

## Comments on electronic signage

Dark sky and other concerns:

By its very nature, lighting emanating from or reflecting off of sign faces is unshielded – 50% or more ends up in the night sky.

At present, electronic message centers (as the sign industry calls them) are limited to 200 nits in brightness at night and an upper color temperature limit of 4400 K. The size is not limited, however, and may be as large as any other sign type. The emcs are relatively small now for economic reasons but that continues to change. We need to think about the future of this sign type with regard to night sky protection. Since signs are by nature unshielded light sources, more than half the light emitted makes its way into the night sky. In addition to a nighttime nits limit, a limit on the total light emitted by an emc should be considered, especially as they increase in size.

Potential brightness

Emcs can be as bright as 5,000 to 7,500 nits for daytime use. This is as much as 30 times brighter than the nighttime limit. Since every emc has daytime brightness capability, this means an installed base of enormous light potential as emcs become cheaper and larger. To substantially change the lighting level of any other permitted sign type is an involved process, not a matter of a keystroke. This points to the need for effective controls on emcs.

Controls

In the case of the Ace Hardware sign, the sign manufacturer's letter said the sign would be factory set to Tucson code requirements. "The default settings can be preset at the factory to comply with code restrictions are are password-protected and cannot be adjusted without the assistance to Time-O-Matic technical support." In fact, the sign owner could change the display settings and did. Whether he called technical support or not, how can Code compliance be made to work if the manufacturer's assurances don't hold? We worry about sign owners changing the brightness settings. The City does not have the staff or equipment to monitor emc brightness after the fact.

While the 200 nit limit is helpful in protecting the night time environment, it is difficult to enforce. Anyone with access to the sign's control system can change the light level or display interval at a keystroke. Is the led sign industry working on firmware/hardware in the electronic sign control system to preventing over-illuminance at night? Can an led sign be locked beyond user control when the optical sensor determines it is dark and night-time limits are in force?

Lumen cap

At present, cabinet and similar signs light output is not counted toward a premise's Outdoor Lighting Code lumens allowance. This stems largely from the fact that it is hard to predict a sign's light output until it is built. Since emcs' brightness can be known in advance, should they be included in the lumen cap? Experience is beginning to show that 200 nits may be too bright. Flood-lit billboards with no lighting limit are rarely more than 100 nits in surface brightness. Why do EMC's have to be brighter?

## Color

Full color emc displays emit light across the visible spectrum and this light pollutes the entire visible spectrum in the night sky. One color signs, such as amber, are less troublesome than full color signs and usually emit less light overall given the nature of a typical display. Limiting full color displays would help protect dark skies. Text-only one color emcs are the least harmful.

## Size

Less area means less nighttime light. Emc size could be limited to perhaps no more than 50 percent of the sign allowance NTE 20 square feet or something similar.

## Other

Does the Energy Code address energy use by emcs? What about the environmental side of such signs. Conventional signs need no power to be seen in daytime while led signs have to be brighter than daylight -- a much greater use of electricity.

Also, as residents, we should remember other elements of this discussion such as light trespass, driver distraction and visual clutter.

Visual impact: Is the forest of electronic signs along the highway in central Phoenix something that Tucson wants?

Note: Text in red is new or modified language added by staff subsequent to review by the two subcommittees at the request of the chair to 1) fill-in blanks not addressed by the subcommittees, 2) clarify the content provided the subcommittees, or 3) respond to comments made by sub-committee members to the full committee.

## ARTICLE II DEFINITIONS

### Sec. 3-11. Definitions.

The terms used in this sign code shall have the following meanings, unless the context otherwise requires:

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V. *Electronic message center.* An electronic or electronically controlled message board, where scrolling or moving copy changes are shown on the same message board, or any sign, or portion of a sign, that changes its text, copy, display, and/or light intensity electronically or by electronic control.

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## ARTICLE V SIGN TYPES AND GENERAL REGULATIONS

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### Sec. 3-50. Generally permitted signs.

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G. Reserved.

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### Sec. 3-52. Prohibited signs enumerated.

No person shall erect, alter or relocate any sign of the type specified in this section, or of the types specified in sections 3-53 and 3-54.

...

B. *Electronic Message Center.* An electronic message center that changes its text, copy, display, and/or light intensity more than once per hour.

...

### Sec. 3-60. Electronic message centers. For definition see section 3-11.V.

A. *Permitted locations:* Within a conforming sign in any of the following locations:

1. On a premise developed with
  - a. an educational use, or
  - b. a religious use as defined in the Uniform Development Code
2. Within the following districts:
  - a. General Business District, or
  - b. Industrial District, or
  - c. PAD District, or
  - d. Pedestrian District limited to wall or projecting signs.

B. *Maximum number per premise:*

1. Two single face attached/wall signs on separate elevations of the same building
2. One double face projecting sign which shall count as two projecting signs on premises where more than one projecting sign is allowed
3. One double face freestanding sign, which shall count as two freestanding signs on premises where more than one freestanding sign is allowed.

C. *Size:*

1. Electronic message centers within a freestanding sign shall be no more than 75 percent of the area of the sign and a maximum of 54 square feet.
2. Electronic message centers within an attached (wall) sign shall be no more than 25 percent of the area of the sign.
3. Electronic message centers within an attached (wall) sign may exceed 25 percent of the area of the sign subject to a special permit issued in accordance Article XI of this sign code and the following findings:
  - a. The sign is on a premise developed with an assembly use. Should the assembly use be discontinued, the EMC shall be removed.
  - b. The sign is not a projecting sign, or an integrated architectural feature as allowed per Sec. 3-42.
  - c. The sign is not visible from any location within a Single Family Residential District or Multiple Family Residential District within 300 feet of the sign.
  - d. The sign is compatible with the character of the immediate area.

D. *Maximum brightness:*

1. Daytime: 5000 nits
2. Nighttime: Per the Tucson/Pima County Outdoor Lighting Code (OLC).

E. *Maximum change rate:* One (1) time per hour, on the hour. Any change shall be instantaneous with no scrolling, flashing, or special effects of any sort.

F. *Minimum setback from residential districts:* Electronic Message Centers shall be located a minimum of 150 feet from any adjacent property within a Single Family Residential District or a Multiple Family Residential District.

G. ~~Quality standards.~~

- ~~1. Display resolution, alphanumeric display only: 20 mm maximum pixel pitch (distance between pixels).~~
- ~~2. Display resolution, other than alphanumeric display. Pixels pitch (distance between pixels) shall equal or exceed 20/20 visual acuity ("retina display") for the sign district or posted speed limit as applicable per following table:~~

<del>Sign district / speed limit</del>	<del>Design viewing distance</del>	<del>Maximum pixel pitch</del>
<del>Pedestrian district</del>	<del>20 feet</del>	<del>1.5 mm</del>
<del>Up to 35 mph speed limit</del>	<del>100 feet</del>	<del>8 mm</del>
<del>Over 35 mph speed limit</del>	<del>200 feet</del>	<del>16 mm</del>

- ~~3. Image resolution input to the EMC shall be commensurate with the display resolution.~~

H. *Enforcement fee:* The annual regulation fees shall be quadrupled for any sign which includes an electronic message center.

All EMC signs shall comply with the current City of Tucson/Pima County Outdoor Lighting Code, Chapter 5, Section 501 requirements including 501.3.3 *Prohibited installations*, 501.5 *LED, LCD, Plasma Screen and Similar Signs* (maximum luminous intensity limits) and 501.6 *Sign illumination curfew*.

All EMC signs must include photocell technology to control and vary the intensity of lighting depending on the amount of ambient light that is present to prevent overly bright luminance at all times. Automatic controls must limit sign luminance to the maximum allowed in Section 501.5 of the City of Tucson/Pima County Outdoor Lighting Code when display is set to show maximum brightness white(100% full white mode).

The applicant shall provide a written certification from the sign manufacturer that the daytime and nighttime light intensity has been factory pre-set not to exceed this level, and that this setting is protected from end-user modification by password-protected software or other method as deemed appropriate by the Planning Director. In addition, the manufacturer must certify that the sign in question is equipped with the ability to comply with all applicable regulations of this section such as display time and curfew.

The applicant shall also submit a letter from the sign owner and/or operator stating that they have read and understand the applicable regulations pertaining to their sign and are subject to enforcement action including fines if they violate the regulations.

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Other thoughts and language:

The daytime nit level needs to be placed in OLC 501.5.

Sign owner may change sign content but not the factory-set change frequency, mode (style of change) or brightness levels.

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