

**RE: Critique of KCMO draft ordinance on Outdoor Lighting dated July 16, 2007.**

My name is Robert Wagner I have been working with the KCMO Street Light Division and outdoor lighting group to help put together the Outdoor Lighting ordinance. In addition, I have worked with various Missouri cities, the Boy Scouts of America and several federal agencies. I also operate a website called Midwest Citizens for Responsible Outdoor Lighting and freely volunteer my time to others trying to understand the problem of Light Pollution. I am providing this critique as a way of enhancing the current draft, not preventing it from passing.

In general an Outdoor Lighting ordinance is designed to reduced or eliminate the adverse impacts of poorly designed illumination. The adverse qualities commonly addressed are Sky Glow, Light Trespass and Glare. Sky Glow is the bright haze that we see overhead when the sun goes down. Light Trespass is measurable light crossing the property line and Glare is the bright lights seen from outside the property and into our windows at night.

To address Sky Glow two items need to be regulated. The first is direct light emitted into the sky. The draft ordinance reduces the national average 33% up-lighting to a 2.5% limit. While this is a good start, most cities and states addressing up-light have adopted the Illumination Society of North American's (IESNA) Full-Cutoff standard. In addition to preventing direct up-lighting, the Full-Cutoff standard also reduces high angle glare. Light emitted above 80% typically never reaches the ground where it can be used. The second item is referred to as Over-lighting. This occurs when the property owner exceeds published IESNA illumination standards for the sake of being "brighter" than their neighbor. Many gas stations identified in 80-430-05-B are several times these recommended standards. In outdoor display lots, such as car dealerships, these bright lights continue even after the business has closed for the evening. Several articles have been published showing bringing lighting levels in compliance with IESNA standards have resulted in improved revenue for affected businesses. The draft ordinance has no regulations to prevent Over-lighting.

To address Light Trespass the city should limit spillover light. Item 80-430-05-C does limit spillover light, but the limitations and exemptions prevent this from being applied to any of the city. As stated by the KCMO Street Light Department, bright lights from private property into the public streets violate our compliance with IESNA RP-8-00 standards and result in a hazard to pedestrians and drivers alike. Section 80-430-05-C could easily be modified to include the street or public right-of-way. The exemptions (80-430-03) will be addressed below.

Glare, although mentioned in the purpose (80-430-01) and in the current city ordinances is not addressed in the draft ordinance. In speaking with Madison, Wisconsin, they simply prohibit lighting where the lighting source or reflector can be seen from an adjoining property.

80-430-03 Exemptions. After reviewing the exemptions, almost every light could fall into these categories. Here are my thoughts:

80-430-03-B "security lights controlled and activated by motion sensor devices for a duration of 15 minutes or less;". The term "security" is a marketing term (no light guarantees against any kind of criminal act) and should not be used. Additionally, the exclusion of lights emitting less than 4,050 lumens makes this item not necessary.

80-430-03-C “outdoor lights on lots occupied by residential buildings containing fewer than 4 dwelling units;” I believe this might be an error. This excludes all single family residences – the people most likely to want privacy and avoid nuisances. This line should be removed.

80-430-03-F “city street lighting system;” Any incorrectly aimed light pointing into the street could be claimed to be a city street light. Only those that fully comply with IESNA RP-8-00 should be excluded. Changing this to “city street lighting system complying to IESNA RP-8-00 standard;” would make more sense.

80-430-03-G “luminous tube lighting;” Every light bulb could be argued to be a luminous tube, thus excluding this entire Outdoor Lighting ordinance. This should define luminous tube like:

[http://www.coconino.az.gov/uploadedFiles/Community\\_Development/Section17.pdf](http://www.coconino.az.gov/uploadedFiles/Community_Development/Section17.pdf)

LUMINOUS TUBE means a glass tube filled with a gas or gas mixture (including neon, argon, mercury or other gasses), usually of small diameter (10-15 millimeter), caused to emit light by the passage of an electric current, and commonly bent into various forms for use as decoration or signs. A "neon" tube. Does not include common fluorescent tubes.

80-430-03-I “lights associated with outdoor recreation uses, which are subject to the standards of 80-430-07;” This is a very broad exclusion and many activities occurring outside could be considered outdoor recreation. There are no requirements to shut lights off after the conclusion of activities or a recommended curfew time – 10pm. Additionally, lights fixtures are available to comply with all of the aspects of this ordinance so this exclusion is not necessary. If deemed necessary, this can be improved with the addition of something like “Curfew: All events shall be scheduled so as to complete all activity before the curfew of 10pm. Illumination of the playing field, court or track shall be permitted after the curfew only to conclude a scheduled event that was unable to conclude before the curfew due to unusual circumstances.”

The current draft is certainly an improvement over existing standards. Light pollution is increasing at an average rate of 5%-10% annually in the US. The current draft never sunsets existing lights (even something like 10 years would be helpful). While this draft is not expected to greatly impact this annual increase, continued focus through the establishment of a committee on Outdoor Lighting might be able to.

I look forward to answering any questions you might have at your convenience,

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**Summary of recommended changes:**

80-430-03-B – Remove, unnecessary

80-430-03-C - Remove, detrimental

80-430-03-F – Change to “city street lighting system complying to IESNA RP-8-00 standard;”

80-430-03-G – Add a definition section (80-430-08) and better define:

LUMINOUS TUBE means a glass tube filled with a gas or gas mixture (including neon, argon, mercury or other gasses), usually of small diameter (10-15 millimeter), caused to emit light by the passage of an electric current, and commonly bent into various forms for use as decoration or signs. A "neon" tube. Does not include common fluorescent tubes.

80-430-03-I – Remove, unnecessary

80-430-05-A – Change to “All outdoor light sources that produce more than 4,050 lumens must be at least shielded to meet the Illuminating Engineering Society of North America (IESNA) definition of Full-Cutoff”.

80-430-05-B – Remove, unnecessary if 80-430-05-A is fixed

80-430-05-C - Change to “Spillover light onto R-zoned property, street or public right-of-way may not exceed 2 lux, measured at grade along the property line.”

80-430-07 - Remove, unnecessary

Add new section 80-430-05-D (or replace 80-430-05-B) with “Illuminance and Luminance requirements: Illuminance and luminance requirements shall be as set forth in the current edition of the IESNA Lighting Handbook. All external lighting fixtures shall not exceed IESNA luminance recommendations. After operating hours, businesses shall not exceed IESNA luminance recommendations for outdoor parking lots.”

Add new section 80-430-05-E “Lighting is prohibited where the light source or reflector can be seen from an adjoining property.

In addition add: 80-430-06-B item 5. Documentation and controls showing compliance with section 80-430-05-D.

Modify 80-430-02 “Unless otherwise expressly exempted, the regulations of the article apply to all uses. Previously installed luminaires shall be brought into compliance within 10 years after the passage of this ordinance on (DATE).”