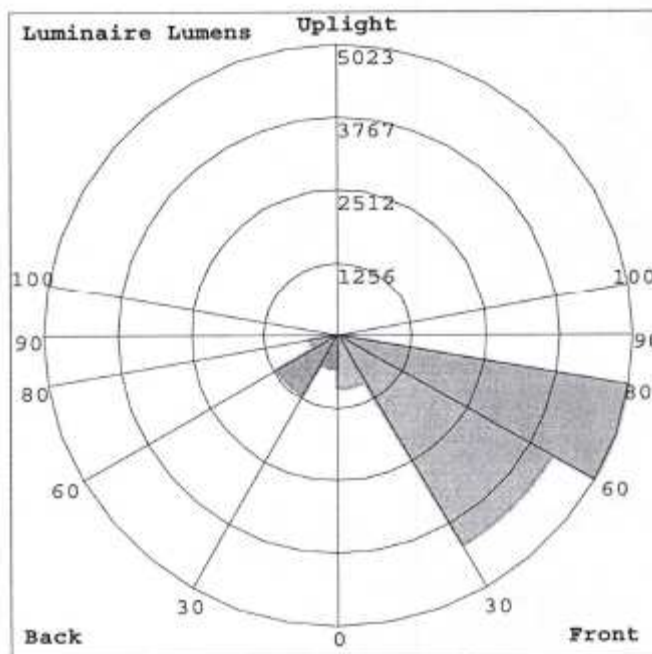
Road Classification: Type IV, Medium, Full Cutoff (deprecated)

Luminaire Efficacy Rating (LER): 50

Indoor Classification: Direct

### LCS Summary:

LCS Zone	Lumens	%Lamp	%Lum
FL (0-30)	923.6	3.3	7.4
FM (30-60)	4189.4	15.0	33.5
FH (60-80)	5023.2	17.9	40.2
FVH (80-90)	114.3	0.4	0.9
BL (0-30)	577.5	2.1	4.6
BM (30-60)	1180.9	4.2	9.4
BH (60-80)	465.5	1.7	3.7
BVH (80-90)	22.6	0.1	0.2
UL (90-100)	0.0	0.0	0.0
UH (100-180)	0.0	0.0	0.0
Total	12497.0	44.7	100.0



<p style="text-align: center;"><b>Outdoor Lighting Code</b> <b>- Proposed Amendments -</b></p>
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The following proposed amendments pertain to the Outdoor Lighting Code (Section 29.411). Current regulations are cited below, with proposed new language shown as **underlined** text, and proposed deleted language shown as **~~strikeout~~** text. Only those sections and paragraphs with proposed changes are shown.

**Section 29.411(4) Control of Glare – Luminaire Design Factors**

- (a) Any luminaire with a lamp rated at more than 1800 lumens shall not emit, in its installed position, any direct light above a horizontal plane through the lowest direct light emitting part of the luminaire.
- (b) Any luminaire with a lamp rated at more than 1800 lumens, shall not emit in its installed position any more than 5% of its total light output in the zone from **15** **10** degrees below the horizontal to the horizontal plane through the lowest direct light emitting part of the luminaire.

**Section 29.411(10) Development Permits**

- (a) Submission Contents. The applicant for any permit or site plan approval required by any provision of the ordinances of this city involving outdoor lighting fixtures shall submit (as part of the application for site plan approval or a permit) evidence that the proposed work or activity will comply with the Outdoor Lighting Code. Specifically, the application or submission shall include:
  - (i) plans indicating the location on the premises, and the type of illuminating devices, fixtures, lamps, supports, reflectors, and other devices;
  - (ii) a detailed description of the illuminating devices, fixtures, lamps, supports, reflectors, and other devices. The description shall include manufacturer's catalog cuts and drawings, including sections when requested;
  - (iii) photometric data, such as that furnished by manufacturers, showing the angle of cut off or light emissions, **or luminaire classification system data as supplied by the manufacturer or independent testing laboratory.**
- (b) Additional Submission. The above required plans, descriptions and data shall be sufficiently complete to enable the plans examiner to readily determine whether compliance with the requirements of the Outdoor Lighting Code will be secured. If such plans, descriptions and data cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures, or lamps proposed, the applicant shall additionally submit as evidence of compliance to enable such determination such certified reports of tests as will do so provided that these tests shall have been performed and certified by a recognized testing laboratory.
- (c) Alternative Submission. As an alternative to 10 (a) and 10 (b) above, a note may be placed on the site plan indicating that no outdoor lighting shall be installed unless approved by the Department of Planning and**

**Housing. Prior to installation of any outdoor lighting fixtures, sufficient information as described in 10 (a) or 10 (b) above shall be submitted to the Department in order to determine compliance with the Outdoor Lighting Code.**

**(e)(d)** Lamp or Fixture Substitution. Should any outdoor light fixture, or the type of light source therein, be changed after the permit has been issued, a change request must be submitted to the building official for approval, together with adequate information to assure compliance with this code, which must be received prior to substitution.

**ORDINANCE NO. \_\_\_\_\_**

**AN ORDINANCE TO AMEND THE MUNICIPAL CODE OF THE CITY OF AMES, IOWA, BY AMENDING CHAPTER 29 SECTIONS 29.411(4) (a),(b), 29.411(10)(a)(i)(ii)(iii)(b)(c)(d), THEREOF, FOR THE PURPOSE OF DETERMINING COMPLIANCE WITH OUTDOOR LIGHTING; REPEALING ANY AND ALL ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT TO THE EXTENT OF SUCH CONFLICT; PROVIDING A PENALTY; AND ESTABLISHING AN EFFECTIVE DATE.**

**BE IT ENACTED**, by the City Council for the City of Ames, Iowa, that:

Section One. The Municipal Code of the City of Ames, Iowa shall be and the same is hereby amended by amending Sections 29.411(3)(a)(b) and 29.411(9)(a)(i)(ii)(iii)(b)(c)(d) as follows:

**“Section 29.411(4) Control of Glare – Luminaire Design Factors**

(a) Any luminaire with a lamp rated at more than 1800 lumens shall not emit, in its installed position, any direct light above a horizontal plane through the lowest direct light emitting part of the luminaire.

(b) Any luminaire with a lamp rated at more than 1800 lumens, shall not emit in its installed position any more than 5% of its total light output in the zone from 10 degrees below the horizontal to the horizontal plane through the lowest direct light emitting part of the luminaire.

**Section 29.411(10) Development Permits**

(a) Submission Contents. The applicant for any permit or site plan approval required by any provision of the ordinances of this city involving outdoor lighting fixtures shall submit (as part of the application for site plan approval or a permit) evidence that the proposed work or activity will comply with the Outdoor Lighting Code. Specifically, the application or submission shall include:

(i) plans indicating the location on the premises, and the type of illuminating devices, fixtures, lamps, supports, reflectors, and other devices;

(ii) a detailed description of the illuminating devices, fixtures, lamps, supports, reflectors, and other devices. The description shall include manufacturer’s catalog cuts and drawings, including sections when requested;

(iii) photometric data, such as that furnished by manufacturers, showing the angle of cut off or light emissions, or luminaire classification system data as supplied by the manufacturer or independent testing laboratory.

(b) Additional Submission. The above required plans, descriptions and data shall be sufficiently complete to enable the plans examiner to readily determine whether compliance with the requirements of the Outdoor Lighting Code will be secured. If such plans, descriptions and data cannot enable this ready determination, by reason of the nature or configuration of the devices, fixtures, or lamps proposed, the applicant shall additionally submit as evidence of compliance to enable such determination such certified reports of tests as will do so provided that these tests shall have been performed and certified by a recognized testing laboratory.

(c) Alternative Submission. As an alternative to 10(a) and 10(b) above, a note may be placed on the site plan indicating that no outdoor lighting shall be installed unless approved by the Department of Planning and Housing. Prior to installation of any outdoor lighting fixtures, sufficient information as described in 10(a) or 10(b) above shall be submitted to the Department in order to determine compliance with the Outdoor Lighting Code.

(d) Lamp or Fixture Substitution. Should any outdoor light fixture, or the type of light source therein, be changed after the permit has been issued, a change request must be submitted to the building official for approval, together with adequate information to assure compliance with this code, which must be received prior to substitution.”

Section Two. Violation of the provisions of this ordinance shall constitute a simple misdemeanor punishable as set out by law.

Section Three. All ordinances, or parts of ordinances, in conflict herewith are hereby repealed to the extent of such conflict, if any.

Section Four. This ordinance shall be in full force and effect from and after its passage and publication as required by law.

Passed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

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Diane R. Voss, City Clerk

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Ann H. Campbell, Mayor