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## INTERNAL AFFAIRS COMMITTEE AGENDA

A Committee of the Chico City Council: Councilmembers Coolidge, Fillmer, and Chair Ritter

**Meeting of November 9, 2016 - 9:00 a.m. to 11:00 a.m.**

Council Chamber Building, 421 Main Street, Conference Room 1

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### REGULAR AGENDA

#### A. SIX (6) MONTH UPDATE ON TRAFFIC COMPLAINTS ON CUSSICK AVENUE

At its meeting on 9/9/15, the Internal Affairs Committee was provided with information on speeding concerns on Cussick Avenue, between East and Shasta Avenues. At its meeting on 3/9/16, the Internal Affairs Committee was provided with an update by Staff on the status and efforts that have and will be implemented to curtail the issue and requested further update in six (6) months. **(Verbal Report – Brendan Ottoboni, Public Works Director-Engineering)**

**Recommendation:** *No action required – this is an informational item only.*

#### B. UPDATE ON THE REVIEW OF OUTDOOR CAFE PERMIT REGULATIONS

At its 9/6/16 meeting, the City Council directed staff to review the existing regulations regarding Outdoor Cafes in the downtown area with the Parking and Access Committee (P/ARC), and recommend potential Chico Municipal Code (CMC) changes to the Internal Affairs Committee. Staff will be providing an update on the P/ARC's initial review of the Outdoor Cafe permit code regulations and process. **(Report – Brendan Ottoboni, Public Works Director-Engineering)**

**Recommendation** – *Consider forwarding the following recommendations to the Council:*

- 1) *That the Internal Affairs Committee approve future Outdoor Cafe permits or other projects, such as a parklet, which impacts parking.*
- 2) *That Staff and P/ARC be allowed to continue its review of CMC Section 14.70 – “Use of Public Right-of-way for Operation of Outdoor Cafe for its effectiveness and potential amendments”.*

#### C. CONSIDERATION OF CODE AMENDMENTS FOR ELECTRONIC/DIGITAL SIGNS

At its meeting of 9/20/16, the Council voted to agendaize a request from Mayor Sorensen to discuss and review Chico Municipal Code Section 19.74 regulating signs. At its meeting of 10/4/16, Council voted to refer this item to the Internal Affairs Committee for discussion on possible modifications that might add some flexibility in regards to digitized signs. **(Report – Mark Wolfe, AICP, Community Development Director)**

**Recommendation:** *The Community Development Director recommends that the Internal Affairs Committee provide direction to staff as necessary.*

#### D. BUSINESS FROM THE FLOOR

Members of the public may address the Committee at this time on any matter not already listed on the agenda, with comments being limited to three minutes. The Committee cannot take any action at this meeting on requests made under this section of the agenda.

#### E. ADJOURNMENT AND NEXT MEETING

The meeting will adjourn no later than 11:00 a.m. The next regular Internal Affairs Committee meeting is scheduled for Wednesday, December 14, 2016, at 9:00 a.m. in Conference Rm. No. 1.

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## **SPEAKER ANNOUNCEMENT**

**NOTE:** Citizens and other interested parties are encouraged to participate in the public process and will be invited to address the Committee regarding each item on the agenda. In order to maintain an accurate and complete record, the following procedural guidelines have been implemented:

1. Speaker Cards – speakers will be asked to print his/her name on a speaker card to address the Committee and provide card to the Clerk prior to the completion of the Staff Report.
2. The Clerk will call speakers in the order the cards are received.
3. Speakers may address the Committee one time per agenda item.
4. Speakers will have three minutes to address the Committee.

### **Distribution available in the office of the City Clerk**

**Posted: 11/4/16 prior to 5:00 p.m. at 421 Main St. Chico, CA 95928 and [www.ci.chico.ca.us](http://www.ci.chico.ca.us)**

**Copies of the agenda packet are available for review at:**

**City Clerk's Office, 411 Main St. Chico, CA 95928**



*Please contact the City Clerk at 896-7250 should you require an agenda in an alternative format or if you need to request a disability-related modification or accommodation in order to participate in a meeting. This request should be received at least three working days prior to the meeting in order to accommodate your request.*



## Internal Affairs Committee Agenda Report

Meeting Date: 11/9/16

TO: INTERNAL AFFAIRS COMMITTEE  
FROM: BRENDAN OTTOBONI, PUBLIC WORKS DIRECTOR- ENGINEERING (879-6901)  
SUBJECT: UPDATE ON THE REVIEW OF OUTDOOR CAFE PERMIT REGULATIONS

### REPORT IN BRIEF:

At its 9/6/16 meeting, the City Council directed staff to review the existing regulations regarding Outdoor Cafes in the downtown area with the Parking and Access Committee (P/ARC), and recommend potential Chico Municipal Code (CMC) changes to the Internal Affairs Committee. Staff will be providing an update on the P/ARC's initial review of the Outdoor Cafe permit code regulations and process.

**Recommendation:** Public Works Director-Engineering and P/ARC recommend that the Committee recommend City Council approval of the following:

1. That the Internal Affairs Committee approve future Outdoor Cafe permits or other projects, such as a parklet, which impacts parking.
2. That Staff and P/ARC be allowed to continue its review of CMC Section 14.70 – "Use of Public Right-of-way for Operation of Outdoor Cafe for its effectiveness and potential amendments.

**FISCAL IMPACT:** None at this time.

### BACKGROUND:

Chico Municipal Code (CMC) Section 14.070 currently provides guidelines and a permit process for the installation of temporary and permanent improvements in the City's right-of-way for outdoor dining purposes. At its 9/6/16 meeting, the City Council discussed outdoor cafe permits in the downtown area. The Council directed staff to review the existing regulations with the P/ARC to discuss how outdoor cafes are working in the downtown area, and to come up with concepts and ideas for possible CMC amendments.

### DISCUSSION:

Staff and the P/ARC have met twice on this item. At the meetings, P/ARC members expressed the following initial concerns, particularly for those permits that may impact parking:

1. Currently, there are no limitations on the number of Outdoor Cafe permits allowed within the downtown area. Members are concerned about the impacts to the parking supply if no limitations are established.
2. The approval process does not allow for the public vetting or review of the outdoor cafe permits. The P/ARC suggested, that as the Traffic Committee for the City, perhaps the Internal Affairs Committee should approve all permits that impact parking to allow for this public review.
3. The lack of specific guidelines and policies in the CMC regarding Parklets, and suggested that a pilot program be conducted to determine what these guidelines should be.

P/ARC and Staff need more time to conduct a comprehensive review of the Outdoor Cafe permit process, policies, and impacts to the downtown area.

Reviewed by:

Brendan Ottoboni, Public Work Director- Engineering

Approved by:

Mark Orme, City Manager

### DISTRIBUTION:

City Clerk (3)  
P/ARC



## Internal Affairs Committee Agenda Report

Meeting Date: November 9, 2016

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DATE: November 1, 2016  
TO: City Council Internal Affairs Committee  
FROM: Mark Wolfe, AICP, Community Development Director  
RE: Municipal Code Amendments for Digital/Electronic Signs

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### BACKGROUND AND SUMMARY

The Council has asked that the Internal Affairs Committee assess the concept of a Code Amendment which would allow for expanded digital/electronic-type signage in Chico.

Such signage is at present generally prohibited, with the exception being certain signs for “assembly” uses such as schools and churches. In these cases, the Code provides for the following:

“K. Changeable Copy Signs, Reader Boards, and Digital Reader Boards.

1. Such signs shall only be allowed on nonresidential property which contains an approved assembly use or when specifically allowed by state or federal law.
2. The area of such signs shall count towards the maximum allowed sign area for the site.
3. Any digital reader boards shall display static (unanimated) images and/or copy. For the purposes of this section, static images and/or copy shall be defined as those which are changed no more than 12 times in any 24-hour period.
4. Digital reader boards shall not be brighter than other allowed signs in the same zoning district. Digital reader boards shall be equipped with a photocell, timer, or other similar device which automatically dims the display during nighttime hours to prevent glare impacts to motorists.”

The scope of possible changes to the Code is broad, and the effect of any change has the potential to substantially alter the visual character of the community. For example, technology has made feasible large, high resolution, high-intensity LED signage. Depending upon the scope of the changes undertaken and given the presence of multiple large billboards along Chico’s arterial streets, the result could be a dramatic change in community aesthetics. Alternately, an extremely limited expansion of current Code provisions to include uses other than just “assembly” types might have a much lesser effect, depending upon the specifics of any such change.

Similarly, the level of staff resources and overall cost to the City necessary to accomplish any changes would vary significantly depending upon the scope. A very rough estimate of costs reflecting dedication of resources from a number of City Departments would range anywhere from \$7,500 to \$30,000, with no funding source being identified. Given current staffing levels, existing priorities and workload, and capacity in the Planning Division, it would be recommended that any amendments to the City’s sign regulations be carried out under contract by an experienced, project-specific planning consultant.

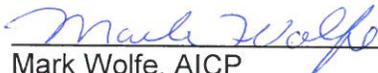
Attachments to this report provide additional information about the regulation of digital signs, and the factors which any code revision should consider. They include a 2008 report from the American Planning Association, an excerpt from Minnetonka, Minnesota's Municipal Code addressing "Dynamic Displays", and a similar excerpt from Oroville's Municipal Code. Other examples, both good and bad, are also available, and vary significantly in their scope and level of specificity.

Materials provided by the Government Affairs Director of the California Sign Association are also forwarded as Attachments to this report. The Association has expressed an interest in being involved in amending the Code. The interest in such participation might suggest a willingness on the part of the industry to pursue a Code amendment on its own accord, without use of City funds.

## RECOMMENDATION

The Community Development Director recommends that the Internal Affairs Committee provide direction to staff as necessary.

Prepared By:

  
\_\_\_\_\_  
Mark Wolfe, AICP  
Community Development Director

Approved By:

  
\_\_\_\_\_  
Mark Orme  
City Manager

## DISTRIBUTION:

Chamber of Commerce  
DCBA

## ATTACHMENTS

- A. Report from American Planning Association
- B. Excerpt from Minnetonka, Minnesota Municipal Code
- C. Excerpts from Oroville Municipal Code
- D. "Finding Common Ground" report from International Sign Association
- E. "Night-time Brightness Level Recommendations for On-Premise Electronic Message Centers" report from International Sign Association

# Looking Ahead: Regulating Digital Signs and Billboards

By Marya Morris, AICP

Cities and counties have always been challenged to keep their sign ordinances updated to address the latest in sign types and technologies.

Each new sign type that has come into use—for example, backlit awnings and electronic message centers—has prompted cities to amend their regulations in response to or in anticipation of an application to install such a sign.

The advent in the last several years of signs using digital video displays represents the latest, and perhaps the most compelling, challenge to cities trying to keep pace with signage technology. More so than any other type of sign technology that has come into use in the last 40 to 50 years, digital video displays on both off-premise (i.e., billboards) and on-premise signs raise very significant traffic safety considerations.

This issue of *Zoning Practice* covers current trends in the use of digital technology on off-premise billboards and on-premise signs. It recaps the latest research on the effects of

this type of changeable signage on traffic safety. It also discusses the use of digital video sign technology as a component of on-premise signs, including a list of ordinance provisions that municipalities should consider if they are going to permit this type of sign to be used. I use the phrase digital display or video display, but these devices are also referred to as LEDs or, collectively, as “dynamic signs.”

## BRIGHT BILLBOARDS

While digital technology is growing in use for on-premise signs, it is the proliferation of digital billboards that has triggered cities and counties to revise their sign ordinances to address this new type of display. Of the approximately half-million billboards currently lining U.S. roadways, only about 500 of them are digital. However, the industry's trade

group, the Outdoor Advertising Association of America, expects that number to grow by several hundred each year in the coming years. In 2008, digital billboards represent for the sign industry what the Comstock Lode must have represented for silver miners in 1858—seemingly limitless riches. The technology allows companies to rent a single billboard—or pole—to multiple advertisers. A billboard company in San Antonio, for example, estimated that annual revenue from one billboard that had been converted from a static image to a changeable digital image would increase tenfold, from \$300,000 to \$3 million just one year after it went digital.

It is very difficult for cities and counties to get billboards removed once they are in place. Billboard companies have made a concerted effort to get state legislation passed that limits or precludes the ability of local

⊕ A typology of moving-image signs. The variable message sign at the right uses a motor to switch among three different static images. Next, the electronic messageboard at Wrigley Field in Chicago displays scrolling text and simple images. The on-premise digital sign, pictured third from left, looks like a giant television screen, displaying a steady stream of video images. On the far right, this digital billboard cycles through a number of static video images at regularly timed intervals.



## ASK THE AUTHOR JOIN US ONLINE!

Go online from May 12 to 23 to participate in our "Ask the Author" forum, an interactive feature of Zoning Practice. Marya Morris, AICP, will be available to answer questions about this article. Go to the APA website at [www.planning.org](http://www.planning.org) and follow the links to the Ask the Author section. From there, just submit your questions about the article using the e-mail link. The author will reply, and Zoning Practice will post the answers cumulatively on the website for the benefit of all subscribers. This feature will be available for selected issues of Zoning Practice at announced times. After each online discussion is closed, the answers will be saved in an online archive available through the APA Zoning Practice web pages.

### About the Author

Marya Morris is a senior associate at Duncan Associates, a planning consulting firm specializing in land development regulations and infrastructure finance. [www.duncanassociates.com](http://www.duncanassociates.com)

governments to require removal of existing billboards through amortization. The only option left is paying cash compensation. The federal Highway Beautification Act, which was modified many years ago under industry pressure, also prohibits amortization and requires cash compensation for billboard removal.

With the amortization option unavailable, some cities and counties have struck deals with billboard companies requiring them to remove two boards for every new one they install. Other jurisdictions have established simple no-net-increase policies. Although many communities have had success with these approaches, in the

last few years the industry has devised a litigious tactic to secure new billboard permits. Billboard companies challenge the constitutionality of a sign provision, and when the ordinance is in legal limbo, they rush in to secure billboard permits.

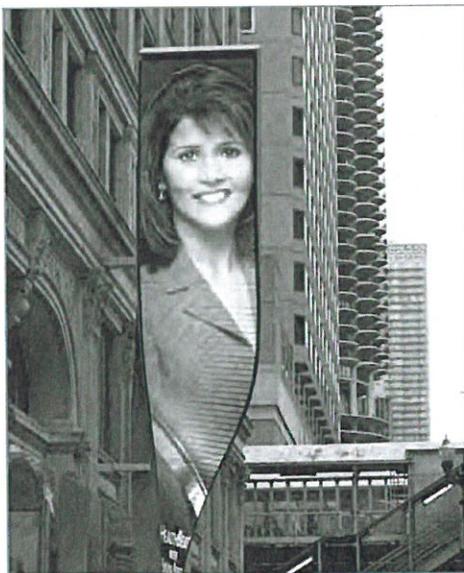
The American Planning Association has joined Scenic America, the International Municipal Lawyers Association, and others in filing amicus curiae briefs in many of these cases to show the courts the industry's pattern of conduct and deliberate strategy to circumvent local sign codes. A review in January 2006 found 113 such "shakedown" sign cases filed in the federal

courts since 1997, and eight filed in state courts in the same time period. For more information visit the APA Amicus Curiae webpage at [www.planning.org/amicusbriefs](http://www.planning.org/amicusbriefs).

The emergence of the highly lucrative digital billboards has also, however, given local governments some leverage to at least reduce the total number of billboards. Many of the applications cities are seeing for the video billboards are requests by companies to replace the static type with the new video displays in key locations. The added revenue potential from a digital format has proved to be enough of an incentive to get companies to agree to remove multiple static billboards in exchange for permits to install video display in certain locations.

In June 2007, Minnetonka, Minnesota, in the Twin Cities area, reached a settlement with Clear Channel in which the company agreed to

**The emergence of the highly lucrative digital billboards has given local governments some leverage to at least reduce the total number of billboards.**



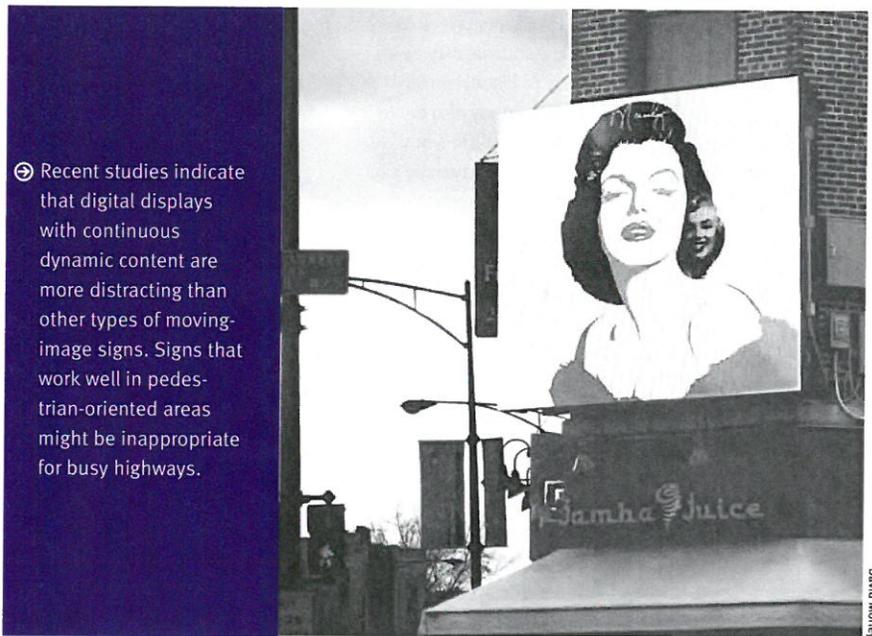
remove 15 of the 30 conventional static image billboards in the city in exchange for permission to install its digital billboards. The city will permit the company to install no more than eight dynamic signs at four to six locations.

The City of San Antonio amended its sign and billboard ordinance in December 2007 to require the removal of up to four static billboards in exchange for permission to install one digital display billboard in their place. Prior to that amendment the city had no provisions for digital sign technology, but it did already have a two-for-one replacement requirement. The city has a developed a sliding scale that determines the number of billboards required to be removed in exchange for a single digital billboard. According to the scale, the number of digital signs permitted is determined by the total square footage of static billboard faces removed. Therefore, a billboard company will be required to demolish as few as three and as many as 19 billboards to get one new digital billboard structure placed or an existing static billboard face replaced.

**IT DEPENDS ON YOUR DEFINITION OF 'DISTRACTING'**

Digital signs are brighter and more distracting than any other type of sign. Other attention-grabbers, like strobe lights, mirrors, searchlights, and signs with moving parts, are typically prohibited (or allowed under very narrow circumstances) by even the most hands-off jurisdictions. The high visual impact of digital signs has prompted highway and traffic safety experts to try to quantify how drivers respond to such distractions. This research, which is summarized below, has been instrumental in helping cities craft new sign ordinances that address the specific characteristics of such signs, including how often the messages or images change, the degree of brightness, and their placement relative to residential areas.

The Federal Highway Administration is currently conducting a study on driver distraction and the safety or impact of new sign technologies on driver attention. The initial phase, which is slated to be completed by June 2008, will identify and evaluate the most significant issues and develop research methods needed to secure definitive results. The FHWA anticipates the second phase of the research study and final report will be completed in the latter part of calendar year 2009. Also, the Transportation Research Board (a branch of the National Science Foundation) has formed a subcommittee to examine research needs on electronic signs.



Recent studies indicate that digital displays with continuous dynamic content are more distracting than other types of moving-image signs. Signs that work well in pedestrian-oriented areas might be inappropriate for busy highways.

David Morley

Until a couple of years ago, one of the only studies on the effects of billboards and traffic safety was a 1980 survey of existing research on the subject prepared for the Federal Highway Administration (Wachtel and Netherton 1980). It did not, however, provide any concrete answers. The study noted "attempts to quantify the impact of roadside advertising on traffic safety

have not yielded conclusive results." The authors found that courts typically rule on the side of disallowing billboards because of the "readily understood logic that a driver cannot be expected to give full attention to his driving tasks when he is reading a billboard."

A 2006 study by the National Highway Traffic Safety Administration that focused primarily on driver distractions inside the car (i.e., phone use, eating, and changing the radio station) concluded that any distraction of more than two seconds is a potential cause of crashes and near crashes.

A 2004 study at the University of Toronto found that drivers make twice as many glances at active (i.e., video signs) than they do at passive (i.e., static) signs. All three of the moving sign types that were studied (video, scrolling text, and trivision) attracted more than twice as many glances as static signs. They also found that the drivers' glances at the active signs were longer in duration; 88 percent of glances were at least 0.75 seconds long. A duration of 0.75 seconds or longer is important because that is the amount of time required for a driver to react to a vehicle that is slowing down ahead. Video and scrolling text signs received the longest average maximum glance duration.

An earlier study also at the University of Toronto that was designed to determine whether video billboards distract drivers' attention from traffic signals found that drivers made roughly the same number of glances at traffic signals and street signs with and without full-motion video

**ORDINANCES AND ZONING REPORTS**

- ◆ City of Minnetonka, Minnesota. 2007. Staff report to city council recommending adoption of an ordinance regulating digital signs. June 25. Available at [www.eminnetonka.com/community\\_development/planning/show\\_project.cfm?link\\_id=Dynamic\\_Signs\\_Ordinance&cat\\_link\\_id=Planning](http://www.eminnetonka.com/community_development/planning/show_project.cfm?link_id=Dynamic_Signs_Ordinance&cat_link_id=Planning).
- ◆ City of San Antonio City Code, Chapter 28. Amendment Adding Provisions for Digital Signs. Last revised December 2, 2007. Available at <http://epay.sanantonio.gov/dsddocumentcentral/upload/SIGNsecDRAFT.pdf>.
- ◆ City of Seattle, Land Use Code, Section 23.55.005 Signs, Video Display Methods. Last revised 2004. <http://clerk.ci.seattle.wa.us/~public/clrkhome.htm>.

billboards present. This may be interpreted to mean that while electronic billboards may be distracting, they do not appear to distract drivers from noticing traffic signs. This study also found that video signs entering the driver's line of sight directly in front of the vehicle (e.g., when the sign is situated at a curve) are very distracting.

A 2005 study by the Texas Transportation Institute of driver comprehension of sign messages that flash or change concluded that such signs are more distracting, less comprehensible, and require more reading time than do static images. While this research did not evaluate advertising-related signs, it does demonstrate that flashing signs require more of the driver's time and attention to comprehend the message. In the case of electronic billboards, this suggests that billboards that flash may require more time and attention to read than static ones.

The City of Seattle commissioned a report in 2001 to examine the relationship between

## Sign messages that flash or change are more distracting, less comprehensible, and require more reading time than do static images.

The Seattle study also found that drivers expend about 80 percent of their attention on driving-related tasks, leaving 20 percent of their attention for nonessential tasks, including reading signs. The report recommended the city use a "10-second rule" as the maximum display time for a video message.

### APPROACHES TO REGULATING DIGITAL DISPLAY SIGNS

Most cities and counties that have amended their sign ordinances to address the use of digital display on on-premise signs and billboards have done so in response to an application by a sign owner to install a new sign that uses the

ital video display signs while still permitting electronic message centers.

3) A relatively small number of sign ordinances have been amended to allow video display signs under narrowly prescribed circumstances and with numerous conditions.

For jurisdictions that want or need to allow them, the following section explains additional considerations that should be added to a sign ordinance to effectively regulate digital display signs.

**Sign type.** The ordinance must indicate whether the digital display can be used on off-premise billboards only, on on-premise signs only, or on both sign types.

Billboards with changeable digital images allow billboard companies to dramatically increase their revenue by renting the same sign face to multiple advertisers.



David Morley

electronic signs with moving/flashing images and driver distraction. The study was conducted by Jerry Wachtel, who in 1980 had conducted the first-ever study on signs and traffic safety for the Federal Highway Administration.

The Seattle report concluded that electronic signs with moving images will distract drivers for longer durations (or intervals) than do electronic signs with no movement. The study also noted that the expanded content of a dynamic sign also contributes to extended distraction from driving. Specifically it found that signs that use two or more frames to tell a story are very distracting because drivers are involuntarily compelled to watch the story through to its conclusion.

technology or in response to a sign owner having replaced an existing sign face with a digital display. Some cities, like Minnetonka, were required by a court settlement with a billboard company to allow the technology. Although regulations for digital signs are still relatively new, we can group the regulatory approaches (or lack thereof) into three general categories:

- 1) Most sign ordinances are still silent on the issue of digital video displays, but almost all do regulate electronic message centers and also prohibit or restrict signs that move, flash, strobe, blink, or contain animation.
- 2) A smaller but growing number of sign ordinances contain a complete prohibition on dig-

**Definitions.** The definitions section must be updated to include a detailed definition of digital display signage and the sign's functional characteristics that could have an effect on traffic safety and community aesthetics.

**Zoning districts.** The ordinance should list the districts in which such signs are permitted and where they are prohibited. Such signs are commonly prohibited in neighborhood commercial districts, historic districts, special design districts, and scenic corridors, in close proximity to schools, and in residential districts. On the other end of the spectrum, East Dundee, Illinois, for example, expressly encourages digital video signs in two commercial overlay districts, but only a

## RESOURCES

- ◆ Beijer, D. and A. Smiley. 2005. "Observed Driver Glance Behavior at Roadside Advertising Signs," *Transportation Research Record*.
- ◆ Dudek, C. L. et al. 2005. "Impacts of Using Dynamic Features to Display Messages on Changeable Message Signs," Washington, D.C.: Operations Office of Travel Management: Federal Highway Administration.
- ◆ "Dynamic" Signage: Research Related To Driver Distraction and Ordinance Recommendations. Prepared by SRF Consulting Group, Inc. for the City of Minnetonka, Minnesota. June 7, 2007 ([www.digitalooh.org/digital/pdf/2007-minnetonka\\_digital-srf\\_consulting\\_report06-08-07.pdf](http://www.digitalooh.org/digital/pdf/2007-minnetonka_digital-srf_consulting_report06-08-07.pdf)).
- ◆ "The Impact of Driver Inattention on Near-Crash/Crash Risk: An Analysis Using the 100-Car Naturalistic Driving Study Data." 2006. National Highway Traffic Safety Administration, U.S. Department of Transportation. April.
- ◆ McBride, Sarah. "Seeing the Light: In Billboard War, Digital Signs Spark a Truce." *Wall Street Journal*. February 3, 2007.
- ◆ Smiley, A. et al. 2004. "Impact of Video Advertising on Driver Fixation Patterns." *Transportation Research Record*.
- ◆ *Unsafe at Any Speed: Billboards in the Digital Age*. 2007. Scenic America Issue Alert 2. Available at [www.scenic.org/pdfs/eb.pdf](http://www.scenic.org/pdfs/eb.pdf). The Scenic America website has a number of excellent resources for planners and citizens interested in regulating digital signage, including a downloadable PowerPoint presentation, research summaries, and model ordinances.
- ◆ Wachtel, J. and R. Netherton. 1980. "Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable-Message Signage." Report No. FHWA-RD-80-051. Washington, D.C.: Federal Highway Administration.

few land uses—new car dealerships, multi-tenant retail centers, and amusement establishments—are permitted to have them.

**Placement and orientation.** A minimum spacing requirement between signs and residential areas should be considered, as should a provision requiring that the sign face be oriented away from residential areas and other scenic or sensitive areas. The Baker and Wolpert study recommended that dynamic signs be limited or prohibited at intersections, in demanding driving environments, and in places where they obstruct a driver's view. In Seattle, the sign face of on-premise digital signs must not be visible from a street, driveway, or surface parking area, nor may it be visible from a lot that is owned by a different person.

**Sign area.** For on-premise signage, many ordinances include a limit on the percentage of the sign face that can be used for digital display. Thirty percent is common although in some areas, such as entertainment districts, that proportion may be much higher.

**Illumination and brightness.** The ordinance should address the legibility and brightness of a sign both during the day and after dark. During the day the issue is reducing or minimizing glare and maintaining contrast between the sign face and the surrounding area. At night the issues are the degree of brightness and its impact on driver distraction and on light trespass into residential areas. In the study for the City of Minnetonka, researchers noted the challenge posed by this aspect of digital signs: "There is no objective definition of excessive brightness because the appropriate level of brightness depends on the environment within which the sign operates."

**Message duration and transition.** The ordinance must include a minimum duration of time that a single message must be displayed. Typically this is expressed in terms of seconds. The San Antonio billboard ordinance requires each image to remain static for at least eight seconds and that a change of image be accomplished within one second or less.

The city's ordinance requires any portion of the message that uses a video display method to have a minimum duration of two seconds and a maximum duration of five seconds. Further, it requires a 20-second "pause" in which a still image or blank screen is shown following every message that is shown on a video display.

**Public service announcements.** In exchange for permission to use digital displays, owners of billboards in Minnesota and San

Antonio have agreed to display emergency information such as Amber Alerts and emergency evacuation information. Such a requirement can be included in an ordinance or imposed as a condition of approval.

Whether undertaking a comprehensive revision of a sign ordinance or more limited, strategic amendments to address digital technology, there are other common provisions related to electronic and digital signage that should be revisited as part of the rewrite. At the top of the list would be updating standards for conventional electronic message centers to reflect the latest research regarding driver distraction and message duration. Also, the boilerplate provisions common to so many ordinances that prohibit signs that flash, are animated, or simulate motion should also be rethought. These provisions could conceivably be used to prohibit digital displays without additional regulations. The problem is that these characteristics are very rarely defined in the ordinance and remain open to interpretation. Also, whenever new regulations are being considered for digital billboards, jurisdictions should take the opportunity to draft new provisions to address digital technology for on-premise signs as well. And, finally, any time the sign ordinance goes into the shop for repair—whether to address digital signage or to make broader changes—is a good time to remove or revise any provisions that violate content neutrality rules.

## NEWS BRIEFS

### SMART GROWTH TAKES A HIT IN MARYLAND

By Lora Lucero, AICP

The *Baltimore Sun* hit the nail on the head when it reported on March 12 "[t]he state's highest court declared that Maryland law does not require local governments to stick to their master plans or growth management policies in making development decisions."

*Trail, et al. v. Terapin Run, LLC, et al.* presented an important question for the court to address: What link is required between the community's adopted plan and the decision by the Zoning Board of Appeals (ZBA) to grant or deny a request for a special exception? In a 4 to 3 vote, the majority concluded that Article 66B, the state planning law, is permissive in nature and plans are only advisory guides, so a strong link between plans and implementation is not required. The court affirmed the county's

## The majority concluded that the state planning law is permissive in nature and plans are only advisory guides, so a strong link between plans and implementation is not required.

approval of the special exception and determined that the “in harmony with” traditional standard in applications for special exceptions remains the standard, in the absence of specific legislative language to the contrary. The court’s decision is available at [www.planning.org/amicusbriefs/pdf/terrapinrundecision.pdf](http://www.planning.org/amicusbriefs/pdf/terrapinrundecision.pdf).

Terrapin Run, LLC, the developer, proposed to build an “active adult” community of 4,300 homes on 935 partially wooded acres in Allegany County, a rural area of mountainous Western Maryland. The land is primarily zoned District “A” (Agricultural, Forestry, and Mining), with a portion located in District “C” (Conservation). In addition to the homes, the developer proposed to build an equestrian center, a community building, and a 125,000-square-foot shopping center.

The residential density is 4.6 units per acre. A planner who testified at trial indicated that the density of the proposed development would approximate that of Kentlands, in Montgomery County. The initial phase of development would use individual septic tanks, but the project would eventually require its own sewage treatment plant. Significantly, the property is not located in one of Maryland’s priority funding areas.

The zoning ordinance divides Allegany County into urban and nonurban areas. “A” and “C” are classified as nonurban zoning districts. The zoning ordinance provides:

“Non-urban districts are designed to accommodate a number of non-urban land uses including agriculture, forestry, mining, extractive industries, wildlife habitat, outdoor recreation, and communication, transmission and transportation services, as well as to protect floodplain areas, steep slope areas, designated wetlands and habitat areas, and Public Supply Watersheds from intense urban development.” Allegany County Code, Chapter 141, Part 4 (Zoning) §141-5(B) (emphasis supplied).

Opponents to the project argued that the ZBA erred when it found that strict conformity with the plan was not required and that the proposed development would be “in harmony with” the Allegany County Comprehensive Plan

because Maryland Code (Article 66, § 1(k)) requires a special exception to be “in conformity with” the plan.

Gov. Martin O’Malley’s administration argued in its amicus brief that counties and municipalities are required to conform to the seven broad “visions” for growth in Maryland as listed below:

### § 1.01. Visions

- (1) Development is concentrated in suitable areas.
- (2) Sensitive areas are protected.
- (3) In rural areas, growth is directed to existing population centers and resource areas are protected.
- (4) Stewardship of the Chesapeake Bay and the land is a universal ethic.
- (5) Conservation of resources, including a reduction in resource consumption, is practiced.
- (6) To assure the achievement of items (1) through (5) of this section, economic growth is encouraged and regulatory mechanisms are streamlined.
- (7) Adequate public facilities and infrastructure under the control of the county or municipal corporation are available or planned in areas where growth is to occur.

APA and its Maryland Chapter jointly filed an amicus brief. We argued that “[p]lans are documents that describe public policies that the community intends to implement and not simply a rhetorical expression of the community’s desires.” APA’s position is that (1) the adopted comprehensive plan must be implemented; (2) effective implementation requires that the day-to-day decisions made by local officials be consistent with the adopted comprehensive plan; and (3) the court’s review of whether consistency is achieved should be more searching when local officials are acting in their administrative (quasi-judicial) capacity. APA’s amicus brief is available at [www.planning.org/amicusbriefs/pdf/terrapinrun.pdf](http://www.planning.org/amicusbriefs/pdf/terrapinrun.pdf).

The lengthy majority opinion (52 pages) recounts much of Maryland’s legislative history in statutory reforms. “[T]his case, in one sense is a continuation of legislative battles that began in the early 1990s, where representatives of the

environmental protection and professional land planning interests attempted to establish that the State, or State planners, should exercise greater control than theretofore enjoyed over most aspects of land use decision-making that then reposed in the local jurisdictions” (*Trail, et al. v. Terrapin Run, LLC, et al.*, 2008 WL 638691, p.1). The majority concludes that the “in harmony” standard is synonymous with “in conformity.” However, the three dissenting justices said the majority “sets special exception considerations on a lubricious path” (*Trail, et al. v. Terrapin Run, LLC, et al.*, Minority Opinion, p.13). The statutory amendments made by the legislature in 1970, and subsequent case law, buttresses the argument that a stricter linkage is required between the adopted plan and the grant of a special exception, the minority opined.

Richard Hall, Maryland secretary of planning and past president of the Maryland Chapter of APA, said: “We think this is a time when we need more smart, sustainable growth, not less.” The O’Malley administration is going to study the ruling before deciding whether to advance legislation to reverse the court’s decision.

*Lora Lucero, AICP, is editor of Planning & Environmental Law and staff liaison to APA’s amicus curiae committee.*

Cover concept by Lisa Barton.

Photos: Sign © iStockphoto.com/David McShane; Screen © iStockphoto.com/Alexey Khlobystov

### VOL. 25, NO. 4

*Zoning Practice* is a monthly publication of the American Planning Association. Subscriptions are available for \$75 (U.S.) and \$100 (foreign). W. Paul Farmer, FAICP, Executive Director; William R. Klein, AICP, Director of Research.

*Zoning Practice* (ISSN 1548-0135) is produced at APA. Jim Schwab, AICP, and David Morley, Editors; Julie Von Bergen, Assistant Editor; Lisa Barton, Design and Production.

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## EXCERPT FROM MINNETONKA TMINN. CODE

turn off the display or lighting if it malfunctions, and the sign owner or operator must immediately turn off the sign or lighting when notified by the city that it is not complying with the standards in this section.

### 9. Outdoor advertising displays.

Outdoor advertising signs which exist as of March 13, 1991 are nonconforming signs. A permanent outdoor advertising sign is a principal use of property. No permitted or conditionally permitted use or any part of such use may be located on the same parcel of property as such a sign. The parcel on which such a sign is located may not be subdivided to segregate the sign from the remaining property. For the purposes of this paragraph, "parcel of property" means any property for which one property identification number has been issued by the county, or all contiguous property in common ownership as of October 15, 1997, whichever is greater.

### 10. Dynamic Displays.

a) Findings. Studies show that there is a correlation between dynamic displays on signs and the distraction of highway drivers. Distraction can lead to traffic accidents. Drivers can be distracted not only by a changing message, but also by knowing that the sign has a changing message. Drivers may watch a sign waiting for the next change to occur. Drivers are also distracted by messages that do not tell the full story in one look. People have a natural desire to see the end of the story and will continue to look at the sign in order to wait for the end. Additionally, drivers are more distracted by special effects used to change the message, such as fade-ins and fade-outs. Finally, drivers are generally more distracted by messages that are too small to be clearly seen or that contain more than a simple message. Time and temperature signs appear to be an exception to these concerns because the messages are short, easily absorbed, and become inaccurate without frequent changes.

Despite these public safety concerns, there is merit to allowing new technologies to easily update messages. Except as prohibited by state or federal law, sign owners should have the opportunity to use these technologies with certain restrictions. The restrictions are intended to minimize potential driver distraction and to minimize proliferation in residential districts where signs can adversely impact residential character.

Local spacing requirements could interfere with the equal opportunity to use such technologies and are not included. Without those requirements, however, there is the potential for numerous dynamic displays to exist along any roadway. If more than one dynamic display can be seen from a given location on a road, the minimum display time becomes critical. If the display time is too short, a driver could be subjected to a view that appears to have constant movement. This impact would obviously be compounded in a corridor with multiple signs. If dynamic displays become pervasive and there are no meaningful limitations on each sign's ability to change frequently, drivers may be subjected to an unsafe degree of distraction and sensory overload. Therefore, a longer display time is appropriate.

A constant message is typically needed on a sign so that the public can use it to identify and find an intended destination. Changing messages detract from this way-finding purpose and could adversely affect driving conduct through last-second lane changes, stops, or turns, which could result in traffic accidents. Accordingly, dynamic displays generally should not be allowed to occupy the entire copy and graphic area of a sign.

In conclusion, the city finds that dynamic displays should be allowed on signs but with significant controls to minimize their proliferation and their potential threats to public safety.

b) Regulations. Dynamic displays on signs are allowed subject to the following conditions:

1) Dynamic displays are allowed only on monument and pylon signs for conditionally permitted uses in residential districts and for all uses in other districts. Dynamic displays may occupy no more than 35 percent of the actual copy and graphic area. The remainder of the sign must not have the capability to have dynamic displays even if not used. Only one, contiguous dynamic display area is allowed on a sign face;

2) A dynamic display may not change or move more often than once every 20 minutes, except one for which changes are necessary to correct hour-and-minute, date, or temperature information. Time, date, or temperature information is considered one dynamic display and may not be included as a component of any other dynamic display. A display of time, date, or temperature must remain for at least 20 minutes before changing to a different display, but the time, date, or temperature information itself may change no more often than once every three seconds;

3) The images and messages displayed must be static, and the transition from one static display to another must be instantaneous without any special effects;

4) The images and messages displayed must be complete in themselves, without continuation in content to the next image or message or to any other sign;

5) Every line of copy and graphics in a dynamic display must be at least seven inches in height on a road with a speed limit of 25 to 34 miles per hour, nine inches on a road with a speed limit of 35 to 44 miles per hour, 12 inches on a road with a speed limit of 45 to 54 miles per hour, and 15 inches on a road with a speed limit of 55 miles per hour or more. If there is insufficient room for copy and graphics of this size in the area allowed under clause 1 above, then no dynamic display is allowed;

6) Dynamic displays must be designed and equipped to freeze the device in one position if a malfunction occurs. The displays must also be equipped with a means to immediately discontinue the display if it malfunctions, and the sign owner must immediately stop the dynamic display when notified by the city that it is not complying with the standards of this ordinance;

7) Dynamic displays must comply with the brightness standards contained in subdivision 15;

8) Dynamic displays existing on June 25, 2007 must comply with the operational standards listed above. An existing dynamic display that does not meet the structural requirements in clause 1 may continue as a non-conforming development subject to section 300.29. An existing dynamic display that cannot meet the minimum size requirement in clause 5 must use the largest size possible for one line of copy to fit in the available space.

c) Incentives. Outdoor advertising signs do not need to serve the same way-finding function as do on-premises signs. Further, outdoor advertising signs are no longer allowed in the city, and there is no potential that they will proliferate. Finally, outdoor advertising signs are in themselves distracting and their removal serves public safety. The city is extremely limited in its ability to cause the removal of those signs. This clause is intended to provide incentives for the voluntary and uncompensated removal of outdoor advertising signs in certain settings. This removal results

in an overall advancement of one or more of the goals set forth in this section that should more than offset any additional burden caused by the incentives. These provisions are also based on the recognition that the incentives create an opportunity to consolidate outdoor advertising services that would otherwise remain distributed throughout the community.

1) A person may obtain a permit for an enhanced dynamic display on one face of an outdoor advertising sign if the following requirements are met:

(a) The applicant agrees in writing to permanently remove, within 15 days after issuance of the permit, at least two other faces of an outdoor advertising sign in the city that are owned or leased by the applicant, each of which must satisfy the criteria of parts (b) through (d) of this subsection. This removal must include the complete removal of the structure and foundation supporting each sign face. The applicant must agree that the city may remove the sign if the applicant does not timely do so, and the application must be accompanied by a cash deposit or letter of credit acceptable to the city attorney sufficient to pay the city's costs for that removal. The applicant must also agree that it is removing the sign voluntarily and that it has no right to compensation for the removed sign under any law.

(b) The city has not previously issued an enhanced dynamic display permit based on the removal of the particular faces relied upon in this permit application.

(c) Each removed sign has a copy and graphic area of at least 288 square feet and satisfies two or more of the following additional criteria:

(1) The removed sign is located adjacent to a highway with more than two regular lanes and with a general speed limit of 45 miles per hour or greater, but that does not have restrictions on access equivalent to those of an interstate highway;

(2) All or a substantial portion of the structure for the removed sign was constructed before 1975 and has not been substantially improved;

(3) The removed sign is located in a noncommercial zoning district;

(4) The removed sign is located in a special planning area designated in the 1999 comprehensive plan; or

(5) The removed copy and graphic area is equal to or greater than the area of the copy and graphic area for which the enhanced dynamic display permit is sought.

(d) If the removed sign face is one for which a state permit is required by state law, the applicant must surrender its permit to the state upon removal of the sign. The sign that is the subject of the enhanced dynamic display permit cannot begin to operate until proof is provided to the city that the state permit has been surrendered.

(e) The applicant must agree in writing that no dynamic displays will ever be used on one additional outdoor advertising sign that has a copy and graphic area of at least 288 square feet in size. This agreement will be binding on the applicant and all future owners of the sign. If the sign is subsequently removed or destroyed and not replaced, the holder of the enhanced dynamic display permit is not required to substitute a different sign for the one that no longer exists.

2) If the applicant complies with the permit requirements noted above, the city will issue an enhanced dynamic display permit for the designated outdoor advertising sign. This permit will

allow a dynamic display to occupy 100 percent of the potential copy and graphic area and to change no more frequently than once every eight seconds. The designated sign must meet all other requirements of this ordinance.

### **11. Sign construction and maintenance.**

All signs must conform to the following standards.

a) Construction specifications. All permanent signs must be constructed in accordance with the following:

- 1) the Minnesota state building code;
- 2) all electric signs must be approved and labeled as conforming to the standards of the Underwriters' Laboratories, Inc., the United States bureau of standards or other similar institutions of recognized standing. All illuminating elements must be kept in satisfactory working condition or immediately repaired or replaced. Signs that are partly illuminated must meet all electrical requirements for the portion that is illuminated;
- 3) all permanent freestanding signs must have self-supporting structures erected on and permanently attached to concrete foundations;
- 4) for wall signs, the wall must be designed for and have sufficient strength to support the sign;
- 5) wall signs must be mounted parallel to the building and may not project more than 18 inches from the face of the building;
- 6) signs may not be painted on the wall of a building;
- 7) Unless otherwise specified in this section, the maximum angle permitted between faces of a double face freestanding sign is 45 degrees; and
- 8) signs must be constructed to withstand the following wind loads:
  - (a) for solid signs, 30 pounds per square foot on one face of the sign; and
  - (b) for other signs, 36 pounds per square foot of the total face area of the letters and other sign surface, or 10 pounds per square foot of the gross area of the sign as determined by the overall dimensions of the sign, whichever is greater.

b) Sign maintenance and repair. All signs must be maintained in a safe, presentable and good structural condition at all times, including the replacement of defective parts, cleaning and other items required for maintenance of the sign. Vegetation around, in front of, behind, and underneath the base of ground signs for distance of 10 feet must be neatly trimmed and free of weeds. Rubbish or debris under or near the sign that would constitute a fire or health hazard must be removed.

### **12. Removal of Abandoned Signs, Signs in Disrepair and Signs Located in Public Right-of-Way.**

a) Abandoned signs and signs in disrepair. An abandoned sign or sign in disrepair is prohibited and shall be removed by the owner of the premises within 30 days after notification. If

**17.20.045 Signs requiring a use permit.**

**A. Off Premises Signs (Outdoor Advertising Including Billboards).** The application for building permits for such outdoor displays or structures shall include plans showing the construction of the sign, the advertising display to be placed thereon, and the proposed location of the sign in relation to the freeway and to the property on which the sign is to be placed. No advertising structure or off-premises sign shall be placed unless it is built to withstand a wind pressure of 20 pounds per foot of exposed surface.

→ **B. Video Display Signs.** Except as otherwise provided in this section, all digital display signs (DDS) shall comply with the requirements of this section.

1. Area. The maximum sign area for a DDS shall not exceed 300 square feet on each face.
2. Height. A DDS shall not exceed a maximum height of 40 feet measured from ground surface to the top of the sign.
3. Location. DDS's shall only be allowed to be located within 150 feet of a state route right-of-way within the city limits. All DDS's shall be located such that no part of the DDS encroaches into any public right-of-way. DDS's shall not be placed within any legal easements, unless such easements were specifically created for the placement of signs. The applicant for a DDS shall demonstrate that the proposed DDS location is free of such easements.
  - a. All proposed signs adjacent to state highways shall meet the requirements of the State of California Department of Transportation Outdoor Advertising standards for outdoor signs.
4. Spacing from Other DDS. Signs of this type must be separated from other display signs as follows:

<b>State Route</b>	<b>Distance (miles)</b>
Highway 70	2.0
Highway 162 (Oro Dam Blvd.)	1.25
Highway 162 (Olive Highway)	1.25

5. Lighting. Signs which contain, include, or are illuminated by flashing, intermittent, or moving light or lights are prohibited. A DDS that utilizes lighting technologies (such as light emitting diodes) to create digital messages shall be equipped with a light sensor that automatically adjusts the lighting of the sign face as ambient lighting changes. In no event shall a digital display sign face increase ambient illumination by more than 0.3 footcandles when measured perpendicular to the message sign face at a distance based on the sign face size as follows:

<b>Changeable Message Sign Face Size (sq. ft.)</b>	<b>Measurement Distance (ft.)</b>
50 ft <sup>2</sup>	71
100 ft <sup>2</sup>	100
150 ft <sup>2</sup>	122
200 ft <sup>2</sup>	141
250 ft <sup>2</sup>	158

- \* For signs with an area in square feet other than those specifically listed in the table, the measurement distance shall be calculated with the following formula: Measurement Distance =  $\sqrt{\text{Area of Sign Sq. Ft.} \times 100}$

6. Safety. The community development director, or his/her designee, shall approve the location of all digital display signs to ensure that they do not introduce unsafe driving conditions to the roadway system.
7. Maintenance. All structures shall be properly maintained, kept in good repair and kept clean. The area occupied by such structure shall be kept free of weeds, debris, and graffiti. If violations of this paragraph occur, the planning commission may start proceedings to revoke the permit.
8. Permits. A use permit will be required for all DDS. All requests for building permits for these signs shall be accompanied by construction and design plans stamped by a California registered civil engineer, in addition, a lighting plan shall be required showing the brightness of the proposed sign and the message intervals between individual advertisements.
9. Hours of Operation. All DDS shall be permitted to operate only between the hours of 5:00 a.m. to 12:00 a.m.
10. Messages shall be displayed for a minimum of 8 seconds.
11. Transition during messages shall be 2 seconds or less and shall either be instantaneous or fade out/in. Flashing is prohibited.
12. Signs shall be required to meet all Caltrans requirements, permits and other applicable standards. (Ord. 1749 § 4; Ord. 1768 § 2; Ord. 1806 § II, 2014)

**17.20.070 Requirements for specific types of signs.**

The following requirements shall apply in any case where the specified type of sign is used, unless provided otherwise by this section:

**A. Wall Signs.**

- 1. No part of a wall sign shall extend more than 1/3 of the sign height or 8 feet, whichever is less, above the top of the portion of the building façade that is adjacent to the sign.
- 2. The thickness of any wall sign shall not exceed one foot.
- 3. The maximum area for the total of all permitted wall signs for any single wall plane shall not exceed 10%. The wall plane area shall include all window and door areas and shall be measured from the sidewalk or ground line to the building eave line or parapet.

**B. Window Signs.** For windows that have multiple panes, in order to determine the maximum window area that may be covered, the window area shall be measured as the framed area of all of the window’s panes.

**C. Monument Signs.**

- 1. Monument signs shall not be placed on any frontage with a building setback of less than 15 feet.
- 2. A minimum distance of 50 feet shall separate any 2 monument signs.
- 3. Where practical, monument signs shall be placed so that the sign face is perpendicular to the adjacent right-of-way.

**D. Freestanding Signs.**

- 1. Freestanding signs shall not be placed on any frontage with a width of less than 75 feet, or with a building setback of less than 25 feet.
- 2. A minimum distance of 75 feet shall separate any 2 freestanding signs.
- 3. Where practical, freestanding signs shall be placed so that the sign face is perpendicular to the adjacent right-of-way.
- 4. The maximum height of a freestanding freeway-oriented sign shall be 40 feet. Increased height, up to a maximum of 60 feet, may be permitted in order to provide motorists with direct vision of the sign from a distance of 1/4 mile from a freeway exit ramp. The need for this increased height shall be demonstrated by means of a balloon test or other method approved by the zoning administrator. The maximum permitted height shall be specified in the sign permit.
- 5. To exceed the allowable height of a freestanding sign as specified in Tables 17.20.120-2, 17.20.120-3, and 17.20.130-1, approval of the planning commission shall be required.
- 6. The maximum freestanding sign area is based on the total linear street frontage of the front side of the site as follows:

**Street Frontage Sign Area**

Up to 200 ft.	50 sq. ft. per side
---------------	---------------------

200 to 400 ft.	75 sq. ft. per side
Over 400 ft.	100 sq. ft. per side

7. No portion of a freestanding sign shall project above a public right-of-way.

**E. Projecting Signs.**

1. Projecting signs may be provided only for uses located on the ground floor of a building.
2. A projecting sign may include a projection above a maximum of 5 feet of the width of a public right-of-way, provided that the sign includes the minimum vertical clearance specified by Section 17.20.060 and provides a 2-foot horizontal clearance from the curb face.
3. In a multi-story building, projecting signs shall be placed at or below the sill of the second-floor windows in a multi-story building.
4. No part of a projecting sign shall extend more than 1/3 of the sign height or 8 feet, whichever is less, above the top of the portion of the building façade that is adjacent to the sign.
5. Where practical, projecting signs shall be placed so that the sign face is perpendicular to the adjacent right-of-way.
6. The total area of a projecting sign shall not exceed 50 square feet.
7. The thickness of any projecting sign shall not exceed one foot.

**F. Awning Signs.** Awning signs may be placed at the sides or ends of the awning and shall not project from the surface of the awning.

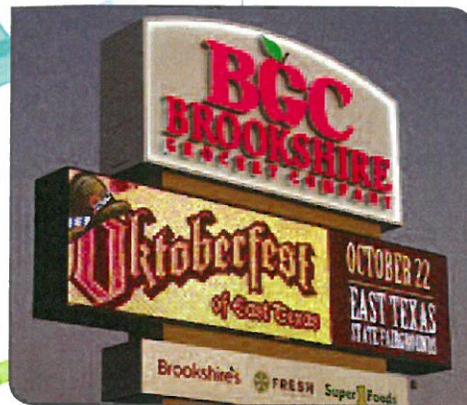
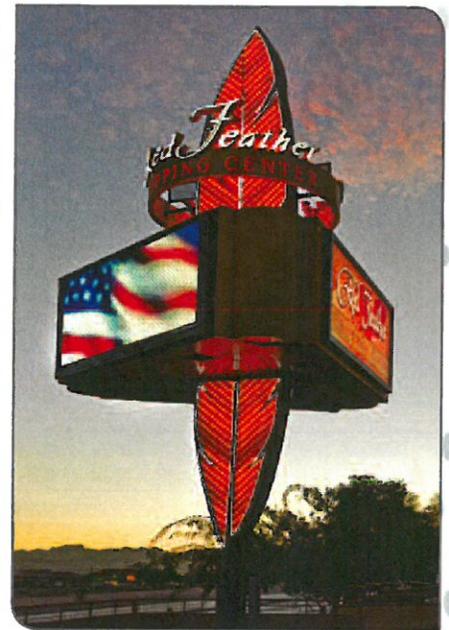


**G. Reader Boards.**

1. Reader boards may be provided as part of any allowed sign.
2. The area of a reader board shall not exceed 40 square feet on any one face, and in no case shall a reader board be provided on more than 2 faces of a sign. (Ord. 1749 § 4; Ord. 1763 §§ 12, 13; Ord. 1796 § 6)

# FINDING COMMON GROUND:

ANSWERS TO COMMON  
QUESTIONS ABOUT  
ELECTRONIC MESSAGE  
CENTERS (EMCs)



# FINDING COMMON GROUND: ANSWERS TO COMMON QUESTIONS INVOLVING ON-PREMISE ELECTRONIC MESSAGE CENTERS

Is your community trying to determine how to treat on-premise electronic message center signs (EMCs)? Are you trying to strike a balance between the desire for businesses to use EMCs and community aesthetics? Do you have concerns about the safety of EMCs? Are you confused or frustrated about how to properly regulate these types of signs?

If you have answered in the affirmative to any of these questions, you are not alone. Planners, community officials, small businesses and sign companies have struggled with these questions for several years. As the trade association for the on-premise sign industry, ISA has worked with hundreds of communities across the country on EMC issues, lending our expertise in helping to develop reasonable and beneficial code language governing this modern and innovative sign technology.

Just to clarify, EMCs are not digital billboards, which advertise a good or service that is located away from where the sign is located. Rather, EMCs are digital signs that are located on the premises of the business, and that advertise goods and services that are provided at the location.

*(Left) Electronic message center (EMC) / on-premise sign advertising a product that is located at the place of business*

*(Right) Digital billboard / off-premise sign advertising a business away from where the sign is located*



There is often confusion regarding on and off-premise digital signs. However, EMCs and digital billboards have very distinct capabilities and purposes, each targets a specific audience and each has traditionally been treated under separate legal and regulatory regimes. For the purposes of this publication, we are focusing solely and exclusively on EMCs.

We have compiled this guide in order to help all stakeholders make informed decisions about EMCs, addressing common concerns and providing the perspective necessary for the development of effective sign regulations. We hope that the information in this publication can assist each community in finding common ground in the quest for appropriate EMC regulation.

# TABLE OF CONTENTS

EMCs AND AESTHETICS . . . . .	02
EMCs AND CODE ENFORCEMENT . . . . .	03
EMCs AND COLOR RESTRICTIONS . . . . .	04
EMCs AND DEFINITIONAL PROBLEMS & SOLUTIONS . . . . .	05
EMCs AND DIGITAL AREA SIZE LIMITATIONS . . . . .	06
EMCs AND ENERGY CONSUMPTION . . . . .	06
EMCs AND (THE) HIGHWAY BEAUTIFICATION ACT . . . . .	07
EMCs AND MORATORIUMS . . . . .	08
EMCs AND NIGHT-TIME BRIGHTNESS . . . . .	09
EMCs AND OFF-PREMISE MESSAGES . . . . .	10
EMCs AND TEXT-ONLY RESTRICTIONS . . . . .	11
EMCs AND TRAFFIC SAFETY . . . . .	12

# EMCs AND AESTHETICS

## ISSUE

Some communities are concerned with the impact of EMCs on the visual environment. Most concerns regarding aesthetics can be resolved with effective regulation. Proper brightness standards and regulated content presentation standards can resolve the majority of aesthetic concerns. When properly regulated and utilized, EMCs can actually enhance community aesthetics.

The manually-changeable reader board, an ancestor to EMC technology, is common in most communities. Mis-matched letters, bland fonts, and other design limitations make a reader board to electronic message center conversion an improvement in aesthetics. A properly regulated EMC is considered by some to be more attractive than a traditional reader board.

Another example of sometimes aesthetically-displeasing signs is multi-tenant panel signs that can be found in many retail multi-tenant shopping centers. Frequently these signs are packed with a long list of tenants, which are functionally invisible to the motoring public. Such lack of visibility affects the viability of the retail center, and unviable businesses can eventually become an eyesore. Allowing an EMC in a retail shopping center can give tenants the visibility they need, replace functionally invisible signs with an effective sign without increasing over all square footage, and thus improve the aesthetic appearance of the shopping center.

Lack of visibility and the ability to change advertising messages often results in some business owners using alternate methods to get the message out. Ironically, prohibitions or severe restrictions on EMCs can result in the very thing such sign codes are intended to avoid; namely, visual clutter by excessive signage. By allowing properly regulated EMCs to operate in a community, you can avoid these aesthetically objectionable behaviors from occurring. If a business owner is able to use an EMC, the need for excessive banners and other forms of visual clutter are eliminated.

Associating these signs with Las Vegas is a common concern voiced in the debate over EMCs and aesthetics. A closer look at the size, height, spacing and content delivery methods on signs on the Las Vegas strip reveals that this comparison is inaccurate. Signs on the Las Vegas strip have few or no set back requirements, spacing limitations, or height restrictions. It is not uncommon for signs on the Las Vegas strip to exceed two hundred feet in height, and most of the larger signs exceed several thousand square feet in total sign area. Most communities do not even come close to allowing signs such as these. Unless your community allows signs of this magnitude, it is highly unlikely that your community will resemble anything like Las Vegas.

## RECOMMENDATIONS

The key to addressing aesthetic concerns regarding EMCs is to ensure that the message brightness, duration, and transition method are properly regulated and enforced in conformity to community aesthetic values. EMCs in and of themselves are not aesthetically displeasing.



Before ••



After ••

*The traditional multitenant sign at the top is forced to use unimaginative fonts and colors in order to fit in all the businesses; the same multitenant sign on the bottom has added an EMC which advertises each tenant every ten seconds, making the sign less cluttered and more attractive.*

# EMCs AND CODE ENFORCEMENT

## ISSUE

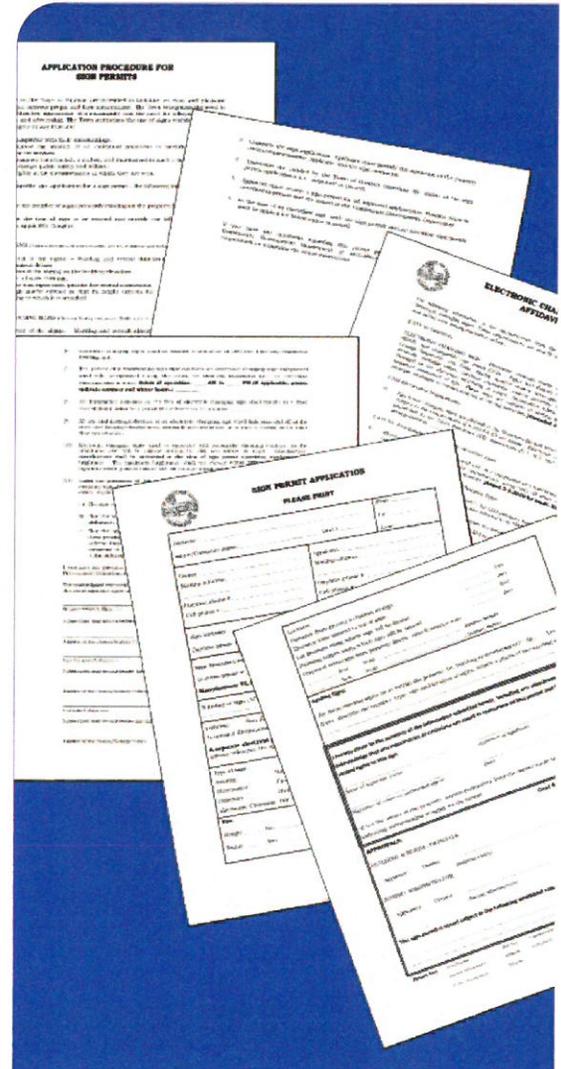
Local sign codes often have provisions regarding the regulation of EMCs. Sign companies help their customers learn what regulations govern their EMCs when the product is sold. Once the EMC is permitted, it is up to the sign owner to make sure that they program their sign so that it is in compliance with the local sign code. EMC manufacturers can only build signs that are capable of compliance.

In some rare instances, out of fear that some extra-judicial programming will take place after an EMC is permitted and operational, some local regulators have attempted to take the position that such signs are prohibited altogether.

## RECOMMENDATIONS

The sign industry encourages strict compliance with sign codes and should always educate customers on how to properly operate EMCs. However, occasionally EMCs are programmed beyond the limitations of local regulation by their owners. Acknowledging the difficulty of city code enforcement, one way of encouraging proper and legal use of these signs by their owners is to have the owner sign an affidavit at the same time the sign is permitted in which the owner agrees to abide by the local regulations or else be cited and pay a fine.

There is no legal basis to deny a static-display electronic sign, as it is legally indistinguishable from any other illuminated sign. Car usage is not prohibited merely because cars are designed so that they can exceed the speed limit; tickets are issued to the driver if they *do* exceed the speed limit. Likewise, if a sign owner *actually* violates the zoning or sign code, the remedy is to cite them for the violation, not to presume that they will do so and refuse to issue permits at the outset.



*Cities can require EMC users to promise that they will program and use their signs in compliance with the local sign code, including imposing penalties for knowingly violating the ordinance.*

# EMCs AND COLOR RESTRICTIONS

## ISSUE

Some jurisdictions have established restrictions on the types of content displayed on EMCs. Among the restrictions are limits to the number of colors displayed or a prohibition on full-color images. Many of these limitations are based on a belief that multiple colors or “photo-quality” images are more intrusive or distracting to motorists. We believe that restrictions on the appearance of EMC displays fail to advance any compelling governmental interest and represent an impermissible content-based regulation.

## COLOR-BASED LIMITS

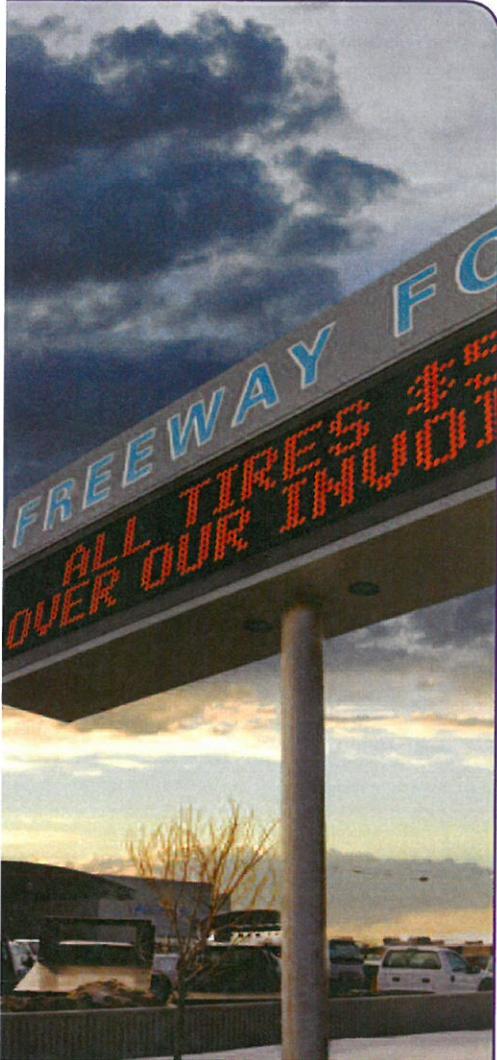
Color restrictions can take the form of limiting the total number of colors displayed (“one color only” or “no more than 3 colors”) or specifying the colors allowed (“amber only” or “no red lights”). As a practical issue, most EMCs are comprised of RGB pixels capable of displaying full color images. In order to display most colors, the image actually consists of a mixture of individual LEDs displaying red, green, or blue in varying amounts. Even if the display appears to be a single color (“white”), when viewed at a close distance the EMC can be seen to generating multiple colors of light that blend together as the viewing distance increases. Restrictions on the number of colors are problematic to enforce as questions of color shading and the “black” appearance of unlit LEDs complicate the ability to precisely determine the number of colors being displayed.

Additionally, many EMCs are designed to display information in a format similar to conventional signs. A filling station commonly displays the prices of gasoline, diesel fuel, ethanol and kerosene using different colored numerals. If a manual changeable copy panel can display a message using multiple colors, an EMC should be afforded the ability to display the identical message.

## RECOMMENDATIONS

Any attempt to regulate EMCs based on the appearance of the display may run afoul of judicial scrutiny of content-based regulations. Other federal protections on the display of registered trademarks also may affect controls on the display of logos (for example, the Federal Lanham Trademark Act.)

Any EMC should be allowed to display text information, graphics, or images identical to a permanent display on a non-EMC sign. EMC-specific regulations should avoid restrictions on the information displayed and be limited to appropriate controls on sign brightness, size, and message change.



*This EMC user can only use  
amber-colored text messages,  
which can be bland and  
limit the creativity of their  
business's message.*

# EMCs AND DEFINITIONAL PROBLEMS & SOLUTIONS

## ISSUE

When it comes to drafting and enforcing signs codes, it is important for the language and definitions have clear, reasonable, workable and easily understandable meanings. This is especially true when it comes to definitions in the part of the sign code that covers EMCs. This language can often be technologically incorrect, difficult to implement, and unworkable in practice, resulting in sign codes that don't benefit regulators, sign users or the community.

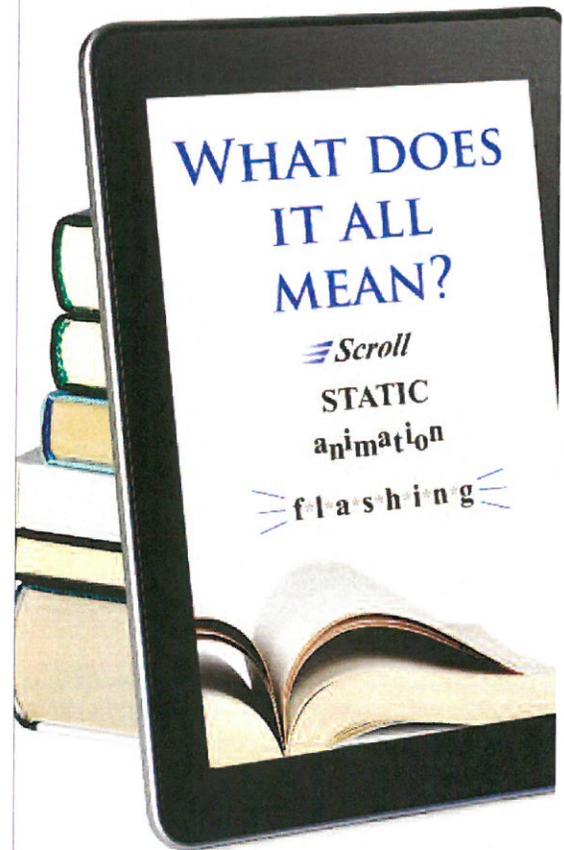
Terms that need consistent clarification in regard to EMC regulatory language can be as basic as the definition of a changeable message sign. There are two kinds of such signs, manually-changed and electronically-changed. Most manually-changed signs involve a background surface with horizontal channels, into which plastic letters and numbers are inserted into the channels on the sign face. The message must be changed by having an employee or technician remove the existing plastic letters and replacing them with the new message.

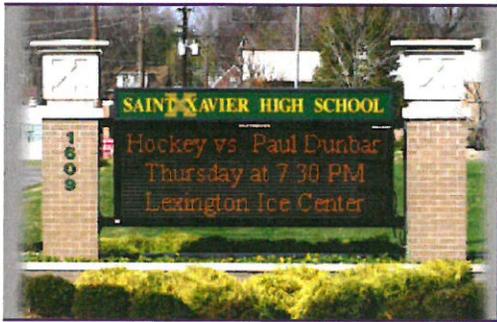
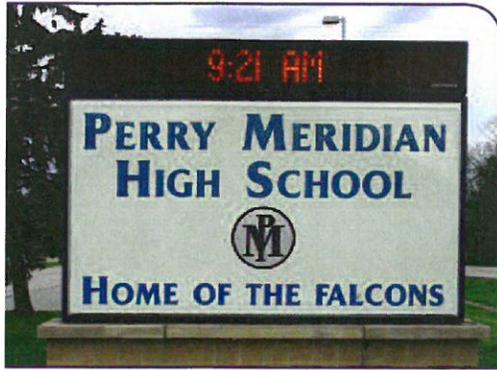
On the other hand, for the most part EMCs use light emitting display technologies such as LEDs. These kinds of changeable message signs are operated via computer at a remote location and can change messages as fast as they can be programmed. For the purposes of this document, we are focusing on the definitional issues that arise when it comes to EMCs

## RECOMMENDATIONS

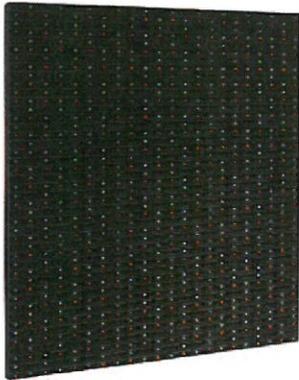
EMC regulatory language should cover certain technical capabilities of such signs such as:

- ANIMATION — the usage of multiple frames running at a fast enough speed that the human eye perceives the content to be in continuous movement.
- DISSOLVE — a mode of message transition on an EMC accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.
- FADE — a mode of message transition on an EMC accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.
- FLASHING — an intermittent or flashing light source where the identical EMC message is constantly repeated at extremely fast intervals.
- FRAME — a complete, static display screen on an EMC.
- FRAME EFFECT — a visual effect on an EMC applied to a single frame to attract the attention of viewers.
- SCROLL — a mode of message transition on an EMC where the message appears to move vertically across the display surface.
- STATIC MESSAGE — messages that contain static messages only, and do not have movement, or the appearance or optical illusion of movement during the static display period, of any part of the sign structure, design, or pictorial segment of the sign, including the movement or appearance of movement.
- TRANSITION — a visual effect used on an EMC to change from one message to another.
- TRAVEL — a mode of message transition on an EMC where the message appears to move horizontally across the display surface.





*The school sign on the top has been allotted a very small area for its EMC as compared to the school sign on the bottom. The school sign on the bottom is therefore able to present more information in a more legible fashion on the screen in comparison.*



*EMCs use light emitting diodes, or LEDs, which are one of the more energy-efficient forms of lighting available today.*

# EMCs AND DIGITAL AREA SIZE LIMITATIONS

## ISSUE

Some jurisdictions have adopted restrictive square footage area restrictions for EMCs. For example, restrictive allowable square footage for EMCs would be to only allow 25% of the maximum square footage for a sign. We believe that if square footage restrictions for electronic message centers are too restrictive this may lead to limiting the type of message that a business can display. A smaller EMC may only lend itself to effectively displaying text, restricting the business to utilize images. Since EMCs are considered such an effective method for a business to advertise, this will also have a potential negative economic impact on a business.

## ECONOMIC CONSIDERATIONS

EMCs have proven to be a very cost effective method of advertising, especially when compared to radio, television, and print media. A typical small business does not have the recognition of a national chain. Therefore, affordable and effective advertising that is provided by an EMC can be an important factor of a successful business.

## RECOMMENDATIONS

**In support of the business community and particularly small business, no square footage area restrictions or minimal restrictions of the allowable square footage, are recommended for EMCs.** This will afford a business the flexibility to display images or text providing, full marketing advantage afforded by electronic message centers. By allowing the business community greater flexibility in the allowable square footage of EMCs can also lead to overall support and economic enhancement of the community. An additional advantage of allowing minimal restrictions on the allowable area for EMCs will enable enhanced messaging for community or civic events.

# EMCs AND ENERGY CONSUMPTION

## ISSUE

Some jurisdictions are concerned about the amount of energy consumption by electronic signs, including EMCs. Modern EMCs use light-emitting diode or "LED" lighting technology to produce changeable messages. LED lighting is one of the most energy efficient forms of lighting, according to the U.S. Department of Energy.

## RECOMMENDATIONS

Gains in LED efficiency over the past few years have been dramatic. Many EMC manufacturers have reported efficiency gains of almost 80% over a five-year period, and it appears that the trend towards more efficiency will continue. EMCs are on the cutting edge of the most energy efficient sign technologies.

When compared to other forms of advertising such as print media, radio, or television, and EMC is a more environmentally responsible form of advertising. The energy, paper, and equipment used in other forms of advertising far outweigh the energy consumption and overall environmental impact of an EMC.

# EMCs AND THE HIGHWAY BEAUTIFICATION ACT

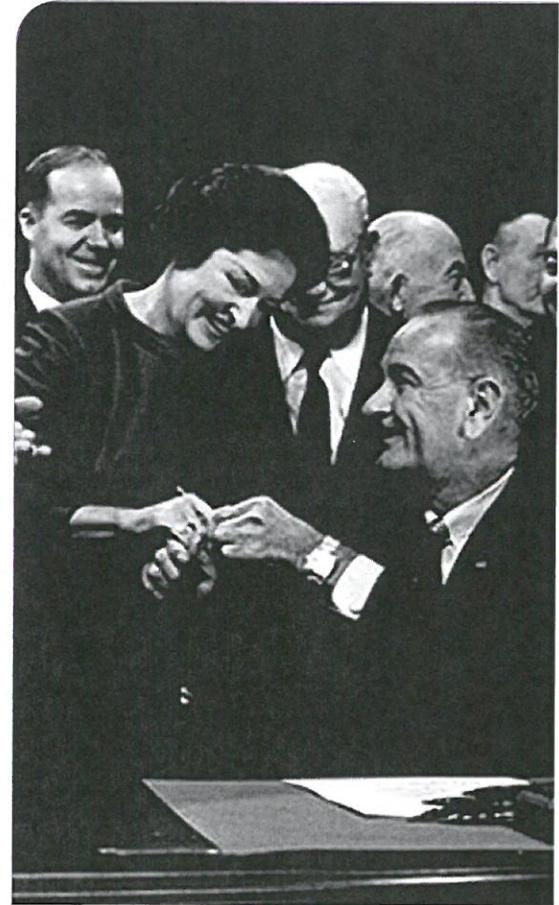
## ISSUE

The Highway Beautification Act (23 USC 131) of 1965 calls for control of outdoor advertising or billboards within 660 feet of the nation's Interstate Highway System and the existing federal-aid primary highway system.

Since its passage, the Highway Beautification Act has been consistently interpreted as exempting on-premise signs under its jurisdiction. However, in recent years a few state and federal officials have mistakenly sought to regulate on-premise signs using the Act as justification.

## RECOMMENDATIONS

The Highway Beautification Act cannot be used as justification for government officials to regulate on-premise signs. The HBA does not apply to all signs within 660 feet of a primary aid highway or interstate system. 23 USC 131(c)(2) and 23 USC 131(c)(3) of the Act provide exceptions for on-premise signs, including for on-premise EMCs. It was never the legislative intent of the drafters of the Highway Beautification Act or its subsequent amendments to place on-premise signs under any federal control.



*President Lyndon Johnson and his wife "Lady Bird" at the signing of the 1965 Highway Beautification Act, which regulates outdoor advertising (billboards), not on-premise signs*

# EMCs AND MORATORIUMS

## ISSUE

Moratoriums are not necessary to change a sign ordinance unless it can be proven that specific kinds of signs imminently threaten public health and safety. Communities should be able to research options and revise their sign codes without resorting to moratoriums.

Many communities enact temporary moratoriums on certain kinds of signs while they consider how to regulate these specific signs. During this period of time, permits are not issued for the specific types of signs. In some cases, a temporary moratorium leads to a permanent ban on the kinds of signs in question.

## RECOMMENDATIONS

ISA believes that sign moratoriums make for poor public policy for several reasons, including the following:

- (1) moratoriums can have the affect of favoring businesses which have the targeted signs already in existence;
- (2) government signs are often not included under moratoriums;
- (3) moratoriums often take place during important economic opportunities (i.e. Christmas, summer tourism season etc) for local businesses; and
- (4) moratoriums could discourage development of new businesses.

Most importantly, sign moratoriums can usually be avoided by effectively involving and communicating with the appropriate community stakeholders.

If a community elects to enact or extend a sign moratorium, it should be used as a last resort, and only then in furtherance of an imminent health or safety concern. A sign moratorium should be limited to the shortest possible duration.



*Electronic message centers have often been the target of moratoriums by local officials. However, prohibiting these types of signs (or other types, such as pole signs or window signs) can often hurt existing businesses in the community and could discourage the development of new businesses.*

# EMCs AND NIGHT-TIME BRIGHTNESS

## ISSUE

EMCs that are too bright at night can be offensive and ineffective. EMC brightness at night is an issue where sign users, the sign industry, and community leaders have a common goal: ensuring that EMCs are appropriately legible. The messages that these signs convey can be rendered unattractive and perhaps even unreadable if they are programmed too bright when it is dark outside.

That's why many sign companies recommend to their customers that in order for these signs to be most effective, their brightness be set at such a level to be visible, readable and conspicuous.

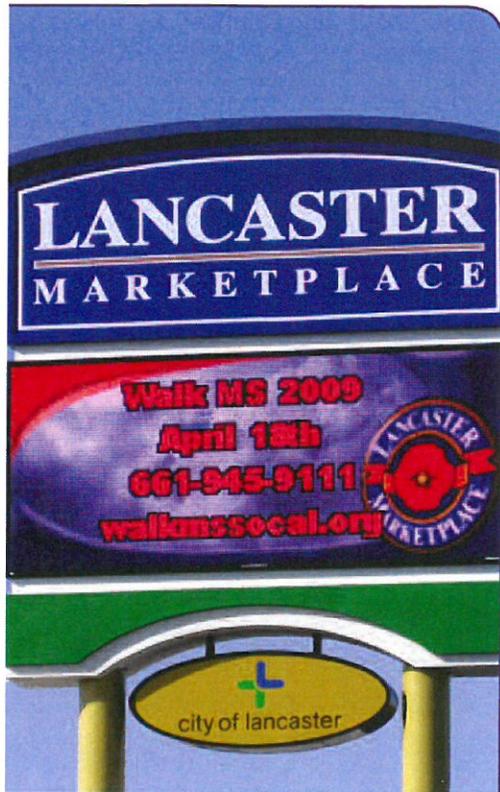
## RECOMMENDATIONS

In 2008, the International Sign Association (ISA) retained Dr. Ian Lewin of Lighting Sciences to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. Dr. Lewin is a past chair of the Illuminating Engineering Society of North America (IES), and is greatly respected within the lighting field. His work for ISA was conducted with the input of experts within the sign industry.

As a result of this research, the recommended night-time brightness level for EMCs is 0.3 foot candles above ambient light conditions when measured at an appropriate distance. This is a lighting level that works in theory and in practice. Dozens of jurisdictions across the country have adopted these standards, either in whole or in part.

Included with this research and recommendations are model statutory language and six short steps to help guide the process. You can find these EMC Night-time Brightness Recommendations at [www.signs.org/brightness](http://www.signs.org/brightness).





*This shopping center's electronic message center (EMC) is communicating a message not about any goods or services sold on the property, but about a non-commercial community-oriented event that is happening at a place other than at the location of the sign. It is perfectly acceptable for an on-premise EMC to broadcast such a non-commercial message; however, if the same sign were to communicate a commercial message about a store in the next town or advertise for a product that was not sold at that particular location, it would be in danger of losing its permitted status as an on-premise sign and could instead be classified as an off-premise sign. This new classification would usually entail undergoing a new permitting process, additional fees and other arduous procedures.*

# EMCs AND OFF-PREMISE MESSAGES

## ISSUE

An on-premise sign is a communication device whose message and design relate to a business, an event, goods, profession or service being conducted, sold, or offered at the same location as where the sign is erected. An off-premise sign is any sign that is not appurtenant to the use of the property, a product sold, or the sale or lease of the property on which it is displayed and that does not identify the place of business as purveyor of the merchandise, services, etc. advertised upon the sign.

When an on-premise EMC is programmed to include among its several messages one that advertises a business, an event, goods, profession or service being conducted, sold, or offered at a different location from where the sign is erected, it may be viewed by some government officials as being an off-premise sign, and need to be permitted and regulated as such. This can have adverse impacts on both the individual sign users as well as other future sign users who will need approval from zoning or permitting authorities.

## RECOMMENDATIONS

ISA believes that the messages that should be displayed on signs permitted under on-premise sign regulations should be messages relating to a business, an event, goods, profession or service being conducted, sold, or offered at the same location as where the sign is erected. ISA also believes that on-premise signs should be permitted to display noncommercial messages and public service announcements without risk of losing their on-premise status or exemption from outdoor advertising restrictions.

# EMCs AND TEXT-ONLY RESTRICTIONS

## ISSUE

Some jurisdictions have established restrictions on the types of content displayed on EMCs. Among the restrictions are prohibitions on high-quality images. Many of these limitations are based on a belief that “photo-quality” images are more intrusive or distracting to motorists. We believe that restrictions on the appearance of EMC displays fail to advance any compelling governmental interest and represent an impermissible content-based regulation.

## ALPHANUMERIC LIMITS

Alphanumeric controls are designed to limit displays to the 62 Latin letters and Arabic numbers. Photographic images, graphics, and other characters are prohibited. While alphanumeric text allows messages to be expressed, the limited displays are not necessarily as effective as images can be. As noted in the APA’s *Street Graphics and the Law*, (pictographic) images are encouraged as they are more easily comprehended than text. Additionally, images allow businesses to express the products offered at their location using registered trademarks and logos, which are much more readily identified than words expressing the same message.

## RECOMMENDATIONS

Any attempt to regulate EMCs based on the appearance of the display may run afoul of judicial scrutiny of content-based regulations. Other federal protections on the display of registered trademarks also may affect controls on the display of logos.

Any EMC should be allowed to display text information, graphics, or images identical to a permanent display on a non-EMC sign. EMC-specific regulations should avoid restrictions on the information displayed and be limited to appropriate controls on sign brightness, size, and message change.



*The Burger King EMC photo at the top can only use text, while the Burger King EMC photo on the bottom can also show pictures, logos, and other images.*

# EMCs AND TRAFFIC SAFETY

## ISSUE

Many jurisdictions that consider regulations on EMCs fear that allowing this technology to be used in signage will lead to an increase in traffic accidents. These fears are unfounded. The LED technology inherent in electronic message centers have been studied for over 30 years and have never been found to be hazardous to traffic safety. Studies from reputable organizations such as Virginia Tech Transportation Institute, Tantara Associates and even the Federal Highway Administration have found that digital signs are appropriate along the nation's roadways.

The Federal Government has accepted the use of this technology in signage along the roadways. Over forty State Governments have specifically adopted regulations allowing for its usage. In fact, digital signs are found throughout the United States.

## RECOMMENDATIONS

**There are two basic types of safety studies in the United States: Statistical and Human Factors.**

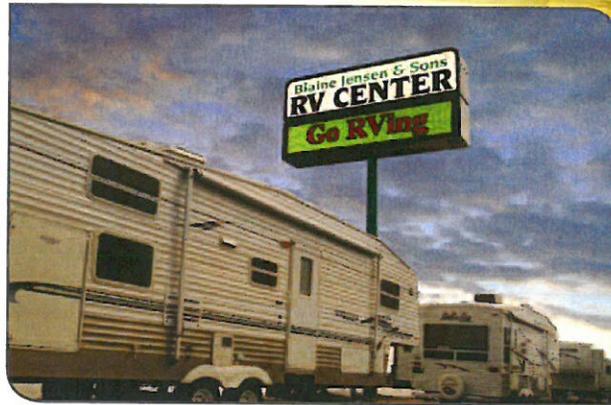
Neither type of study has ever shown that digital signs cause an increase in accidents or are a hazard to the traveling public.

Statistical studies look at multiple locations and attempt to determine whether the introduction of a stimulus (in this instance an EMC) caused an increase in accidents. The study begins by looking at traffic data at specific locations, for a number of years before the digital sign is erected. This data provides a baseline by which to judge whether there was an increase in accidents. The researcher then analyzes the same data that is present for these locations after the digital sign is erected. No statistical study has ever shown that digital signs cause an increase in accidents. In fact, a 2012 study by Texas A&M University researched over 120 locations of EMCs in four states, and found that there is "no statistically significant impact between the installation of on-premise digital signs and an increase in crashes."

Human Factors studies look at the way in which a stimulus affects a driver. Such studies have been done on any number of stimuli: eating and drinking, changing the radio-A/C dials, texting, etc. This type of study looks at how a driver may become distracted by a stimuli and how such distraction could increase the likelihood of an accident. No such study has ever found that digital signs are so distracting as to be the cause of an accident.



*Pictured is an official District of Columbia Department of Transportation digital sign, with a two-second time interval, informing motorists during rush-hour on a high-traffic area about their distracted driving law. That our nation's capital uses this type of signage technology to educate drivers demonstrates that digital technology enhances safe traffic conditions.*



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RESEARCH

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# Night-time Brightness Level Recommendations for On-Premise Electronic Message Centers

*Updated August 2016*

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PRODUCED BY:

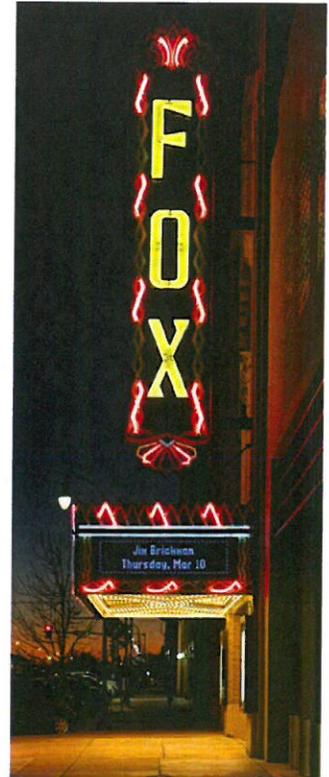


INTERNATIONAL SIGN ASSOCIATION

**ATTACHMENT** E

# TABLE OF CONTENTS

INTRODUCTION .....	2
CASE STUDIES .....	4-6
EXECUTIVE SUMMARY .....	7
RECOMMENDED LANGUAGE .....	8
SIX STEPS: EMC BRIGHTNESS LEVELS	
WITH OPERATIONAL CONTROL .....	9
WITHOUT OPERATIONAL CONTROL .....	11



## LEARN MORE ABOUT EMCS

The International Sign Association offers an Electronic Message Center (EMC) Resource Center, with resources on:

- EMCs and traffic safety
- A framework for developing EMC sign code language
- The differences between EMCs and digital billboards

[www.signs.org/local](http://www.signs.org/local)

## ADDITIONAL SIGN CODE RESOURCES

The International Sign Association has developed numerous tools to help communities develop better sign codes. All are housed at [www.signs.org/local](http://www.signs.org/local), including:

- The Supreme Court ruling, *Reed v. Town of Gilbert*
- Model sign codes
- Best practices in regulating temporary and wayfinding signs
- The Economic Impact of On-Premise Signs

ISA's advocacy team is available to provide complimentary assistance on sign codes and sign-related issues.

Contact [SignHelp@signs.org](mailto:SignHelp@signs.org) or 703.836.4012.

# INTRODUCTION

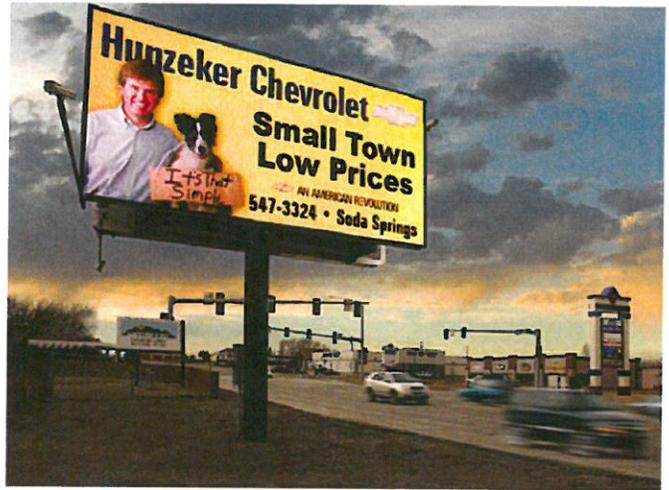
## ELECTRONIC MESSAGE CENTERS (EMCs)

Electronic message centers, or EMCs, continue to grow in popularity for business and community use. You may have heard EMCs being referred to as changeable message displays or digital signs.

EMCs are *not* digital billboards, which advertise a good or service that is located away from the sign. Rather, EMCs are digital signs that are located *on the premises*, and that advertise goods and services that are available at the location.



Electronic Message Center (EMC)/on-premise sign advertising a bank that is located on the same premises as the sign



Digital billboard/off-premise sign advertising an automobile business in another location

There is often confusion regarding on- and off-premise digital signs. However, EMCs and digital billboards have very distinct capabilities and purposes, each targets a specific audience and each has traditionally been treated under separate legal and regulatory regimes, a zoning practice which was noted in the 2015 U.S. Supreme Court ruling in *Reed v. the Town of Gilbert*. For the purposes of this publication, we are focusing solely and exclusively on EMCs.

EMCs that are too bright at night can be offensive and ineffective. Night-time EMC brightness is an issue where sign users, the sign industry, and local offices have a common goal: ensuring that EMCs are appropriately legible. We know the messages that these signs convey can be rendered unattractive and perhaps even unreadable if they are programmed too bright.

That's why many sign companies recommend to their customers that in order for these signs to be most effective, their brightness be set at such a level to be visible, readable and conspicuous.



The International Sign Association (ISA) retained noted lighting expert Dr. Ian Lewin of Lighting Sciences to help the industry develop scientifically-researched, understandable recommendations for EMC brightness. Dr. Lewin was a past chair of the Illuminating Engineering Society of North America (IES), and was greatly respected within the lighting field. His work for ISA was conducted with the input of experts within the sign industry.

*As a result of his research, Dr. Lewin recommended two different brightness settings based on whether the EMC was located in an area of high or low ambient light. After field testing and utilizing Dr. Lewin's recommendations, it was determined that using the more conservative recommendation is appropriate in areas of both low and high ambient light. In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, **it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.***

The research and the recommendations contained in this report pertain only to EMCs, not traditionally internally illuminated signs, such as these channel letter and neon signs below. EMCs use a different lighting technology than most of these types of signs, and as such the scientific approach differs.

Community leaders should understand that, while it is recommended that brightness measurements be taken perpendicular to the sign, sign viewers rarely see the sign at that same perpendicular approach. At any viewing point away from or off the forward angle, the apparent brightness will be reduced. In other words, the measurements will capture the recommended brightness levels, but, unless viewers are looking at the sign directly perpendicular, they will not perceive the brightness at the full level.

We have provided recommended statutory language and tips to measure brightness with and without control of the EMC. If you need further assistance, feel free to contact ISA, [signhelp@signs.org](mailto:signhelp@signs.org) or at (703) 836-4012 to answer any of your EMC questions.



## FOOTCANDLES VS. NITS: WHICH MEASUREMENT IS BETTER?

This document recommends communities adopt illumination measurements in footcandles as compared to nits. Here are a few reasons why more than 200 localities and many state departments of transportation have adopted the footcandle measurement for EMCs:

### FOOTCANDLES

- Measures illuminance
- Accounts for ambient light conditions
- Luxmeter measuring device \$100
- "Twilight" measurement possible
- Measures light impact and appearance
- Works with roadway lighting standards
- Easier to check and enforce

### NITS

- Measures luminance
- Measures only the amount of brightness emitted
- Luminance spectrometer (nit gun) - \$1,000
- Does not allow adjustment based on ambient light
- Does not measure appearance
- Difficult to measure accurately
- Difficult to enforce

\* While the main advantage of using nits as compared to footcandles is that daytime measurement is possible, EMC brightness is typically more of an issue at night.

# CASE STUDY: Columbus, Ohio



COMMUNITY .....	<b>Columbus, Ohio</b>
POPULATION .....	<b>836,000</b>
LOCATION .....	As Ohio’s largest city and state capitol, Columbus is the country’s 15th largest city.
SPECIFIC EMC ISSUE .....	Crafting a reasonable, enforceable code that addresses complaints while preserving the ability for businesses to use what it termed automatic changeable copy signs.

As automatic changing copy signs—as Columbus refers to EMCs—grew in use, so did community complaints.

By 2011, city planners began to edit the graphics codes to limit special effects. The goal was to continue to allow for a variety of commercial graphics, “but not at the expense of neighborhoods,” said Lisa Russell, the city’s Planner II who facilitated the code development project.

The city had in place certain limits on automatic changing copy signs, aka EMCs, in the graphics code, limiting their use to commercial and manufacturing zoning districts and requiring that only half of the sign could be used for the changeable copy. But signs lacked brightness limits and a hold time.

Russell led a team to draft the new code, which incorporated a brightness limit for both on-premise and off-premise signs. The testing method also is included in the code.

It was the result of much scientific discussion. “I believe that the best answer is revealed if you have enough information,” Russell said. The committee included a community group leader who was an architect specializing in lighting and representatives from the sign and graphics industry.

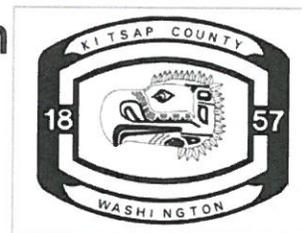
“When we started exploring brightness, it appeared the footcandle method was the way to go,” Russell said. “However, some group members wanted us to explore the luminance method. ISA believed so strongly that the luminance method was problematic that they brought a demonstration to us.”

The demonstration included a field trip to visit a sign to show the impact of the two measurement methods. “They wanted to make sure that we didn’t go down the wrong path. They rented a lift and showed us that with the luminance method you’d have to get up in the lift, raise it and shine the nit gun at the sign. With the footcandle meter, you can stand on the ground.”

Russell helped the group to see that the “members of the professional sign and graphics industry are not the same as end-users of signs, such as an owner of a carryout who wants to draw attention to his shop over others. We all had an interest in developing reasonable regulations instead of just banning these signs. We also did not want to take away the rights that businesses had to display electronic signs.”

The new code has significantly lessened complaints about sign brightness. And when a complaint is received, the code enforcement officers have a verifiable process for determining whether the sign complies with the code.

## CASE STUDY: Kitsap County, Washington



COMMUNITY .....	<b>Kitsap County, Washington</b>
POPULATION .....	<b>260,000</b>
LOCATION .....	Across the Puget Sound from Seattle and bordered by rural communities on the west. It is the third most densely populated county in the state.
SPECIFIC EMC ISSUE .....	Existing codes did not cover electronic signs.

As a “transition” county between rural Washington and the metropolitan city of Seattle, Kitsap County had the challenges of creating regulations for electronic signs that fit the county’s dual personalities.

“The first step was to identify where these signs would be allowed,” said Darren Gurnee, a planner with the county. “We wanted to make sure these were restricted to areas of increased density and primarily non-residential use such as industrial zones and commercial zones within the urban growth area.”

Previously, the county had allowed electronic signs “as a matter of interpretation,” Gurnee said. Crafting more defined electronic sign regulations would provide a measure of stability—and help business owners know what was allowed and where. An added bonus: Gurnee felt the signs would be more attractive than the block letters signs that had to be changed manually.

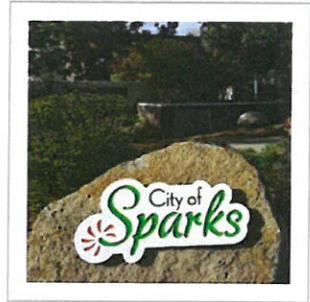
While the county wanted to make it easier for businesses to convert existing static monument signs into electronic signs, it also wanted to ensure that the regulations were not written in a way that would allow billboards to convert.

“We were able to craft our regulations in a way that required signs be brought into conformance before any change could be made,” Gurnee said. “Billboards were non-conforming, so that would not be an issue.”

ISA provided Gurnee with industry standards—contained in this publication—and some background on the technology that today’s electronic signs offer, such as automatic dimming. It also incorporated some of the recommended language on animation, hold times and transitions.

“The regulation is written in a way that it would be easy to enforce,” Gurnee said, and easy to understand, without the ambiguities contained in the previous method. The ending code created a perfect fit for both of the community’s personalities.

# CASE STUDY: SPARKS, NEVADA



COMMUNITY ..... **Sparks, Nevada**  
 POPULATION..... **93,500**  
 LOCATION ..... A rapidly growing community, Sparks is located near Lake Tahoe, California, and Reno, Nevada, and is Nevada’s fifth largest city.  
 SPECIFIC EMC ISSUE. . . . Existing regulations were difficult to enforce and outdated.

Sparks, Nevada had existing regulations of electronic message centers—or electronic variable signs as the community deemed them. But “it wasn’t very explicit,” said senior planner Karen Melby. “The brightness standards were in lumens, which we didn’t even know how to measure.”

The regulations were outdated as well—having been drafted in 2002. Technology had changed dramatically and the costs of EMCs had dropped, putting them in the range of more businesses’ budgets. “We felt we could see more coming and felt that we needed to get a handle on it.”

As a first step, planners required that those seeking an EMC permit meet their standards before approval was granted, but nothing was written into the code. That method can create problems.

So Melby led the city through the code revision process. She sought out industry expertise from both the planning community and the sign and graphics industry. For industry insight, she turned to ISA. ISA provided feedback on how other communities were regulating electronic message centers, and recommendations on what was working for these communities.

One outside group felt strongly that the standards should be regulated in nits, not footcandles. They brought in an expert who opposed the proposed regulations. But Melby held strong on the issue of footcandles. “In my research, it seems like footcandle is what you can see with your eyes while a nit is pinpointing a spot on a sign. When you look at a sign, you’re looking at the whole thing, not just one small spot.”

The city adopted the widely recognized standard of 0.3 footcandles above ambient light, using the distance measurements outlined in this publication. Melby took that table, determined the formula and wrote the formula into the code.

The community allows smaller signs—those under 32 square feet—to include scrolling, while those larger do not.

The result has been a city that has successfully navigated the balance between business interests and community aesthetics. “We’ve had very few complaints,” Melby said. “When we do get a complaint about a sign being too bright, we go out and measure it. When they bring it down to standards, we don’t get complaints.”

Being able to use a simple light meter to measure brightness is far easier than simply guessing whether the sign is in compliance, Melby said. “The other method (measuring nits) was really based on opinion. What may seem bright to me may not seem bright to you. Now, we can say, ‘This is what the meter says.’”

By having clear standards that are easier to enforce, both community and business win.

# EXECUTIVE SUMMARY

## ISA ELECTRONIC MESSAGE CENTER NIGHT-TIME BRIGHTNESS RECOMMENDATIONS

This summary has been developed with an understanding that EMCs that are unreasonably bright are not effective for the communities or end users. This intends to help communities and stakeholders develop brightness standards for on-premise EMCs. The summary comprises:

- 1) *An overview of the importance of ensuring appropriate brightness,*
- 2) *Technology utilized to ensure appropriate brightness, and*
- 3) *Recommended brightness standards*

### 1. Overview of the importance of ensuring appropriate night-time brightness.

EMCs that are too bright at night can be offensive and ineffective. There are significant advantages to ensuring than an electronic display is not overly bright. These advantages include:

- » Conservation of energy
- » Increased life expectancy of the electronic display components
- » Building goodwill with the community
- » Ensuring the legibility of the display

It is in the best interest of all stakeholders to ensure that EMCs are sufficiently bright to ensure clear legibility, while at the same time avoiding a display that is overly bright.

### 2. Technology utilized to ensure appropriate brightness.

Most EMCs are designed to produce sufficient brightness to ensure clear legibility during daylight hours. However, daytime brightness settings are usually inappropriate for night-time viewing. The following general methods are used to dim an EMC for appropriate night-time viewing:

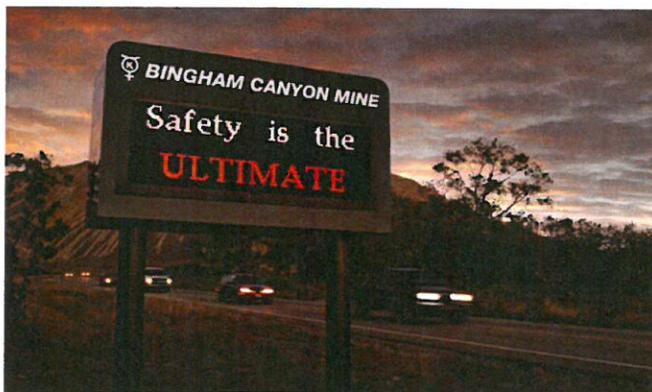
1. **Manual Dimming.** Using this method, the sign operator dims the display in response to changing ambient light conditions.
2. **Scheduled Dimming.** Sunset-sunrise tables allow an EMC to be programmed to dim at the same time that the sun sets and rises. This method is generally acceptable, but is more effective when used as a backup to automatic dimming controls capability, such as photocell technology.
3. **Photocell Technology.** An EMC that utilizes photocell technology can automatically dim as light conditions change. A photocell sensor alerts the display to adjust brightness according to ambient light conditions.

### 3. Recommended night-time brightness standards.

Dr. Lewin recommended the development of brightness criteria based on the Illuminating Engineering Society's (IES) well-established standards pertaining to light trespass, IES Publication TM-11-00. The theory of light trespass is based on the concept of determining the amount of light that can spill over (or "trespass") into an adjacent area without being offensive.

In order to simplify Dr. Lewin's recommendations, and to take a more reasonable approach to ensure that EMCs are sufficiently visible but not overly bright, **it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.**

Email [signhelp@signs.org](mailto:signhelp@signs.org) to receive Dr. Lewin's original research.



*...it is recommended that EMCs not exceed 0.3 footcandles over ambient lighting conditions when measured at the recommended distance, based on the EMC size.*

# RECOMMENDED LEGISLATIVE LANGUAGE



**Electronic Message Center (EMC) Criteria:** The night-time illumination of an EMC shall conform with the criteria set forth in this section.

**A. EMC Illumination Measurement Criteria:** The illuminance of an EMC shall be measured with an illuminance meter set to measure footcandles accurate to at least two decimals. Illuminance shall be measured with the EMC off, and again with the EMC displaying a white image for a full color-capable EMC, or a solid message for a single-color EMC. All measurements shall be taken as close as practical to a perpendicular plane of the sign at the distance determined by the total square footage of the EMC as set forth in the accompanying Sign Area of a Sign versus Measurement Distance table.

**B. EMC Illumination Limits:** The difference between the off and solid-message measurements using the EMC Measurement Criteria shall not exceed 0.3 footcandles at night.

**C. Dimming Capabilities:** All permitted EMCs shall be equipped with a sensor or other device that automatically determines the ambient illumination and programmed to automatically dim according to ambient light conditions, or that can be adjusted to comply with the 0.3 footcandle measurements.

**D. Definition of EMC:** A sign that utilizes computer-generated messages or some other electronic means of changing copy. These signs include displays using incandescent lamps, LEDs, LCDs or a flipper matrix.



## SIGN AREA VERSUS MEASUREMENT DISTANCE

AREA OF SIGN sq. ft.	MEASUREMENT (ft.)
10	32
15	39
20	45
25	50
30	55
35	59
40	63
45	67
50	71
55	74
60	77
65	81
70	84
75	87
80	89
85	92
90	95
95	97
100	100
110	105
120	110
130	114
140	118
150	122
160	126
170	130
180	134
190	138
200	141
220	148
240	155
260	161
280	167
300	173

\* For signs with an area in square feet other than those specifically listed in the table (i.e., 12 sq ft, 400 sq ft, etc), the measurement distance may be calculated with the following formula:  $Measurement\ Distance = \sqrt{Area\ of\ Sign\ Sq.\ Ft. \times 100}$

# HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC WITH OPERATIONAL CONTROL

*(Note: This method can be completed by one individual, but requires operational control to shutoff the EMC)*

## STEP 1

### OBTAIN AN ILLUMINANCE METER.

Purchase or otherwise procure an illuminance meter. Most city/county traffic departments have an illuminance meter, which are also referred to as lux or footcandle meters (lux is the metric measure of illuminance; footcandles is the English measure of illuminance). The illuminance meter must have the ability to provide a reading up to two decimal places and must be set to read footcandles. It is preferred to have an illuminance meter with a screw-mount that allows the sensor to be mounted on a tripod. A tripod ensures that the highly sensitive sensor is held perfectly still; otherwise it may be difficult to obtain an accurate reading.

## STEP 2

### DETERMINE SQUARE FOOTAGE.

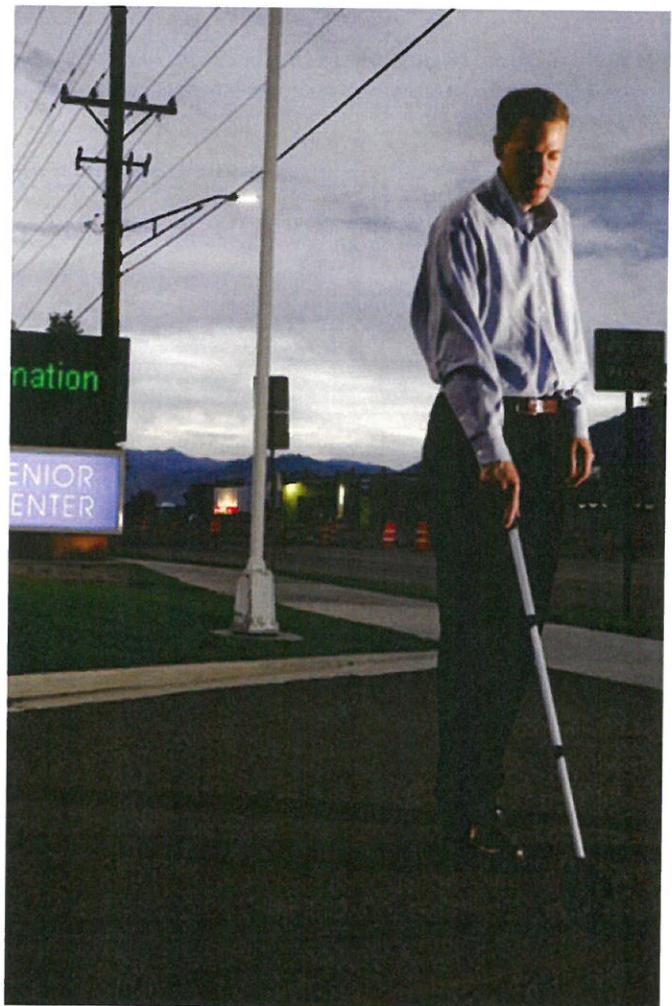
Determine the square footage of the face of the electronic message sign (EMC) by multiplying the height and width of the EMC. This information may be available in a permit application, or can be determined by physically measuring the height and width of the EMC. Do not include the sign face square footage attributable to any additional static signs associated with the EMC (if applicable).



## STEP 3

### DETERMINE THE MEASUREMENT DISTANCE.

Using the total square footage found in Step 2, look up the measurement distance in the table provided in the Recommended Legislative Language on page 8, to determine the distance to measure the brightness of the EMC. The distance should be measured perpendicular to the EMC sign face. The use of a measuring wheel, laser finder or a smartphone app are the most convenient ways to measure the distance.



## STEP 4

### PREPARE THE DISPLAY FOR TESTING.

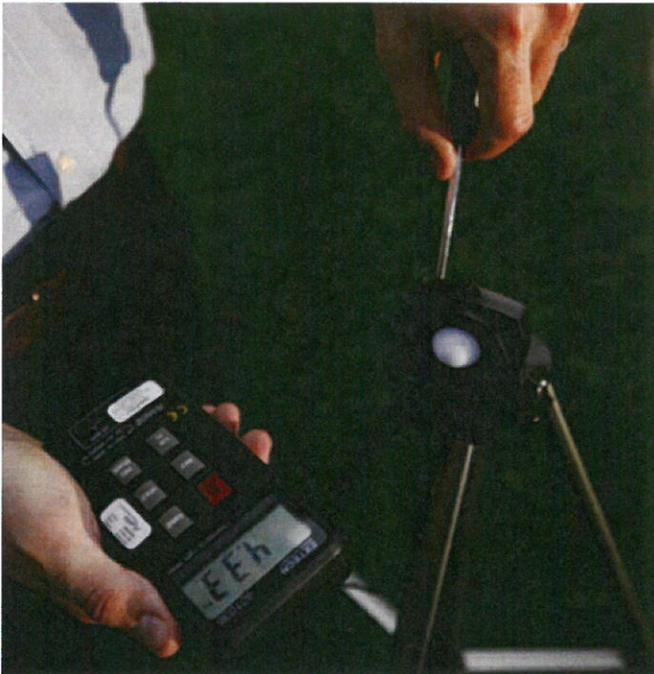
Ensure that the EMC is programmed to alternate between a solid white (or in the case of a monochrome display – the solid color of the display) message and a blank message. The community may require that the sign owner cooperate with testing by programming the EMC for testing upon written notice.

## STEP 5

### USE AN ILLUMINANCE METER TO MEASURE THE BRIGHTNESS OF THE EMC.

Mount the sensor of your illuminance meter to a tripod and orient the sensor directly towards the face of the EMC at the measurement distance determined in Step 2.

Ensure that the illuminance meter is set to measure footcandles up to two decimal places. As the display alternates between a solid white message and an “off” message, note the range of values on the illuminance meter. If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance. If not, the display will need to be adjusted to a lower brightness level using the manufacturer’s recommended procedures.



## STEP 6

### ENSURE THAT THE DISPLAY CAN ADJUST TO DIFFERENT AMBIENT CONDITIONS.

Inspect the sign to ensure that it incorporates a photocell or other technology to ensure that the display can adjust according to ambient lighting conditions.



*As the display alternates between a solid white message and an “off” message, note the range of values on the illuminance meter.*

*If the difference between the readings is less than 0.3 footcandles, then the brightness of the display is in compliance.*

# HOW TO MEASURE THE NIGHT-TIME BRIGHTNESS OF AN EMC—WITHOUT CONTROL OF THE SIGN

(Note: This method requires two individuals, but does not require operational control of the EMC.)

There will be instances where the EMC illumination needs to be evaluated to ensure that it does not exceed the brightness levels established in the municipal sign ordinance. If the municipality is unable to obtain access to the sign controls or attempting to take the measurement after business hours, this method should be followed.

Unlike the six-step process described previously, this process measures the difference in brightness between the sign in operation and when the sign is completely blocked from the illuminance meter. This procedure is extremely simple and requires only an illuminance meter and a piece of painted cardboard cut to the proper size.

## STEP 1

### OBTAIN AN ILLUMINANCE METER.

(See previous Step 1)

## STEP 2

### DETERMINE SQUARE FOOTAGE.

(See previous Step 2)

## STEP 3

### DETERMINE THE MEASUREMENT DISTANCE.

(See previous Step 3 or use  $\sqrt{(\text{Area of Sign in Sq. Ft.} \times 100)}$ )

## STEP 4

### POSITION THE TESTERS.

Based on the size of the digital display, the person conducting the test should position themselves as close to directly in front of the digital display as practical, at the appropriate distance (calculated in Step 3).

A helper should position themselves about 7 ft. to 10 ft. in front of the light meter and hold up an opaque, black sheet of material that is roughly 12 in. high by 40 in. wide. (Regular cardboard painted matte black works well for this.) The sheet should be positioned so it blocks all light from the EMC, but still allows the remaining ambient light to register on the illuminance meter.

EMC Area	Measurement Distance
24 ft <sup>2</sup>	49 ft
32 ft <sup>2</sup>	57 ft
50 ft <sup>2</sup>	71 ft
100 ft <sup>2</sup>	100 ft

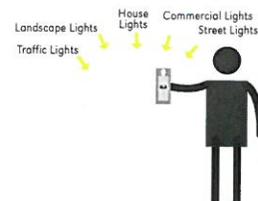
This helper should use a cardboard sheet to block the EMC light from the footcandle meter. This will establish the baseline footcandle reading.



After the cardboard block is held in place, a reading should be taken for the ambient light.

In this example, various light sources are impacting the photocell measuring 2.3 footcandles of ambient light.

This is the baseline for the measurement. Write it down.



## STEP 5

### USE AN ILLUMINANCE METER.

The illuminance meter should be held at a height of about 5 ft. (which is approximately eye level) and aimed directly at the EMC. The illuminance meter will account for surrounding sources of light or the absence thereof.

In this case our ambient light reading was 2.3 fc. The new light reading with the LED displaying a full white frame cannot read above 2.6 fc or 2.3 (ambient) + 0.3 (threshold). If a full white frame cannot be arranged, watch the meter to see if any ad exceeds 2.6 fc.



At this point, readings should be taken from the illuminance meter to establish a baseline illumination level. (ISA recommends that the illuminance meter is capable of levels to 2 decimal places 0.00).

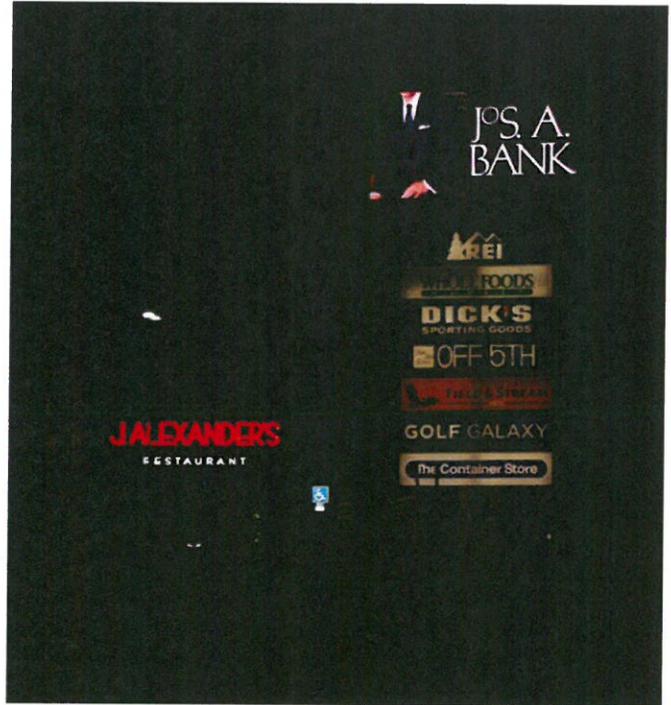
Once the baseline level is established, add 0.3 footcandles to the baseline level to calculate the max brightness limit. (For example: Baseline reading is 3.15 footcandles. The max brightness level is 3.45 footcandles.)

## STEP 6

### DETERMINE THE BRIGHTNESS LEVEL.

Remove the opaque sheet from blocking the EMC. Watch the foot-candle meter for 3 to 5 minutes to see if the max brightness level is exceeded by any of the images on the sign. If the readings do not exceed the max brightness levels, then the EMC illumination is in compliance.

If any of readings consistently exceed the max brightness level, the lighting level is not in compliance. In this scenario, the municipality will need to inform the sign owner of noncompliance and take appropriate steps to ensure that the EMC be adjusted to a lower brightness level using the manufacturer's recommended procedures.



*If any of readings consistently exceed the max brightness level, the lighting level is not in compliance.*



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