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**MEMORANDUM**

Agenda Items: # 6

To: Planning Commission  
From: Mark Donaldson, Executive Director  
Date: February 5, 2008  
**RE: Regulation of Dynamic Displays on Signs and Billboards in Knoxville**

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**REQUEST**

In February 2007, City of Knoxville Mayor Haslam appointed a Study Committee to explore issues relative to the regulation of digital display billboards. The committee recommends that any amendment to the zoning regulations to allow digital displays include consideration of appropriate regulations addressing location, spacing, size, and display controls. Mayor Haslam has referred the Report and Recommendations of the committee to the MPC for further action and recommendation.

**SUMMARY OF MPC SPONSORED MEETINGS AND WORK SESSIONS**

This item was postponed from the December 13, 2007 MPC meeting. Subsequently, on January 31 a work session was held with the planning commission to review background information and proposed optional amendments. Prior to that meeting, MPC staff met with local sign companies on January 24 to discuss Electronic Message Center (EMC) regulations and their relationship to the use of digital technology on billboards.

Since receiving the request from Mayor Haslam, staff of MPC has also conducted a public meeting on October 29 and a City Council work session of November 15. In addition, staff scheduled, but subsequently cancelled, a work session with the planning commission on November 29. Instead a work session for MPC was held December 11 following its regularly scheduled agenda review meeting.

The public meeting and City Council workshop identified two distinct and polar opposite points of view regarding the conversion to dynamic display sign area on existing billboards.

- One point of view sees the use of this new technology as essentially allowing new advertising signs and therefore contrary to the 2001 prohibition on new billboards. Comments also reflect concerns about safety, conflicts with the federal Highway Beautification Act, issues with the recommendations of the study committee, the relationship between billboard control and an improved economy, visual blight resulting from the proliferation of billboards, concern with the amount of energy consumed by dynamic displays, the need for additional safety studies, increased

cost in the event a billboard owner must be compensated because of a land condemnation, and the need to focus on safety first.

- The other point of view considers dynamic display as an allowable maintenance of existing billboards as a simple upgrade to the sign area of existing structures with the latest technology that will result in greater business opportunity, an improved economy, and the use of billboards for emergency uses. Further, issues were raised related to already existing dynamic displays, lack of evidence linking dynamic display to increased accidents, cost and safety of current sign changing practices

These two perspectives would lead toward policies and regulations that are in strong contrast with each other (Amendment Option A and Amendment Option B).

There is a third way worthy of consideration ... a way that addresses a goal of each point of view. Those against the use of dynamic display want to reduce the visual clutter of billboards in the city and those supporting dynamic display want to use the latest technology to enhance business opportunity and performance. A third way of looking at the issue (originally presented as Amendment Option C) allows the use of the new technology in a way that results in a reduction in the overall number of billboard structures in the city through incentives to achieve the performance characteristics desired by the billboard industry while also addressing issues with regard to the equity and operation of allowed EMC. At the request of members of the planning commission during their work session, staff has removed consideration of amendments to EMC regulations at this time in order to simplify the issue. A revised proposal (Amendment Option C-2) reflects the intent of the original Option C, without addressing the issue of equity between dynamic displays on off-premise signs versus on-premise signs.

## **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. This is known as the "Zeigarnik Effect," a well documented characterization of human behavior.

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.

The proliferation of allowed EMC as on-premise signs on parcels adjacent to the City's interstate highways and major arterial roads have much the same impact as potential dynamic displays on advertising signs (billboards) along the same roads. In fact, with operational characteristics such as scrolling messages and flashing and blinking lights, the visual and distractive qualities of EMC are similar to the proposed digital display prohibitions of the Study Committee. This dichotomy should be addressed in the future.

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.

Exceptionally large spacing requirements could interfere with the equal opportunity to use such technologies and are therefore minimized. With these minimal spacing 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.

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

Advertising signs do not need to serve a way-finding function. Further, advertising signs are no longer allowed in the city, and there is no potential that they will proliferate. Finally, 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. The incentive provision in Amendment Option C-2 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 of the community 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. The result in the long term should be fewer, better billboards in the City of Knoxville.

#### **STAFF RECOMMENDATION**

The Planning Commission should consider each of the three amendment options presented. Staff recommends Amendment Option C-2. This option allows the use of the

new dynamic display technology in a way that will result in a reduction in the overall number of billboard structures in the city through incentives to achieve the performance characteristics desired by the billboard industry. Issues with regard to the equity and operation of allowed Electronic Message Centers (EMC) should be addressed in the future.

Amendment Option A, prohibiting the use of dynamic display as a modification of sign area on lawfully existing billboards would likely lead to a protracted and expensive legal challenge to the prohibition.

Amendment Option B, allowing the use of properly regulated dynamic display as a modification of sign area on lawfully existing billboards, will not reduce the number of billboards in the City.

Amendment Option C-2 addresses the concerns of those who have expressed a desire for a reduction in the visual impact of billboards on the community while allowing for the use of the latest technology on existing billboard structures in the city.

## **ATTACHMENTS**

- Amendment Option A
- Amendment Option B
- Amendment Option C
- Amendment Option C-2
- Mayor's Study Committee Report and Recommendations
- TCA 13-7-208
- Attorney General Opinion 06-007 and 06-125
- Outdoor West v. City of Johnson City
- Public Chapter No. 76, an act amending TCA, Title 54, Chapter 21
- FHWA guidance memo on Off-Premise Changeable Message Signs
- Local Regulation of Dynamic Billboards and Signs: Bridging Research, Planning Policy and Law
- Dynamic Signage: Research Related To Driver Distraction and Ordinance Recommendations
- Scenic America Issue Alert
- Scenic America PowerPoint
- Letters from Public

# Amendment Option "A"

## PURPOSE

- Prohibit dynamic displays on existing billboards.

## ARTICLE 5, SECTION 10 SIGNS, BILLBOARDS, AND OTHER ADVERTISING STRUCTURES

### A. GENERAL REGULATIONS:

#### 9. a. Size, Location and Structure Restrictions:

1. Advertising signs shall be placed on a unipole structure and shall not be double decked (either one above the other, or side by side on the same structure).
2. The total sign area per face shall not exceed fort-eight (48) feet by fourteen (14) feet [six hundred seventy-two (672) square feet] with a twenty (20) percent nonpermanent extension, except within five hundred (500) feet of interstate arteries where the total sign area per face may be seven hundred seventy-five (775) square feet.
3. **Dynamic displays are prohibited on any advertising sign. A dynamic display means any characteristics of a sign, or portion of a sign, except government owned signs, that have movement or changing displays caused by any method other than physically removing and replacing the sign or its components, whether the apparent movement or change is in the display, the sign structure itself, or any other component of the sign. This includes a display that incorporates a technology or method allowing the sign surface to change the image without having to physically or mechanically replace the sign surface or its components. This also includes any display that incorporates rotating panels, LED lights manipulated through digital input, liquid crystal display, plasma screen image display, "digital ink" or any other method or technology that allows the sign surface to present a series of images or displays.**

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# Amendment Option "B"

## PURPOSE

- Provide appropriate regulations for the modification of lawfully existing billboards to dynamic display sign area.

## ARTICLE 2 DEFINITIONS

**Dynamic Display** - means any characteristics of an advertising sign, except **government owned** signs, that **have changing displays** caused by any method other than physically removing and replacing the sign or its components, whether the apparent change is in the display, the sign structure itself, or any other component of the sign. This includes a display that incorporates a technology or method allowing the sign surface to change the image without having to physically or mechanically replace the sign surface or its components. This also includes any display that incorporates LED lights manipulated through digital input, liquid crystal display, plasma screen image display, "digital ink" or any other method or technology that allows the sign surface to present a series of images or displays.

## ARTICLE 5, SECTION 10 SIGNS, BILLBOARDS, AND OTHER ADVERTISING STRUCTURES

### 30. 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, and by moving, animated or video images. Finally, drivers are generally more distracted by messages that are too small to be clearly seen or that contain more than a simple message.

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.

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

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## Amendment Option "B"

b) **Regulations.** A permit may be issued for the purpose of modifying with dynamic display the sign face of lawfully existing advertising signs in conformance with the following regulations:

1) **Location.** Dynamic displays are allowed only on lawfully existing advertising signs located along Interstates I-40, I-75, I-40/75, I-640, I-275 and I-140, provided that no dynamic display may be placed upon a sign within two thousand (2,000) feet of a Scenic Highway or Parkway. No dynamic display may be placed upon an advertising sign within one hundred (100) feet of a residential zone district (any district with R or T as a preface) unless such sign face is designed to face away from the zone district. No dynamic display may be placed upon an advertising sign that does not meet the minimum setbacks described in Article 5, Section 10 (A)(9)(d);

2) **Spacing.** A sign with a dynamic display shall not be within four thousand (4,000) feet of another sign with a dynamic display facing the same travel direction, provided that no sign with dynamic display shall be in the same line of sight with another sign with dynamic display and no sign shall be capable of being read from more than one interstate road;

3) **Maximum Display Area.** A dynamic display on an advertising sign may encompass one hundred (100) percent of the sign area and that sign area shall not exceed the sign area of the lawfully existing advertising sign being modified with dynamic display, or six hundred seventy-eight (678) square feet, whichever is less. An advertising sign with dynamic display on a structure with two (2) existing sign faces facing the same travel direction shall necessitate the removal of one of the sign faces. Dynamic displays may not exceed forty-eight (48) feet in length.

4) **Static Hold Time.** The images and messages displayed must be static and may not change more often than once every ten (10) seconds;

5) **Transition.** The transition from one static display to another must be instantaneous without any special effects;

6) **Display.** 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. There shall be no scrolling of messages, and no video, animation or other form of moving image;

7) **Text Size.** Every line of text in a dynamic display must be at least fifteen (15) inches in height;

8) **Default Display.** 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;

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## Amendment Option "B"

9) **Non Conforming Displays.** Dynamic displays on advertising signs existing on           (date of adoption)           must comply with the operational standards listed above in clauses 4, 5 and 6. An existing dynamic display that cannot meet the minimum size requirement in clause 7 must use the largest size possible for one line of copy to fit in the available space.

10) **Brightness.**

a) Dynamic displays must meet the following brightness standards in addition to those found elsewhere in Article 5, Section 10:

1) No sign may be brighter than is necessary for clear and adequate visibility.

2) No sign may be of such intensity or brilliance as to impair the vision of a motor vehicle driver with average eyesight or to otherwise interfere with the driver's operation of a motor vehicle.

3) No sign may be of such intensity or brilliance that it interferes with the effectiveness of an official traffic sign, device or signal.

b) The person owning or controlling the sign must adjust the sign to meet the brightness standards in accordance with the city's instructions. The adjustment must be made immediately upon notice of non-compliance from the city. The person owning or controlling the sign may appeal the city's determination through the following appeal procedure:

1) After making the adjustment required by the city, the person owning or controlling the sign may appeal the city's determination by delivering a written appeal to the city **recorder** within ten (10) days after the city's non-compliance notice. The written appeal must include the name of a person unrelated to the person and business making the appeal, who will serve on the appeal panel.

2) Within five (5) business days after receiving the appeal, the city must name a person who is not an official or employee of the city to serve on the appeal panel. Within five (5) business days after the city names its representative, the city's representative must contact the sign owner's representative, and the two of them must appoint a third member to the panel, who has no relationship to either party.

3) The appeal panel may develop its own rules of procedure, but it must hold a hearing within five (5) business days after the third member is appointed. The city and the sign owner must be given the opportunity to present testimony, and the panel may

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## Amendment Option "B"

hold the hearing, or a portion of it, at the sign location. The panel must issue its decision on what level of brightness is needed to meet the brightness standards within five business days after the hearing commences. The decision will be binding on both parties.

c) All signs installed after \_\_\_\_\_ (date of adoption) \_\_\_\_\_ that will have illumination by a means other than natural light must be equipped with a mechanism that automatically adjusts the brightness in response to ambient conditions. These signs must also be equipped with a means to immediately 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.

**11) No variances from these regulations applying to dynamic display may be granted by the Board of Zoning Appeals.**

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- 4 -

# Amendment Option "C-2"

## PURPOSE

- Provide appropriate regulations for the modification of lawfully existing billboards to dynamic display sign area.
- Provide an incentive program to reduce number of billboards by allowing enhanced dynamic display signs in exchange for removal of existing nonconforming billboards.

## ARTICLE 2 DEFINITIONS

Replace with Proposed:

**DYNAMIC DISPLAY - Any characteristics of a sign, or portion of a sign, except government owned signs, that have changing displays caused by any method other than physically removing and replacing the sign or its components, whether the apparent movement or change is in the display, the sign structure itself, or any other component of the sign. This includes a display that incorporates a technology or method allowing the sign surface to change the image without having to physically or mechanically replace the sign surface or its components. This also includes any display that incorporates LED lights manipulated through digital input, liquid crystal display, plasma screen image display, "digital ink" or any other method or technology that allows the sign surface to present a series of images or displays.**

## ARTICLE 5, SECTION 10 SIGNS, BILLBOARDS, AND OTHER ADVERTISING STRUCTURES

### A. GENERAL REGULATIONS:

#### 30. 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.

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.

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## Amendment Option "C-2"

Exceptionally large spacing requirements could interfere with the equal opportunity to use such technologies and are therefore minimized. With these minimal 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.

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. A permit may be issued for the purpose of modifying with dynamic display the sign face of lawfully existing advertising signs in conformance with the following regulations:

1) Location. Dynamic displays are allowed only on lawfully existing advertising signs located along Interstates I-40, I-75, I-40/75, I-640, I-275 and I-140, provided that no dynamic display may be placed upon an advertising sign within two thousand (2,000) feet of a Scenic Highway or Parkway. No dynamic display may be placed upon an advertising sign within one hundred (100) feet of a residential zone district (any district with A, R or T as a preface) unless such sign face is designed to face away from the zone district. No dynamic display may be placed upon an advertising sign that does not meet the minimum setbacks described in Article 5, Section 10 (A)(9)(d);

2) Spacing. An advertising sign with a dynamic display shall not be within two thousand (2,000) feet of another advertising sign with dynamic display facing the same travel direction, provided that no advertising sign with dynamic display shall be in the same line of sight with another advertising sign with dynamic display and no sign shall be capable of being read from more than one interstate road;

3) Maximum Display Area. A dynamic display on an advertising sign may encompass one hundred (100) percent of the sign area and that sign area shall not exceed the sign area of the lawfully existing advertising sign being modified with dynamic display, or six hundred seventy-eight (678) square feet, whichever is less. An advertising sign with dynamic display on a structure with two (2) existing sign faces facing the same travel direction shall necessitate the removal of one of the sign faces. Dynamic displays may not exceed forty-eight (48) feet in length.

4) Static Hold Time. The images and messages displayed must be static and may not change more often than once every sixty (60) seconds;

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## Amendment Option "C-2"

- 5) **Transition**. The transition from one static display to another must be instantaneous without any special effects;
- 6) **Display**. 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. There shall be no scrolling of messages, and no video, animation or other form of moving image;
- 7) **Text Size**. Every line of text in a dynamic display must be at least fifteen (15) inches in height;
- 8) **Default Display**. 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;
- 9) **Non Conforming Displays**. Dynamic displays existing on \_\_\_\_ (date of adoption) \_\_\_\_ must comply with the operational standards listed above. An existing dynamic display that does not meet the structural requirements in clause 4 may continue as a non-conforming development subject to Article 6 and TCA 13-7-208. An existing dynamic display that cannot meet the minimum size requirement in clause 8 must use the largest size possible for one line of copy to fit in the available space.
- 10) **Brightness**.
- (a) Dynamic displays must meet the following brightness standards in addition to those found elsewhere in Article 5, Section 10:
- (1) No sign may be brighter than is necessary for clear and adequate visibility.
- (2) No sign may be of such intensity or brilliance as to impair the vision of a motor vehicle driver with average eyesight or to otherwise interfere with the driver's operation of a motor vehicle.
- (3) No sign may be of such intensity or brilliance that it interferes with the effectiveness of an official traffic sign, device or signal.
- (b) The person owning or controlling the sign must adjust the sign to meet the brightness standards in accordance with the city's instructions. The adjustment must be made immediately upon notice of non-compliance from the city. The person owning or controlling the sign may appeal the city's determination through the following appeal procedure:

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## Amendment Option "C-2"

(1) After making the adjustment required by the city, the person owning or controlling the sign may appeal the city's determination by delivering a written appeal to the city clerk within ten (10) days after the city's non-compliance notice. The written appeal must include the name of a person unrelated to the person and business making the appeal, who will serve on the appeal panel.

(2) Within five (5) business days after receiving the appeal, the city must name a person who is not an official or employee of the city to serve on the appeal panel. Within five (5) business days after the city names its representative, the city's representative must contact the sign owner's representative, and the two of them must appoint a third member to the panel, who has no relationship to either party.

(3) The appeal panel may develop its own rules of procedure, but it must hold a hearing within five (5) business days after the third member is appointed. The city and the sign owner must be given the opportunity to present testimony, and the panel may hold the hearing, or a portion of it, at the sign location. The panel must issue its decision on what level of brightness is needed to meet the brightness standards within five (5) business days after the hearing commences. The decision will be binding on both parties.

(c) All signs installed after \_\_\_\_\_ (date of adoption) \_\_\_\_\_ that will have illumination by a means other than natural light must be equipped with a mechanism that automatically adjusts the brightness in response to ambient conditions. These signs must also be equipped with a means to immediately 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.

11) No variances from these regulations applying to dynamic display may be granted by the Board of Zoning Appeals.

c) Incentives. Advertising signs do not need to serve a way-finding function. Further, advertising signs are no longer allowed in the city, and there is no potential that they will proliferate. Finally, 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 of the community that should more than offset any additional burden caused by the incentives. These provisions are also based on the recognition that the incentives

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## Amendment Option "C-2"

create an opportunity to consolidate outdoor advertising services that would otherwise remain distributed throughout the community.

1) **Permit Allowed.** An enhanced dynamic display is permitted as an incentive to reduce the number of advertising signs in the city of Knoxville. An enhanced dynamic display provides greater flexibility with regard to the static hold time of each display. A person may obtain a permit for an enhanced dynamic display on one face of a lawfully existing advertising sign located along Interstates I-40, I-75, I-40/75, I-640, I-275 and I-140, 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 (2) advertising sign structures containing no less than two (2) times the sign area of the proposed dynamic display. Such removed sign structures must be owned or leased by the applicant in the city, and 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. The applicant must also assure the city that the site of the advertising sign shall no longer be used for the purpose of advertising signs.

b) The applicant must agree in writing that no dynamic displays will ever be used on one (1) additional advertising sign structure that has a sign area of at least three hundred seventy-eight (378) square feet in size. This agreement will be binding on the applicant and all future owners of the sign. If the designated 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.

c) 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.

d) Each removed sign face must be a lawfully existing advertising sign located along the interstate highway system, a major arterial road, a scenic highway or parkway, a residential zone district, or a special planning area identified in a small area plan by the MPC.

e) 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

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## Amendment Option "C-2"

enhanced dynamic display permit cannot begin to operate until proof is provided to the city that the state permit has been surrendered.

2) **Permit May Be Issued.** If the applicant complies with the permit requirements noted above, the city may issue an enhanced dynamic display permit for the designated advertising sign subject to the following regulations:

a) **Restricted Locations.** No enhanced dynamic display may be placed upon a sign within two thousand (2,000) feet of a Scenic Highway or Parkway, and no enhanced dynamic display may be placed upon an advertising sign within one hundred (100) feet of a residential zone district (any district with R or T as a preface) unless such sign face is designed to face away from the zone district, and no enhanced dynamic display may be placed upon an advertising sign that does not meet the minimum setbacks described in Article 5, Section 10 (A)(9)(d);

b) **Maximum Display Area.** A dynamic display on an advertising sign may encompass one hundred (100) percent of the sign area and that sign area shall not exceed the sign area of the lawfully existing advertising sign being modified with dynamic display, or six hundred seventy-eight (678) square feet, whichever is less. An advertising sign with dynamic display on a structure with two (2) existing sign faces facing the same travel direction shall necessitate the removal of one of the sign faces. Such double sign face shall not contribute to the required signs to be removed to qualify for enhanced dynamic display. Dynamic displays may not exceed forty-eight (48) feet in length;

c) **Static Hold Time.** An enhanced dynamic display may change no more frequently than once every ten (10) seconds.

d) **The enhanced dynamic display must meet all other requirements of this ordinance.**

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# Amendment Option "C"

## PURPOSE

- Delete EMC sign definition and adopt Dynamic Display sign definition.
- Provide equity on the use of dynamic display signs for on-premise signs and legal nonconforming billboards.
- Provide an incentive program to reduce number of billboards by allowing enhanced dynamic display signs in exchange for removal of existing nonconforming billboards.

## ARTICLE 2 DEFINITIONS

### Current:

~~ELECTRONIC MESSAGE CENTER SIGN – A sign which uses a bank of lights that can be individually lit to form copy such as words, letters, logos, figures, symbols, illustrations, or patterns to form a message without altering the sign face.~~

### Replace with Proposed:

**DYNAMIC DISPLAY - Any characteristics of a sign, or portion of a sign, except government owned signs, that have changing displays caused by any method other than physically removing and replacing the sign or its components, whether the apparent movement or change is in the display, the sign structure itself, or any other component of the sign. This includes a display that incorporates a technology or method allowing the sign surface to change the image without having to physically or mechanically replace the sign surface or its components. This also includes any display that incorporates LED lights manipulated through digital input, liquid crystal display, plasma screen image display, "digital ink" or any other method or technology that allows the sign surface to present a series of images or displays.**

## ARTICLE 5, SECTION 10 SIGNS, BILLBOARDS, AND OTHER ADVERTISING STRUCTURES

### A. GENERAL REGULATIONS:

3. No sign shall have moving parts. ~~No signs, except electronic message centers (EMC), shall have red, green, yellow, amber, or blue lights.~~

4. No sign shall have flashing or blinking lights ~~other than electronic message centers, (EMC), or~~ **except** a documented historic or reproduction sign located in an H-1 (Historic Overlay) District, which has received a certificate of approval from the Knoxville Historic Zoning Commission, or a sign within the D-1 (Downtown Design Overlay) District which has received

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## Amendment Option "C"

approval from the Downtown Design Review Board as being compatible, and in character, with the Downtown Design guidelines and surrounding established development.

~~5. No sign having flashing, intermittent, or animated illumination or moving parts shall be permitted, except electronically operated message boards which operate primarily for the purpose of giving time, temperature, public service information and/or the name of business. No signs, except electronically operated message boards, shall have red, green, yellow, amber, or blue lights.~~

26. As of June 1, 2001, there shall be a ban on the issuance of permits for new construction of advertising signs at new locations within the City of Knoxville; provided however that lawfully existing advertising signs shall be nonconforming uses, as regulated by Article 6 of this Ordinance.

### 30. 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.

Exceptionally large spacing requirements could interfere with the equal opportunity to use such technologies and are therefore minimized. With these minimal 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.

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# Amendment Option "C"

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.** A permit may be issued for the purpose of modifying with dynamic display the sign face of lawfully existing advertising signs in conformance with the following regulations:

1) **Location.** Dynamic displays are allowed only on wall, roof, monument and ground on-premise signs and on lawfully existing advertising signs provided that no dynamic display may be placed upon an advertising sign within two thousand (2,000) feet of a Scenic Highway or Parkway. No dynamic display may be placed upon an advertising sign within one hundred (100) feet of a residential zone district (any district with A, R or T as a preface) unless such sign face is designed to face away from the zone district. No dynamic display may be placed upon an advertising sign that does not meet the minimum setbacks described in Article 5, Section 10 (A)(9)(d);

2) **Spacing.** An advertising sign with a dynamic display shall not be within two thousand (2,000) feet of another advertising sign with dynamic display facing the same travel direction, provided that no advertising sign with dynamic display shall be in the same line of sight with another advertising sign with dynamic display and no sign shall be capable of being read from more than one interstate road;

3) **Limitations of on-premise signs with dynamic display.** An on-premise sign with dynamic display shall be limited to parcels with a minimum of two hundred (200) feet of frontage on a street, located within the C (Commercial), PC (Planned Commercial) and SC (Shopping Center) zone districts, except C-1 (Neighborhood Commercial), and further limited to one (1) sign with dynamic display per parcel except in those areas covered by an H-1 (Historic) or D-1 (Downtown Design) overlay.

4) **Dynamic Display Area.** Dynamic displays may occupy no more than thirty-five (35) percent of the actual sign area. The remainder of the sign must not have the capability to have dynamic displays even if not used. Only one (1), contiguous dynamic display area is allowed on a sign face;

5) **Static Hold Time.** A dynamic display may not change more often than once every minute, except one for which changes are necessary to correct hour-and-minute, date, or temperature information. Time, date, or temperature

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## Amendment Option "C"

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 one minute before changing to a different display, but the time, date, or temperature information itself may change no more often than once every three (3) seconds;

6) **Display**. The images and messages displayed must be static. 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;

7) **Transition**. The transition from one static display to another must be instantaneous without any special effects;

8) **Text Size**. Every line of text in a dynamic display must be at least seven (7) inches in height on a road with a speed limit of 25 to 34 miles per hour, nine (9) inches on a road with a speed limit of 35 to 44 miles per hour, twelve (12) inches on a road with a speed limit of 45 to 54 miles per hour, and fifteen (15) inches on a road with a speed limit of 55 miles per hour or more. If there is insufficient room for text of this size in the area allowed under clause 1 above, then no dynamic display is allowed;

9) **Default Display**. 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;

10) **Non Conforming Displays**. Dynamic displays existing on \_\_\_\_ (date of adoption) \_\_\_\_ must comply with the operational standards listed above. An existing dynamic display that does not meet the structural requirements in clause 4 may continue as a non-conforming development subject to Article 6 and TCA 13-7-208. An existing dynamic display that cannot meet the minimum size requirement in clause 8 must use the largest size possible for one line of copy to fit in the available space.

11) **Brightness**.

(a) Dynamic displays must meet the following brightness standards in addition to those found elsewhere in Article 5, Section 10:

(1) No sign may be brighter than is necessary for clear and adequate visibility.

(2) No sign may be of such intensity or brilliance as to impair the vision of a motor vehicle driver with average eyesight or to otherwise interfere with the driver's operation of a motor vehicle.

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## Amendment Option "C"

(3) No sign may be of such intensity or brilliance that it interferes with the effectiveness of an official traffic sign, device or signal.

(b) The person owning or controlling the sign must adjust the sign to meet the brightness standards in accordance with the city's instructions. The adjustment must be made immediately upon notice of non-compliance from the city. The person owning or controlling the sign may appeal the city's determination through the following appeal procedure:

(1) After making the adjustment required by the city, the person owning or controlling the sign may appeal the city's determination by delivering a written appeal to the city clerk within ten (10) days after the city's non-compliance notice. The written appeal must include the name of a person unrelated to the person and business making the appeal, who will serve on the appeal panel.

(2) Within five (5) business days after receiving the appeal, the city must name a person who is not an official or employee of the city to serve on the appeal panel. Within five (5) business days after the city names its representative, the city's representative must contact the sign owner's representative, and the two of them must appoint a third member to the panel, who has no relationship to either party.

(3) The appeal panel may develop its own rules of procedure, but it must hold a hearing within five (5) business days after the third member is appointed. The city and the sign owner must be given the opportunity to present testimony, and the panel may hold the hearing, or a portion of it, at the sign location. The panel must issue its decision on what level of brightness is needed to meet the brightness standards within five (5) business days after the hearing commences. The decision will be binding on both parties.

(c) All signs installed after           (date of adoption)           that will have illumination by a means other than natural light must be equipped with a mechanism that automatically adjusts the brightness in response to ambient conditions. These signs must also be equipped with a means to immediately 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.

c) Incentives. Advertising signs do not need to serve the same way-finding function as do on-premises signs. Further, advertising signs are no longer allowed in

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## Amendment Option "C"

the city, and there is no potential that they will proliferate. Finally, 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 of the community 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) **Permit Allowed.** An enhanced dynamic display is permitted as an incentive to reduce the number of advertising signs in the city of Knoxville. An enhanced dynamic display provides greater flexibility with regard to the percentage of the sign face available for dynamic display and the static hold time of each display. A person may obtain a permit for an enhanced dynamic display on one face of a lawfully existing advertising sign located along Interstates I-40, I-75, I-40/75, I-640, I-275 and I-140, 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 (2) times the sign area of the proposed dynamic display. Such removed sign area must be owned or leased by the applicant in the city, and 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. The applicant must also assure the city that the site of the advertising sign shall no longer be used for the purpose of advertising signs.

b) The applicant must agree in writing that no dynamic displays will ever be used on one (1) additional outdoor advertising sign that has a sign area of at least three hundred seventy-eight (378) square feet in size. This agreement will be binding on the applicant and all future owners of the sign. If the designated 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.

c) 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.

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## Amendment Option "C"

d) Each removed sign face must be **a lawfully existing advertising sign** located along the interstate highway system, a major arterial road, a scenic highway or parkway, a residential zone district, or a special planning area identified in a small area plan by the MPC.

e) If the removed sign face is one for which a state permit is required by state law, the applicant must surrendered 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.

2) **Permit May Be Issued.** 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 subject to the following regulations:

a) **Restricted Locations.** No enhanced dynamic display may be placed upon a sign within two thousand (2,000) feet of a Scenic Highway or Parkway, and no enhanced dynamic display may be placed upon an advertising sign within one hundred (100) feet of a residential zone district (any district with R or T as a preface) unless such sign face is designed to face away from the zone district, and no enhanced dynamic display may be placed upon an advertising sign that does not meet the minimum setbacks described in Article 5, Section 10 (A)(9)(d),

b) **Maximum Display Area.** A dynamic display on an advertising sign may encompass one hundred (100) percent of the sign area and that sign area shall not exceed the sign area of the lawfully existing advertising sign being modified with dynamic display, or six hundred seventy-eight (678) square feet, whichever is less. An advertising sign with dynamic display on a structure with two (2) existing sign faces facing the same travel direction shall necessitate the removal of one of the sign faces. Such double sign face shall not contribute to the required sign face to be removed to qualify for enhanced dynamic display. Dynamic displays may not exceed forty-eight (48) feet in length;

c) **Static Hold Time.** An enhanced dynamic display may change no more frequently than once every ten (10) seconds.

d) **The enhanced dynamic display must meet all other requirements of this ordinance.**

E. COMMERCIAL DISTRICTS:

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# Amendment Option "C"

In C, Commercial and SC, Shopping Center Districts, the following regulations shall apply:

1. Within all Commercial Districts business signs shall be limited to:

~~e. Electronic Message Centers (EMC) subject to the following requirements:~~

~~(1) An EMC shall be limited to parcels with a minimum of 200 feet of frontage on a street and further limited to one EMC per parcel except in those areas covered by an H-1 overlay.~~

~~(2) No EMC shall be erected or used by a business unless any changeable letter reader board is first removed from the parcel.~~

~~(3) An EMC shall be included in the total signage permitted on the parcel.~~

~~(4) An EMC shall be permitted as a wall sign, or an integrated part of the total sign surface of a free standing business sign.~~

~~(5) An EMC shall be integrated into the total sign surface of a free standing sign and shall have a minimum matrix area of 20 sq. ft. and a maximum size of 1/3 of the total signage permitted or 100 sq. ft., whichever is less.~~

~~(6) An EMC permitted as a wall sign shall not exceed 100 sq. ft. maximum.~~

~~(7) Each display on an EMC shall hold constant for a minimum of 5 seconds.~~

~~(8) An EMC must be equipped with a dimming sensor switch that automatically calculates lighting and adjusts itself accordingly.~~

~~(9) No electronic message center (EMC) shall be permitted in any location which is zoned C-1.~~

**e. Dynamic displays, subject to the requirements found at Article 5, Section 10.A.30.**

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CITY OF KNOXVILLE  
BILL HASLAM, MAYOR

## Memo

**To:** Mark Donaldson  
Executive Director, Metropolitan Planning Commission

**From:** Mayor Bill Haslam *Bill*

**CC:** Gary Norman, Building Inspections Director

**Date:** 08/16/2007

**Re:** Digital Display Billboards

In February 2007, I appointed a study committee to explore issues relative to the regulation of digital display billboards ("digital displays"). I have received a Report and Recommendation from the Digital Display Billboard Study Committee, including a minority report from Committee member Alex Harkness; (collectively "Report") which I am attaching hereto. As you will note from the Report, the Committee recommends that any amendment to the zoning regulations to allow digital displays include consideration of appropriate regulations addressing location, spacing, size, and display controls. The Committee also notes in Section E of the Report that there are other related matters that will need to be taken into consideration, but those matters were beyond its scope of study for recommendation. I am referring this matter to the Metropolitan Planning Commission for further action and recommendation.

Please let me know if you have any questions regarding this matter.



**DIGITAL DISPLAY BILLBOARD  
STUDY COMMITTEE**

**REPORT AND RECOMMENDATION**

**JUNE 5, 2007**

# Study Committee Report

## I. INTRODUCTION

This is the report and recommendation of the Digital Display Billboard Study Committee (the "Committee") concerning the potential amendment of the City of Knoxville zoning regulations to allow this type of advertising structure. The Committee was appointed by the Mayor's Office in February 2007, in response to a request by Lamar Advertising to explore such an amendment. Since that time, the Committee has met regularly and undertaken to discuss and consider issues relative to the regulation of such structures

## II. SUMMARY

As set forth more fully below, because of concerns of aesthetics and safety, the Committee recommends that in formulating any amendment to the zoning regulations to allow this type of structure, consideration be given to developing appropriate regulations addressing location, spacing, size, and display controls including but not limited to static hold time and brightness control.

### A. Location

The Committee recommends that such structures should only be allowed on interstate routes and on major arterial streets as identified in the MPC Major Street Plan.

A particular area of concern is where a structure located on a major arterial street can also be viewed from the interstate, e.g., that portion of Kingston Pike between Papermill Drive and Gallaher View that runs parallel with I-40. The committee recommends that additional requirements be imposed in these particular instances to prevent the structures from being located too close together. The Committee suggests that on any major arterial street that is visible from the interstate, no two structures reading in the same direction be located closer than 4000 linear feet on either street.

### B. Spacing

The Committee discussed spacing on interstate routes ranging from 3000 linear feet to 5000 linear feet, reading in the same direction, and proposed spacing on major arterial

# Study Committee Report

streets at 3000 linear feet. The final recommendation of the Committee is 4000 linear feet, reading in the same direction, on both interstate routes and major arterial streets.

## **C. Size**

With regard to size of the structures, the Committee recommends the maximum allowable not exceed 378 square feet on major arterial streets and 672 square feet on interstate routes.

The Committee was particularly concerned with the replacement of existing double-decked billboards located on major arterial streets with this new technology because State law permits the rebuilding/repairing/replacement of existing billboards. In such case, the Committee recommends that only one board be subject to replacement and that the other board be voluntarily removed with no rebuild allowed.

## **D. Display Controls**

### **1. Static Hold Time**

The regulation of static hold time for messages generated the most discussion among Committee members. The Committee discussed regulations ranging from one message change per day to one message change every eight seconds.

After much consideration, the Committee was unable to reach a consensus on a recommendation and a vote was taken. The recommendation on static hold time for structures on interstate routes was approved at 10 seconds by a vote of 6 – 1. The recommendation on static hold time for structures on major arterial streets was also approved at 10 seconds by a vote of 5 – 2.

### **2. Brightness Control**

The Committee discussed that there are a number of ways to regulate brightness with new technology emerging. The Committee feels allowable brightness measured in candela per square meters (cdms) or some other measurable standard should be established.

# Study Committee Report

Additionally, the Committee recommends that measuring devices be provided to the appropriate inspecting department to have available for measuring the brightness to determine compliance.

### 3. Display

With regard to the display of messages, the Committee recommends that the following prohibitions be considered:

- No scrolling or continuation of messages.
- No fade in or out allowed – only instant message change permitted.
- No moving parts.
- No video, animation or other form of moving images.

### E. Other

Other areas of concern noted by the Committee, but beyond its scope of study for recommendation, included the following:

- Specific revisions to the City's existing zoning regulations pertaining to electronic message centers (EMCs) that would be required to permit such structures including considerations of specific zoning districts in which they would be allowed.
- Development of a process for Applications/Permit submittal that would include a restriction on the number of applications per company within a specified period of time.
- Limitations on conversion of existing structures (see attached).

# Study Committee Report

## DIGITAL DISPLAY BILLBOARD STUDY COMMITTEE

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# Study Committee Report

Only those advertising signs, including billboards, which were in complete conformity with Article 5, Section 10 of the Building Code of the City of Knoxville as of May 31, 2001 shall be considered for conversion to a Digital Display Board. (Example 1) However, in the case of a "nonconforming sign" (as of May 31, 2001) that can be brought into conformity may be considered for conversion as long as all other requirements are met. (Example 2)

Example 1: existing board located within 2,000 ft. of the right-of-way of a Scenic Highway or Scenic Parkway cannot be converted to a Digital Display Board.

Example 2: existing double decked board where one of the boards will be removed in order to convert the other board to Digital.

# Study Committee Report

No existing billboard that falls within one or more of the following categories shall be converted to a digital display billboard:

1. One located within two thousand (2,000) feet of the right-of-way of a Scenic Highway or Scenic Parkway or within a two thousand (2,000) foot radius from any intersection of the Scenic Highway and/or Scenic Parkway system and an interstate highway system.
2. One that is double decked (either one above the other or side by side on the same structure) unless the adjacent board is first removed.
3. One that is within one hundred feet of property in any Residential District unless the illumination of such digital display billboard is so designed that it does not shine or reflect light onto such property.
4. One that exceeds fifty feet in length.
5. One located in any zoning district other than C-2, C-3, or C-4 and only then if such board fronts a Major Arterial or Interstate Highway.
6. One that was not erected in conformity with the front, side and rear yard requirements of the district in which located.

# Study Committee Report

Alex J. Harkness  
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Phone: 865/525-9839  
E-mail: [ajharkness@juno.com](mailto:ajharkness@juno.com)

June 5, 2007

William E. Haslam, Mayor  
City of Knoxville  
City/County Building  
Knoxville, TN 37902

Dear Mayor Haslam:

Thank you for asking me to serve on the Digital Display Billboard Study Committee. I appreciate the confidence you placed in me to study the issues involved and render an unbiased opinion. We committee members were not charged with the task of studying the merits or demerits of digital billboards. Nor were we asked to recommend either for or against the passage of an amendment to the zoning ordinance that would allow converting existing billboards in the City of Knoxville to digital display boards. Rather, our responsibility was limited to recommending regulations to control location, installation and operation of such boards if and when they might be allowed.

With the above in mind, I can generally recommend the report you have received from our committee. However, I differ from the finding of the majority of the committee members in the following important instances:

1. Messages should not change more often than once a minute on interstate boards. The majority recommended ten seconds. From my own personal observation and from published reports, three or four ten-second messages can be read while traveling at normal in-city interstate speed. The constant changing of messages is what attracts viewers to the advantage of advertisers, but it also is what detracts the motorist from the standpoint of safety. It has been proven that a distraction in excess of two seconds causes accidents.
2. Messages should not change more often than once an hour on non-interstate boards. Again the majority recommends ten seconds. If the ten-second interval were to apply with the slower traffic in congested areas, motorists would be subjected to several full



# Study Committee Report

rotations of six or more advertisements. I feel this distraction would lead to many additional traffic accidents.

Over the years the City of Knoxville has adopted numerous worthwhile regulations in regard to signage. Many of these have been with the approval of the sign industry itself. Unfortunately, many of these regulations cannot be enforced due to "grand-fathering". The allowed use of "non-conforming" billboards should not be changed to that of "digital display boards". I feel there is a strong legal case against this change of usage. However in order to eliminate future litigation, the insertion in the Building Code of language similar to the following should solve this problem:

"Only those advertising signs, including billboards, which were in complete conformity with Article 5, Section 10 of the Building Code of the City of Knoxville as of May 31, 2001 (prior to the moratorium on new billboards in new locations) shall be considered for conversion to Digital Display Boards. However, in the case of "non-conforming signs" that can be brought into conformity, they may be considered for conversion as long as all other requirements are met "

The above addition to the Code would eliminate the possible problem of the conversion of existing boards that are located within 2,000 feet of the right-of-way of a Scenic Highway or Scenic Parkway, the conversion of double-decked boards and of boards whose illumination shines into residences.

Bill, I am sorry to be the "contrarian" in this matter. However, after careful consideration of the importance of the issues involved, I decided you should be more fully advised of these alternative proposals. Thanks again for giving me this opportunity to serve. Please let me know if I can be of further service in this regard or others.

Respectfully submitted,

Alex J. Harkness

c.c. Digital Display Billboard Committee members

Chapter 13-7 Zoning

Municipal Zoning

**13-7-208. Enforcement of ordinances - Remedies - Applicability of provisions.**

(a) (1) The chief legislative body may provide for the enforcement of any ordinance enacted under this part and part 3 of this chapter. A violation of any such ordinance is a Class C misdemeanor.

(2) In case any building or structure is or is proposed to be erected, constructed, reconstructed, altered, converted or maintained, or any building, structure or land is or is proposed to be used in violation of any ordinance enacted under this part and part 3 of this chapter, the building commissioner, municipal counsel or other appropriate authority of the municipality, or any adjacent or neighboring property owner who would be specially damaged by such violation, may, in addition to other remedies, institute injunction, mandamus or other appropriate action or proceeding to prevent such unlawful erection, construction, reconstruction, alteration, conversion, maintenance or use, or to correct or abate such violation, or to prevent the occupancy of the building, structure or land.

(b) (1) In the event that a zoning change occurs in any land area where such land area was not previously covered by any zoning restrictions of any governmental agency of this state or its political subdivisions, or where such land area is covered by zoning restrictions of a governmental agency of this state or its political subdivisions, and such zoning restrictions differ from zoning restrictions imposed after the zoning change, then any industrial, commercial or business establishment in operation, permitted to operate under zoning regulations or exceptions thereto prior to the zoning change shall be allowed to continue in operation and be permitted; provided, that no change in the use of the land is undertaken by such industry or business.

(2) When the use permitted to continue to expand, or to be rebuilt pursuant to any subsection of this section is an off-premises sign, such use shall not preclude any new or additional conforming use or structure on the property on which the sign structure is located or on any adjacent property under the same ownership; provided, however, that any such new or additional use or structure does not result in any violations of the applicable zoning restrictions other than those nonconformities associated with the off-premises sign as allowed under this subdivision (b)(2).

(c) Industrial, commercial or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto in effect immediately preceding a change in zoning shall be allowed to expand operations and construct additional facilities which involve an actual continuance and expansion of the activities of the industry or business which were permitted and being conducted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area

which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners. No building permit or like permission for construction or landscaping shall be denied to an industry or business seeking to expand and continue activities conducted by that industry or business which were permitted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners.

(d) Industrial, commercial, or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto immediately preceding a change in zoning shall be allowed to destroy present facilities and reconstruct new facilities necessary to the conduct of such industry or business subsequent to the zoning change; provided, that no destruction and rebuilding shall occur which shall act to change the use classification of the land as classified under any zoning regulations or exceptions thereto in effect immediately prior to or subsequent to a change in the zoning of the land area on which such industry or business is located. No building permit or like permission for demolition, construction or landscaping shall be denied to an industry or business seeking to destroy and reconstruct facilities necessary to the continued conduct of the activities of that industry or business, where such conduct was permitted prior to a change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners.

(e) The provisions of subsections (b)-(d) apply only to land owned and in use by such affected business, and do not operate to permit expansion of an existing industry or business through the acquisition of additional land.

(f) The provisions of subsections (b)-(e) do not apply to any municipality defined as a premiere type tourist resort according to § 67-6-103(a)(3)(B).

(g) The provisions of subsections (b)-(d) shall not apply if an industrial, commercial, or other business establishment ceases to operate for a period of thirty (30) continuous months and the industrial, commercial, or other business use of the property did not conform with the land use classification as denoted in the existing zoning regulations for the zoning district in which it is located. Anytime after the thirty (30) month cessation, any use proposed to be established on the site, including any existing or proposed on-site sign, must conform to the provisions of the existing zoning regulations. For the purposes of this subsection (g), the thirty (30) month period of continuous ceased operation shall be tolled by:

(1) The period in which an industrial, commercial, or other business establishment is party to any action in a court of competent jurisdiction regarding the use of the property until such time that a final settlement, order, decree, or judgment has been rendered;

## TCA 13-7-208

(2) Any period in which a facility is being constructed, reconstructed, renovated, or refurbished, provided that all necessary building permits were obtained within thirty (30) months of cessation of continuous use;

(3) The filing of an application for a building permit for the alteration, renovation or reconstruction of a structure which is non-conforming or of a structure in which or out of which a non-conforming industrial, commercial or other business use operates or is located; or

(4) The reactivation of the non-conforming use any time prior to the end of the thirty (30) month period; provided, however, that the restrictions of subsections (g) and (i) shall only apply if the property owner intentionally and voluntarily abandons the nonconforming use of the property. In any contested matter on the use of such property, the government has the burden of proving an overt act of abandonment in such matter.

(h) The provisions of subsections (b)-(d) shall apply to an off-site sign which, for the purposes of this subsection, means any sign that advertises or gives direction to any business, product, service, attraction, or any other purpose or interest, other than the industrial, commercial or other business establishment located on the site where the sign is located; provided, however, that any expansion shall be limited as follows:

(1) Any off-site sign smaller than a standard 8-sheet poster which, for the purposes of this subsection, means an off-site sign with overall dimensions of at least five feet four inches (5' 4") to six feet two inches (6' 2") in height and eleven feet four inches (11' 4") to twelve feet two inches (12' 2") in width shall not be expanded to a size greater than a standard 8-sheet poster;

(2) Any standard 8-sheet poster shall not be expanded to a size greater than a 30-sheet poster which, for the purposes of this subsection, means an off-site sign with overall dimensions of twelve feet three inches (12' 3") in height and twenty-four feet six inches (24' 6") in width;

(3) Any standard 30-sheet poster shall not be expanded to a size greater than any standard bulletin which, for the purposes of this subsection, means any off-site sign with overall dimensions of ten feet (10') to fourteen feet (14') in height and thirty-six feet (36') to forty-eight feet (48') in width;

(4) Any standard bulletin shall not be expanded to a size greater than any super bulletin which, for the purposes of this subsection, means any off-site sign with overall dimensions of sixteen feet (16') to twenty feet (20') in height and sixty feet (60') in width;

(5) Any super bulletin shall not be expanded; or

(6) Any off-site sign with a height larger than standard 8-sheet poster height or width larger than standard 8-sheet poster width but not meeting the definition of a standard 8-sheet poster, a standard 30-sheet poster, a standard bulletin, or a standard super bulletin shall not be expanded by more than one hundred percent (100%) of its surface area.

## TCA 13-7-208

(i) Notwithstanding the provisions of subsection (d), any structure rebuilt on the site must conform to the provisions of the existing zoning regulations as to setbacks, height, bulk, or requirements as to the physical location of a structure upon the site, provided that this subsection (i) shall not apply to off-site signs.

(j) The provisions of subsections (g), (h) and (i) do not apply to any home rule municipality; provided, however, that subject to the approval of the local legislative body, a home rule municipality may opt into the provisions of these subsections.

(k) Notwithstanding subsections (a)-(i), subsection (g) shall not apply to any industrial establishment location where twenty-five percent (25%) or more of the gross annual sales from such location are derived from sales to or contracts with Local, state or federal governments or as a subcontractor to contracts with local, state or federal governments, or to any industrial establishment location where seventy-five percent (75%) or more of the gross annual sales from the location are made to agriculture or construction businesses.

[Acts 1935, ch. 44, § 6; C. Supp. 1950, § 3407.6; Acts 1973, ch. 279, § 1; T.C.A. (orig. ed.), § 13-708; Acts 1988, ch. 539, § 1; 1989, ch. 591, § 113; 2004, ch. 730, § 1; 2004, ch. 775, § 1.]

STATE OF TENNESSEE  
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January 10, 2006

Opinion No. 06-007

Tenn Code Ann. § 13-7-208 Protection of Nonconforming Billboard Sites

QUESTIONS

1. What rights do the owners of real property, a portion of whose land was leased for the construction and operation of an off-premises sign, which sign was constructed and in operation prior to a change in zoning which would now prohibit such activity, have under Tenn. Code Ann. § 13-7-208(d) upon the termination of the lease and the removal of the sign structure by the lessee?

2. What rights do the owners of real property, a portion of whose land was leased for the construction and operation of an off-premises sign, which sign was constructed, in operation and in compliance with all municipal zoning regulations prior to a change in zoning which now limits the maximum number of signs which may be permitted in the municipality, have under Tenn. Code Ann. § 13-7-208(d) upon the termination of the lease and the removal of the sign structure by the lessee if the rebuilding of the sign would cause the maximum number of signs to be exceeded?

3. Assuming the municipality later passes an ordinance, the effect of which would be to remove a requirement which created a nonconformity, such as a spacing requirement for the distance between signs, which was expanded from 750 feet to 1,500 feet and then later reduced to 750 feet, does the removal of the requirement which caused the nonconformity terminate the owners' rights under Tenn. Code Ann. § 13-7-208?

4. Is the entity that will rebuild a sign structure under Tenn. Code Ann. § 13-7-208(d), whether it be the landowner or the sign company, entitled to disregard the municipality's regulations regarding the height, bulk and physical location of a structure under Tenn. Code Ann. § 13-7-208(i), or is this section applicable only to the increase in the area of the sign face under Tenn. Code Ann. § 13-7-208(h)?

OPINIONS

1. In the situation presented for review, the owners of the real property that has been leased for the construction and operation of an off-premises sign (or billboard) by others have the right "to continue" their leasing of their billboard site subject to the provisions of Tenn. Code Ann. § 13-7-208(b)(1); to "expand operations and construct additional facilities which involve an actual continuance and expansion of the activities of the business which were permitted and being conducted prior to the change in zoning" subject to the provisions of Tenn. Code Ann. § 13-7-208(c); and to "destroy present facilities and reconstruct new facilities necessary to the conduct of

# Attorney General Opinion 06-007

Page 2

such . . . business subsequent to the zoning change” subject to the provisions of Tenn. Code Ann. § 13-7-208(d). Their “business establishment in operation” is their leasing of their billboard site. Upon the termination of an existing lease and the removal of the billboard owned by the lessee, the owners of the billboard site have the right to continue their leasing of their billboard site; to expand their leasing operation; and to construct additional facilities “which involve an actual continuance and expansion of the activities” of their leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, as long as they continue to be engaged in the same business that they were engaged in when the change in zoning occurred.

2. In the situation under review, the owners of the billboard site have the right to continue their leasing of their billboard site; to expand their leasing operation; and to construct additional facilities “which involve an actual continuance and expansion of the activities” of their leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of the new billboard would violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality.

3. In the event that a municipality enacts an ordinance that removes a zoning restriction that previously rendered a legal conforming land use nonconforming under that zoning restriction, the section 13-7-208 protection of the land use, which was once nonconforming but that has been transformed into a conforming use by operation of the new ordinance that removes the zoning restriction, can no longer be invoked.

4. Tenn. Code Ann. 13-7-208(i) expressly provides that the requirement imposed by that subsection “shall not apply to off-site signs.”

## ANALYSIS

1. The State of Tennessee has enacted Tenn. Code Ann. § 13-7-208, which expresses the public policy of this state that “industrial, commercial, or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto in effect immediately preceding a change in zoning” may “continue in operation and be permitted” under certain conditions set forth in that statute. Tenn. Code Ann. § 13-7-208(b)(1). *B. F. Nashville, Inc. v. City of Franklin*, 2005 WL 127082 at \*16 (Tenn. Ct. App.).

The Court of Appeals of Tennessee has held that Tenn. Code Ann. § 13-7-208 is a “grandfather clause,” which is defined as “an exception to a restriction that allows those already doing something to continue doing it, even if they would be stopped by the new restriction.” *Lamar Tennessee, LLC v. City of Hendersonville*, 2005 WL 65536, at \*4 (Tenn. Ct. App.). The Court of Appeals has also opined that such an exception in a statute “must be construed strictly against the party who seeks to come within the exception.” *Id.*, quoting *Teague v. Campbell County*, 920 S.W.2d 219, 221 (Tenn. Ct. App. 1995).

# Attorney General Opinion 06-007

Page 3

A party seeking the protection of section 13-7-208 has the burden of proving that its use is a pre-existing nonconforming use which qualifies for protection. *Outdoor West of Tennessee, Inc. v. City of Johnson City*, 39 S.W.3d 131, 135 (Tenn. Ct. App. 2000). To invoke the protection of this statute the one seeking such protection must establish (1) that there has been a change in zoning (either adoption of zoning where none existed previously or an alteration in zoning restrictions), and (2) that the use which the party seeks to continue was permitted prior to the zoning change. *Rives v. City of Clarksville*, 618 S.W.2d 502, 505 (Tenn. Ct. App. 1981). Additionally, a party seeking the protection of section 13-7-208(d) must establish that destroying present business facilities and reconstructing new facilities is “necessary to the conduct of such industry or business subsequent to the zoning change.” Tenn. Code Ann. § 13-7-208(d); see also *Outdoor West*, 39 S.W.3d at 136, and *Lamar Tennessee, LLC*, 2005 WL 65536, at \*6-7.

In the situation presented for review, a municipality has enacted an ordinance that limits the number of billboards permitted within its territorial jurisdiction, and owners of real property located in that municipality who lease their real property for the construction and operation of an off-premises sign (or billboard) by others contend that this municipal ordinance imposes a zoning restriction upon their use of their real property. The opinion of this office is based on the assumption that the owners can establish that there has been a change in zoning, and that the use which the owners seek to continue was permitted prior to the zoning change. The owners of the billboard site are concerned about the continuation of their legal nonconforming use after the municipal enactment of the billboard limitation and the anticipated termination of the lease of their billboard site and removal of the billboard structure by the lessee.

The “business establishment in operation” by the owners of the billboard site is their leasing of their billboard site, and it is that nonconforming use of their real property that is protected by Tenn. Code Ann. § 13-7-208 as long as they continue to engage in the same business operation that they were engaged in when the change in zoning occurred.<sup>1</sup> See *Lafferty v. City of Winchester*, 46 S.W.3d 752, 758 (Tenn. Ct. App. 2000), and *Rutherford v. Murray*, 2004 WL 1870066 (Tenn. Ct. App.).

In the situation presented for review, the owners of the real property that has been leased for the construction and operation of an off-premises sign (or billboard) by others have the right “to continue” their leasing of their billboard site subject to the provisions of Tenn. Code Ann. § 13-7-208(b)(1); to “expand operations and construct additional facilities which involve an actual continuance and expansion of the . . . business which were permitted and being conducted prior to the change in zoning” subject to the provisions of Tenn. Code Ann. § 13-7-208(c); and to “destroy present facilities and reconstruct new facilities necessary to the conduct of

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<sup>1</sup> In *Farris v. Town of Farragut*, 1996 WL 530020 (Tenn. Ct. App.), the Court of Appeals of Tennessee affirmed the decision of the trial court to direct the Board of Zoning Appeals of the Town of Farragut to issue a building permit allowing Farris, the owner of a billboard site, to reconstruct a billboard after the lessee of her site removed its billboard. At all relevant times before and after the Town of Farragut enacted an ordinance that prohibited billboards within its territorial limits, the owner of the billboard site was the permittee of the state billboard permits and actively engaged in the billboard operation protected by Tenn. Code Ann. § 13-7-208(d).



# Attorney General Opinion 06-007

Page 4

such . . . business subsequent to the zoning change” subject to the provisions of Tenn. Code Ann. § 13-7-208(d). Upon the termination of an existing lease and the removal of the billboard owned by the lessee, the owners of the billboard site have the right to continue their leasing of their billboard site; to expand their leasing operation, and to construct additional facilities “which involve an actual continuance and expansion of the activities” of their leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, as long as they continue to be engaged in the same business that they were engaged in when the change in zoning occurred.

2. The power of local governments to enact ordinances that regulate or restrict the use of private property is derived from the state and is delegated to them by the General Assembly through the enactment of a state statute. *B F. Nashville, Inc.*, 2005 WL 127082, at \*15. While local governments have broad discretion to enact land use regulations and restrictions within this delegated power, those regulations and restrictions “cannot contravene or conflict with applicable state laws.” *Id.* When a state statute and a municipal ordinance “are in irreconcilable conflict, . . . the ordinance must give way to the imperatives of the statute.” *Id.*

In the situation under review, a municipality seeks to limit the number of billboards erected within its territorial limits by exercise of its delegated power to do so. However, that limitation cannot contravene the provisions of Tenn. Code Ann. § 13-7-208 “so long as the requirements of that statute are satisfied” by the business that seeks to invoke the protection of that statute. *Outdoor West*, 39 S.W.3d at 137; see also *Lamar Advertising of Knox County, Tennessee, Inc v City of Knoxville*, 1995 WL 124292, at \*3-4 (Tenn. Ct. App.).

The owners of the billboard site have the right to continue their leasing of their billboard site; to expand their leasing operation; and to construct additional facilities “which involve an actual continuance and expansion of the activities” of their leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of the new billboard would violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality.

3. Section 13-7-208 is a “grandfather clause,” which is defined as “an exception to a restriction that allows those already doing something to continue doing it, even if they would be stopped by the new restriction.” *Lamar Tennessee, LLC*, 2005 WL 65536, at \*4. And that exception allows an industrial, commercial or business establishment “in operation and permitted to operate under zoning regulations or exceptions thereto immediately preceding a change in zoning” to continue and to expand in operation in spite of the change in zoning that renders the “business establishment in operation” nonconforming. Tenn. Code Ann. §§ 13-7-208(b)(1) and (c).

In the event that a municipality enacts an ordinance that removes a zoning restriction that previously rendered a legal conforming land use nonconforming under that zoning restriction, the section 13-7-208 protection of the land use, which was once nonconforming but that has been transformed into a conforming use by operation of the new ordinance that removes the zoning

# Attorney General Opinion 06-007

Page 5

restriction, can no longer be invoked. By removing the zoning restriction that created the nonconformity, the municipal ordinance in effect restores the legality of the “nonconforming use” and makes the invocation of the section 13-7-208 protection unnecessary.

4. Tenn. Code Ann. § 13-7-208(d) provides:

Industrial, commercial, or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto immediately preceding a change in zoning shall be allowed to destroy present facilities and reconstruct new facilities necessary to the conduct of such industry or business subsequent to the zoning change; provided, that no destruction and rebuilding shall occur which shall act to change the use classification of the land as classified under any zoning regulations or exceptions thereto in effect immediately prior to or subsequent to a change in the zoning of the land area on which such industry or business is located. No building permit or like permission for demolition, construction or landscaping shall be denied to an industry or business seeking to destroy and reconstruct facilities necessary to the continued conduct of the activities of that industry or business, where such conduct was permitted prior to a change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners.

However, the broad protection provided by subsection (d) is limited by subsection (i), which provides:

Notwithstanding the provisions of subsection (d), any structure rebuilt on the site must conform to the provisions of the existing zoning regulations as to setbacks, height, bulk, or requirements as to the physical location of a structure upon the site, *provided that this subsection (i) shall not apply to off-site signs.*<sup>2</sup>

Tenn. Code Ann. § 13-7-208(i) (emphasis added).

The fourth issue presented involves the interpretation of a state statute. The primary rule of statutory interpretation is “to ascertain and give effect to the intention and purpose of the legislature.” *Lens Crafters, Inc. v. Sundquist*, 33 S.W.3d 772, 777 (Tenn. 2000). To determine legislative intent, one must look to “the natural and ordinary meaning of the language used in the

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<sup>2</sup> Tenn. Code Ann. § 13-7-208(j) states that subsection (i) does not apply to any home rule municipality but provides that a home rule municipality “may opt into the provisions” of subsection (i) as well as other subsections.

# Attorney General Opinion 06-007

Page 6

statute itself” and examine any provision “within the context of the entire statute and in light of its over-arching purpose and the goal it serves.” *State v. Flemming*, 19 S.W.3d 195, 197 (Tenn. 2000). The statute should be read “without any forced or subtle construction which would extend or limit its meaning.” *National Gas Distributors, Inc. v. State*, 804 S.W.2d 66, 67 (Tenn. 1991). The interpreter of a statute must “give effect to every word, phrase, clause and sentence of the act in order to carry out the legislative intent.” *Tidwell v Collins*, 522 S.W.2d 674, 676-677 (Tenn. 1975).

Tenn. Code Ann. § 13-7-208(i) expressly provides that the requirement imposed by that subsection “shall not apply to off-site signs.” We must presume that the General Assembly selected these words deliberately to convey their intent that the requirement imposed by subsection (i) “shall not apply to off-site signs.”

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Requested by:

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August 3, 2006  
Opinion No. 06-125

Tenn Code Ann. § 13-7-208 Protection of Nonconforming Billboard Sites

QUESTIONS

1. When and under what circumstances does a nonconforming billboard site no longer qualify for protection provided by Tenn. Code Ann. § 13-7-208?
2. If a billboard becomes disqualified, does the maximum number of billboards allowed by a municipal outdoor advertising ordinance increase?
3. What rights, if any, does the owner of a billboard site have that are required to be terminated when the owner of a billboard located on that site desires to move its billboard to another location?
4. If a municipal ordinance attempts to create rights for an owner of a billboard site who does not own the billboard located on that site, consequently removing rights from the owner of the billboard located on that site, which rights are undefined and contrary to the contract between the owner of the billboard site and the owner of the billboard located on that site, does that municipal ordinance violate Article I, Sections 8, 20, or 21 or Article XI, Section 8 of the Tennessee Constitution or the Fifth Amendment of the United States Constitution?
5. If the enactment of a municipal ordinance causes “an existing contracted billboard” to become nonconforming, is it proper for the municipality to issue a municipal outdoor advertising permit for a nonconforming billboard owned and operated by another billboard company to continue the nonconforming use “that is zoned out?”
6. Does Tenn. Code Ann. § 13-7-208 require a municipality to issue a municipal outdoor advertising permit to a new business making application to place a new billboard upon newly zoned premises?

OPINIONS

1. A nonconforming billboard site no longer qualifies for protection provided by Tenn. Code Ann. § 13-7-208 when the nonconforming billboard use is changed, when the nonconforming billboard use ceases for thirty continuous months, or when the zoning restriction that previously rendered the billboard use nonconforming is removed.

# Attorney General Opinion 06-125

Page 2

2. The express provisions of the applicable municipal outdoor advertising ordinance will determine the maximum number of billboards allowed by that ordinance.

3. Upon the removal of a billboard by its owner, the owner of that billboard site has the right to continue the leasing of that billboard site; to expand that billboard leasing operation; and to construct additional facilities “which involve an actual continuation and expansion of the activities” of the billboard leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of a new billboard may violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality. Unless the owner of the billboard site and the owner of the billboard located on that site have entered into an agreement to the contrary, the removal of the billboard from that site does not terminate the rights of the owner of the billboard site that are protected by Tenn. Code Ann. § 13-7-208.

4. Evaluating the constitutionality of a municipal ordinance that attempts to create rights for an owner of a billboard site who does not own the billboard located on that site, consequently removing rights from the owner of the billboard located on that site, which rights are undefined and contrary to the contract between the owner of the billboard site and the owner of the billboard located on that site, without more specific information concerning the express provisions of that ordinance and the affected rights of the parties to the contract, is impossible.

5. As stated hereinabove, upon the removal of a billboard by its owner, the owner of that billboard site has the right to continue the leasing of that billboard site; to expand that billboard leasing operation; and to construct additional facilities “which involve an actual continuation and expansion of the activities” of the billboard leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of a new billboard may violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality. Upon receiving from the owner of the billboard site a proper application for a new outdoor advertising permit, the municipality should issue that permit to the owner of the billboard site in accordance with Tenn. Code Ann. § 13-7-208 (c) and (d), subject to the various requirements of Tenn. Code Ann. § 13-7-208.

6. Tenn. Code Ann. § 13-7-208 does not require a municipality to issue a municipal outdoor advertising permit to a new business making application to place a new billboard upon newly zoned premises.

## ANALYSIS

1. Tenn. Code Ann. § 13-7-208 expresses the public policy of this state that “industrial, commercial, or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto in effect immediately preceding a change in zoning” may “continue in operation and be permitted” under certain conditions set forth in that statute. Tenn. Code Ann.

# Attorney General Opinion 06-125

Page 3

§ 13-7-208(b)(1). *B F. Nashville, Inc. v. City of Franklin*, 2005 WL 127082 at \*16 (Tenn Ct App. 2005).

The Court of Appeals of Tennessee has held that Tenn. Code Ann. § 13-7-208 is a “grandfather clause,” which is defined as “an exception to a restriction that allows those already doing something to continue doing it, even if they would be stopped by the new restriction.” *Lamar Tennessee, LLC v. City of Hendersonville*, 2005 WL 65536, at \*4 (Tenn Ct.App. 2005). The Court of Appeals has also opined that such an exception in a statute “must be construed strictly against the party who seeks to come within the exception.” *Id.*, quoting *Teague v Campbell County*, 920 S.W 2d 219, 221 (Tenn Ct.App. 1995).

A party seeking the protection of section 13-7-208 has the burden of proving that its use is a pre-existing nonconforming use which qualifies for protection. *Outdoor West of Tennessee, Inc. v. City of Johnson City*, 39 S.W.3d 131, 135 (Tenn.Ct.App. 2000). To invoke the protection of this statute the one seeking such protection must establish (1) that there has been a change in zoning (either adoption of zoning where none existed previously or an alteration in zoning restrictions), and (2) that the use which the party seeks to continue was permitted prior to the zoning change. *Rives v. City of Clarksville*, 618 S.W.2d 502, 505 (Tenn. Ct. App. 1981). Additionally, a party seeking the protection of section 13-7-208(d) must establish that destroying present business facilities and reconstructing new facilities is “necessary to the conduct of such industry or business subsequent to the zoning change.” Tenn. Code Ann. § 13-7-208(d); see also *Outdoor West*, 39 S.W.3d at 136.

In the situation presented by the opinion request, a municipality has enacted an ordinance that limits the number of billboards permitted within its territorial jurisdiction, and owners of real property located in that municipality who lease their real property for the construction and operation of an off-premises sign (or billboard) by others contend that this municipal ordinance imposes a zoning restriction upon their use of their real property. The opinion of this office is based on the assumption that the owners can establish that there has been a change in zoning, and that the use which the owners seek to continue was permitted prior to the zoning change. The owners of the billboard sites are concerned about the continuation of their legal nonconforming use after the municipal enactment of the billboard limitation and the anticipated termination of the leases of their billboard sites and removal of the billboard structures by the lessees.

The site owner’s leasing of that billboard site and his use of the site to operate a billboard constitutes a “business establishment in operation”, and it is that nonconforming use of the real property that is protected by Tenn. Code Ann. § 13-7-208 as long as the owner continues to engage in the same business operation that he was engaged in when the change in zoning occurred.<sup>1</sup> See

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<sup>1</sup> In *Farris v. Town of Farragut*, 1996 WL 530020 (Tenn.Ct.App. 1996), the Court of Appeals of Tennessee affirmed the decision of the trial court to direct the Board of Zoning Appeals of the Town of Farragut to issue a building permit allowing Farris, the owner of a billboard site, to reconstruct a billboard after the lessee of her site removed its billboard. At all relevant times before and after the Town of Farragut enacted an ordinance that prohibited billboards within its territorial limits, the owner of the billboard site was the permittee of the state billboard permits and actively engaged in the billboard operation protected by Tenn. Code Ann. § 13-7-208(d)

# Attorney General Opinion 06-125

Page 4

*Lafferty v. City of Winchester*, 46 S.W.3d 752, 758 (Tenn.Ct.App. 2000), and *Rutherford v. Murray*, 2004 WL 1870066 (Tenn.Ct.App. 2004).

In the situation presented for review, the owner of the real property that has been leased for the construction and operation of an off-premises sign (or billboard) by others has the right “to continue” leasing that billboard site subject to the provisions of Tenn. Code Ann. § 13-7-208(b)(1); to “expand operations and construct additional facilities which involve an actual continuance and expansion of the activities of the . . . business which were permitted and being conducted prior to the change in zoning” subject to the provisions of Tenn. Code Ann. § 13-7-208(c); and to “destroy present facilities and reconstruct new facilities necessary to the conduct of such . . . business subsequent to the zoning change” subject to the provisions of Tenn. Code Ann. § 13-7-208(d). Upon the termination of an existing lease and the removal of the billboard owned by the lessee, the owner of the billboard site has the right to continue leasing the billboard site to others; to expand the leasing operation, and to construct additional facilities “which involve an actual continuance and expansion of the activities” of the leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, as long as the owner continues to be engaged in the same business that he or she was engaged in when the change in zoning occurred.

In this situation the existing billboard operation, which is the business activity or use conducted by a billboard operator who leases land from the owner of the billboard site and operates this business activity pursuant to a municipal outdoor advertising permit, may also qualify as a pre-existing nonconforming use of the same site for which the billboard operator can invoke the protection provided by Tenn. Code Ann. § 13-7-208, provided that all requirements of that statute have been satisfied. See *Creative Displays, Inc. of Knoxville v. City of Pigeon Forge*, 576 S.W.2d 356, 357 (Tenn.Ct.App. 1978); and Tenn. Code Ann. § 13-7-208(h).

However, a nonconforming billboard site no longer qualifies for protection provided by Tenn. Code Ann. § 13-7-208 when the nonconforming billboard use is changed, when the nonconforming billboard use ceases for thirty continuous months, or when the zoning restriction that previously rendered the billboard use nonconforming is removed.

Tenn. Code Ann. § 13-7-208 (b) (1) provides:

In the event that a zoning change occurs in any land area where such land area was not previously covered by any zoning restrictions of any governmental agency of this state or its political subdivisions, or where such land area is covered by zoning restrictions of a governmental agency of this state or its political subdivisions, and such zoning restrictions differ from zoning restrictions imposed after the zoning change, then any industrial, commercial or business establishment in operation, permitted to operate under zoning regulations or exceptions thereto prior to the zoning change shall be allowed to continue in operation and be permitted; *provided, that no*

# Attorney General Opinion 06-125

Page 5

*change in the use of the land is undertaken by such industry or business.*

Tenn. Code Ann. § 13-7-201 (b)(1) (emphasis added). Under the express terms of this statute, “the business establishment in operation . . . prior to the zoning change shall be allowed to continue in operation . . . provided, that no change in the use of the land is undertaken . . .” *Id.* See also generally *Lafferty v. City of Winchester*, 46 S.W.3d 752 (Tenn.Ct.App. 2000).

Furthermore, if the nonconforming billboard use ceases for thirty continuous months, the protection provided by section 13-7-208 can no longer be invoked. Tenn. Code Ann. § 13-7-208 (g).

Finally, in the event that a municipality enacts an ordinance that removes a zoning restriction that previously rendered a legal conforming land use nonconforming under that zoning restriction, the section 13-7-208 protection of the land use, which was once nonconforming but that has been transformed into a conforming use by operation of the new ordinance that removes the zoning restriction, can no longer be invoked. By removing the zoning restriction that created the nonconformity, the municipal ordinance in effect restores the legality of the “nonconforming use” and makes the invocation of the section 13-7-208 protection unnecessary.

2. When the language of a municipal ordinance is clear, the courts will enforce the ordinance as written. *421 Corporation v. Metropolitan Government of Nashville and Davidson County*, 36 S.W.3d 469, 475 (Tenn.Ct.App. 2000). When, however, the language of an ordinance is ambiguous, the courts will resort to the customary principles of statutory construction. *Id.* Accordingly, a reviewing court will construe a zoning ordinance as a whole and will give its words their natural and ordinary meaning. *Id.*

If the applicable municipal outdoor advertising ordinance specifies the maximum number of billboards allowed by that ordinance, the express provisions of the ordinance will determine the maximum number of billboards allowed by that ordinance.

3. The power of local governments to enact ordinances that regulate or restrict the use of private property is derived from the state and is delegated to them by the General Assembly through the enactment of a state statute. *B. F. Nashville, Inc.*, 2005 WL 127082 at \*15. While local governments have broad discretion to enact land use regulations and restrictions within this delegated power, those regulations and restrictions “cannot contravene or conflict with applicable state laws.” *Id.* When a state statute and a municipal ordinance “are in irreconcilable conflict, . . . the ordinance must give way to the imperatives of the statute.” *Id.*

In the situation under review, a municipality seeks to limit the number of billboards erected within its territorial limits by exercise of its delegated power to do so. However, that limitation cannot contravene the provisions of Tenn. Code Ann. § 13-7-208 “so long as the requirements of that statute are satisfied” by the business that seeks to invoke the protection of that statute. *Outdoor West*, 39 S.W.3d at 137; see also *Lamar Advertising of Knox County, Tennessee, Inc. v. City of*



# Attorney General Opinion 06-125

Page 6

*Knoxville*, 1995 WL 124292 at \*3-4 (Tenn Ct.App. 1995).

Upon the removal of a billboard by its owner, the owner of that billboard site has the right to continue the leasing of that billboard site; to expand that billboard leasing operation; and to construct additional facilities “which involve an actual continuation and expansion of the activities” of the billboard leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of a new billboard may violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality. Unless the owner of the billboard site and the owner of the billboard located on that site have entered into an agreement to the contrary, the removal of the billboard from that site does not terminate the rights of the owner of the billboard site that are protected by section 13-7-208.

4. Local governments lack inherent power to control the use of private property within their boundaries. This power belongs to the State of Tennessee, but the General Assembly may delegate this power to local governments. *Lafferty v. City of Winchester*, 46 S.W.2d at 757; see Tenn. Code Ann. §§ 13-7-101 and 13-7-201. Local governments must exercise their delegated power consistently with the statutes from which they derive their power. See *Henry v. White*, 194 Tenn. 192, 196, 250 S.W.2d 70, 71 (1952).

Local governments have “considerable discretion” to act within the scope of their delegated power, but they cannot effectively nullify state law on the same subject “by enacting ordinances that ignore applicable state laws, that grant rights that state law denies, and that deny rights that state law grants.” *421 Corporation*, 36 S.W.3d at 475; see also *Family Golf of Nashville, Inc. v. Metropolitan Government of Nashville and Davidson County*, 964 S.W.2d 254, 257 (Tenn.Ct.App.1997). Ordinances that conflict with state law of state-wide application are universally held to be invalid. See *Southern Railway Co v City of Knoxville*, 223 Tenn. 90, 442 S.W.2d 619 (1968) and *City of Knoxville v. Currier*, 1998 WL 338195 (Tenn.Ct.App. 1998).

Zoning ordinances are often challenged on constitutional grounds. The express provisions of the municipal ordinance under review have not been provided to this office, but that ordinance is described as an attempt “to create rights to a real property owner that does not own the billboard, consequently removing rights from the billboard owner which is contrary to the agreement between the landowner and the billboard owner and the rights are undefined.” Evaluating the validity of that ordinance without more specific information is impossible, but this office provides the following summary of applicable law for consideration when the specific provisions of that ordinance are known.

The Tennessee Constitution guarantees citizens substantive due process. Article I, Section 8 of the Tennessee Constitution provides that “no man shall be taken or imprisoned, or disseized of his freehold, liberties, or privileges, or outlawed, or exiled, or in any manner deprived of his life, liberty, or property, but by the judgment of his peers, or the law of the land.” The Tennessee Supreme Court has opined that “unless a fundamental right is implicated, a statute comports with substantive due process if it bears ‘a reasonable relation to a proper legislative purpose’ and ‘is

# Attorney General Opinion 06-125

Page 7

neither arbitrary nor discriminatory.” *Riggs v. Burson*, 941 S.W.2d 44, 51 (Tenn. 1997).

Generally, a substantive due process claim is based on the exercise of governmental power without reasonable justification. *Consolidated Waste Systems, LLC v. Metropolitan Government of Nashville and Davidson County*, 2005 WL 1541860 at \*5 (Tenn.Ct.App. 2005). Where governmental action does not deprive a citizen of a particular constitutional guarantee, that action will be upheld against a substantive due process challenge if it is rationally related to a legitimate governmental interest. *Id.* Under this standard, a legislative regulation of land use will be upheld “if it has a rational relationship with a legitimate governmental interest or public welfare concern.” *Id.* If “any reasonable justification” for the law may be conceived, it must be upheld. *Riggs*, 941 S.W.2d at 48.

The Tennessee Constitution also guarantees citizens the equal protection of the laws. *State v. Robinson*, 29 S.W.3d 476, 480 (Tenn. 2000). Article I, Section 8 and Article XI, Section 8 of the Tennessee Constitution provide “essentially the same protection” as the Fourteenth Amendment to the United States Constitution. *State v. Tester*, 879 S.W.2d 823, 827 (Tenn. 1994). The equal protection provisions of the federal and state constitutions “demand that persons similarly situated be treated alike.” *Gallaher v. Elam*, 104 S.W.3d 455, 461 (Tenn. 2003).

In analyzing equal protection challenges, the Tennessee Supreme Court has “adopted an analytical framework similar to that used by the United States Supreme Court.” *Id.* at 460. The Court applies one of three standards, “depending upon the nature of the right asserted or the class of persons affected.” *Id.* Those standards include: (1) strict scrutiny (when the classification at issue “operates to the peculiar disadvantage of a suspect class or interferes with the exercise of a fundamental right”); (2) heightened scrutiny (when the classification at issue involves “a quasi-suspect class”); or (3) reduced scrutiny (when the challenged classification is evaluated in light of its relationship to “a legitimate state interest”) *Id.* at 460, 461. The last standard is often described as the “rational basis test.” *Id.*

The rational basis analysis used in an equal protection challenge does not differ substantially from the rational basis test used when considering a substantive due process claim. *Consolidated Waste Systems, LLC*, 2005 WL 1541860 at \*7. Equal protection requires only that the legislative classification be rationally related to the objective it seeks to achieve. *Id.* And the ordinance will be upheld “if any state of facts can reasonably be conceived to justify the classification or if the unreasonableness is fairly debatable . . . .” *Id.*

Article I, Section 20 of the Tennessee Constitution states “that no retrospective law, or law impairing the obligations of contracts, shall be made” However, this constitutional prohibition against retrospective laws “does not inhibit retrospective laws made in furtherance of the police power of the state . . . .” *Dark Tobacco Growers’ Co-op Ass’n v. Dunn*, 150 Tenn. 614, 266 S.W.308, 312 (1924). The enactment of a municipal zoning ordinance pursuant to the police power delegated by the state to the municipality is not a violation of Article I, Section 20.

In some jurisdictions the enactment of a zoning ordinance has been challenged as an

# Attorney General Opinion 06-125

Page 8

unlawful taking of property. Article I, Section 8 of the Tennessee Constitution provides that “no man shall be . . . deprived of his life, liberty, or property, but by the judgment of his peers or the law of the land.” Article I, Section 21 provides that “no man’s particular services shall be demanded, or property taken, or applied to public use, without the consent of his representatives, or without just compensation being made therefor.” These constitutional provisions apply to governmental taking of property, but the Tennessee Supreme Court has never held that the enactment of a zoning ordinance constitutes a taking of property under these provisions. See *Consolidated Waste Systems, LLC*, 2005 WL 1541860 at \*11, 12. Instead, the Supreme Court has “traditionally examined” land use regulation through ordinances using the rational basis test, as described earlier in this opinion, “or other tests of validity under state law.” *Id.*

The Fifth Amendment to the United States Constitution guarantees that no person shall “be deprived of life, liberty, or property, without due process of law” and also provides, “nor shall private property be taken for public use, without just compensation.” The second provision is called the Takings Clause, or sometimes the Just Compensation Clause, and it is predicated on the proposition that the government should pay for private property it has taken for its own use. *Id.* The purpose of the Takings Clause is to prevent the government from forcing an individual or group of individuals alone to bear burdens “which, in all fairness and justice, should be borne by the public as a whole.” *Palazzolo v. Rhode Island*, 533 U.S. 606, 618, 121 S.Ct. 2448, 2457-58 (2001); *Dolan v. City of Tigard*, 512 U.S. 374, 384, 114 S.Ct. 2309, 2316 (1994); *Armstrong v. United States*, 364 U.S. 40, 49, 80 S.Ct. 1563, 1569 (1960).

A taking of property for public use violates the Takings Clause only if just compensation is not paid. *Lingle v. Chevron U.S.A., Inc.*, 544 U.S. 528, 125 S.Ct. 2074, 2080 (2005).

The Takings Clause of the United States Constitution was generally understood to apply only to physical takings until the United States Supreme Court held in *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 415, 43 S.Ct. 158, 160 (1922) that “while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.” The Court has repeatedly stated there is no set formula for determining when a regulation goes too far. *Lingle*, 125 S.Ct. at 2081; *Palazzolo*, 533 U.S. at 617, 121 S.Ct. at 2457; *Lucas v. S.C. Coastal Council*, 505 U.S. 1003, 1015, 112 S.Ct. 2886, 2893 (1992).

The principles that have emerged in takings jurisprudence are attempts to apply the “fairness and justice” purposes underlying the Takings Clause, as explained in *Armstrong*, 364 U.S. at 49, 80 S.Ct. at 1569. See also *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302, 321, 122 S.Ct. 1465, 1478 (2002) (referring to the *Armstrong* principles). The United States Supreme Court has described its Takings or Just Compensation Clause holdings as follows:

The text of the Fifth Amendment itself provides a basis for drawing a distinction between physical takings and regulatory takings. Its plain language requires the payment of compensation whenever the government acquires private property for a public purpose, whether

# Attorney General Opinion 06-125

Page 9

the acquisition is the result of a condemnation proceeding or a physical appropriation. But the Constitution contains no comparable reference to regulations that prohibit a property owner from making certain uses of her private property. Our jurisprudence involving condemnations and physical takings is as old as the Republic and, for the most part, involves the straightforward application of *per se* rules. Our regulatory takings jurisprudence, in contrast, is of more recent vintage and is characterized by ‘essentially ad hoc, factual inquiries,’ designed to allow ‘careful examination and weighing of all the relevant circumstances.’

*Brown v. Legal Foundation of Washington*, 538 U.S. 216, 233, 123 S.Ct. 1406, 1417-18 (2003).

5. As stated hereinabove, upon the removal of a billboard by its owner, the owner of that billboard site has the right to continue the leasing of that billboard site; to expand that billboard leasing operation; and to construct additional facilities “which involve an actual continuation and expansion of the activities” of the billboard leasing operation “which were permitted and being conducted prior to the change in zoning,” subject to the various requirements imposed by Tenn. Code Ann. § 13-7-208, even though the construction of a new billboard may violate the limitation imposed by municipal ordinance upon the number of billboards permitted within the territorial limits of the municipality. Upon receiving from the owner of the billboard site a proper application for a new outdoor advertising permit, the municipality should issue that permit to the owner of the billboard site in accordance with Tenn. Code Ann. § 13-7-208 (c) and (d), subject to the various requirements of Tenn. Code Ann. § 13-7-208.

Section 13-7-208(c) provides:

Industrial, commercial or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto in effect immediately preceding a change in zoning shall be allowed to expand operations and construct additional facilities which involve an actual continuance and expansion of the activities of the industry or business which were permitted and being conducted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners. *No building permit or like permission* for construction or landscaping *shall be denied* to an industry or business seeking to expand and continue activities conducted by that industry or business which were permitted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to

# Attorney General Opinion 06-125

Page 10

adjoining landowners

Tenn. Code Ann. § 13-7-208(c) (emphasis added).

Section 13-7-208(d) provides:

Industrial, commercial, or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto immediately preceding a change in zoning shall be allowed to destroy present facilities and reconstruct new facilities necessary to the conduct of such industry or business subsequent to the zoning change; provided, that no destruction and rebuilding shall occur which shall act to change the use classification of the land as classified under any zoning regulations or exceptions thereto in effect immediately prior to or subsequent to a change in the zoning of the land area on which such industry or business is located. *No building permit or like permission* for demolition, construction or landscaping shall be denied to an industry or business seeking to destroy and reconstruct facilities necessary to the continued conduct of the activities of that industry or business, where such conduct was permitted prior to a change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners.

Tenn. Code Ann. § 13-7-208(d) (emphasis added).

The foregoing statutory provisions compel a municipality to issue the requested outdoor advertising permit to the “business establishment in operation,” which in the scenario presented for review is the leasing of the billboard site by the owner of that site. *See Farris v. Town of Farragut*, 1996 WL 530020 (Tenn Ct.App. 1996), in which the Court of Appeals of Tennessee affirmed the decision of the trial court to direct the Board of Zoning Appeals of the Town of Farragut to issue a building permit allowing Farris, the owner of a billboard site, to reconstruct a billboard after the lessee of her site removed its billboard.

6. As previously mentioned, a party seeking the protection of Tenn. Code Ann. § 13-7-208 has the burden of proving that its use is a pre-existing nonconforming use which qualifies for protection. *Outdoor West of Tennessee, Inc.*, 39 S.W.3d at 135. In the last scenario presented for review, the party seeking this protection is not a “business establishment in operation” that desires to continue a pre-existing nonconforming use, and it therefore does not qualify for protection provided by Tenn. Code Ann. § 13-7-208 (b), (c) and (d). *See Custom Land Development, Inc. v. Town of Coopertown*, 168 S.W.3d 764, 775 (Tenn. Ct. App. 2004); and *Toles v. City of Dyersburg*, 39 S.W.3d 138, 140 (Tenn. Ct. App. 2000). Section 13-7-208 does not require a municipality to

# Attorney General Opinion 06-125

Page 11

issue a municipal outdoor advertising permit to a new business proposing to begin a nonconforming billboard use commencing after the zoning change that rendered that use nonconforming.

PAUL G. SUMMERS  
Attorney General

MICHAEL E. MOORE  
Solicitor General

LARRY M. TEAGUE  
Deputy Attorney General

Requested by:

The Honorable Charlotte Burks  
State Senator  
Suite 9, Legislative Plaza  
Nashville, Tennessee 37243-0215



# Outdoor West v. Johnson City

IN THE COURT OF APPEALS OF TENNESSEE  
AT KNOXVILLE

## **OUTDOOR WEST OF TENNESSEE, INC. (LAMAR ADVERTISING OF TRI-CITIES) v. CITY OF JOHNSON CITY**

**Appeal As Of Right From the Circuit Court for Washington County  
No. E1999-00412-COA-R3-CV Hon. G. Richard Johnson, Judge**

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**No. 17512 - Decided June 26, 2000**

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The City of Johnson City appeals the Trial Court's Order requiring the City to issue eleven permits to Outdoor West of Tennessee, Inc. (Lamar Advertising of Tri-Cities), permitting Outdoor West to increase the size and/or double-face eleven billboards, some of which previously had only one face. We affirm the Judgment of the Trial Court.

**T. R. A. P. Rule 3; Judgment of the Trial Court Affirmed; Case Remanded.**

SWINEY, J., delivered the opinion of the court, in which GODDARD, P. J., and SUSANO, J., joined.

Earl P. Booze, James D. Culp and James H. Epps, III, Johnson City, for Appellant, City of Johnson City

Thomas C. Jessee, Johnson City, for Appellee, Outdoor West of Tennessee, Inc. (Lamar Advertising of Tri-Cities).

Richard M. Currie, Jr and Timothy B. McConnell, Kingsport, Amicus Curiae Brief for Scenic Tennessee.

### **OPINION**

#### **Background**

Appellee, Lamar Advertising of Tri-Cities ("Lamar"), filed eleven Applications for Sign Permits with Appellant, the City of Johnson City ("the City"), seeking to enlarge the size of eleven billboards and/or to change those billboards from single-faced to double-faced, so as to provide more advertising space on each sign. Mr. Richard Drummond testified that he was general



# Outdoor West v. Johnson City

manager of Outdoor West of Tennessee, Inc., the original company that filed requests and obtained State permits for ten out of the eleven signs which are at issue in this case.<sup>1</sup> That company then became Outdoor Communications, Inc., and Drummond was general manager of the new company. Outdoor Communications, Inc., then merged with Lamar Advertising, a national billboard advertising company, and became Lamar Advertising of Tri-Cities, Inc. Drummond is currently Vice-President and General Manager of that company. The gross revenue of Lamar exceeds \$5 million annually. From the record before us, there are one hundred and one billboards currently erected in Johnson City. Lamar owns eighty of those billboards. No additional billboards will be constructed in Johnson City, because in 1988 the city enacted a local ordinance prohibiting new billboards.

The eleven billboards at issue were built before the enactment of the 1988 ordinance. Lamar contends that those billboards were permitted uses at the time they were constructed under the then-existing city ordinances, and that the requested sign permits for upgrading those signs are authorized under T.C.A. § 13-7-208, the Grandfather Statute. Mr. John Campbell, City Manager of the City of Johnson City, declined to issue the requested sign permits. By letter of January 26, 1996, Mr. Campbell advised counsel for Lamar:

I am in receipt of various applications which have been tendered on behalf of Outdoor West, Inc. for permits to expand the billboards located at each of the above referenced locations. After careful consideration, I must respectfully deny Outdoor West's request for those permits

It is the opinion of the City of Johnson City that Outdoor West's proposed construction does not comply with the City's sign ordinance, and that T.C.A. Section 13-7-208 does not prevent the sign ordinance from being applicable.

At trial, Mr. Campbell testified that the sole basis for the City's denial of the requested sign permits was that the current zoning ordinance, enacted in 1988, prohibits additional billboards. There has been no finding that the proposed expansions constitute a nuisance to adjoining landowners or exceeds the property lines on which the signs are now located. Mr. Campbell testified he doesn't know whether all of the signs applied for have State permits or whether the signs comply with earlier zoning ordinances in effect in the City prior to the 1988 zoning ordinance banning billboards. He did not investigate these issues, and does not think anyone else investigated them for the City. He testified that, from 1981 until 1988, the zoning ordinance permitted billboards not larger than 672 sq. ft

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<sup>1</sup>The eleventh sign is not adjacent to a State-controlled artery and therefore does not require a State permit.

# Outdoor West v. Johnson City

Mr. Drummond testified that billboards are produced in two standard sizes, a 300 sq. ft. size for surface roads throughout a city, and a 672 sq. ft. size for freeway systems and other major thoroughfares. Mr. Drummond testified that these requested eleven sign permits, requesting upgrades to signs which have been present in Johnson City since 1981 or before, were necessary for several reasons:

One reason is to modernize the existing structures to 1999 requirements for the industry. The industry is a standardized industry where production has to be produced that will fit here and Nashville, and Dallas, etc., just like thirty second TV spots. They need to be 30 seconds no matter where they're at. So sizing here needs to be conforming - - to be conforming on a national level.

\* \* \*

[Another reason is] Safety issues. One of these has been held in abeyance since 1981. There are safety concerns that we need to upgrade. In addition, is that we've been frozen in time since '81. And as everybody knows, the City has grown rapidly since then, and we are running out of inventory to satisfy the demand from our clients. So we have to maximize our existing inventory to accept clients that request coverage in Johnson City. And right now, we can't do that in all the times and we are losing financial revenue because of that.

Mr. Drummond also testified that the size of the signs was to be enlarged so that, "as opposed to having one advertiser, we can have two. And that's our intent, is to be able to offer our services to an additional advertiser, which we can't now with the smaller sign." He intends to upgrade "a great number" of Lamar's signs to 672 feet, and he filed these eleven sign permit applications first, with "several others waiting once we know the outcome [of this litigation]."

The Trial Court reviewed the eleven sign permit Applications, Mr. Campbell's letter denying the eleven requests for sign permits, the Johnson City Zoning Ordinances for 1963, 1972, 1981 and 1988, and heard the testimony of the two above-quoted witnesses. The Trial Court then took the case under advisement and, on September 27, 1999, filed a Memorandum Opinion and Final Order. The Trial Court found that "T.C.A. § 13-7-208(c) permits, or grandfathers, the subject billboards as a non-conforming use." The Trial Court then found that "[t]he Defendant's City Ordinances, Article VII, Signs Regulations, 7.41, banning 'Off-premise Advertising Signs' is inapplicable . . . [because it] . . . is prospective only; therefore the ban does not apply to the subject billboards that were existing at the time of the Defendant's ban of billboards." Accordingly, the Trial Court ordered that the City of Johnson City issue the requested sign permits.

# Outdoor West v. Johnson City

## Discussion

Our review is *de novo* upon the record, accompanied by a presumption of the correctness of the findings of fact of the Trial Court, unless the preponderance of the evidence is otherwise. Rule 13(d), T.R.A.P.; *Davis v. Inman*, 974 S.W.2d 689, 692 (Tenn. 1998). The Trial Court's conclusions of law are subject to a *de novo* review with no presumption of correctness. *Ganzevoort v. Russell*, 949 S.W.2d 293 (Tenn. 1997).

The City of Johnson City appeals and raises one issue:

Whether the Trial Court erred in holding that the eleven (11) billboards for which applications for sign permits had been filed with the City of Johnson City, qualify for the protection pursuant [to] Tenn. Code Ann. § 13-7-208(d), thereby compelling the City of Johnson City to issue the necessary building permits.

As stated, the Trial Court based its holding on T.C.A. § 13-7-208(c), which provides:

(c) Industrial, commercial or other business establishments in operation and permitted to operate under zoning regulations or exceptions thereto in effect immediately preceding a change in zoning shall be allowed to expand operations and construct additional facilities which involve an actual continuance and expansion of the activities of the industry or business which were permitted and being conducted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners. No building permit or like permission for construction or landscaping shall be denied to an industry or business seeking to expand and continue activities conducted by that industry or business which were permitted prior to the change in zoning; provided, that there is a reasonable amount of space for such expansion on the property owned by such industry or business situated within the area which is affected by the change in zoning, so as to avoid nuisances to adjoining landowners.

A grandfather clause is defined as "an exception to a restriction that allows all those already doing something to continue doing it, even if they would be stopped by the new restriction." Black's Law Dictionary 629 (5<sup>th</sup> ed. 1979). A grandfather clause exception in a statute must be construed strictly against the party who seeks to come within the exception. *Teague v. Campbell County*, 920 S.W.2d 219, 221 (Tenn. Ct. App. 1995). Lamar as the party seeking the protection of the statute has the burden of proving that its sign is a pre-existing non-conforming use which

# Outdoor West v. Johnson City

qualifies for protection. *Lamar Advertising of Tennessee, Inc. v. City of Knoxville*, 905 S.W.2d 175, 176 (Tenn. Ct. App. 1995). In *Rives v. City of Clarksville*, 618 S.W.2d 502 (Tenn. Ct. App. 1981), this Court found that a plaintiff must make two threshold showings before invoking the protection of T.C.A. § 13-7-208: (1) that there has been a change in zoning (either adoption of zoning where none existed previously, or an alteration in zoning restrictions), and (2) that the use to which they put their land was permitted prior to the zoning change. There is no dispute that the first requirement was met as a result of the zoning change in 1988. Likewise, from the record before us, there appears to be no real dispute that the second requirement has also been met. The initial threshold requirements necessary to trigger T.C.A. § 13-7-208 are present.

The City states that the Trial Court's judgment in this case was "pursuant to Tenn. Code Ann. § 13-7-208(d)." The judgment, however, cites "T.C.A. §13-7-208(c)." Subsection (c) of that statute applies to situations in which the business seeks to expand, and provides that in such cases, the petitioner

... shall be allowed to expand operation and construct additional facilities which involve an actual continuance and expansion of the activities of the industry or business which were permitted and being conducted prior to the change in zoning . . . .

Subsection (d) applies to situations in which the business seeks to demolish and rebuild, and provides that in such cases, the petitioner

... shall be allowed to destroy present facilities and reconstruct new facilities necessary to the conduct of such industry or business subsequent to the zoning change . . . .

The City argues that subsection (d) applies, that Lamar has failed to prove that the destruction and reconstruction is "necessary to the conduct of such industry or business," and, therefore, the judgment of the Trial Court must be reversed. We agree with the City that subsection (d) appears to require a higher standard of proof by Lamar, since under that section, Lamar must show that the reconstruction is "necessary to the conduct of [the] industry or business." The record in this case is not clear as to whether Lamar plans for all of the existing signs to be demolished and new signs installed, thus implicating subsection (d), or whether, in some cases, the existing sign is to be retained but enlarged, thus implicating subsection (c). The sign permit applications indicate that eight 300 sq. ft. double-face signs are to be enlarged to 672 sq. ft. double-face signs. Three 672 sq. ft. single-face signs are to be converted to double-face signs. Mr. Richard Drummond testified for Lamar that the company plans to "modernize" the billboards to standardize the sizes, to "upgrade" for safety reasons and to "maximize our existing inventory to accept clients that request coverage in Johnson City." He testified that, depending on the location, and whether the traffic count would justify the decision, some signs would be taken down and changed from multiple wooden pole to unipole steel construction, which creates a larger and safer billboard, generates greater revenue, and is very expensive to install. Since at least *some* of the billboards are intended for demolition and replacement, we agree with the City that Lamar must show that the proposed action is "necessary

# Outdoor West v. Johnson City

to the conduct of the business.”

Among the reasons justifying the destruction and reconstruction, Mr. Drummond testified that the company loses revenue when property is sold and a sign taken down by new owners, because the zoning in Johnson City will not permit the sign being moved to another location. In such cases, all of Lamar's revenue is permanently lost. Also, the company will soon begin losing revenue due to the State tobacco settlement, which will prevent tobacco companies, representing 10 to 19% of Lamar's billboard clients, from advertising on billboards. Furthermore, advertisements for billboards are no longer painted individually. Instead, they are sent to the billboard company, i.e., Lamar, from the client in the form of plastic sheets, of uniform size and construction, and the billboards on which they are to be installed must be uniform to accept the ads. Lamar owns most of the billboards in Johnson City, and they must upgrade and maintain them according to prevailing industry standards in order to keep their advertising clients. We find the preponderance of this evidence shows that upgrading and/or replacing its billboards is necessary to the conduct of Lamar's business and reject the City's argument to the contrary.

We hold that Lamar has satisfied the requirements of both subsection (d) and subsection (c) of T.C.A. § 13-7-208. This being so, a determination of whether subsection (c) or subsection (d) is the controlling subsection is unnecessary under the facts of this case.

An Amicus Curiae Brief was filed by Scenic Tennessee, self-described as

an association of individuals and corporations committed to protecting and promoting Tennessee's scenic heritage by working with government and municipal agencies, experts in planning and zoning, and local communities to develop appropriate sign ordinances to protect this State's natural beauty from billboard blight.

Scenic America makes two related public policy arguments in support of the issue raised by the City of Johnson City. The organization says that the application of T.C.A. § 13-7-208, the grandfather statute, in this case “would yield a result contrary to the health, safety and welfare of the people of the City of Johnson City,” and that the statute “was not intended to allow the billboard industry to circumvent municipal ordinances developed for the protection and enhancement of communities throughout this State.” We recognize that the City of Johnson City, by enacting its 1988 Ordinance prohibiting construction of new billboards, has lawfully determined that the presence of billboards in that City is “contrary to the health safety and welfare of the people of . . . Johnson City.” However, T.C.A. § 13-7-208 recognizes a competing interest which the State of Tennessee has determined to protect, i.e., the right of businesses in Tennessee to continue those businesses, including the rights to expand and to demolish and rebuild on premises where they are already located, even though more restrictive zoning is enacted. We are not at liberty to ignore the State's statutorily declared legitimate interests in order to promote the City's legitimate, later-asserted regulatory interests. While we do not disagree with Scenic Tennessee's argument that the City of Johnson City has authority to regulate existing billboards, that regulation cannot contravene

# Outdoor West v. Johnson City

the provisions of T.C.A. § 13-7-208. Since T.C.A. § 13-7-208 clearly permits a business to demolish, rebuild, and expand so long as the requirements of that statute are satisfied, Scenic America's first argument must fail under T.C.A. § 13-7-208(c) and (d).

Scenic Tennessee next states that the grandfather clause does not apply to billboards because "billboards are not an 'establishment' within the meaning of Tennessee Code Annotated § 13-7-208." Scenic Tennessee contends that the legislature did not intend to include billboards in the class of business properties afforded the protection of the grandfather statute. We quote from Scenic's brief:

The statute does not define the term "establishment"; however, Black's Law Dictionary defines an establishment as "an institution or place of business, with its fixtures and organized staff." Moreover, while no Tennessee court has addressed the issue of whether a billboard is an "establishment," the Court of Appeals for New Mexico, in construing similar language contained in a zoning ordinance, has held that it is not. . . . The business "establishment" of Lamar Advertising with its fixtures and organized staff is located at Tri-City Airport Station, Blountville, Tennessee. Lamar Advertising is not seeking to expand its establishment as a result of changes in zoning, instead, it seeks to expand its billboards, a product of the establishment.

We have reviewed the legislative history of the grandfather statute and find nothing which supports such an existential view. The goal of the legislature was to protect established businesses from later-enacted municipal zoning which would exclude them. The billboards in this case are the business establishments of Lamar just as a parcel of land with folding tables set out on it may be the business establishment of a flea market. The home office is not the only, or even the primary, income-producing "business establishment." Additionally, Lamar's employees are on site at the billboards from time to time working on and at the billboards. These employees are working in furtherance of Lamar's business at that site.

It is not for this Court to re-write the grandfather statute so as to exclude one type of business from its protection while affording the protection to others. It is an impermissible stretch for this Court to suppose that the legislature intended to protect business warehouses and other business buildings from later-enacted zoning while excluding business signs, as "[t]he most basic principle of statutory construction is to ascertain and give effect to the Legislative intent without unduly restricting or expanding a statute's coverage beyond its intended scope." See, *Worley v. Weigels, Inc.*, 919 S.W.2d 589, 593 (Tenn. 1996). Each billboard is one of Lamar's places of business. While Scenic America's argument on the issue raised by the City of Johnson City is well made, it is unsupported by the law of this State and unpersuasive.

# Outdoor West v. Johnson City

## Conclusion

The judgment of the Trial Court is affirmed and this cause is remanded to the Trial Court for such further proceedings as may be required, if any, consistent with this Opinion, and for collection of the costs below. The costs on appeal are assessed against the the City of Johnson City.

**PUBLIC CHAPTER NO. 76**

**SENATE BILL NO. 593**

**By Southerland**

**Substituted for: House Bill No. 750**

**By Harmon**

AN ACT to amend Tennessee Code Annotated, Title 54, Chapter 21, relative to billboard regulation and control.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. Tennessee Code Annotated, Section 54-21-102, is amended by inserting the following new definition to be appropriately designated:

( ) "Changeable message sign" means an off-premise advertising device which displays a series of messages at intervals by means of digital display or mechanical rotating panels;

SECTION 2. Tennessee Code Annotated, Title 54, Chapter 21, Part 1, is amended by adding the following language as a new, appropriately designated section:

§ 54-21-122. (a) Changeable message signs may be double faced, back to back or "V"- type signs.

(b) Changeable message signs with a digital display which meet all other requirements pursuant to this chapter are permissible subject to the following restrictions:

(1) The message display time shall remain static for a minimum of eight (8) seconds with a maximum change time of two (2) seconds;

(2) Video, continuous scrolling messages and animation are prohibited; and

(3) The minimum spacing of such changeable message signs with a digital display on the interstate system or controlled access highways is two thousand feet (2000 ft).

SECTION 3. This act shall take effect upon becoming a law, the public welfare requiring it

**PASSED: April 19, 2007**





FHWA- Guidance on Off-Premise Changeable Message Signs



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

# Memorandum

Subject: **INFORMATION:** Guidance on  
Off-Premise Changeable Message Signs

Date: September 25, 2007

From: Original signed by:  
Gloria M. Shepherd  
Associate Administrator for  
Planning, Environment, and Realty

In Reply Refer To:  
HEPR -20

To: Division Administrators  
Attn: Division Realty Professionals

### Purpose

The purpose of this memorandum is to provide guidance to Division offices concerning off-premises changeable message signs adjacent to routes subject to requirements for effective control under the Highway Beautification Act (HBA) codified at 23 U.S.C. 131. It clarifies the application of the Federal Highway Administration (FHWA) July 17, 1996 memorandum on this subject. This office may provide further guidance in the future as a result of additional information received through safety research, stakeholder input, and other sources.

Pursuant to 23 CFR 750.705, a State DOT is required to obtain FHWA Division approval of any changes to its laws, regulations, and procedures to implement the requirements of its outdoor advertising control program. A State DOT should request and Division offices should provide a determination as to whether the State should allow off-premises changeable electronic variable message signs (CEVMS) adjacent to controlled routes, as required by our delegation of responsibilities under 23 CFR 750.705(j). Those Divisions that already have formally approved CEVMS use on HBA controlled routes, as well as those that have not yet issued a decision, should re-evaluate their position in light of the following considerations. The decision of the Division should be based upon a review and approval of a State's affirmation and policy that: (1) is consistent with the existing Federal/State Agreement (FSA) for the particular State, and (2) includes but is not limited to consideration of requirements associated with the duration of message, transition time, brightness, spacing, and location, submitted for FHWA approval, that evidence reasonable and safe standards to regulate such signs are in place for the protection of the motoring public. **Proposed laws, regulations, and procedures that would allow permitting CEVMS subject to acceptable criteria (as described below) do not violate a prohibition against "intermittent" or "flashing" or "moving" lights as those terms are used in the various FSAs that have been entered into during the 1960s and 1970s.**

# FHWA Guidance on Off-Premise Changeable Message Signs <sup>2</sup>

This Guidance is applicable to conforming signs, as applying updated technology to nonconforming signs would be considered a substantial change and inconsistent with the requirements of 23 CFR 750.707(d)(5). As noted below, all of the requirements in the HBA and its implementing regulations, and the specific provisions of the FSAs, continue to apply.

## **Background**

The HBA requires States to maintain effective control of outdoor advertising adjacent to certain controlled routes. The reasonable, orderly and effective display of outdoor advertising is permitted in zoned or unzoned commercial or industrial areas. Signs displays and devices whose size, lighting and spacing are consistent with customary use determined by agreement between the several States and the Secretary, may be erected and maintained in these areas (23 U.S.C. § 131(d)). Most of these agreements between the States and the Secretary that determined the size, lighting and spacing of conforming signs were signed in the late 1960's and the early 1970's.

On July 17, 1996, this Office issued a Memorandum to Regional Administrators to provide guidance on off-premise changeable message signs and confirmed that FHWA has "always applied the Federal law 23 U.S.C. 131 as it is interpreted and implemented under the Federal regulations and individual Federal/State agreements." It was expressly noted that "in the twenty-odd years since the agreements have been signed, there have been many technological changes in signs, including changes that were unforeseen at the time the agreements were executed. While most of the agreements have not changed, the changes in technology require the State and FHWA to interpret the agreements with those changes in mind". The 1996 Memorandum primarily addressed tri-vision signs, which were the leading technology at the time, but it specifically noted that changeable message signs "regardless of the type of technology used" are permitted if the interpretation of the FSA allowed them. Further advances in technology and affordability of LED and other complex electronic message signs, unanticipated at the time the FSAs were entered into, require the FHWA to confirm and expand on the principles set forth in the 1996 Memorandum.

The policy espoused in the 1996 Memorandum was premised upon the concept that changeable messages that were fixed for a reasonable time period do not constitute a moving sign. If the State set a reasonable time period, the agreed-upon prohibition against moving signs is not violated. Electronic signs that have stationary messages for a reasonably fixed time merit the same considerations.

## **Discussion**

Changeable message signs, including Digital/LED Display CEVMS, are acceptable for conforming off-premise signs, if found to be consistent with the FSA and with acceptable and approved State regulations, policies and procedures.

# FHWA Guidance on Off-Premise Changeable Message Signs<sup>3</sup>

This Guidance does not prohibit States from adopting more restrictive requirements for permitting CEVMS to the extent those requirements are not inconsistent with the HBA, Federal regulations, and existing FSAs. Similarly, Divisions are not required to concur with State proposed regulations, policies, and procedures if the Division review determines, based upon all relevant information, that the proposed regulations, policies and procedures are not consistent with the FSA or do not include adequate standards to address the safety of the motoring public. If the Division Office has any question that the FSA is being fully complied with, this should be discussed with the State and a process to change the FSA may be considered and completed before such CEVMS may be allowed on HBA controlled routes. The Office of Real Estate Services is available to discuss this process with the Division, if requested.

If the Division accepts the State's assertions that their FSA permits CEVMS, in reviewing State-proposed regulations, policy and procedures for acceptability, Divisions should consider all relevant information, including but not limited to duration of message, transition time, brightness, spacing, and location, to ensure that they are consistent with their FSA and that there are adequate standards to address safety for the motoring public. Divisions should also confirm that the State provided for appropriate public input, consistent with applicable State law and requirements, in its interpretation of the terms of their FSA as allowing CEVMS in accordance with their proposed regulations, policies, and procedures.

Based upon contacts with all Divisions, we have identified certain ranges of acceptability that have been adopted in those States that do allow CEVMS that will be useful in reviewing State proposals on this topic. Available information indicates that State regulations, policy and procedures that have been approved by Divisions to date, contain some or all of the following standards:

- Duration of Message
  - Duration of each display is generally between 4 and 10 seconds – 8 seconds is recommended.
- Transition Time
  - Transition between messages is generally between 1 and 4 seconds – 1-2 seconds is recommended.
- Brightness
  - Adjust brightness in response to changes in light levels so that the signs are not unreasonably bright for the safety of the motoring public.
- Spacing
  - Spacing between such signs not less than minimum spacing requirements for signs under the FSA, or greater if determined appropriate to ensure the safety of the motoring public.
- Locations
  - Locations where allowed for signs under the FSA except such locations where determined inappropriate to ensure safety of the motoring public.

# FHWA Guidance on Off-Premise Changeable Message Signs<sup>4</sup>

Other standards that States have found helpful to ensure driver safety include a default designed to freeze a display in one still position if a malfunction occurs; a process for modifying displays and lighting levels where directed by the State DOT to assure safety of the motoring public; and requirements that a display contain static messages without movement such as animation, flashing, scrolling, intermittent or full-motion video.

## **Conclusion**

This Memorandum is intended to provide information to assist the Divisions in evaluating proposals and to achieve national consistency given the variations in FSAs, State law, and State regulations, policies and procedures. It is not intended to amend applicable legal requirements. Divisions are strongly encouraged to work with their State in its review of their existing FSAs and, if appropriate, assist in pursuing amendments to address proposed changes relating to CEVMS or other matters. In this regard, our Office is currently reviewing the process for amending FSAs, as established in 1980, to determine appropriate revisions to streamline requirements while continuing to ensure there is adequate opportunity for public involvement.

For further information, please contact your Office of Real Estate Point of Contact or Catherine O'Hara ([Catherine.O'Hara@dot.gov](mailto:Catherine.O'Hara@dot.gov)).

Local Regulations of Dynamic  
Billboards and Signs

**Local Regulation of Dynamic Billboards and Signs:  
Bridging Research, Planning Policy, and Law**

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Nashville, Tennessee

# Local Regulations of Dynamic Billboards and Signs

## Contents

I.	Five pillars of dynamic sign regulation .....	1
A.	The authority of local government to regulate signs more restrictively than state and federal governments has been a pervasive and intended part of the overall system from the outset.....	1
B.	A legally sufficient factual basis exists to adopt significant limits (or even bans) on dynamic signs. ....	1
C.	Picking the best policy for your community unavoidably involves the degree of risk-aversion, and aesthetic and policy preferences, of your elected officials.....	3
D.	A well-tred “middle path” –a general ban on signs that change, with a public information exception – is vulnerable to a First Amendment attack.....	4
E.	Nonconforming use statutes have an impact on the ability of lawfully-erected billboards to vanish.....	5
<del>II</del> <del>VII</del>	Modes of regulation.....	6
A.	Unsafe (and unlawful) at any speed: Complete or near-complete bans .....	6
1.	Maple Valley, WA (2003): a complete ban.....	6
2.	St. Croix County, WI (June 19, 2007): a ban with a time-and-temperature exception .....	7
3.	Bloomington, MN (2006): small steps short of a full ban.....	9
B.	Constitutional safety, for that city whose council just can’t bring itself to “dumb down” that neat sign outside City Hall.....	13
1.	Minnetonka, MN’s proposed new approach to off-premise dynamic displays: citywide permission to operate, under distraction-reducing and proliferation-reducing conditions .....	13

# Local Regulations of Dynamic Billboards and Signs

- C. Consolidating advertising in a few well-placed dynamic signs ..... 16
  - 1. Minnetonka, MN’s “incentives” provision ..... 16
- D. A Euclidean approach: allowing flashy signs in one or two zoning overlay districts ..... 19
  - 1. Minneapolis, MN’s “downtown opportunity billboard district” ..... 19
  - 2. East Dundee, IL’s video display overlay district and static electronic display overlay district (2006)..... 20
- E. *Encouraging* certain kinds of dynamic signs through regulation .. 22
  - 1. Cuyahoga Falls, OH (2003)..... 22
- ~~III~~ ~~IV~~ At the “micro” level: recurring regulatory issues for dynamic signs ..... 25
  - A. There are seven key regulatory issues regarding dynamic signs: (1) the appropriate duration of dynamic messages, (2) whether, and under what conditions, to permit motion, animation, and video messages, (3) the appropriate level of brightness of dynamic signs, (4) the appropriate placement and spacing of signs, (5) whether to treat on-site and off-site dynamic signs differently, (6) the appropriate size of dynamic signs, and (7) the appropriate text size for dynamic signs. .... 25
  - B. Dynamic billboards cause driver distraction and pose risks to public safety..... 25
  - C. Regulatory options for duration of dynamic messages: what is the appropriate time interval between message changes?..... 26
  - D. Regulatory options for motion, animation, and video messages. .... 27
  - E. Regulatory options for the brightness of dynamic signs and external illumination..... 28
  - F. Regulatory options for sign placement and spacing..... 29
  - G. Regulatory distinctions between on-site and off-site signs ..... 31
  - H. Regulatory options for the size of signs..... 32



# Local Regulations of Dynamic Billboards and Signs

I. Regulatory options for the text size of dynamic signs ..... 32

# Local Regulations of Dynamic Billboards and Signs

## I. Five pillars of dynamic sign regulation

A. **The authority of local government to regulate signs more restrictively than state and federal governments has been a pervasive and intended part of the overall system from the outset.**

a. The federal Highway Beautification Act (1965) was intended to increase respect for local communities, not to ignore them. As President Johnson stated when articulating to Congress the goals of his initiative, “The roads themselves must reflect, in location and design, increased respect for the natural and social integrity *and unity of the landscape and communities through which they pass.*” See Special Message to the Congress on Conservation and the Restoration of Natural Beauty, 1 Pub. Papers 159 (Feb. 8, 1965) (recommending legislation to control highway billboards) (emphasis added).

b. The existence of state regulations does not necessarily preclude local regulation. In denying the plaintiffs’ motion for a preliminary injunction in *Clear Channel Outdoor v. City of Minnetonka*, Court File No. 27-CV-06-23485 (Henn. Co. Dist. Ct. Jan. 30, 2007), Judge Lloyd Zimmerman stated that “the record does not demonstrate that the Minnesota legislature intended to occupy the field of outdoor billboard regulation, and preclude municipalities from imposing more restrictive rules. The relevant Minnesota statutes discussed above specifically contemplate more restrictive local control.” *Id.* at 19.

B. **A legally sufficient factual basis exists to adopt significant limits (or even bans) on dynamic signs.**

a. Long before large LED signs appeared, courts recognized that billboards can distract drivers, and that cities can regulate (or even ban) billboards for that reason. “No empirical studies are necessary for reasonable people to conclude that billboards pose a traffic hazard, since by their very nature they are designed to distract drivers and

# Local Regulations of Dynamic Billboards and Signs

their passengers from maintaining their view of the road.” *Major Media of the Southeast v. City of Raleigh*, 621 F. Supp. 1446, 1450 (E.D.N.C. 1985).

- (i) As Judge Diana E. Murphy wrote for the Eighth Circuit in August 2006 regarding an attempt to install billboards that would have completely changed their display every six to ten seconds (though “trivision” technology rather than digital technology), “distracting roadside billboards of the type Advantage sought to erect could also pose real danger to both motorists and nearby pedestrians.” *Advantage Media LLC v. City of Eden Prairie*, 456 F.3d 793, 803 (8th Cir. 2006).
- b. As explained in greater detail in the last half of this report, in this field – like many others – conclusive scientific proof is elusive, for reasons that need not preclude thoughtful regulation.
- c. Legitimate studies of sign safety (conducted and sponsored by those without a financial interest in a particular answer) form pieces of a broader puzzle. When fit together properly, these pieces support the conclusion that the replacement of static signs with frequently-changing dynamic signs can create an added safety hazard.
  - (i) There is reason to believe that billboards tend to distract drivers.
  - (ii) There is reason to believe that *dynamic* billboards tend to distract drivers to a greater degree.
  - (iii) Drivers are distracted to a dangerous degree if their eyes are diverted from a highway for even two seconds (or, when congestion may require braking, for  $\frac{3}{4}$  of a second)
  - (iv) Certain types of dynamic signs can create “the Zeigarnik effect” – named for a human behavioral pattern. When a sign appears to present a visual

# Local Regulations of Dynamic Billboards and Signs

story or message, a driver may be motivated, or even compelled, to watch the story through to completion.

- d. In affirming the constitutionality of a flat ban on “electronic message center type signs,” the City of Concord, New Hampshire’s “legislative conclusion” that such signs are likely to prove distracting to drivers to the extent the signs are visible from roadways, thereby adversely affecting traffic safety, is hardly unreasonable, and would appear to be supported by common sense.” *Nasar Jewelers, Inc. v. City of Concord, New Hampshire*, Civil No. 06-CV-400-SM at 9 (D.N.H. June 25, 2007) (citing *Chapin Furniture Outlet v. Town of Chapin*, 2006 WL 2711851, \*4 (D.S.C. Sept. 20, 2006) (“Contrary to Plaintiff’s contentions, the Town’s judgment that flashing or scrolling signs constitute a traffic hazard and are inconsistent with the rural community aesthetic is not unreasonable”)).

**C. Picking the best policy for your community unavoidably involves the degree of risk-aversion, and aesthetic and policy preferences, of your elected officials.**

- a. Identifying a safety risk is just the beginning – cities must also consider how *averse* they are to that level of risk.
- b. Sign regulation can and does involve values other than safety – such as aesthetic concerns (which are capable of cutting either way on this subject), communication, wayfinding, and creativity.
- c. As Judge McAuliffe also concluded in *Nasar Jewelers*, “And, while taste and aesthetic sensitivity are debatable topics, it would seem well within the City’s legitimate discretion to conclude that bright, colorful, electronic signs that change color and messages – or signs similar to those, are inconsistent with the aesthetic values the City seeks to promote.” *Id., slip op.* at 10.

# Local Regulations of Dynamic Billboards and Signs

- D. A well-tred “middle path” –a general ban on signs that change, with a public information exception – is vulnerable to a First Amendment attack.
- a. Following the lead of federal and state laws, many communities have carved out exceptions to allow dynamic signs that present “public service information,” “electronic message centers,” or signs owned by governments or non-profits.
  - b. However, in the eyes of *some* judges:
    - (i) A sign regulation is only as constitutional as its exceptions (*Metromedia v. City of San Diego*, 453 U.S. 490, 540 (1981) (plurality)), and
    - (ii) the constitutional requirement of content-neutrality should be taken literally, see *Advantage Media LLP v. City of Hopkins*, 379 F.Supp.2d 1030, 1040-41 (D. Minn. 2005) (Davis, J.); *Clear Channel Outdoor, Inc. v City of St. Paul*, No. 02-1060 (DWF/AJB), 2003 WL 21857830 (D. Minn. Aug. 4, 2003) (Frank, J.), so that
    - (iii) exceptions for dynamic signs displaying public service information may violate the requirement of content-neutrality because their enforcement depends on what a sign says.
  - c. Even when content-neutrality is established, exceptions allowing the government itself to “participate in the vice” complicate its ability to justify treating such signs as harmful. See *Rubin v. Coors Brewing Co.*, 514 U.S. 476, 489 (1995) (there was “little chance” that the speech restriction could have directly and materially advanced its aim, “while other provisions of the same Act directly undermined and counteracted its effects”); *Lawson v. City of Kankakee, Ill.*, 81 F.Supp.2d 930, 934 (C.D.Ill. 2000) (“If the City were so worried that signs on terraces looked bad, it would not have chosen to place a sign

# Local Regulations of Dynamic Billboards and Signs

there itself. Surely its own sign is no less unattractive than Plaintiff's.”).

## E. The impact of nonconforming use statutes.

- a. The original Highway Beautification Act was enacted based on the expectation that nonconforming billboards would eventually fade away. Charles Floyd, “A Requiem for the Highway Beautification Act,” *APA Journal* (Autumn 1982).
- b. Some states have laws that –
  - (i) Withdraw authority to amortize nonconforming uses;
  - (ii) Require cities to allow lawful nonconforming uses to be “improved” (but not expanded) and destroyed uses to be rebuilt if a building permit is timely sought, subject to an exception allowing the protection of health, safety or welfare; and/or
  - (iii) Require cities that condition official controls on the removal of a lawful nonconforming use to pay “just compensation” for the value of the nonconforming use.
- c. These statutes take prior nonconforming billboards off the endangered list, and leave cities with few options but to allow their owners to give them an extended life.
- d. The result: to get such signs to disappear may require agreement (between the sign company and the fee owner, or local regulators), including through locally-created incentives.
- e. However, the Virginia Supreme Court has concluded that the replacement of a static billboard face with a digital billboard face constitutes an “enlargement” of the billboard for purposes of nonconforming use law, even if the area of the face itself is no larger than the area of the face of the original static sign. *Adams Outdoor*

# Local Regulations of Dynamic Billboards and Signs

*Advertising, L.P. v Board of Zoning Appeals of City of Virginia*, --- S E.2d ----, 2007 WL 1651100 (Va. June 8, 2007).

## II. Modes of regulation

- a. Whether and how to regulate dynamic signs are discretionary choices. Those choices should be made in light of the pillars of dynamic sign regulation and the local government's cost-benefit analysis of safety, aesthetics, planning, and other policy considerations.
- b. Local governments that have devoted the most attention to this subject recently have taken approaches that tend to fall within six discrete "modes" of regulation, ranging from an absolute or near-absolute prohibition of dynamic signs to encouraging dynamic signs.

### A. Unsafe (and unlawful) at any speed: Complete or near-complete bans

#### 1. Maple Valley, WA (2003): a complete ban

- a. ORDINANCE NO. O-03-228, Amending Title 18 of the Maple Valley Municipal Code relating to signs

#### D. PROHIBITED SIGNS:

The following signs or displays are prohibited in all zones within the City.

\* \* \*

3. Animated signs or displays;

\* \* \*

6. Electronic changeable message signs,<sup>[1]</sup> except for temporary signs required by government agencies for

---

<sup>1</sup> DEFINITIONS: \* \* \* 24. Electronic Changeable Message Sign: An electronically activated sign whose message content or display, either whole or in part, may be changed by means of electrical, electronic or computerized programming. A sign

# Local Regulations of Dynamic Billboards and Signs

road and street repairs, and similar activities. This prohibition includes, but is not necessarily limited to, signs which include animation, flashing, traveling, or scrolling messages or displays<sup>[2]</sup>;

7 Flashing signs<sup>[3]</sup> or displays,;

\* \* \*

12. Moving signs;

\* \* \*

14. Festoons, pennants, or blinking lights;

**2. St. Croix County, WI (June 19, 2007): a ban with a time-and-temperature exception**

a. St. Croix County Code of Ordinances/Land Use and Development

b. Findings of Fact (§17.65(A) (1) (a)(3, 7)):

(i) "Signs can create safety hazards that threaten the public health, safety or welfare. Such a safety

---

or portion of a sign on which the message or display is an electronic indication of fuel price shall be considered an Electronic Changeable Message Sign. A sign on which the sole message or display is an electronic indication of time and/or temperature shall be considered an Electronic Changeable Message Sign. Drive-through Business/menu signs are not considered Electronic Changeable Message Signs.

<sup>2</sup> DEFINITIONS: \* \* \* 72. Scrolling Displays: The vertical movement of a static message or display on an electronic changeable message sign.

<sup>3</sup> DEFINITIONS: \* \* \* 29. Flashing Sign: A sign of which any portion of it changes light intensity, switches on and off in a constant pattern, or contains moving parts or the optical illusion of motion caused by use of electrical energy or illumination, with a display that appears for less than one and one-half consecutive seconds.



# Local Regulations of Dynamic Billboards and Signs

threat is particularly great for signs that are structurally inadequate, or that may confuse or distract drivers or pedestrians, or that may interfere with official directional or warning signs.”

- (ii) “With one narrow exception, only static signs (which change, if at all, only on rare occasions when they are repainted or covered with a new picture) constitute a customary use of signage in the County [4] The only non-static signs that constitute a customary use of signage in the County are components of on-premise signs for which frequent changes are necessary for the purpose of updating numerical hour-and-minute, date, and temperature information. Such changes are unique because their accuracy depends upon their ability to frequently change, and because in their customary use such signs are apt to distract drivers or pedestrians to a dangerous degree than other types of non-static signs.”

- c. Prohibitions (§ 17.65 (C) (3)):
- d. Signs and sign components and elements of faces of signs shall not flash, move, travel or use animation.
- e. Unless a sign’s only illumination is external and uncolored, the following additional regulations shall also apply to that sign:

---

<sup>4</sup> St Croix County’s findings regarding “customary use” have the intended effect of causing “non-customary use” signs that are adjacent to federal-aid highways to also violate the federal Highway Beautification Act, even if they are in a commercial or industrial zone. See 23 U.S.C. § 131 (d) (“Whenever a bona fide State, county, or local zoning authority has made a determination of customary use, such determination will be accepted in lieu of controls by agreement in the zoned commercial and industrial areas within the geographical jurisdiction of such authority.”) and Wisc. Trans. R. 201.20 (5).

# Local Regulations of Dynamic Billboards and Signs

- (i) No illuminated off-premises sign which changes in color or intensity of artificial light at any time while the sign is illuminated shall be permitted.
- (ii) No illuminated on-premises sign which changes in color or intensity of artificial light at any time when the sign is illuminated shall be permitted, except one for which the changes are necessary for the purpose of correcting hour-and-minute, date, or temperature information.
- (iii) A sign that regularly or automatically ceases illumination for the purpose of causing the color or intensity to have changed when illumination resumes shall fall within the scope of the prohibitions of par. f. 1) and 2) above.
- (iv) The scope of [this subsection's] prohibitions include, but are not limited to, any sign face that includes a video display, LED lights that change in color or intensity, 'digital ink,' and any other method or technology that causes the sign face to present a series of two or more images or displays.

### 3. **Bloomington, MN (2006): small steps short of a full ban**

- a. Bloomington Zoning Code §§ 19.66 and 19.100-108.
- b. Findings (§ 19.100):
  - (i) "With respect to electronic signs, including video display signs, the City Council finds that they are highly visible from long distances and at very wide viewing angles both day and night and are designed to catch the eye of persons in their vicinity and hold it for extended periods of time. If left uncontrolled, electronic signs, including video display signs, constitute a serious traffic safety threat." A set of enumerated reports and studies "reveal that electronic signs are highly distracting to drivers and that driver distraction

# Local Regulations of Dynamic Billboards and Signs

continues to be a significant underlying cause of traffic accidents.”

- c. Prohibitions (§§ 19.66(b), and 19.108 (h) (4-6, 8)):
- d. **Billboards** (i.e. advertising signs which have an area exceeding 150 square feet) **which utilize electronic display techniques-**
  - (i) **must have a minimum duration of 20 minutes and must be a static display;**
  - (ii) cannot move or appear to move;
  - (iii) cannot fluctuate in light intensity or use intermittent, strobe or moving light to create the illusion of movement;
  - (iv) are only permitted in certain commercial and industrial districts; and
  - (v) must meet specified standards prohibiting non-instantaneous transitions, limiting brightness, and requiring dimmer controls.
- e. **Video display signs** (i.e. a sign that changes its message or background in a manner or method of display characterized by motion or pictorial imagery, which may or may not include text and depicts action or a special effect to imitate movement, the presentation of pictorials or graphics displayed in a progression of frames which give the illusion of motion, but not including electronic changeable copy signs as defined below) that are not billboards-
  - (i) **must not be visible from residential property or from any motored way,**
  - (ii) are excluded from residential, conservation and bluff protection zones; and

# Local Regulations of Dynamic Billboards and Signs

- (iii) must be set back 100 feet from an abutting residential district and 35 feet from other electronic changeable copy signs.
- f. **Electronic graphic display signs** (i.e. a sign or portion thereof that displays electronic, static images, static graphics or static pictures, defined by a small number of matrix elements using different combinations of LEDs, fiber optics, light bulbs or other illumination devices within the display area where the message change sequence is accomplished immediately or by means of fade, repixelization or dissolve modes) that are not billboards-
  - (i) **cannot change more frequently than every 20 minutes;**
  - (ii) may be seen from a motored way, but must not be visible from residential property if within 150 feet;
  - (iii) are excluded from residential, conservation, and bluff protection zones; and
  - (iv) must be set back 100 feet from an abutting residential district and 35 feet from other changeable copy signs.
- g. **Electronic changeable copy signs** (i.e. a sign or portion thereof that displays electronic, non-pictorial, text information in which each alphanumeric character, graphic, or symbol is defined by a small number of matrix elements using different combinations of LEDs, fiber optics, light bulbs or other illumination devices within the display area, but not including time-and-temperature signs as defined below) that are not billboards-
  - (i) **may include up to ten words of text, but not pictures;**

# Local Regulations of Dynamic Billboards and Signs

- (ii) cannot change more frequently than every 8 seconds (in a non-residential area), and every one hour in a residential area;
  - (iii) may be seen from a motored way, but must not be visible from residential property if within 150 feet;
  - (iv) may in theory appear in a residential zone, but not in a conservation or bluff protection zone;
  - (v) must be set back 100 feet from an abutting residential district and 35 feet from other changeable copy signs.
- h. **Time and temperature signs** (i.e. a sign which displays exclusively current time and temperature information) that are not billboards –
- (i) Cannot change more frequently than every 2 seconds;
  - (ii) No visibility or special setback limits; and
  - (iii) are excluded from residential, conservation, and bluff protection zones.
4. **Judge Zimmerman's interim compromise in *Clear Channel Outdoor v. City of Minnetonka*.**
- a. In his order on reconsideration, Judge Zimmerman ruled that, on an interim basis, the City could not interfere with the operation of the two LED signs installed by Clear Channel "during daytime hours, to the extent that (a) the electronic messages on the sign change no more than once each hour (b) the brightness, color, and illumination of the signs are calibrated by Clear Channel to the minimal level of illumination equivalent to conventional non-LED electronic billboard signs. Pending the outcome of this litigation, Clear Channel is enjoined from operating the two signs before and after day-light hours."

# Local Regulations of Dynamic Billboards and Signs

## B. Constitutional safety, for that city whose council just can't bring itself to "dumb down" that neat sign outside City Hall

### 1. Minnetonka's new approach to off-premise dynamic displays: citywide permission to operate, under distraction-reducing and proliferation-reducing conditions

#### a. The provisions that have been replaced:

(i) [in the criteria in subd. 4 for a monument identification sign], "7) *message centers/time and temperature displays permitted* but the maximum area for display is 50 percent of the potential copy and graphic area of the monument identification sign."

(ii) [in the prohibitions section], "revolving and moving signs *except electronic message center/time and temperature display signs according to subdivision 4* and search lights according to subdivision 8," and "flashing, blinking or animated signs including but not limited to traveling lights or any other means not providing constant illumination *except electronic message center/time and temperature display signs according to subdivision 4* and search lights according to subdivision 8."

(iii) The City's definition of "flashing sign" is very broad, extending the ban to signs on which illumination is not kept stationary or constant in intensity and color at all times when such sign is in use." §300.02 (117).

b. The new prohibition: "signs with dynamic displays **except** search lights under subdivision 8 and **those allowed under subdivision 14;**"

#### c. New subsection 14 ("Dynamic Displays")

a) Findings. Studies show that there is a correlation between dynamic displays on signs and the distraction of

# Local Regulations of Dynamic Billboards and Signs

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**

# Local Regulations of Dynamic Billboards and Signs

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<sup>[5]</sup> 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<sup>[6]</sup> 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

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<sup>5</sup> The Minnetonka Planning Commission has recommended that the City Council consider increasing the percentage of permitted dynamic area on the sign face above the 35 percent proposed by staff. The Commission also recommended that the Council not preclude the remaining percentage from being electronic (so long as it is permanent and does not in fact change electronically).

<sup>6</sup> The Planning Commission also recommended that the City Council consider reducing the minimum duration below the 20 minutes proposed by staff.



# Local Regulations of Dynamic Billboards and Signs

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;

## C. Consolidating advertising in a few well-placed dynamic signs

### 1. Minnetonka's "incentives" provision

#### a. Purposes and Findings:

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

# Local Regulations of Dynamic Billboards and Signs

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.**

- b. **Criteria for issuance of an enhanced dynamic signage permit:**
- c. (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.

# Local Regulations of Dynamic Billboards and Signs

(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

# Local Regulations of Dynamic Billboards and Signs

display permit is not required to substitute a different sign for the one that no longer exists.

d. **The benefits of an enhanced dynamic display permit:**

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.

**D. A Euclidean approach: allowing flashy signs in one or two zoning overlay districts**

**1. Minneapolis, MN's "downtown opportunity billboard district"**

a. The City's "Downtown 2010 Entertainment Policy" noted that the policy's goals would be furthered by steps to "create street level excitement in the Entertainment District. A successful urban entertainment district requires a street level environment that is visually exciting and that encourages pedestrian flow between various attractions."

b. Minneapolis City Code § 544.60. Opportunity billboard districts, provides:

(a) Establishment and restrictions. This section establishes the following opportunity billboard districts:

\* \* \*

(2) Downtown opportunity billboard district. The downtown opportunity billboard district shall comprise the area bounded by the Mississippi River, I-35W, I-94, and I-394/Third Avenue North (extended to the river), except that in no case shall a sign or billboard be constructed or structurally altered along or within three hundred (300) feet of either side of Nicollet Avenue

# Local Regulations of Dynamic Billboards and Signs

between Washington Avenue and Ninth Street South, between LaSalle Avenue and Marquette Avenue between Ninth Street South and Grant Street, or north of Washington Avenue. No advertising sign or billboard shall be constructed or structurally altered within the downtown opportunity billboard district except as provided in this section and subject to all other applicable regulations of this zoning ordinance.

- c. Minneapolis City Code § 544.20 (13). General provisions - Flashing signs, provides:

Flashing, blinking or animated signs, including but not limited to traveling lights or other means not providing constant illumination, shall be prohibited **except in the downtown opportunity billboard district. Such signs shall be allowed in the downtown opportunity billboard district, provided flashing signs containing changing written messages shall be limited to the news, weather, time or other public service messages, and provided further that the vertical dimension of such changing written message shall not exceed four (4) feet.**

## 2. East Dundee, IL's video display overlay district and static electronic display overlay district (2006)

- a. James Carlini, one of the Trustees of the Village of East Dundee, has characterized sign ordinances as a "horse-and-buggy bridle on business," and has advocated that local governments should "turn on profits by turning on the lights." James Carlini, "Electronic Signs for Municipalities: Las Vegas or Lost Revenues?" Wisconsin Technology Network, online edition, 05/17/06.
- b. Last year East Dundee amended its sign ordinance in the following respects:
  - (i) In the East Side Commercial Overlay District, *"for new car dealerships, multi-tenant retail centers and amusement establishments only,* the

# Local Regulations of Dynamic Billboards and Signs

freestanding sign permitted” on a parcel “may contain a fully electronic message display consisting of words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means, *including animated graphics and video*, subject to the following: (a) the area of the electronic message shall not exceed 75 % of the sign area; and (b) the intensity of illumination and the movement of any illumination or the flashing, scintillating or varying of light intensity shall not constitute a traffic hazard as described in subsection 156.03(E)[<sup>7</sup>].” Ordinance No. 06-46, amending Code of Ordinances § 156.04 (E).

- (ii) In the Hilltop Commercial Overlay District, “*for new car dealerships, multi-tenant retail centers and amusement establishments only*, the freestanding sign may contain a *static electronic message display capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or electronic means*,” subject to the same 75 percent limit and traffic hazard limit as signs in the other overlay district, plus a requirement that “each message on the sign shall be displayed for a minimum of 10 seconds,” and “said messages shall change only through dissolve or fade transitions, or with the use of other subtle transitions and frame effects that do not have the appearance of moving text or images, but which may otherwise not have movement, or the appearance or optical illusion of

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<sup>7</sup> Under 156.03(E), “In order to assure traffic safety, no sign shall be erected, relocated or maintained in a manner as will, in the determination of the Building Official, (1) by reason of size, location, content, coloring or manner of illumination, obstruct the vision of drivers or obstruct or detract from the visibility or effectiveness of any traffic signal or control device on streets and roads within the village; or (2) make use of words, phrases, symbols, lights or characters, in a manner as to interfere with, mislead or confuse traffic.”

# Local Regulations of Dynamic Billboards and Signs

movement, of any part of the sign structure, design or pictorial segment of the sign, including movement of any illumination or the flashing, scintillating or varying of light intensity.” Ordinance No. 06-46, amending Code of Ordinances § 156.04 (F).

- (iii) Everywhere else in the Village, “flashing signs” shall be prohibited, “moving, rotating, or animated signs or signs creating the illusion of movement shall be prohibited,” and “illumination shall be constant in intensity and color, and shall not consist of flashing, animated, chasing, scintillating or other illumination conveying the sense of movement except for those signs that exhibit time and temperature . . . .” Ordinance No. 06-46, amending Code of Ordinances § 156.03 (F) and (G)(5).

## **E. *Encouraging certain kinds of dynamic signs through regulation***

### **1. Cuyahoga Falls, OH (2003)**

- a. Cuyahoga Falls’ 2003 overhaul of its sign ordinance is characterized as an “outside the box” approach by the planning consultant who drafted it, John Gann of Gann Associates. Gann believed that “the best solution to temporary clutter is permanent signs with designed-in readerboards or electronic message centers. Temporary signs exist because businesses and other sign users have a legitimate need to display temporary messages. Doing this on a permanent panel that is physically part of and visually integrated with a good permanent sign may be the most compatible way to do this.” Author’s Answers to Questions about “Sign Control in Cuyahoga Falls: Regulating Outside the Box” (July 2003 Zoning News), available on the American Planning Association website.
- b. § 1147.03 (C): Displays prohibited:
  - (i) d. Flashing signs.

# Local Regulations of Dynamic Billboards and Signs

- (ii) f. Moving signs.
- c. § 1147.06.A: Rules for Special Signs: Changeable Sign Areas
- (i) “1. *Sign Area Bonus for Inclusion in Permanent Sign.* To meet the need businesses and organizations have for timely and variable sign messages and also to prevent the clutter that can be created by portable signs, *the Permanent Sign Allowance of a property shall be increased as provided in Table 1147-4 if a changeable copy area or electronic message center, both as defined herein, of no less than 16 square feet is incorporated into a permanent non-portable Non-Surface Sign on the lot or building site.*”
  - (ii) Under Table 1147-4, the lawful surface area of a permanent sign – known as its “permanent sign allowance” – increases by 20 percent if “a changeable copy area or electronic message center is permanently part of a permanent non-portable sign conforming to 1147.06.A.
  - (iii) 2. *Single Electronic Message Center.* Electronic message centers shall be allowed only on a single Permanent Sign per lot or building site.
  - (iv) 3. *Integration into Sign.* Changeable copy areas and electronic message centers on permanent signs shall be part of the same sign panel as a non-changeable sign and shall be integrated into the face of such sign by use of a border or similar design treatment that provides a visual linkage to the rest of the sign.
  - (v) 4. *Maximum Area.* A changeable copy area or electronic message center, both as defined herein, shall be no more than 60 percent of the actual sign area of any permanent sign panel of which it is a part.



# Local Regulations of Dynamic Billboards and Signs

- (vi) 5. *On Temporary or Portable Signs.* No temporary or portable sign shall display a changeable copy area or electronic message center.

# Local Regulations of Dynamic Billboards and Signs

## III. At the “micro” level: recurring regulatory issues for dynamic signs

A. There are seven key regulatory issues regarding dynamic signs: (1) the appropriate duration of dynamic messages, (2) whether, and under what conditions, to permit motion, animation, and video messages, (3) the appropriate level of brightness of dynamic signs, (4) the appropriate placement and spacing of signs, (5) whether to treat on-site and off-site dynamic signs differently, (6) the appropriate size of dynamic signs, and (7) the appropriate text size for dynamic signs.

a. In assessing what regulatory options achieve their policy goals, local governments may consider the safety risks associated with dynamic signs and the costs and benefits of various regulatory options.

B. **Dynamic billboards cause driver distraction and pose risks to public safety.**

a. To assess the safety implications of dynamic and static signs, road safety scholars have examined (1) the relationship between static or dynamic signs and crash rates, (2) how drivers process information and limitations on their ability to process information, and (3) the factors contributing to driver distraction and the risk of crashes

b. In general, the results of these studies indicate that dynamic billboards cause driver distraction and driver distraction causes traffic accidents. Dynamic billboards, with their ability to display high resolution color images and changing and moving images, capture the attention of drivers and capture the attention of drivers for longer periods of time than static signs. Indeed, the billboard companies design dynamic billboards precisely for the purpose of capturing the attention of the public and maximizing profitability. When drivers are looking at dynamic billboards, they are distracted and distracted drivers increase the risk of crashes and pose problems for road safety and traffic operations. Driver distraction alone can be the cause of accidents. In addition, driver distraction interacts with roadway conditions, driving

# Local Regulations of Dynamic Billboards and Signs

environments, weather, and traffic conditions to cause accidents.

## C. Regulatory options for duration of dynamic messages: what is the appropriate time interval between message changes?

a. The implications of duration for safety: prior research indicates that the duration of dynamic messages has implications for safety:

- (i) Glances of two seconds or greater double the risk of crashes or near crashes
- (ii) Visual fixations on roadway signs decrease as route familiarity increases (but this decrease in visual fixations may not occur with signs that change messages)
- (iii) Dynamic billboards attract more glances and longer glances than static signs and the length of those longer glances (greater than .75 seconds) is close to the minimum perception-reaction time required for a driver to react to a slowing vehicle
- (iv) Signs with a visual story or message that carries for two or more frames are particularly distracting because drivers tend to focus on the message until it is completed rather than the driving task at hand
- (v) Due to the Zeigarnik effect (the psychological need to follow a task to its conclusion), the desire to see a message change or read a sequence of messages causes driver distraction and unsafe driving behavior like prolonged glances away from the road, slowing, and lane departure

b. Suggested regulatory goals and options

- (i) Minimize the Zeigarnik effect (the desire to see a message change) and the driver distraction associated with watching dynamic signs change by setting the duration of sign messages to minimize

# Local Regulations of Dynamic Billboards and Signs

the number of new messages seen by drivers. This can be calculated based on the length of time a sign is visible for particular driver's speed, speed limits, and traffic volume.

- (ii) Minimize the Ziegarnik effect by requiring a dark period between successive messages.
- (iii) Prohibit flashing, spinning, revolving transition methods that are distracting.
- (iv) Reduce driver distraction by prohibiting signs that require or induce drivers to watch a sign for several seconds, such as signs with visual stories, signs carrying messages that are delivered through a sequence of displays, flashing messages (or by limiting such signs to certain driving environments).
- (v) Reduce driver distraction by insuring that signs are conspicuous and legible.

## **D. Regulatory options for motion, animation, and video messages.**

- a. The implications of motion, animation, and video messages for safety: prior research indicates that:
  - (i) Video and tri-vision signs attract more long glances than static and scrolling text signs
  - (ii) Video and scrolling text signs received the longest average glance duration
  - (iii) Video signs entering into a driver's line of sight directly in front of the vehicle are very distracting
  - (iv) Electronic signs with moving images contribute to driver distraction for longer intervals than electronic signs with no movement
  - (v) Signs with a visual story or message that carries for two or more frames are particularly distracting

# Local Regulations of Dynamic Billboards and Signs

because drivers tend to focus on the message until it is completed rather than the driving task at hand

- (vi) Scrolling messages and sequences of messages increase driver distraction
- (vii) Flashing messages require more time to read and more time to comprehend and require more of the driver's time and attention.

## b. Suggested Regulatory Goals and Options

- (i) Minimize driver distraction by prohibiting video, tri-vision, scrolling text, flashing signs, or any other type of motion in dynamic signs or restricting motion to signs located in certain driving environments.
- (ii) Set a maximum motion time frame based on the length of time a sign is visible for particular driver's speed, speed limits, and traffic volume.
- (iii) Reduce driver distraction by prohibiting signs that require or induce drivers to watch a sign for several seconds, including signs with visual stories, signs carrying messages that are delivered through a sequence of displays, flashing messages.

## E. Regulatory options for the brightness of dynamic signs and external illumination.

- a. The implications of brightness for safety: brightness can distract drivers and impair their ability to perform driving tasks. Previous research indicates that that the brightness of dynamic signs can temporarily blind a driver or prompt a driver to look away from the light. Newer sign technologies permit dynamic signs to respond to ambient light conditions, raising additional concerns about the adequacy of those changing brightness levels.
- b. The challenges of brightness regulation: there is no objective definition of excessive brightness because the

# Local Regulations of Dynamic Billboards and Signs

appropriate level of brightness depends on the environment within which the sign operates. Accordingly, it is difficult to establish a uniformly applicable measure of brightness for all dynamic signs. In addition, the instruments that are used to measure brightness in the field are currently very expensive and it is difficult to measure brightness in the field. For all these reasons, the enforcement of any brightness regulations is challenging.

## c. Regulatory Options

- (i) City of Minnetonka: "No sign may be brighter than is necessary for clear and adequate visibility."
- (ii) Prohibit brightness that impairs the vision of a driver or promotes driver distraction.
- (iii) Prohibit brightness that interferes with traffic control devices.

## F. Regulatory options for sign placement and spacing.

- a. The implications of sign placement and spacing for safety: previous research indicates that:
  - (i) The number of advertising signs per mile (or road section) is positively associated with crash rates, i.e., the more advertising signs per mile (or road section), the higher the crash rate
  - (ii) Intersections containing advertising signs have a higher crash rate than those containing no advertising signs
  - (iii) Street level advertising signs are more distracting than raised advertising signs
  - (iv) The less conspicuous the sign, the higher the likelihood of an increased crash rate
  - (v) Signs pose a safety hazard when they obstruct a driver's line of sight at an intersection, curve, or

# Local Regulations of Dynamic Billboards and Signs

point of egress from an adjacent property or obstruct a driver's view of a traffic control device

- (vi) Signs pose a safety hazard when they are located where heightened driver concentration is required (high pedestrian volume intersection) or when they are likely to be mistaken for a traffic control device or as an instruction to drivers
- (vii) Signs with a visual story or message that carries for two or more frames are particularly distracting because drivers tend to focus on the message until it is completed rather than the driving task at hand

## b. Challenges

- (i) Regulating sign spacing can be like starting a game of "musical chairs" because the ability of one company to put up a sign at one location can depend on whether another company has already put up a sign within the immediate vicinity.
- (ii) This can create problems of equity because similarly situated property owners end up with different rights.
- (iii) It can also create a "race" to engage in exactly the behavior that the local government is trying to regulate, because those who are first in the neighborhood to engage in the behavior are the least likely to be burdened by spacing requirements.

## c. Suggested regulatory goals and options

- (i) To the extent that federal and state spacing requirements are not already applicable, establish minimum distances between dynamic signs and regulations regarding the sequencing of sign messages to insure that drivers are not visually overloaded and reduce the chances of creating an over-stimulated driving environment. Minimum

# Local Regulations of Dynamic Billboards and Signs

distances can be calibrated based on the driving environment, traffic, speed, and distance.

- (ii) Decline to supplement federal and state standards to promote fairness and avoid creating additional incentives to race to apply dynamic technology to existing static signs.
- (iii) Limit or prohibit dynamic signs at intersections, in demanding driving environments, and in places where they obstruct a driver's view.
- (iv) Limit or prohibit dynamic signs that resemble traffic control devices.

## **G. Regulatory distinctions between on-site and off-site signs.**

- a. The safety implications of on-site and off-site signs: previous research does not indicate that on-site and off-site dynamic signs pose distinct safety risks that warrant differential regulatory treatment. However, because on-premises signs are more likely to serve wayfinding purposes, if on-premises signs are illegible or otherwise hard to see from a safe distance, there may be a risk that they are seen too late by drivers who are trying to find their way to a particular location, and who then engage in dangerous maneuvers and lane-changes to leave the road. Local governments need not view advertising and wayfinding as equally important goals, and for that reason may choose to adopt policies that benefit the use of signage for wayfinding while burdening its use purely for advertising.
- b. Regulatory goals and options: local governments may choose to regulate all dynamic signs equally, without regard to whether they on-site or off-site dynamic signs. Local governments may still choose to regulate on-site and off-site signs differently even if they do not regulate on-site and off-site dynamic signs differently.



# Local Regulations of Dynamic Billboards and Signs

## H. Regulatory options for the size of signs.

- a. The safety implications of sign size: previous research indicates that dynamic signs pose safety risks primarily by distracting drivers. The size of signs or the size of the dynamic portion of signs may be distracting because the size is too big or too small. If the size is too small, then drivers must take more time to read the sign, diverting their attention from driving tasks. In addition, advertisers have an interest in frequent message changes and using sequenced messages on small signs, features that increase driver distraction. If the sign is too big, the attention of drivers may be captured for lengthy periods of time, diverting their attention from driving tasks. Overly large signs are also more likely to obstruct a driver's ability to see other things, which may include important traffic-control devices and signs.
- b. Regulatory goals and options: there is no standard approach to regulating the size of signs, and there is no standard approach to regulating the size of dynamic signs or the size of the dynamic portion of the sign. Size limitations may be established that reduce driver distraction based on the driving environment in which the sign is located, distance, and legibility goals.

## I. Regulatory options for the text size of dynamic signs.

- a. The safety implications of text size
  - (i) Previous research indicates that the less legible the sign, the higher the likelihood of an increased crash rate. The preferred approach for highway signage is that sign text be 1 inch high to be readable from 30 feet away, and larger text is needed for signs to be legible at greater distances.
  - (ii) Sign associations have promulgated "best practices" standards for commercial on-premise signs, with a particular focus on legibility. Because there is generally a common interest

# Local Regulations of Dynamic Billboards and Signs

between the sign industry and regulators in avoiding signage or text that is too small to be seen and understood in particular locations, those “best practices” standards can be a useful source of potential standards for text size in particular settings.

- b. Regulatory goals and options: to increase legibility, reduce the time needed to read billboards, and reduce driver distraction, local governments can follow the preferred approach used for highway signage or calibrate the appropriate text size based on distance, the driving environment, and the desired legibility.

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Dynamic Signage: Research  
Related to Drive Distraction &  
Ordinance Recommendations

**“DYNAMIC” SIGNAGE:**

**RESEARCH RELATED TO DRIVER DISTRACTION  
AND  
ORDINANCE RECOMMENDATIONS**

Submitted by

SRF Consulting Group, Inc.

Prepared for

City of Minnetonka

June 7, 2007

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION .....	1
2.0 PURPOSE OF STUDY AND METHODOLOGY .....	1
3.0 SELECTED RESEARCH FINDINGS .....	2
3.1 Expert Opinions .....	3
3.2 Billboards: a Source of Driver Distraction? .....	4
3.3 “Dynamic” Billboards: an Additional Source of Driver Distraction? .....	6
3.3.1 Other Information .....	9
3.4 How Much Distraction Is a Problem? .....	10
3.5 How Does “Brightness” Affect Driver Distraction? .....	15
3.6 Billboard and Other Signage Regulation: a Minnesota Perspective .....	16
3.7 Billboard and Other Signage Regulation: Other Perspectives .....	16
4.0 SUGGESTED REGULATORY APPROACH .....	19
4.1 Definitions .....	19
4.2 Types of Regulatory Measures .....	19
4.2.1 Complete or Partial Prohibition of Electronic Signs .....	19
4.2.2 Size Limitations on Electronic Signs .....	20
4.2.3 Rate-of-Change Limitations on Electronic Signs .....	20
4.2.4 Motion, Animation, or Video Limitations on Electronic Signs .....	21
4.2.5 Sign Placement and Spacing .....	22
4.2.6 Text Size .....	22
4.2.7 Brightness Limitations on Electronic Signs .....	23
4.3 Public Review .....	24
5.0 CONCLUSIONS AND RECOMMENDATIONS .....	25

Appendix A – Current Sign Technologies

Appendix B – Outdoor Advertising Sign Brightness Definitions

Appendix C – Electronic Outdoor Advertising Device Visual Performance Definitions

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## LIST OF TABLES

	<u>Page No.</u>
Table 1: FHWA Reanalysis of Faustman's Findings.....	5
Table 2: Crash Causation Summary.....	11
Table 3: Percentage of CDS Crashes Involving Inattention- Distraction Related Crash Causes.....	12
Table 4: Specific Sources of Distraction Among Distracted Drivers:.....	12
Table 5: Telespot Sign Crash Rates - Expressway Southbound.....	13
Table 6: Telespot Sign Crash Rates-Expressway Northbound.....	14
Table 7: Number of New Messages Displayed at Various Driver Speeds and Time Intervals Between Messages.....	21

## LIST OF FIGURES

	<u>Page No.</u>
Figure 1: VicRoads' Ten Point Road Safety Checklist.....	18

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## 1.0 INTRODUCTION

This study was precipitated by concerns raised by the City of Minnetonka, Minnesota in regard to the installation of two LED (“light emitting diode”) billboards along Interstate 394 and Interstate 494. The LED function was applied to two existing “static” image billboards located adjacent to the interstate. Following installation of the LED function, the City turned off the power to the signs through a stop work order based on current city ordinance prohibiting flashing signs, which is broadly defined, as well as permitting requirements for the retrofitting of the signs to the upgraded technology. The billboard owner sued the City, and the court response to this legal action as of the writing of this study has been to allow limited use of the LED billboards. A moratorium on further signage of this type was established by the City to facilitate the study of issues related to driver distraction and safety and appropriate regulatory measures for LED and other types of changeable signage.

This study was undertaken on behalf of the City of Minnetonka to examine these issues. While the concerns were precipitated by LED billboards in particular, this report examines more broadly “dynamic” display signage which is defined as any characteristics of a sign that appear to have movement or that appear to change, caused by any method other than physically removing and replacing the sign or its components, whether the apparent movement or change is in the display, the sign structure itself, or any other component of the sign. This includes a display that incorporates a technology or method allowing the sign face to change the image without having to physically or mechanically replace the sign face or its components. This also includes any rotating, revolving, moving, flashing, blinking, or animated display and any display that incorporates rotating panels, LED lights manipulated through digital input, “digital ink” or any other method or technology that allows the sign face to present a series of images or displays. These capabilities may be provided by a variety of technologies which are discussed later in this report.

As the study progressed, additional communities within the Twin Cities Metropolitan Area, as well as the League of Minnesota Cities, expressed interest in these issues. However, it is not the intention of this report to provide a comprehensive study of all issues raised by dynamic signage, or other types of billboards, but rather to focus narrowly on the issues of concern to the City of Minnetonka.

## 2.0 PURPOSE OF STUDY AND METHODOLOGY

Driving a motor vehicle is a complex task that requires the ability to divide one’s attention. Simultaneously maintaining a steady and legal speed, changing lanes, navigating traffic and intersections, reading and interpreting street signs, drivers are often challenged by conditions that can change in the blink of an eye. Internal and external physical conditions can affect how safely the driving task is accomplished. Drug or alcohol intoxication, fatigue and/or distractions in the driving environment all can play a role in motor vehicle crashes. However, these conditions are rarely the sole reason for a crash. Rather, these conditions serve to exacerbate an already-complex driving environment and subsequent mistakes in judgment can lead to crashes.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Increasingly complex traffic and roadway environments require greater attention to and focus on the driving task.

The purpose of this study is to understand what existing transportation research tells us about the effects of dynamic signs on motorists. This study also explores regulatory measures enacted in other jurisdictions to address concerns related to driver distraction. Due to time and scope constraints, this report is not comprehensive, but rather addresses the most frequently cited and easily accessible information available. The report concludes with a discussion of regulatory options for the City of Minnetonka to consider in their formulation of policies to address dynamic signage.

Information collected for this report draws from a variety of sources including interviews with subject matter experts, government and academic research, and policies developed to regulate various types of signage.

Several city and county sign ordinances were used as references for policy and regulatory research. In some cases, ordinances were brought to our attention by planners and others following the sign ordinance issue. In others, Internet searches were conducted using words and references that apply specifically to dynamic signs.

Several sign manufacturers and sign companies provided an industry perspective through a workshop with the SRF Consulting Group and the City of Minnetonka staff on February 27, 2007. This meeting yielded information about sign characteristics that can be addressed through policy and regulatory measures. Daktronics, a company that manufactures and markets LED signs, was also helpful in this regard, providing informational materials about characteristics of signs that can be regulated and examples of city sign ordinances with which they are familiar.

## 3.0 SELECTED RESEARCH FINDINGS

This following section presents a summary of expert opinions and selected driver distraction research conducted by government and academic researchers examining roadside signage and its effects on the driving task. Studies are organized around critical questions with serious research ramifications.

- *Is there reason to believe that billboards are a source of distraction?*
- *Is there reason to believe that “dynamic” billboards are an additional source of distraction?*
- *How much distraction is a problem?*
- *How does “brightness” affect driver safety concerns?*
- *How should billboards and other signage be regulated from a driver safety perspective?*



# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## 3.1 Expert Opinions

A combination of researchers and public policy experts were interviewed for this study. Individuals were identified while conducting background research into driver distraction and were interviewed because of their credibility in the field.

**Kathleen Harder**, a researcher at the University of Minnesota, has conducted driver distraction research for a variety of applications, including research for Mn/DOT. She is an expert in the field of human factors and psychology. She indicated that electronic billboards pose a driver distraction threat because of their ability to display high resolution color images, their ability to change images, and their placement in relationship to the roadway, particularly in areas where the road curves, exits and entrances are present, merges, lane drops, weaving areas, key locations of official signs, and/or areas where roadways divide.

**Greg Davis**, a researcher with the FHWA Office of Safety Research and Development, in Washington, DC was involved in the 2001 FHWA study on electronic billboards. He was interviewed to gain a deeper understanding of this critical study and to learn of recent research in this area. Davis stated that while no research has established a direct cause and effect relationship between electronic outdoor advertising signs and crash rates, the lack of such a research finding does not preclude a causal relationship between electronic billboards and crashes. He advocated for a new study that can control all variables and determine if a cause and effect relationship exists.

**Scott Robinson**, an outdoor advertising regulator for Mn/DOT, wrote the 2003 technical memorandum that addresses allowable changes for outdoor advertising devices. Mr. Robinson indicated that the memo was originally written in 1998 to establish a permitted rate of change for tri-vision signs and that the application to electronic billboards was not considered. The minimum change rate of 4.9 seconds for 70 mph roadways and 6.2 seconds for 55 mph roadways was based on the travel time between static signs spaced at the minimum allowed distance apart. Mr. Robinson also indicated that the memo is not a Mn/DOT policy, statute or rule, but rather it was written to provide internal guidance.

**Jerry Wachtel**, an Engineering Psychologist and highway safety expert in private practice, was the lead author for the FHWA's original (1980) study on electronic billboards. He has continued his active involvement in this field, and advises Government agencies as well as the outdoor advertising industry on sign ordinances, sign operations, and the implications of the latest research on road safety. Mr. Wachtel believes that it is neither feasible from the perspective of research design and methodology, nor necessary from a regulatory perspective, to demonstrate a causal relationship between digital billboards and road safety. Rather, he believes that we have a strong understanding, based on many years of research, of driver information processing capabilities and limitations, and of the contributions to, and consequences of, driver distraction, on crash risk; and that this understanding is sufficient to support development of guidelines and ordinances for the design, placement, and operation of digital billboards so as to lessen their potentially adverse impact on road safety and traffic operations.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Wachtel also offered comments on drafts of this report. In later conversations related to his review, Wachtel stated his belief that even though visual fixations on roadway signs decrease as route familiarity increases, a strength of the new digital billboards is that they can present messages *that are always new*. Thus, the conclusion from the 1980 FHWA study is another argument against these billboards; namely, drivers spend more time looking at the unfamiliar signs than at familiar ones, suggesting digital billboards are more dangerous than traditional fixed billboards. Wachtel also suggested his preference for a goal to have any given driver experience only one, or a maximum of two, messages from an individual roadside sign.

## 3.2 Billboards: a Source of Driver Distraction?<sup>1</sup>

The purpose of a sign is to attract the attention of passersby so that a message is conveyed. To the degree signs attract the attention of vehicle drivers, they may distract them from the activity of driving. While this report primarily examines the impact of *dynamic* roadside advertising, the role traditional *static* advertising plays in driver distraction is discussed below.

The relationship between roadside advertising and crash rates has been the subject of several studies. The majority of this research was conducted in the 1950s, 60s and 70s. While some of the earliest studies have been subsequently criticized for flawed methodologies and improper statistical techniques, some findings emerge when the totality of the studies are examined. One of these findings is that the correlation between crash rates and roadside advertising is strongest in complex driving environments. For example, higher crash rates were found at intersections (generally considered a complex environment) that have advertising than those intersections that do not have advertising. A few of the studies that are important in this field are summarized below.

### **Minnesota Department of Transportation Field Study (1951) and Michigan State Highway Department Field Study (1952)<sup>2</sup>**

These two studies from the early 1950s used similar methods but came to significantly different conclusions. Recognized as the more scientifically rigorous study, the Minnesota study found that increases in the number of advertising signs per mile are correlated with increases in motor vehicle crash rates. It also found that intersections with at least four advertising signs experienced three times more crashes than intersections with no advertising signs. Conversely, the less rigorous Michigan study found the presence of advertising signs had no effect on the number of crashes.

### **Iowa State College, Do Road Signs Affect Accidents? (Lauer & McMonagle, 1955)<sup>3</sup>**

A laboratory test was created to determine the effect of advertising signs on driver behavior. The results of this study found removing all advertising signs from the driver's field of vision did not improve driver performance. When signs were included, driver performance was slightly better. Note that laboratory methods used in this study are considered to be dated by today's standards.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## **Faustman (California Route 40) Field Study (1961)<sup>4</sup> and Federal Highway Administration, Reanalysis of Faustman Field Study (1973)<sup>5</sup>**

Two studies that appear to have stood the test of time are Faustman's original analysis of California Route 40 and its re-examination by FHWA more than a decade later. The original analysis tried to improve upon previous research by limiting variables, such as roadway geometric design and roadway access controls. The FHWA reanalysis focused on disaggregating the data and converting actual crashes to expected crash rates on specific roadway sections. Each of the sections was given a value based on the number of billboards on the section. A linear regression was performed to determine the expected crash rates. An analysis of variance of the regression coefficients found that the number of billboards on a section was statistically significant. The reanalysis found a strong correlation between the number of billboards and crash rates as shown in Table 1.

*Table 1. FHWA Reanalysis of Faustman's Findings*

No of Billboards	Expected No. of Accidents in a 5-year Period	Cumulative Increase in Accident Rate
0	5.92	
1	6.65	12.3
2	7.38	24.2
3	8.11	37.0
4	8.84	49.3
5	9.57	61.7

## **Federal Highway Administration**

### ***Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable-Message Signage (Wachtel & Netherton, 1980)<sup>6</sup>***

This extensive review provides a comprehensive discussion of roadside advertising research as of 1980. The study authors 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." Because the distraction evidence is not conclusive, these decisions were generally not based on empirical evidence.

The research review noted that accident reports often cite "driver distraction" as a default category used by uncertain law enforcement officers who must identify the cause of a crash. As a result, the authors believe crashes due to driver distraction are not always properly identified. In addition, law enforcement officers often fail to indicate the precise crash locations on crash reports, making it difficult to establish relationships between crashes and roadside features.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Accident Research Unit, School of Psychology, University of Nottingham  
*Attraction and distraction of attention with roadside advertisements (Crundall et al., 2005)*<sup>7</sup>

This research used eye movement tracking to measure the difference between street-level advertisements and raised advertisements in terms of how they held drivers' attention at times when attention should have been devoted to driving tasks. The study found that street-level advertising signs are more distracting than raised signs.

### 3.3 “Dynamic” Billboards: an Additional Source of Distraction?

Signage owners or leasers want to incorporate dynamic features into their signage for a number of reasons: to enhance the sign's ability to attract attention, to facilitate display of larger amounts of information within the same sign area, to conveniently change message content, and to enhance profitability. As mentioned earlier, this report uses the term “dynamic” signs to refer to non-static signs capable of displaying multiple messages. Several studies documented the ability of a sign to accomplish the first of these goals.

University of Toronto  
*Observed Driver Glance Behavior at Roadside Advertising Signs (Beijer & Smiley, 2004)*<sup>8</sup>

Research done at the University of Toronto compared driver behavior subject to passive (static) and active (dynamic) signs. The study found that about twice as many glances were made toward the active signs than passive signs. A disproportionately larger number of long glances (greater than 0.75 seconds) taken were toward the active signs. The duration of 0.75 seconds is important because it is close to the minimum perception-reaction time required for a driver to react to a slowing vehicle. For vehicles with close following distances, or under unusually complex driving conditions, a perception delay of this length could increase the chance of a crash. The following findings were reported in this study:

- 88% of the subjects made long glances (greater than 0.75 seconds).
- 22% of all glances made at all signs were long glances (greater than 0.75 seconds).
- 20% of all the subjects made long glances of over two seconds.
- As compared to static and scrolling text signs, video and tri-vision signs attracted more long glances.
- Video and scrolling text signs received the longest average maximum glance duration.
- All three of the moving sign types (video, scrolling text and tri-vision) attracted more than twice as many glances as static signs.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## University of Toronto

### *Impact of Video Advertising on Driver Fixation Patterns (Smiley et al., 2001)*<sup>9</sup>

Another study completed at the University of Toronto used similar eye fixation information in urban locations to show that drivers made roughly the same number of glances at traffic signals and street signs with and without full-motion video 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.

## City of Seattle Report (Wachtel, 2001)<sup>10</sup>

The City of Seattle commissioned a report in 2001 to examine the relationship between electronic signs with moving/flashing images and driver distraction. The report found that electronic signs with moving images contribute to driver distraction for longer intervals than electronic signs with no movement. Following are major points made in the report:

- New video display technologies produce images of higher quality than previously available technologies. These signs have improved color, image quality and brightness.
- New video display technologies use LEDs with higher viewing angles. Drivers can read the sign from very close distances when they are at a large angle from the face of the sign.
- Signs with a visual story or message that carries for two or more frames are particularly distracting because drivers tend to focus on the message until it is completed rather than the driving task at hand.
- Research has shown that drivers expend about 80 percent of their attention on driving related tasks, leaving 20% of their attention for non-essential tasks.
- The Seattle consultant suggests a "10 second rule" as the maximum display time for a video message.

The expanded content of a dynamic sign also contributes to extended distraction from the driving task. The Seattle Report examined how this may be due in part to the *Zeigarnik effect* which describes the psychological need to follow a task to its conclusion. People's attention is limited by the ability to only focus on a small number of tasks at a time, and by the tendency to choose to complete one task before beginning another. In a driving environment, drivers' attention might be drawn to the sign rather than the task of driving because they are waiting to see a change in the message. This loss of attention could lead to unsafe driving behaviors, such as prolonged glances away from the roadway, slowing, or even lane departure.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

While the Zeigarnik effect may be present in a wide variety of driving situations, possible scenarios that could affect drivers include:

- A scrolling message requires the viewer to concentrate as the message is revealed. Based on the size and resolution of the sign, and the length of the message, this could range from less than one second to many seconds.
- A sequence of images or messages that tell a story, during which the driver's attention may be captured for the entire duration that the sign is visible. Instead of merely glancing at the sign and then returning concentration to the driving task, more attention may be given to the message.
- Anticipation of a new image appearing, even if the expected new image is not related to the first image. In this case, the driver may be distracted while waiting for the change.

## **Federal Highway Administration Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable-Message Signage (Wachtel & Netherton, 1980)<sup>11</sup>**

This research provides information on the use of on-premise Commercial Electronic Variable-Message Signs (CEVMS) that display public service information (i.e., time and temperature) and advertising messages along the Interstate highway system. The research found the following major considerations:

- **Highway Safety Considerations**

The link between changing messages that attract drivers' attention and crashes has been an issue of concern since the earliest forms of electronic signage became available. This study thoroughly reviewed the literature seeking information regarding a potential link between CEVMS and crashes:

*“Although a trend in recent findings has begun to point to a demonstrable relationship between CEVMS and accidents, the available evidence remains statistically insufficient to scientifically support this relationship.”*

The study also noted that studies have not documented information about “such occurrences as ‘near misses’ or traffic impedances that are widely recognized as relevant to safety, and which may or may not be attributable to the presence of roadside advertising.”

- **Human Factors Considerations**

Human factors relate to all the elements that explain driver behavior, such as eye glances and driver responses to a variety of driving-related stimuli. The study makes the point that simple driving-related tasks consume relatively little information processing capacity. However, when other conditions, such as congestion, complicated roadway geometries, or weather are also considered, the marginal extra

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

amount of attention required to read roadside advertisements could lead to driving errors that could cause crashes.

*“The enormous flexibility of display possessed by CEVMS makes it possible to use them in ways that can attract drivers' attention at greater distances, hold their attention longer, and deliver a wider variety of information and image stimuli than is possible by the use of conventional advertising signs.”*

## **Texas Transportation Institute for FHWA, Impacts of Using Dynamic Features to Display Messages on Changeable Message Signs (Dudek et al., 2005)<sup>12</sup>**

This study examined the comprehension times for three different scenarios for DOT-operated changeable message signs. The scenarios evaluated were:

- Flashing an entire one-phase message
- Flashing one line of a one-phase message while two other lines of the message remain constant
- Alternating text on one line of a three-line CMS while keeping the other two lines of text constant on the second phase of the message

The findings of this study were:

- Flashing messages did not produce faster reading times.
- Flashing messages may have an adverse effect on message comprehension for unfamiliar drivers.
- Average reading times for flashing line messages and two-phase messages were significantly longer than for alternating messages.
- Message comprehension was negatively affected by flashing line messages.

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.

### **3.3.1 OTHER INFORMATION**

#### **NHTSA Driver Distraction Internet Forum (2000)<sup>13</sup>**

The National Highway Traffic Safety Administration held an internet forum to gather research and public comment related to driver distraction with an emphasis on the use of cell phones, navigation systems, wireless Internet and other in-vehicle devices. During this forum, participants were invited to take a poll to determine the most prominent driver

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

distraction issues. Electronic billboards were identified as one of six noted sources of distraction.

## **Parliament of Victoria, Australia, Report of the Road Safety Committee on the Inquiry into Driver Distraction (2006) <sup>14</sup>**

This report identified road signs and advertising as one of the largest sources of driver distraction. At least three billboards near Melbourne, Australia display moving images.

*“The Committee considers these screens to be at the high end of potential visual distraction and accordingly, present a risk to drivers.”*

The study also included a quote from the Manager of the Road User Behaviour group at VicRoads (the State's road and traffic authority) from a December 2005 hearing:

*What we do know is when there is movement involved, such as flicker or movement in the visual periphery, that this is more likely to capture a driver's attention. We actually are hard-wired as human beings to movement, so particularly moving screens and information that scrolls at intersections and in highly complex driving situations – these are risky, and in particular researchers have been most concerned about those sort of advertising materials.*

This opinion would suggest that electronic signs can present a distraction to drivers.

### **3.4 How Much Distraction Is a Problem?**

A number of studies were identified that discussed concerns with driver distraction generally. It should be noted that some of the studies cited use specific crash data that is ten or more years old. Direct comparison of distraction sources to influences of today may not be completely valid due to increased technological sophistication of distracting influences. These could include in-vehicle technology (e.g., navigation systems, MP3 players, DVD players, CD players, computer systems, etc.) as well as other potentially distracting influences (e.g., cell phones, text messaging, dynamic signage, other roadway elements, etc.) that were not commonplace when the data for these studies was collected:

#### **Australian Road Research Board Investigations of Distraction by Irrelevant Information (Johnston & Cole, 1976) <sup>15</sup>**

This research used five experiments to test whether drivers could maintain efficient performance in their driving tasks while being subjected to content that was information rich, but irrelevant to driving. The findings were that a small, but statistically significant amount of performance degradation was observed when the participant was under a critical load of stimuli.



# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

National Highway Traffic Safety Administration/ Virginia Tech Transportation Institute

***Impact of Driver Inattention on Near-Crash/Crash Risk: An Analysis Using the 100-Car Naturalistic Driving Study Data (Klauer et al., 2006)***<sup>16</sup>

This study analyzed the data from a driving database developed by the National Highway Traffic Safety Administration. This database contained exhaustive data recorded by instrumented vehicles that measured glance position, impairment, drowsiness, risk taking and many other parameters potentially involved in crash causation. Vehicles were instrumented so that an observer did not need to be in the vehicle to collect data. Automated data collection reduced the problem of an observer influencing driver behavior. The study found that glances of two seconds or greater doubled the risk of crashes or near-crashes. The study also found that 22 percent of crashes are accompanied by “secondary-task” distraction whether inside or outside the vehicle.

National Highway Traffic Safety Administration/ Virginia Tech Transportation Institute

***Driver Inattention is a Major Factor in Serious Traffic Crashes (2001)***<sup>17</sup>

The National Highway Traffic Safety Administration commissioned a study to examine the causes of crashes. The study gathered information from four areas throughout the country and used data from the National Automotive Sampling System (NASS) from April 1996-April 1997 for analysis. The geographic areas were selected because they had good crash investigation practices and high interview completion rates. The results of this study are summarized in Table 2.

*Table 2. Crash Causation Summary*

<b>Causal Category</b>	<b>Percentage of Drivers Contributing to Causation</b>
Driver Inattention	22.7
Vehicle Speed	18.7
Alcohol Impairment	18.2
Perceptual Errors	15.1
Decision Errors	10.1
Incapacitation	6.4
Other	8.8

Association for the Advancement of Automotive Medicine

***The Role of Driver Inattention in Crashes; New Statistics from the 1995 Crashworthiness Data System (Wang, 1996)***<sup>18</sup>

This report analyzed the NHTSA 1995 Crash Worthiness Data System (CDS). It found that the greatest source of driver distraction (3.2 percent) was due to a specified person, object or event outside the vehicle. The full results of the study are presented in Table 3.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Table 3 Percentage of CDS Crashes Involving Inattention-Distraction Related Crash Causes

Data Element	% of Drivers	% of Crashes
Attentive or not distracted	46.6%	28.4%
Looked but did not see	5.6%	9.7%
Distracted by other occupant [specified]	0.9%	1.6%
Distracted by moving object in vehicle [specified]	0.3%	0.5%
Distracted while dialing, talking, or listening to cellular phone [location and type of phone specified]	0.1% <sup>@</sup>	0.1% <sup>@</sup>
Distracted while adjusting climate controls	0.2% <sup>@</sup>	0.3% <sup>@</sup>
Distracted while adjusting radio, cassette, CD [specified]	1.2%	2.1%
Distracted while using other device/object in vehicle [specified]	0.1%	0.2%
Sleepy or fell asleep	1.5%	2.6%
Distracted by outside person, object, or event [specified]	2.0%	3.2%
Eating or drinking	0.1%	0.2%
Smoking-related	0.1%	0.2%
Distracted/inattentive, details unknown	1.5%	2.6%
Other distraction [specified]	1.3%	2.2%
Unknown/No Driver	38.5%	46.0%

Weighted driver N = 4,627,000 (7,943, unweighted); weighted crash N = 2,619,000 (4,536);  
 In order for a crash to be classified "attentive," all involved drivers had to be classified "attentive."  
<sup>@</sup> - estimate based on 5-9 cases.

University of North Carolina Highway Safety Research Center  
*The Role of Driver Distraction in Traffic Crashes (Stutts et al., 2001)*<sup>19</sup>

A study prepared by the University of North Carolina Highway Safety Research Center for the AAA Foundation for Traffic Safety examined the sources of driver distraction in traffic crashes. The data came from the CDS from 1995-1999. Of the thirteen specific sources of distraction tracked by the study, the greatest source of distraction was an outside person, object or event. While the study does not break down the sources of outside distraction, it does show that distractions outside the vehicle are the largest factor in distraction-related crashes. The results of this study are presented in Table 4.

Table 4. Specific Sources of Distraction Among Drivers in Distraction-Related Crashes

Specific Distraction	Percentage of Drivers
Outside person, object or event	29.4
Adjusting radio, cassette, CD	11.4
Other occupant in vehicle	10.9
Moving object in vehicle	4.3
Other device/object brought into vehicle	2.9
Adjusting vehicle/climate controls	2.8
Eating or drinking	1.7
Using/dialing cell phone	1.5
Smoking related	0.9
Other distraction	25.6
Unknown distraction	8.6
Total	100.0

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Three studies were found which attempted to measure driver behavior specifically in response to dynamic signage. Two of these studies demonstrated a potential relationship between dynamic signage and crash rates:

**Minnesota Department of Transportation, The Effectiveness and Safety of Traffic and Non-Traffic Related Messages Presented on Changeable Message Signs (CMS) (Harder, 2004) <sup>20</sup>**

This study used a driving simulator to measure the effect of Department of Transportation changeable message signs on traffic flow. The two messages evaluated were a “crash ahead” warning and an AMBER Alert (child abduction information). The research found that just over half of the participants used the “crash ahead” message and 60 percent could recall the AMBER Alert with scores of Good or Better. Over one fifth of the participants slowed down by at least 2 mph upon seeing the AMBER Alert, demonstrating that messages relevant to drivers are associated with changes in at least some drivers’ travel speed.

**Decision of the Outdoor Advertising Board in the Matter of John Donnelly & Sons, Permittee, Telespot of New England, Inc., Intervenor, and Department of Public Works, Intervenor, with Respect to Permit Numbered 19260 as Amended (1976) <sup>21</sup>**

This proceeding documents the Commonwealth of Massachusetts Outdoor Advertising Board’s ruling regarding one of the first changeable signs. This sign was located near an arterial road in Boston and used magnetic discs to portray a message that changed every 30 seconds. The original sign permit was rejected based on four criteria, one of which was safety. Upon appeal, the Massachusetts Department of Public Works allowed the permit based on the fact that the sign would give the public a benefit. However, they ultimately determined that the sign was a safety hazard based on crash rates before and after the sign was installed. Tables 5 and 6 show the change in crash rates.

*Table 5. Telespot Sign Crash Rates - Expressway Southbound*

	Average per year (1/1/1970-12/31/1972)	Average per year (1/1/1973-3/31/1975)	Average Percent Change
Crashes where the sign was viewable (north of sign)	29.0	20.0	-31.0
Crashes where the sign was not viewable (south of sign)	39.0	15.6	-60.0

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

*Table 6 Telespot Sign Crash Rates - Expressway Northbound*

	Average per year (1/1/1970- 12/31/1972)	Average per year (1/1/1973- 3/31/1975)	Average Percent Change
Crashes where the sign was viewable (south of sign)	46.3	42.7	-7.8
Crashes where the sign was not viewable (north of sign)	8.0	1.8	-77.5

This analysis shows that while crash rates decreased on comparable sections in the years after the sign was installed, the sections where the sign was visible experienced smaller crash rate decreases. Due to these arguments, the Board ruled that the operation of the sign must be terminated.

**Wisconsin Department of Transportation  
Milwaukee County Stadium Variable Message Sign Study – Impacts of an Advertising Variable Message Sign on Freeway Traffic (1994)**<sup>22</sup>

A study prepared by the Wisconsin Department of Transportation (WisDOT) examined crash rates before and after an advertising variable message sign was installed in 1984 on the Milwaukee County Stadium, home of the Milwaukee Brewers professional baseball team. Crash statistics were analyzed for the three years before and the one and three years after the sign was installed. As they are often associated with driver distraction, side-swipe and rear-end crashes, as well as total crashes, were examined for both the eastbound and westbound directions. The sign was much more visible to eastbound traffic due to the stadium's proximity to the roadway and the amount of visual obstructions for westbound traffic.

The analysis found an increase in crash rates for all crash types in the eastbound direction after the sign was installed. Most pronounced was an 80 percent increase in side-swipe crashes after the first year of installation. Results in the westbound direction were mixed, with a 29 percent decrease in crashes the first year the sign was in place and a 35 percent increase in the three years the sign was in place. Although no control roadway sections were studied, an interview with the study author revealed that the introduction of a sign on a high volume curving roadway may have introduced enough distraction to an already demanding driving environment to explain the higher crash rate in the eastbound direction. The study author also stated that the study was not able to establish a causal relationship between the sign and the crash rates.<sup>23</sup>

**Federal Highway Administration  
Research Review of Potential Safety Effects of Electronic Billboards on Driver Attention and Distraction (2001)**<sup>24</sup>

The Federal Highway Administration published a comprehensive report in 2001 that consisted of a literature search, literature review and a description of research needs for

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

the topic of electronic billboards (EBBs). While the study did not conduct any new research, it does provide an excellent summary of the role electronic billboards play in traffic safety and includes good descriptions of the terminology related to electronic billboards. Selected findings from that synthesis are provided below:

*“In most instances, researchers were not able to verify that an EBB was a major factor in causing a crash. Only one study since the 1980 review and one lawsuit were identified.”*

*“Studies were identified that verified that an increase in distraction, a decrease in conspicuity, or a decrease in legibility may cause an increase in the crash rate.”*

*“Commercial EBBs are designed to ‘catch the eye’ of drivers. Their presence may distract drivers from concentrating on the driving task and visual surrounds.”*

*“There is indication that individual differences in age and driving experience may be important considerations in driver distraction, and are relevant to understanding driver responses to the external environment. Furthermore, research regarding driver familiarity of their route demonstrated that visual fixations on roadway signs decreases as route familiarity increases. This research may show that there is a difference between commuter and visiting drivers.”*

Based on these findings, the FHWA recommended additional research to further demonstrate how roadway characteristics, sign characteristics and legibility, driver characteristics and other potential driver distractions affect traffic safety. FHWA was contacted to see if any new information was available. Greg Davis, a Research Psychologist with the FHWA Office of Safety R&D, indicated that the FHWA has not performed additional studies on the topic since the report was published. He stated that there is “no direct correlation between electronic outdoor advertising signs and crash rates”. He referred to a before/after study of electronic signs installed along a freeway in Las Vegas that found no change in crash rates. He went on to say that the lack of a research finding that links signs with crash rates does not mean that a causal relationship does not exist. He indicated that he has been contacted by several law enforcement agencies regarding the link between driver distraction and dynamic message signs/electronic billboards. He indicated that this is a timely and pertinent topic for many states due to the increasing popularity and capabilities of electronic outdoor advertising devices, and he expects further research to be forthcoming. He advocates for a new study that can control for all variables and determine if a cause and effect relationship exists.<sup>25</sup>

## 3.5 How Does “Brightness” Affect Driver Safety Concerns?

The brightness of any sign, static or dynamic, raises concerns with discomfort or disability glare to the driver that may arise when viewing any lighted object. *Disability Glare* occurs when a

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

driver is exposed to a light source so bright that it temporarily blinds the driver, impairing their ability to perform driving tasks. This temporary blindness is brief, but can be dangerous. *Discomfort Glare* occurs when a light source is bright enough to distract or encourage the driver to look away from the light, but is not blinding. Discomfort glare is of particular concern in cases where a bright sign is located in the same line of sight as a traffic sign, signal or another vehicle.

While concerns about glare are not unique to dynamic signs, newer sign technologies, which often include dynamic components, have the technical capability to emit more light and/or respond to ambient light conditions, raising additional concerns about sign brightness in areas where signs compete with regulatory traffic signs or signals.

## 3.6 Billboards and Other Signage Regulation: a Minnesota Perspective

Roadside signage is governed by policies and laws at the federal, state and local levels. Minnesota Statute, Chapter 173 seeks to “reasonably and effectively regulate and control the erection or maintenance of advertising devices on land adjacent to such highways.” The statute requires adherence to federal statutes with respect to interstate and primary systems of highways.

Minnesota Statute Ch. 173.16 Subd. 3. regulates lighting of signs. Signs which are “illuminated by any flashing light or lights, except those giving public service information” (time, date, temperature, weather or news) are prohibited. This section also states:

(b) Advertising devices shall not be erected or maintained which are not effectively shielded so as to prevent beams or rays of light from being directed at any portion of the traveled way of an interstate or primary highway, of such intensity or brilliance as to cause glare or impair the vision of the operator of any motor vehicle; or which otherwise interfere with any driver’s operation of a motor vehicle are prohibited.

and

(c) Outdoor advertising devices shall not be erected or maintained which shall be so illuminated that they interfere with the effectiveness of or obscure any official traffic sign, device or signal.

## 3.7 Billboard and Other Signage Regulation: Other Perspectives

During the course of this study, several articles were found which summarize regulation of dynamic signage in other states:

**Wisconsin Department of Transportation**  
***Electronic Billboards and Highway Safety (2003)***<sup>26</sup>

The Wisconsin Department of Transportation also published a literature review report to further explain the current state of EBB research. Although much of the information is

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

mentioned in other sections of this report, the Wisconsin review did summarize Wisconsin's regulations for electronic billboards.

- No message may be displayed for less than one-half second;
- No message may be repeated at intervals of less than two seconds;
- No segmented message may last longer than 10 seconds;
- No traveling message may travel at a rate slower than 16 light columns per second or faster than 32 columns per second (light column defined as pixel column);
- No variable message sign lamp may be illuminated to a degree of brightness that is greater than necessary for adequate visibility.

## **National Alliance of Highway Beautification Agencies (1999)** <sup>27</sup>

Although this survey is eight years old, it generated the following information related to electronic billboards:

- Nine states had specific regulations governing signs,
- Nine states had regulations on tri-vision signs that were either being drafted or in pending legislation,
- Fifteen states had regulations regarding moving parts and/or lights,
- Nine state had no regulations on tri-vision signs, and
- Six states and Washington, DC, prohibited tri-vision signs.

An investigation into state outdoor advertising regulations was also conducted.

- Thirty-six states had prohibitions on signs with red, flashing, intermittent, or moving lights,
- Twenty-nine states prohibited signs that were so illuminated as to obscure or interfere with traffic control devices, and
- Twenty-nine states prohibited signs located on interstate or primary highway outside of the zoning authority of incorporated cities within 500 ft of an interchange or intersection at grade or safety roadside area.

## **Parliament of Victoria, Australia, Report of the Road Safety Committee on the Inquiry into Driver Distraction (2006)** <sup>28</sup>

This report, cited earlier for its driver distraction opinions, identifies road signs and advertising as one of the largest sources of driver distraction. VicRoads, the state's road and traffic authority, has implemented the following regulations.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

*Figure 1. VicRoads' Ten Point Road Safety Checklist*

An advertisement, or any structure, device or hoarding for the exhibition of an advertisement, is considered to be a road safety hazard if it:

1. obstructs a driver's line of sight at an intersection, curve or point of egress from an adjacent property; or
2. obstructs a driver's view of a traffic control device, or is likely to create a confusing or dominating background which might reduce the clarity or effectiveness of a traffic control device; or
3. could dazzle or distract drivers due to its size, design or colouring, or it being illuminated, reflective, animated or flashing; or
4. is at a location where particular concentration is required (eg. high pedestrian volume intersection); or
5. is likely to be mistaken for a traffic control device, for example, because it contains red, green or yellow lighting, or has red circles, octagons, crosses or triangles, or arrows; or
6. requires close study from a moving or stationary vehicle in a location where the vehicle would be unprotected from passing traffic; or
7. invites drivers to turn where there is fast moving traffic or the sign is so close to the turning point that there is no time to signal and turn safely; or
8. is within 100 metres of a rural railway crossing; or
9. has insufficient clearance from vehicles on the carriageway;  
or
10. could mislead drivers or be mistaken as an instruction to drivers.



# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

VicRoads also gives operational requirements for electronic advertising message signs. Signage must:

- not display animated or moving images, or flashing or intermittent lights;
- remain unchanged for a minimum of 30 seconds;
- not be visible from a freeway; and
- satisfy the ten-point checklist.

## 4.0 SUGGESTED REGULATORY APPROACH

Local governments regulate electronic outdoor advertising devices in widely varying degrees. Some cities completely prohibit the use of all electronic signs (sometimes specifying LED signs), while others have no regulations specific to electronic signs. Between those two extremes, there are many levels and types of control that can be applied.

The primary concerns to keep in mind when considering sign regulations are 1) First Amendment rights, which can be affected by regulations that affect the content of a sign's message, and therefore should be avoided, and 2) changing technology, which can quickly make a sign ordinance no longer applicable if the ordinance has been specifically written to address a certain type of sign technology. Performance based measures may therefore be preferable as they remain viable even as sign technology advances.

### 4.1 Definitions

Signage discussions often include a number of different words or phrases used to describe the technical characteristics of signage devices or their components (such as LEDs). For the purpose of zoning, some additional terms are also used to describe sign characteristics. Any regulatory efforts should take care to precisely define terminology. One possible resource in this effort is "Street Graphics and the Law," published by the American Planning Association (APA) Planning Advisory Service<sup>29</sup>.

### 4.2 Types of Regulatory Measures

#### 4.2.1 Complete or Partial Prohibition of Electronic Signs

Some cities have completely prohibited the use of electronic outdoor advertising devices. For example, the City of Maple Valley, WA prohibits all types of electronic outdoor advertising devices including animated signs, electronic changeable message signs, flashing signs or displays, moving signs, scrolling displays, and traveling displays. This applies to both on-premise and off-premise signs.

Other cities are very selective about where electronic signs are allowed, allowing them only in certain zoning districts. There are very few "standard" approaches. For the most part, each local

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

government tailors their regulations to their own situation. One approach adopted by cities is to prohibit electronic outdoor advertising devices in residential zoning districts, and for a certain distance away from residential zoning districts, similar to the zoning limitations placed on illuminated signs. Some ordinances require that electronic signs be situated such that the sign face is not visible from nearby residences.

## 4.2.2 Size Limitations on Electronic Signs

Another way of regulating electronic signs is to limit their size. Again, there is no set standard for this. One ordinance reviewed for the purpose of this study limits the electronic portion of a sign to no more than 50 percent of the sign face with the overall size determined by whatever the sign ordinance allows for a particular zoning district. Other examples of electronic sign size limitations include five square feet, 1,000 square inches, 20 square feet, and so forth. In other ordinances, there is no differentiation made between the size of electronic signs and other signs.

According to input from representatives of the sign industry, the smaller the size of the electronic sign, the more desirable it is for businesses to use frequent message changes, or sequenced messages, where more than one screen of text is used to convey an entire message.

## 4.2.3 Rate-of-Change Limitations on Electronic Signs

Many communities that allow electronic signs also regulate the rate at which the messages on the signs can be changed. Research on sign codes has shown this to range from as little as four seconds to as long as 24 hours.

The Interstate 394 sign between Ridgedale Drive and Plymouth Road is visible for approximately 45 seconds at free flow traffic speeds. Depending on text size, the message may not be readable by drivers during this entire duration, but the message changes can attract attention from long distances. Depending on how often the message changes occur and the speed of traffic, drivers on this segment could see a varying number of discrete messages. Table 7 provides the number of message changes a driver would see at different change durations and traffic speeds.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

Table 7. Number of New Messages Seen at Various Driver Speeds and Time Intervals Between Messages

Speed (mph)	Time sign is clearly visible* (seconds)	Number of Messages Seen					
		Message Display Time (seconds)					
		6	8	10	60	1800 (30 minutes)	3600 (1 hour)
30	60	11	9	7	2	1	1
45	40	8	6	5	2	1	1
55	33	7	5	4	2	1	1

\*Assuming the sign is clearly visible from one-half mile away.

Prohibiting displays from changing quickly can minimize potential driver distraction, but it would significantly limit the message owner's ability to convey information that does not fit on one screen of the sign. Using two or more successive screens to convey a message is referred to as sequencing. Based on the studies summarized in part 3 of this Report, including the glance duration studies performed by Klaur for the FHWA in 2006 and by Beijer & Smiley in 2004, and Wachtel's analysis for Seattle of the Zeigarnik effect, a message delivery system such as sequencing that requires or induces a driver to watch the sign for several seconds increases the likelihood of driver distraction. Based on information from the sign industry, for sequencing to be effective in a marketing sense, a brief rate-of-change (1-2 seconds) is generally used before transitioning into the next screen.

Some codes specify how an image changes, while other codes prohibit the use of transitions. The change from one image to another can be accomplished by various techniques: no transition – simply a change from one screen to another, or fading or dissolving one image into the next. Flashing, spinning, revolving, or other more distracting transition methods can be prohibited, allowing businesses to use sequencing in an effective manner without making the signs overly distracting. Another way of regulating distracting transitions is to require a very short time of a dark or empty screen between images.

#### 4.2.4 Motion, Animation, or Video Limitations on Electronic Signs

Motion on a sign can consist of everything from special text effects (spinning, revolving, shaking, flashing, etc.) to simple graphics, such as balloons or bubbles rising across the screen, to more realistic moving images that have the appearance of a television screen. According to sign industry representatives, video imagery on a sign is referred to as "animation" if the sign is limited to the capability of 10 frames per second. Fewer frames per second make the moving image look more like animation. Imagery produced by signs that have the capability of processing up to 30 frames per second is accurately referred to as "video" imaging.

Many communities that allow dynamic signs do not allow the application of any type of motion, animation, or video on the signs. However, Seattle was obliged to allow video imagery on their signs after earlier signage code regulating certain types of signs was not strictly enforced. In addition to requiring a dark period between successive messages to overcome the Zeigarnik effect, Seattle also limits the duration of the video message to a minimum of two seconds and a

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

maximum of 10 seconds. This time frame was established based upon careful calculations of the streets from which these signs could be seen, speed limits and traffic volumes in addition to the community's concern over the extent to which moving images could distract drivers. However, Seattle also limits the size of their electronic signs to a maximum of 1,000 square inches, with no single dimension greater than three feet, thus minimizing the effect of video images.

## 4.2.5 Sign Placement and Spacing

Regulating the number of dynamic sign potentially visible to a driver at any one time as well as the position of the sign in relationship to the roadway may reduce distraction to drivers. Spacing requirements should consider the speed, width and horizontal and vertical alignment of the roadway.

Some communities have established minimum distances between electronic signs. Establishing an adequate distance between these types of devices seems particularly important if a fairly fast rate of change is allowed for the purpose of facilitating sequenced messages or if animation and video imaging is allowed. Closely spaced signs attempting to convey sequenced messages may simply create visual overload and an over-stimulated driving environment. Research conducted to date has not yielded information about optimal electronic sign spacing. Seattle adopted a 35-foot spacing requirement for their electronic signs based upon multiple levels of analysis of the downtown city environment in which these signs are present.

Due to the varying characteristics of individual roadways in this regard, overlay districts allowing dynamic signage with conditions specific to that area could be considered. Overlay districts could also take into account other locational factors such as offset from the roadway and conspicuity. Determining appropriate offsets from the roadway must consider roadway clear zone requirements as well as spacing of frontage roads and access points, while also considering the signage too far outside the driver's line of sight may be a further distraction. Conspicuity, a sign's ability to stand out from its surroundings, should also be considered.

## 4.2.6 Text Size

Legibility is another important property of signage. The preferred approach used within highway signing is that drivers can read text that is 1 inch high from 30 feet away. Larger text is needed for signs to be legible at greater distances. Large, legible text allows the driver to read the billboard from varying distances and focus on the driving task. Conversely, with small text, the driver is more likely to focus on the sign for a longer period of time and possibly be more adversely distracted. However, the size or type of text or the amount of text due is rarely regulated.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

## 4.2.7 Brightness Limitations on Electronic Signs

One of the main concerns about the use of electronic signs, regardless of whether they consist of changeable text, animation, or video, is the brightness of the image. The brightness of an object can be characterized in two ways. *Illuminance* is the total brightness of all the light at a point of measurement. Illuminance often describes ambient light and can be measured with a standard light meter such as is used in photography. *Luminance* is the measure of the light emanating from an object with respect to its size and is the term is used to quantify electronic sign brightness. The unit of measurement for luminance is nits, which is the total amount of light emitted from a sign divided by the surface area of the sign (candelas per square meter).

Many, but not all, LED-type signage can be time-programmed to respond to day and nighttime light levels. Higher-end signage types are equipped with photo cells to respond to ambient light conditions. Despite these controls, LED signs have been observed that are considered to be excessively bright. Sign industry representatives indicate that excessive brightness can be the result of 1) sign malfunction or improper wiring, 2) lack of photo cell and/or dimming mechanism, or 3) operator error or lack of understanding that brightness is not necessarily an advantage, especially if it makes a sign unreadable or unpleasant to look at. They also maintain that the intent of the electronic sign industry is to establish a brightness level that is similar to a traditional internally or externally lit sign. Recent observations of sign technicians calibrating the Interstate 394 LED billboard noted that the brightness controls are not calibrated to specific nit levels, but rather vary in proportion to a set maximum level, like a volume control dial on a typical car radio.

To control the extent to which electronic signs are a distraction or the extent to which they are readable, many local governments have adopted regulations that limit nit levels. At this time, ordinances that use nit level limitations typically differentiate between day time and night time nit levels. A common daytime nit limitation ranges from 5,000 to 7,000 nits. A common nighttime limitation is 500 nits, although in areas that are extremely dark at night, with very little in the way of ambient light levels, less than 500 nits may be appropriate. Other communities have taken this farther, such as Lincoln, Nebraska, whose sign code incorporates a graph of varying ambient light levels ranging from night time to a bright sunny day and all conditions between those two extremes, and has correlating nit limitations for the various ambient light levels.

Enforcement of these types of regulations is challenging as luminance of electronic signs is very difficult to measure in the field. Typically, sign luminance is measured and calibrated in a controlled factory setting using a spectral photometer to measure the light output. This calibration setting is then used in conjunction with a photo cell to control the brightness of the sign. The higher the ambient light levels, the brighter the sign. There are different nit thresholds for various colors. White is most often used to set dimming levels because at a constant nit level, white has the most intensity as perceived by the human eye.

Lincoln uses a light meter to conduct testing on electronic signs and found a wide range of luminance levels. One small electronic sign had luminance levels of 13,000 nits. The process that Lincoln uses to check luminance levels is to hold a luminance meter close to the face of the sign so that it captures only the light emitted from the sign. They have not had any requests to

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

measure the brightness of LED billboards, so the viability of using this approach on billboards has not been explored.

In Seattle, sign luminance was found too difficult to measure, so signs are visually inspected when complaints from the public are received. Sign owners are then contacted and asked to adjust sign luminance accordingly.

Both Mesa, Arizona and Lincoln, Nebraska have included a requirement for written certification from the sign manufacturer that the light intensity has been preset not to exceed the illumination levels established by their code, and the preset intensity level is protected from end user manipulation by password protected software or other method approved by the appropriate city official. This language appears to offer the advantage of ensuring that electronic signs, at a minimum, cannot exceed a certain established level of brightness.

At a minimum, it is important for communities to require all electronic signs to be equipped with a dimmer control. A requirement for both a dimmer control and a photo cell, which constantly keeps track of ambient light conditions and adjusts sign brightness accordingly, is optimal.

Over time, the LEDs used in electronic signs have a tendency to lose some of their intensity, and an owner may choose to have the sign adjusted and calibrated, which involves adjusting the level of electrical current in a manner that affects the brightness of the sign. This occurs over the course of two or three years. Having maximum nit levels established would ensure that the sign company has upper limits to work with as far as adjusting the sign is concerned.

## 4.3 Public Review

Most communities establish rules within their sign code and do not create opportunities for electronic signs to be approved through conditional use permits or special use permits. Some communities with special overlay districts, or areas that are oriented toward entertainment and night life, have established a review process for electronic signs, or for various functions of electronic signs such as animation and video.

Other communities take the opposite approach, where they allow electronic signs with no controls whatsoever, except in certain special areas, such as a historic overlay district, or a historic downtown district, where the signs are prohibited. Each community needs to tailor their application of electronic signs to meet their needs.

As of the writing of this report, no ordinances have been discovered that have a special review committee just for the purpose of electronic signs. Typically, sign regulations established in the zoning ordinance would be reviewed in accordance with existing review and approval processes. As with other development features, dynamic signage should be either prohibited, permitted, or conditional depending upon the zoning district and/or the specific features of the sign as established within the city's regulations (i.e. size, specific location with respect to the adjacent roadway, zoning district, proximity of sensitive uses). The recommended review process for permitted dynamic signs should be the same as procedures already in place for administrative

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

review. For dynamic signs requiring a Conditional Use Permit (CUP), the standard process for public notification and a public hearing before the planning commission should apply.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Driver distraction plays a significant role in traffic safety. Driver distraction is a factor in one in four crashes, and of those crashes involving driver distraction, one in four involves distractions outside the vehicle. The extent to which dynamic signage contributes to traffic safety has been examined in this study. Following are some of the major findings from a review of available research.

- Drivers that are subjected to information-rich content that is irrelevant to the driving task (such as digital advertising) may be temporarily distracted enough to cause a degradation in their driving performance. This degradation could lead to a crash.
- The unlimited variety of changing content allows dynamic signage to attract drivers' attention at greater distances and hold their attention longer than traditional static billboards.
- Several studies have found a correlation between crashes and the complexity of the driving environment. For example, crash rates are higher at intersections because the difficulty of the driving task is increased by the roadway's complexity. Complex driving environments place a high demand on drivers' attention. Introducing a source of distraction in an already demanding driving environment is more likely to result in crashes. This is illustrated by the 1994 Wisconsin DOT study that examined crash rates before and after installation of an electronic sign on a high-volume curving roadway. Introduction of this sign was identified as a likely factor of the 80 percent increase in side-swipe crashes that was experienced.
- Many studies have noted a correlation between outdoor advertising signs and crash rates, but have not established a *causal* relationship between the signs and crash rates. Driving is a complex task influenced by multiple factors. It is not necessary to establish a direct causal relationship between outdoor advertising signs and crash rates to show that they can make the driving task less safe. While the research shows that driver distraction is a key factor in many motor vehicle crashes, this often includes many interacting factors that distract drivers. The specific driver distraction danger that advertising signs contribute is difficult to quantify. A study that could control for multiple variables (human factors, vehicle, enforcement and the roadway environment) would be needed to provide a definitive statement on the level of driver distraction that signs produce. Such a study would likely find that not all advertising signs cause distraction that would lead to crashes, but some signs in some situations are more likely to contribute to crashes than others.

Overall, the literature review conducted for the purpose of this study identifies a relationship between driver distraction and electronic outdoor advertising devices. As indicated, driver distraction is a significant factor in crashes. The purpose of dynamic signage is to attract the attention of people in vehicles, so a natural conclusion from that knowledge is that drivers may be distracted by them. Professional traffic engineering judgment concludes that driver distraction generally contributes to a reduction in safe driving characteristics.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

For this reason, state departments of transportation have carefully studied the design and location of dynamic signs within the highway right-of-way. Their goal is to convey a message to the traveling public in a manner that is as straight-forward and readable as possible without being a visual "attraction". The goal of the outdoor advertising sign is to be a visual attraction outside the right-of-way, possibly making it a source of driver distraction. Nevertheless, the actual change in crash rates influenced by the presence of any specific device has not been quantified in a manner that fully isolates the impacts of an electronic sign. Recent studies conducted by FHWA and others have cited the need for further research.

In the interest of promoting public safety, this report recommends that electronic signs be viewed as a form of driver distraction and a public safety issue. Therefore, the ordinance recommendations identified here should be considered. These recommendations should be reviewed in the future as additional research becomes available.

With respect to regulatory measures for electronic outdoor advertising signs, it is important that local governments take a thorough approach to updating their ordinances to address this issue. For example, an ordinance that addresses sign motion, but does not address brightness and intensity levels may leave the door open for further controversy. This report seeks to identify all of the aspects of electronic outdoor advertising devices that are subject to regulation. It does not specifically state what those regulations should be (e.g. the size of electronic signs), since these are all things that policy makers and staff must take into careful consideration. Further, as driver distraction and resulting influences on safety do not, in a practical sense, distinguish between on-premise and off-premise signage, this distinction is not highlighted in the recommendations below.

## **Regulatory Measures recommended for consideration**

To properly address the issue of dynamic signage, it is recommended that the sign code address the following:

1. Identify specific areas where dynamic signs are prohibited. This would typically be done by specifying certain zoning districts where they are not allowed under any circumstances. If dynamic signs are to be allowed in specific areas, this could be done by zoning district (only higher level commercial districts are recommended for consideration) or by zoning overlay related to specific purposes (e.g. entertainment or sports facility district) or to specific roadway types.
2. Determine the acceptable level of operational modes in conjunction with such zoning districts or overlays. The various levels include:
  - a. Static display only, with no transitions between messages,
  - b. Static display with fade or dissolve transitions, or transitions that do not have the effect of moving text or images,
  - c. Static display with scrolling, traveling, spinning, zooming in, or similar special effects that have the appearance of movement, animation, or changing in size, or get revealed sequentially rather than all at once (e.g. letters dropping into place, etc.), and



# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

d. Full animation and video.

3. If one of the forms of static display is identified as the preferred operational mode, a minimum display time should be established. This display time should correspond to the operation roadway speed (rather than posted speed limit), allowing at most one image transition during the time that the sign is visible to a driver traveling at the operational speed

If a shorter minimum display time is considered, the effects of message sequencing should be considered. Wait intervals of more than 1-2 seconds between sequenced messages have the potential to become more of a distraction as viewers wait impatiently for the next screen, in an effort to view the complete message.

4. If the community wishes to accommodate animation or video in some or all locations where dynamic are permitted, a minimum and maximum duration of a video image should be established. The purpose for establishing a time limit is to ensure that the message is conveyed in a short, concise time frame that does not cause slowing of traffic to allow drivers to see the entire message. Given the creativity of advertising, these video images may be seen as a form of entertainment, and people typically like to see an entertaining message through to the end.

Differentiate between zoning districts where dynamic signs are permitted by right, and zoning districts, overlay districts, or special districts where they should only be allowed through the approval of a Conditional Use Permit. A CUP would involve public notification and review and approval by the Planning Commission. Other options would include a design review board or other dispute resolution process.

5. Consider the establishment of minimum distance requirements between electronic outdoor advertising devices in relation to the zoning district or roadway context in which the signs are allowed.
6. Consider size limitations on dynamic signs for zoning districts where they are allowed. This may vary from one district to another.
7. Consider if dynamic signs are allowed independently, or if they must be incorporated into the body of another sign, and therefore become a limited percentage of the overall sign face.
8. Establish a requirement for that all dynamic signs that emit light be equipped with mechanisms that allow brightness to be set at specific nit levels and respond accurately to changing light conditions. The City must establish the authority to disable or turn the device off if it malfunctions in a manner that creates excessive glare or intensity that causes visual interference or blind spots, and require that the device remain inoperable until such time that the owner demonstrates to the appropriate city official that the device is in satisfactory working condition. If such technology is not available, consideration should be given to banning dynamic signs that emit light until such time as the technology allows brightness levels to be precisely controlled.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

9. Consider maximum brightness levels that correlate to ambient (day or night condition, lighting of surrounding context) light levels. A maximum daytime and separate nighttime nit/footcandle level should be established. Consider wording that requires the sign to automatically adjust its nit level based on ambient light conditions.
10. Consider a requirement for a written certification from the sign manufacturer that the individual sign's maximum light intensity has been preset not to exceed the maximum daytime illumination levels established by the code, and that the maximum intensity level is protected from end user manipulation by password protected software or other method approved by the appropriate city official.
11. Require sign owners to provide an accurate field method of ensuring that maximum light levels are not exceeded. If such a method cannot technically be provided, consider banning dynamic signs that emit light until such time as the technology is available.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

PRELIMINARY DRAFT FOR REVIEW BY CITY OF MINNETONKA

Further changes are anticipated following Signage Workshop

*\*\*Preliminary Report is specific to City of Minnetonka issues and may not be sufficient to  
address concerns in other communities\*\**

## APPENDICES

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

PRELIMINARY DRAFT FOR REVIEW BY CITY OF MINNETONKA

Further changes are anticipated following Signage Workshop

***\*\*Preliminary Report is specific to City of Minnetonka issues and may not be sufficient to  
address concerns in other communities\*\****

## Appendix A

### Current Sign Technologies

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

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## Appendix A – Current Sign Technologies

Roadside signage has long been used to alert and direct travelers to retail businesses, lodging, attractions and other destinations. Until the 20<sup>th</sup> century much of this image was “static” in nature, presenting a single image that could only be altered by repainting or otherwise removing an image and replacing it with another. With the advent of motorized travel, signage became more “dynamic” or active in its efforts to attract the traveler’s attention as they moved at ever increasing speeds. Initially, motion was created by flashing bulbs or alternating sets of neon tubes.

Today’s technologies allow for an increasingly sophisticated display of images that can be manipulated by a few strokes of a keyboard. Simpler forms of signs capable of displaying multiple images include “tri-vision” signs which present a series of images through mechanical rotation of multi-sided vertical strips. The rotation occurs at regular intervals presenting a series of static images. Other forms are electronically produced, allowing for a wide range of colors, messages and images depending on the level of technology, and typically produced by light emitted by the sign face. Basic levels of technology present letters or numbers in a single color of light, such as “time and temperature” signs or gas pricing signs. Many of these signs can present longer images in a scrolling fashion, or can provide simple animations.

Recent advances have introduced a variety of technologies to the outdoor advertising arena. The largest impact has been made with LED signs which offer an inexpensive yet powerful approach that combines full motion, brilliant colors and a readable display. Other technologies are in development, including “digital ink” signs that offer a changeable medium on a surface that looks like a normal vinyl billboard. These signs manipulate ink on the surface, allowing for a dynamic presentation of images without being internally illuminated.

The various sign technologies are referenced by a wide array of terms: “changeable message signs,” “electronic billboards,” “animated signs.” In general, this report focuses on the broad range of signage types which are capable of displaying multiple images through electronic manipulation, which we will refer to as “dynamic” signing. Reference to specific signage types is made when necessary to discussion of specific issues (e.g. the brightness of LED signage).

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## Appendix B

### Outdoor Advertising Sign Brightness Definitions

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

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## Appendix B – Outdoor Advertising Sign Brightness Definitions

This appendix defines various technical terms that are used to describe the operational aspects of electronic billboards.

### Billboard Illuminance

Billboard illumination is typically discussed using two terms: illuminance and luminance. Because this section includes some technical jargon, a glossary that further defines terms used in outdoor advertising is provided in Appendix C.

**Illuminance:** The amount of light that is incident to the surface of an object. This is the method for describing ambient light levels or the amount of light that is projected onto a front-lit sign. This parameter is typically measured in lux (footcandles x meters). For the purposes of dimming, illuminance is discussed to describe the ambient light that hits the photocell.

**Luminance:** The amount of light that emanates from an internally illuminated sign. This parameter is measured in nits. The nit levels necessary for the sign to be legible vary with the ambient light conditions. On a sunny day, the nit levels must be very high, while at night, the levels must be very low to prevent the image from distorting and to prevent glare.

### Billboard Luminance (Brightness)

Luminance is measured in nits (candelas/square meter) and describes how bright the image is. In essence, it is the amount of light that is radiated from the sign divided by the amount of surface area of the sign. No matter how big the sign is, the luminance of the sign is consistent. For example, the brightness of computer monitors is also measured in nits.

The European standard “EN 12966” specifies that at certain ambient light levels, the sign should output a given number of nits. There are different tables for each color due to the properties of how the human eye interprets each color. The color that is most often used to set dimming levels is white.

The FHWA has developed recommended practices for dynamic message signs installed within the roadway right-of-way. The standard is NEMA’s TS-4 “Hardware Standards for Dynamic Message Signs (DMS) With NTCIP Requirements.” Note that these standards were prepared for message signs deployed within the roadway right-of-way and should not be taken as recommended luminance levels for advertising signs. Table A-1 provides a simplified version of the NEMA TS-4 standard for the color white.

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*Table A-1 - Luminance Standards*

Ambient Light (lux)	Approximate Light	Minimum Luminance (nits)	Maximum Luminance (nits)
40,000	Sunlight	12,400	62,000
10,000	Cloudy	12,400	-
4,000	Overcast	2,200	11,000
400	Sunrise/Sunset	600	3,000
40	Candlelight	250	1,250
less than 4	Moonlight	75	375

*Source: NEMA TS-4 (2005)*

## Billboard Resolution

Billboards require far less resolution than print advertisements. For example, Clear Channel's LED "Digital Outdoor Network" LED bulletin-size (14' x 48') billboards require dimensions of only 208 pixels high by 720 pixels wide. If this image were to be printed at 300 dots per inch (dpi), a typical print resolution, the entire image would be less than 1.7 square inches. Therefore, it is ideal to keep the message on these signs simple and clear because they do not currently allow resolutions similar to printed images.

## Dimming

To maintain readability, the brightness of a sign must be adjusted to match ambient light conditions. If this is not done, the image will appear too bright and can even degrade the image quality through a phenomenon called "blooming." If the image blooms, the brightest areas of the image bleed over into darker parts and the image clarity is degraded.

Dimming is typically controlled by a photocell, which measures the ambient light conditions and varies the light output of the sign based on preconfigured settings. As ambient light conditions darken, the photocell senses the decrease and lowers the light output of the sign. Some sign manufacturers do not incorporate photocells in their electronic signs.

Electronic billboard dimming can also be controlled by scheduled dimming according to time of day or manual dimming. On-premise signs may use any of these methods, but most, if not all, off-premise standard size electronic billboards are auto dimmed by photocell. Some signs include user-defined dimming curve capability allowing total control over sign brightness and adjustability to accommodate local brightness ordinances.



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## Appendix C

### Electronic Outdoor Advertising Device Visual Performance Definitions

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

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## Appendix C – Electronic Outdoor Advertising Device Visual Performance Definitions

### Conspicuity

Conspicuity is the property that related to the contrast between a sign and its background and its ability to stand out from its surroundings. This is a subjective property that depends on many factors of both the environment and the viewer.

### Contrast

Contrast is the property that defines the relationship between the brightness of the brightest color possible to the darkest color possible on a sign. In times when ambient conditions are very bright, such as a sunny day, the darkest color may still be very bright due to the sun's reflection off the sign. In these cases, the lighter colored areas of the billboard's image must be much brighter than the contrasting dark areas.

### Legibility

The ability of the driver to read a sign is related to its legibility. Large, legible text allows the driver to read the billboard from varying distances and focus on the driving task. Conversely, with small text the driver is more likely to focus on the sign for a longer period of time and possibly wait until the sign is very close.

State departments of transportation use NEMA's IS-4 document for this criterion. This document specifies many characteristics related to legibility including character height, resolution and color.

### Glare

#### *Disability Glare*

The first form of glare is disability glare. This occurs when a driver is exposed to a light source so bright that it temporarily blinds the driver, impairing their ability to perform driving tasks. This temporary blindness is brief, but can be dangerous.

#### *Discomfort Glare*

Discomfort glare is when a light source is bright enough to distract or encourage the driver to look away from the light, but is not blinding. Discomfort glare is of particular concern in cases where a bright sign is located in the same line of sight as a traffic sign, signal or another vehicle.

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## Frequency of Change

The frequency of change is determined by the interval of time between sign image changes. The rate of change can usually be adjusted by the owner and operator of the sign. Frequency of change is highly variable, with some on-premise signs changing faster than once per second. While no standard is generally accepted, local government agencies have used ordinances to limit the frequency to anywhere from 5 seconds to 24 hours.

## Interactive signs

Interactive signs change their message based on the person viewing it. For example, the carmaker MINI has installed variable message signs that display a customized message to car owners who have special key dongles containing a radio frequency identification (RFID) chips when the dongle is in close proximity to the sign.

Another example is a microphone system that identifies the radio stations passing drivers are listening to and displays a specific message for that station.

# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

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- <sup>16</sup> S.G. Klauer et al., "Impact of Driver Inattention on Near-Crash/Crash Risk. An Analysis Using the 100-Car Naturalistic Driving Study Data," National Highway Traffic Safety Administration, 2006
- <sup>17</sup> "Driver Inattention Is A Major Factor In Serious Traffic Crashes," <<http://www.nhtsa.dot.gov/people/outreach/trafftech/TT243.htm>>, accessed on February 14, 2007.
- <sup>18</sup> J. Wang, "Role of Driver Inattention in Crashes; New Statistics from the 1995 Crashworthiness Data System, 40th Annual Proceedings, Association for the Advancement of Automotive Medicine, Vancouver, British Columbia, 1996.
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# Dynamic Signage: Research Related to Driver Distraction & Ordinance Recommendations

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<sup>28</sup> "Report of the Road Safety Committee on the Inquiry into Driver Distraction," Parliament of Victoria, Australia, Victoria, Australia, 2006

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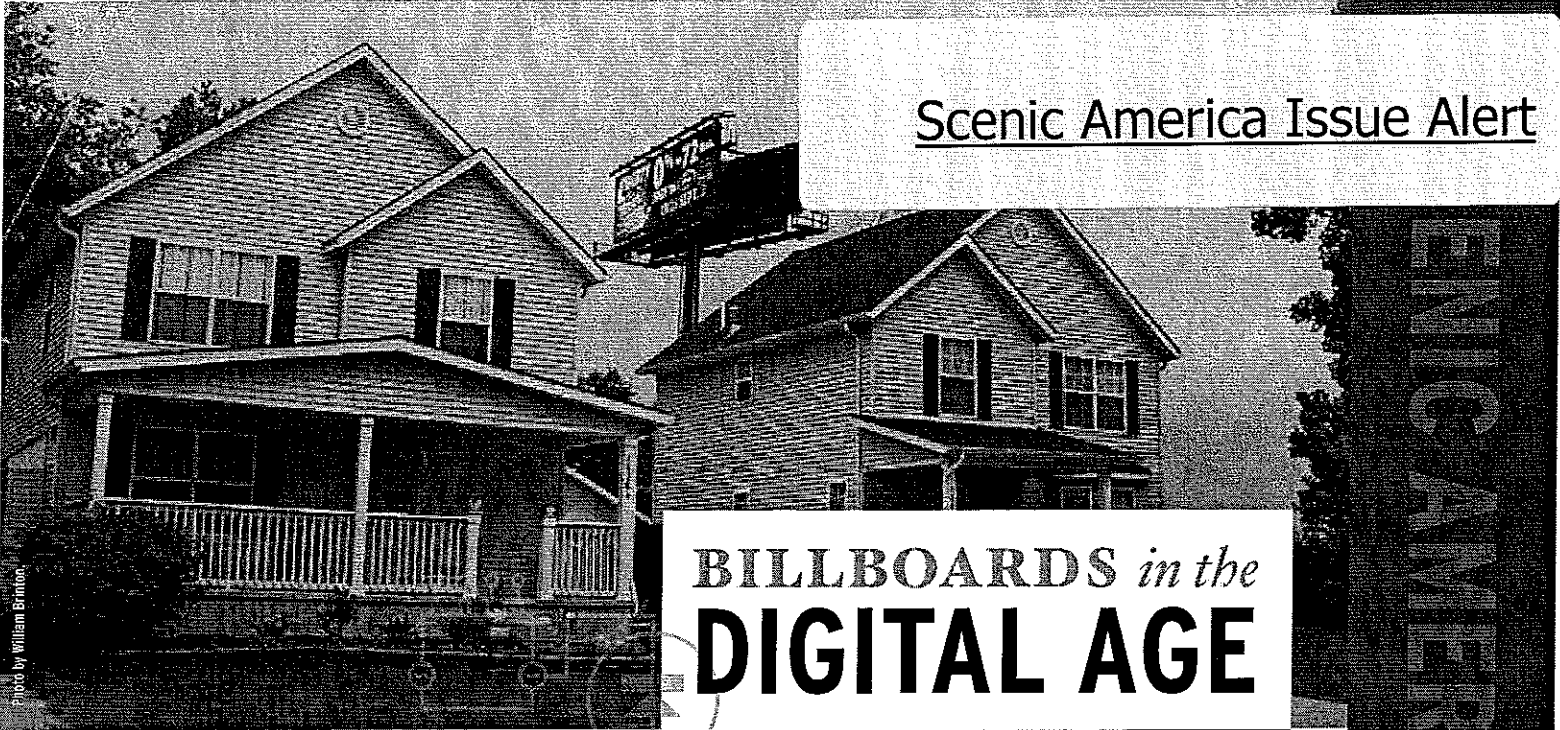


Photo by William Brinton

# BILLBOARDS *in the* DIGITAL AGE

UNSAFE (AND UNSIGHTLY) AT ANY SPEED



**IMAGINE DRIVING** along a twisting, two-lane Alabama road at night. As you slow for a curve, suddenly an enormous television screen pops into your field of vision, temporarily blinding you before flashing an ad for an insurance company.

The glaring lights of this particular sign, slapped up in suburban Vestavia Hills, blindsided city zoning officials as well. They had unknowingly given entrée to digital billboard technology when they approved what appeared to be a routine application to add lighting to a sign grandfathered in years ago. The application made no mention of changeable messages and gave no indication it would transform an old, static board into a giant vehicle for digital TV-like images.

Police officers immediately complained the board posed a major safety hazard. Neighbors complained about the glaring lights. Lamar Advertising Company, which owns the board, claimed they'd made the changes in "good faith."

Anyone who has been following the digital-billboard movement may recognize that argument as a popular tactic employed by an industry that finds it easier to ask localities for forgiveness than permission. It's one of many strategies being used to bring digital technology to as many cities and towns as possible, before localities have a chance to explore the implications of the new technology, update their sign ordinances, or ban digital signs outright.

"There's a full-court press going on at the national, state, and local level, being waged by Lamar, Clear Channel, and CBS Outdoor," said Bill Brinton, an attorney specializing in sign law and a member of the board of Scenic America. Lobbyists are pushing state legislators to pass bills that clear the way for LED (light-emitting diode) signs on state and federal roads, and the industry is pressuring state departments of transportation to rewrite regulations to allow them to transform static signs into digital boards. And in cities and counties across America, they are pressing for looser sign ordinances or simply installing the new technology without permission to do so.

*"For in-your-face results that won't end in a restraining order, out-of-home is the only way to go."*

[www.lamaroutdoor.com](http://www.lamaroutdoor.com)

Digital signs are far more of a threat than their predecessors, said Kevin Fry, president of Scenic America. They're brighter, which makes them visible from far greater distances; they're much more distracting, because of their brightness and because the messages are constantly changing; they're often taller than regular boards, giving the appearance of large, plasma-screen TVs; and they're substantially more expensive to remove, so localities without amortization laws could find themselves unable to afford taking them down. This would be especially true for signs along federal-aid highways where the use of amortization is prohibited by the Highway Beautification Act.

Despite higher installation costs, the profitability of digital boards provides a powerful incentive for companies to put up as many as possible. Clear Channel Outdoor spent \$3.5 million converting seven static boards to digital in Cleveland, but watched revenue jump from \$300,000 to \$3 million in the network's first year, according to Mark P. Mays, Clear Channel's CEO.

That's because digital boards allow companies to sell ad space to 10 times as many clients as static ones; most signs change messages every six seconds. They also allow advertisers to change content several times a day or week, and unlike the static boards, which require contractors to change messages manually, digital boards allow operators to change content from remote locations in a matter of seconds, with just a click of a mouse.

Lamar Advertising boasts that it has digital billboards in as many as 44 states. Clear Channel, the world's largest outdoor advertising company, is similarly upfront about its goals for spreading digital technology. In a November 2006 press release announcing the launch of multi-sign digital networks in Milwaukee and Tampa, Clear Channel Outdoor Global President Paul Meyer put it bluntly:

EMERGENCY SCENIC AMERICA

2  
ELECTRONIC  
SIGNS

# BILLBOARDS in the DIGITAL AGE

*continued*

## Scenic America Issue Alert

"New digital technologies provide us with the capability to execute both general market and targeted advertising campaigns that *consumers can't mute, fast forward or erase,*" he said [Emphasis added]

When digital comes to town, local governments are often caught off guard. As was the case in Vestavia Hills, billboard owners are not always upfront about what they are doing, and the technology may be installed without notice.

But in a rare victory for billboard opponents, the Vestavia Hills Board of Zoning Adjustment (BZA) ordered Lamar to turn off the lights and shut its board down—at least until they could hold a hearing for a zoning variance. The board ruled that the switch had been made under "false pretenses." Had Lamar asked for permission to add digital animation, the board likely would have said no, particularly for that location, zoning officials said. *In fact, Vestavia Hills' new sign ordinance, which was under consideration at the time, would outlaw this kind of sign entirely. The BZA later denied the variance request, and the billboard company filed a lawsuit which is now in the county court system. In the meantime, the digital board has been covered with a traditional sign. A permit request to install a digital face on the other side of the sign was denied.*

City officials in several Minnesota communities were likewise surprised last year when digital billboards began to appear on Clear Channel and Lamar sign structures. In most cases, the companies that leased the signs had sought building permits only to upgrade them, omitting from their applications any indication they planned to hang digital displays on those structures after the upgrades. Their chosen locations included communities with some of the strongest billboard prohibitions.

Clear Channel's strategy backfired, especially in Minnetonka, which for more than 41 years has carried a prohibition on illuminated signs that change in color or intensity. The city pulled the plug on the signs, issued stop-work orders, and then defeated an effort by Clear Channel to obtain an injunction. As Judge Lloyd Zimmerman later found, "there is substantial evidence to support Minnetonka's claim that Clear Channel avoided disclosing its plans to deploy LED billboards in the City of Minnetonka, and operated 'under the radar' in order to get the billboards up and running, in order to meet its expansion and profit goals for 2006."

Meanwhile, one Minnesota community after another has adopted a moratorium on digital display devices to temporarily protect themselves against a repeat of the companies' subterfuge.

It's not unusual for billboard operators to erect digital signs even when State-Federal agreements or local ordinances prohibit them, knowing that local enforcement can be difficult due to lax or inefficient enforcement or the prospect of the lengthy and costly litigation that inevitably follows.

The Texas Department of Transportation's State-Federal agreement clearly prohibits digital billboards. In fact, when state transportation officials requested clarification from the Federal Highway Administration (FHWA) to see if they could allow the boards, they were told in no uncertain terms they could not.

"While the technology for LED displays did not exist at the time of the agreement, the wording in the agreement clearly

prohibits such signs," the FHWA wrote to Texas transportation officials in a letter dated March 15, 2006.

Nonetheless, LED signs have gone up in several cities around the state. And in a recent media interview, Clear Channel Communications CEO Mark Mays made it clear his company had big plans for Texas, particularly San Antonio.

"The question becomes how big an opportunity it will be over the next 10 years," he said. "Is it going to be half the signs in San Antonio, is it going to be a quarter of the signs in San Antonio or is it going to be 10 percent?"

"If Texas is going to allow this, the public should be involved," said Margaret Lloyd, policy director for Scenic Texas. "In my judgment, we need at least three things: first, a safety study funded by a neutral, objective party; second, a cost study to determine the taxpayer burden if these signs have to be condemned for highway widenings; and finally, a public opinion survey to determine if citizens want these signs to be erected along their publicly funded highways."



Photo by Leighton Powell.

One state where the industry hasn't been successful in getting what it wants is Kentucky, where state transportation regulations prohibit both Tri-Vision and LED signs.

Tom Fitzgerald, director of the Kentucky Resources Council, said the outdoor advertising industry has tried on several occasions to push through legislation that would allow them to add the new technology, but lawmakers in the House have stood firmly against it. They came closest in 2004, when the industry had someone insert language allowing Tri-Vision signs into a bill that focused on tree-cutting around billboards.

"That bill got through the Senate and into the House before people realized the provision was even in there," Fitzgerald said. But the House leadership killed the bill, as it has done to tree-cutting bills consistently over the years. This year, a bill that would have allowed electronic billboards and Tri-Vision signs was introduced but died in committee.

"We've not really had a toe-to-toe fight on electronic billboards yet," Fitzgerald said. "I believe there are strong public safety issues at stake."

For many outraged citizens, traditional concerns about "litter on a stick," have now been supplanted by the prospect of confronting "PowerPoint on a stick" along their communities' roadways. The advent of digital technology has opened a new front in the battle against blight—with more at stake than ever before.

# ARE THEY SAFE?

## Electronic America Issue Alert

*The billboard industry often tries to win support for its signs by offering to display public service messages. But no amount of these inducements can compensate for the potential public safety consequences of these devices.*

**BILLBOARDS ARE ADVERTISEMENTS.** They are designed to grab our attention, and hold it, just like a television or radio commercial or an ad in a magazine. The latest in billboard technology—the digital or electronic sign—tries to hold our attention even longer by changing messages and pictures every few seconds using a series of extremely bright, colorful images produced mainly via LED (light-emitting diode) technologies.

Common sense tells us that if we are looking at a billboard and not at the road when we are driving, that's a dangerous thing. Brightly lit signs that change messages every few seconds compel us to notice them, much the same way our eyes move to the television screen when it's on. They lure our attention away from what's happening on the road and onto the sign. It's just human nature. And it works. That's why these signs are so incredibly lucrative for the billboard industry.

Proponents of digital billboards say nobody has ever proven that they increase traffic accidents. This statement is only partially true. Some studies have shown a link between digital billboards (as well as static boards) and traffic safety problems, while others remained inconclusive. *Importantly, no objective studies have shown them to be safe, nor have studies been conducted since these signs have started to proliferate.*

### What does the research currently say?

■ A Wisconsin Department of Transportation study conducted in the 1980s examined crash rates on I-94 East and West adjacent to the Milwaukee County stadium, after a variable message sign that showed sports scores and ads had been installed. The study found that *sideswipe and rear-end collisions were up as much as 35 percent where the sign was most visible.*

*"No empirical studies are necessary for reasonable people to conclude that billboards pose a traffic hazard, since by their very nature they are designed to distract drivers and their passengers from maintaining their view of the road."*

*Major Media of the Southeast v. City of Raleigh, 621 F.Supp. 1446, 1450 (E.D.N.C. 1985), aff'd, 792 F.2d 1269 (4th Cir. 1986), cert. denied, 479 U.S. 1102 (1987).*

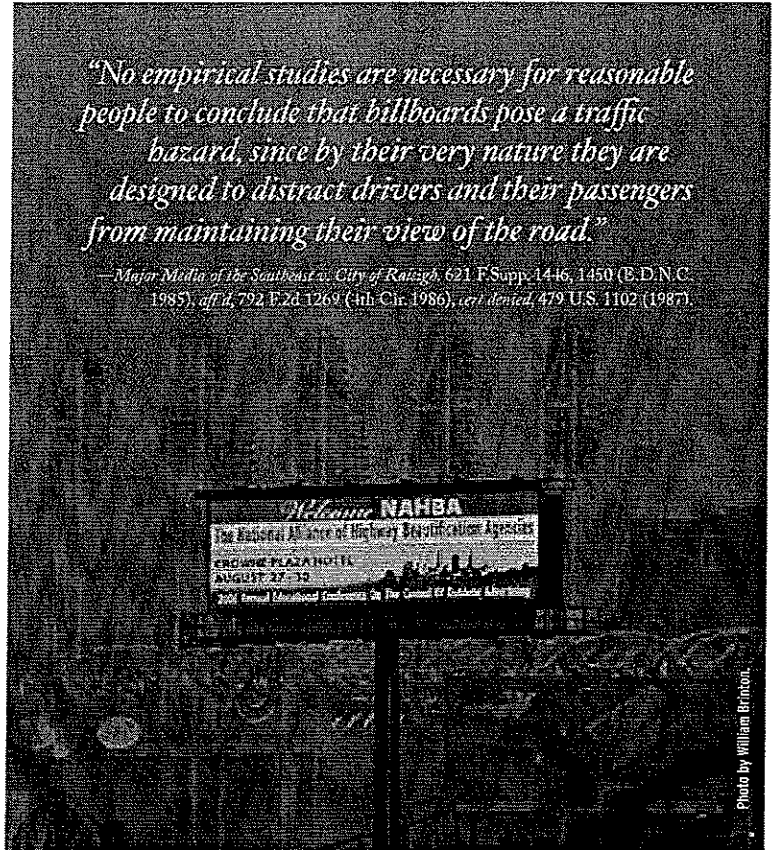


Photo by William Branton.

### THE TWO SECOND RULE: What Every Community Should Know

An analysis of the *100-Car Naturalistic Driving Study*, conducted by the National Highway Traffic Safety Administration, released in 2006, showed that *taking one's eyes off the road for more than two seconds for any reason not directly related to driving (such as checking the rearview mirror) significantly increased individual near-crash/crash risk.*

#### Are electronic signs especially attention-getting?

*"Nothing's as eye-catching as an electronic LED display. The brightly-lit text and graphics can be seen from hundreds of feet away, drawing the attention of everyone within view."*

Source: Voiceover narration of Trans-Lux promotional video ([www.impactmovie.com/trans-lux](http://www.impactmovie.com/trans-lux))

What factors make drivers likely to look at an electronic sign for more than two seconds at a time, and therefore put themselves and others at risk?

They are extremely bright and are designed to be visible in bright sunlight and at night. The eye is drawn to them far more strongly than to traditional illuminated billboards. They are designed to be eye-catching, and they are

They can be seen from great distances, even as far away as six-tenths of a mile, making them distracting even before they begin to communicate their messages.

The images rotate every 6–10 seconds and drivers will naturally look at the sign long enough to see what comes up next. There may be as many as 10 messages in the rotation.

The Florida Department of Transportation's official position is that it takes a minimum of six seconds to comprehend the message on an electronic billboard, which is already three times the safe period for driver distraction.

#### Will people stare at a changing sign to see what's next?

*"The reason [electronic] advertising works is because it is impactful. If you see people parked at the stoplight watching it, you see their eyes waiting for it to change."*

Source: Clear Channel Outdoor Des Moines division president Tim Jameson quoted in the *Des Moines Business Record*, Feb. 4, 2007

Because the messages change daily or even hourly, even commuters who pass by the signs every day will look to see what's new. Traditional signs become visual background noise for local drivers, and thus have less safety impact, but electronic signs never blend into the background.

Younger drivers may be more easily distracted by electronic media, and older drivers may require longer viewing times to comprehend often confusing, elaborate, and colorful images.

See *Additional Resources* on the back page for links to the studies referenced above.



# Scenic America Issue Alert

- A 1998 FHWA memo noted that digital signs raise “significant highway safety questions because of the potential to be extremely bright, rapidly changing, and distracting to motorists.”
- A 2001 FHWA review of billboard safety studies found that “the safety consequences of distraction from the driving task can be profound.”
- A 2003 report titled External-To-Vehicle Driver Distraction, by the Development Department Research Programme in Scotland, found that “there is overwhelming evidence that advertisements and signs placed near junctions can function as distracters, and that this constitutes a major threat to road safety.” It further noted that, “Young (aged 17–21) drivers are particularly prone to external-to-vehicle driver distraction.”

If other studies have remained inconclusive, there is good reason, researchers say. First, many of the studies have been funded, and directed, by the billboard industry (see sidebar). Second, there are inherent difficulties in conducting traffic safety research.

Jerry Wachtel, an engineering psychologist with 25 years of experience in the field of driver behavior, said too many variables contribute to traffic accidents to make it possible to prove causality from a single source. “Most accidents are not caused by one thing, but multiple things happening at once,” he said.

According to Wachtel, digital billboards undoubtedly contribute to the growing number of distractions that vie for a driver’s attention today. Cell phones, navigational systems, and DVD players constitute in-car distractions, while billboards, especially those that change messages, constitute external distractions. Both, he said, contribute to traffic safety hazards that he believes are growing increasingly worse.

“The outdoor advertising industry in my opinion is one part of the problem, but a significant part,” he said.

Wachtel co-authored a report for the Federal Highway Administration back in the 1980s, updated in 2001, which concluded that “some studies showed a clear relationship between the presence of outdoor signs and driver error or accidents and other studies hadn’t shown anything.” It recommended government-funded research into the issue, but the research was never funded.

The Federal Highway Administration in January 2007, however, announced that it will initiate a study to examine the safety issues related to electronic signs. Details on the scope and timing of the research have not been released, but results are not expected until 2009.

## Court Rules Virginia Tech Billboard Safety Study Lacks Credibility

To overcome the argument that billboards are a distraction to drivers, the outdoor advertising industry often points to a study it says “definitively” shows the signs create no safety risks whatsoever. This study, conducted by Dr. Suzanne Lee of the Virginia Tech Transportation Institute, often pops up in outdoor advertising litigation, or may be given to lawmakers in hopes of persuading them of the supposed safety of highway signs.

This study is not only inherently flawed and biased, its uselessness was noted by a federal district court judge in New York. In *Nichols Media Group v. The Towns of Babylon and Islip*, the court held that “the Lee Study is so infected by industry bias as to lack credibility and reliability.” It based its opinion on several factors:

“The study was funded by the Foundation for Outdoor Advertising Research and Education, a close affiliate of the Outdoor Advertising Association of America.”

“Trial testimony revealed that representatives of the OAAA were ultimately involved in the design and conduct of the Lee Study.”

“The Lee Study has been neither widely disseminated nor subject to peer review. Nor have the conclusions of the Lee Study been replicated in any other study.”

Don’t let industry lobbyists use this discredited study as “proof” that billboards are safe. The only thing it proves is how much money the billboard industry is willing to spend making bogus arguments.

*Digital signs are often the brightest objects in the landscape, especially at night. They dominate the field of view and offer dangerous distractions for the traveling public.*

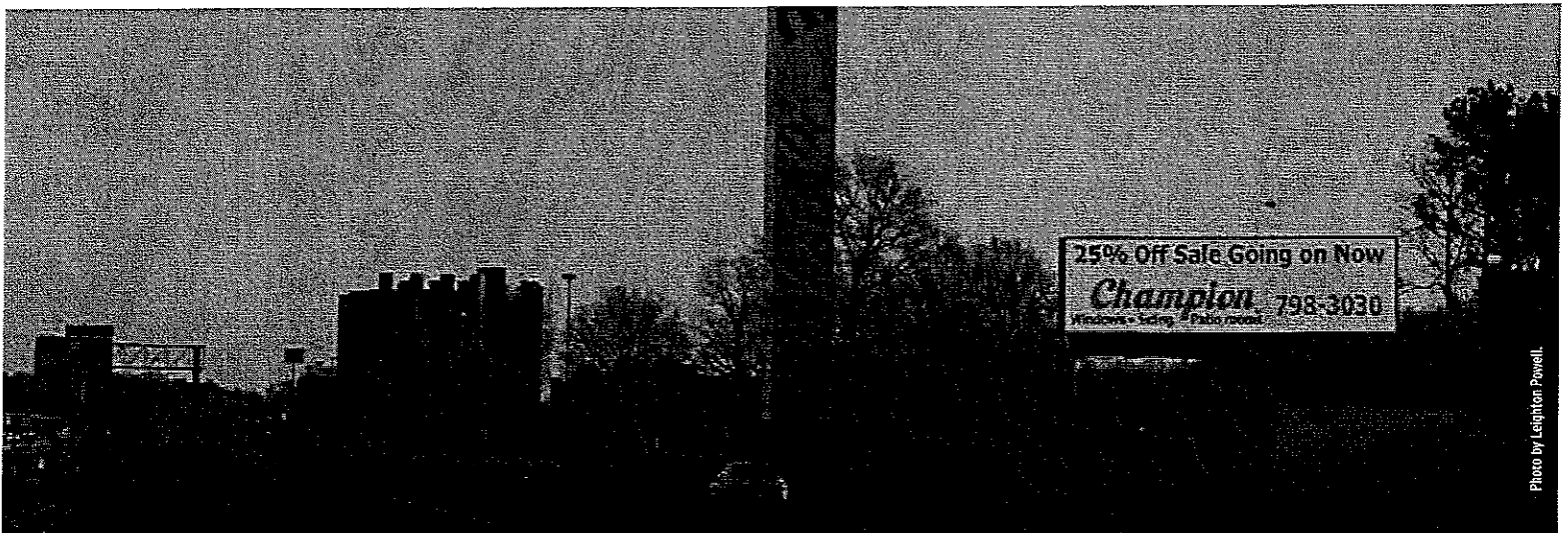


Photo by Leighton Powell.

# Scenic America Issue Alert

## TALKING POINTS

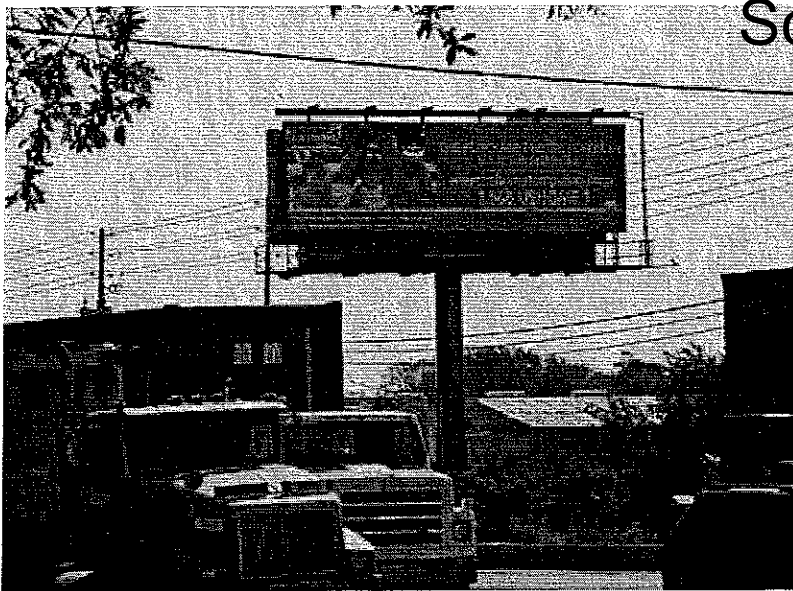


Photo by William Johnson

*Bright electronic signs with complex, changing messages contribute extra distractions to motorists already confronted by visually cluttered environments. How long would it take you to comprehend the messages on this sign? More than two seconds?*

### A Word of Caution for Local and State Governments

Local and state governments should be wary of approving electronic signs, pending the outcome of definitive objective studies regarding their safety. If research proves these signs to be unsafe, governments could face significant liability and negligence issues if accidents occur in the vicinity of the signs. Additionally, if the signs must later be removed because they are deemed a hazard, the cost of compensating sign owners would be enormous, particularly along federal-aid highways where the Highway Beautification Act requires cash compensation and prohibits compensation via amortization.

*There is no objective evidence that these signs are safe. To protect themselves from potentially catastrophic costs in the future, governments at all levels should enact immediate moratoriums on these signs until it is known for sure whether or not they pose a hazard to the motoring public.*

**MPC February 14, 2008**

Studies show drivers who take their eyes off the road for more than two seconds are far more likely to suffer a crash or near crash. Digital billboards often attract drivers' attention for more than two seconds because they are extremely bright and colorful and employ messages that change frequently.

Most images change every six seconds because that's how long it takes to comprehend the message. That's also three times longer than it takes to cause an accident. Motorists stay focused on the sign to see what's next. Many signs have up to 10 different messages in rotation.

Commuters can learn to tune out traditional boards because the message doesn't change. But digital signs change messages frequently, creating fresh, daily distractions. Young and elderly drivers are particularly susceptible to distractions, making these signs especially problematic for drivers already at higher risk.

Local and state governments should enact moratoriums on digital signs until definitive safety research is concluded. Severe liability issues could ensue if governments approve signs that are later proven to be unsafe. The costs of buying out those signs would be enormous.

Many state agreements with the Federal Highway Administration prohibit digital billboards but are not being enforced or are being interpreted to favor the new signs. The FHWA declared in 1996 that if a state agreement bans boards that contain "flashing, intermittent, or moving lights," it effectively bans digital billboards.

Banning digital billboards does not violate the First Amendment right to free speech. Most local jurisdictions have the right to enact strict bans on digital signs in spite of state rules that may permit them.

Digital billboards can often be seen from more than a half-mile away, uselessly and adversely affecting visual quality long before the viewer is close enough to read the sign. This violates the spirit of requirements regarding the spacing of signs along the highway.

State and local governments should reevaluate their rules related to on-premise signs, which often permit electronic signs using highly distracting full-motion video, in spite of being located adjacent to highways. On- and off-premise electronic signs should not be regulated differently when safety is at issue.

Donated ad space and Amber Alerts cannot compensate for the threat to public safety or the aesthetic harm done by digital signs. Alternatives exist for emergency communication along highways.

**Agenda Item # 6**

## ARE THEY LEGAL?

**THE FIRST STEP** in fighting a digital billboard that has been erected or proposed in your locality is to find out whether your state's agreement with the Federal Highway Administration (FHWA) already prohibits them. Many do. While that hasn't stopped the billboard industry from erecting the signs anyway, it can give you some powerful ammunition with which to challenge them and argue for their removal.

### Flashing, Intermittent, or Moving Lights

On July 17, 1996, the FHWA issued a memorandum clarifying the status of "changeable message signs." It noted that many State-Federal agreements would allow for changeable messages such as the Tri-Vision signs that use rotating panels or slats. However, it also noted that, even if Tri-Vision signs were allowed, the agreement probably wouldn't allow LED signs. "In nearly all States, these signs may still not contain flashing, intermittent, or moving lights," the memo states.

A 2006 letter to Texas Department of Transportation officials goes even further. If the state agreement prohibits signs "illuminated by any flashing, intermittent or moving light or lights... including any type of screen using animated or scrolling displays, such as LED (light-emitting diode) screen or any other type of video display, even if the message is stationary," then "the wording in the agreement clearly prohibits such signs," it states.

### Nonconforming Signs

Another industry trick is to convert a static, nonconforming sign to an LED sign and claim that the change is not an "improvement," and therefore not prohibited. The 1996 FHWA memo clearly states that this is not permitted, as "applying updated technology to nonconforming signs would be considered a substantial change and inconsistent" with federal regulations.

A July 1998 FHWA memo offers further guidance. It declares that signs with animation or scrolling messages should be considered nonconforming signs and notes that they raise "significant highway safety questions because of the potential to be extremely bright, rapidly changing, and distracting to motorists."

Additionally, nonconforming signs on state or local roads not covered by the Highway Beautification Act are often governed by local ordinances that do not allow them to be substantially altered or expanded either. Local jurisdictions have denied permits for conversion to digital technology, although some of those denials have been challenged.

*Local cities, towns or counties may usually impose stricter regulations on outdoor advertising than the state or federal government does.*

### Can Local Governments Prohibit Signs Allowed in State-Federal Agreements?

Yes, in almost all states. Local cities, towns or counties may usually impose stricter regulations on outdoor advertising than the state or federal government does. The State-Federal agreements govern signs on interstate and federal-aid highways. Localities may also create stricter standards for state and local roads.

### The First Amendment

Often, billboard industry representatives try to convince local governments that if they ban billboards, they will be violating the First Amendment right to free speech. *This is not true.*

In almost all states, localities may ban billboards outright, or may restrict the size and types of billboards that are allowed. The only thing they cannot restrict is what they say.

"It's only when you get into banning content that you get into trouble," said Eric Kelly, an attorney and professor of urban planning at Ball State University, who often helps local cities and towns draft or revise their sign ordinances.

Kelly recommends that local governments also make any rules regarding sign technology consistent between on-premise and off-premise signs to avoid potential litigation that might charge they are giving preferential treatment to one type of business over another. But that doesn't mean that you have to allow digital billboards if you allow banks to show the time and temperature, or gas stations to regularly change the prices posted on their signs, he said.

Allowing signs to change messages no more than once per minute, or restricting the size of the sign to no more than 30 square feet, allows for time and temperature signs, gas stations and church message boards but essentially bans Tri-Vision billboards and digital message boards that show new ads every six or eight seconds.

It also helps, said Kelly, to include language in the ordinance explaining why the restrictions are there. If the ordinance states that its mission is to promote safety and aesthetics, and ties this goal back to goals in the local comprehensive plan, it strengthens the ordinance and helps protect it from legal challenges.

*Follow this sign's instructions and you may regret it. By taking extra seconds to watch the sign change (and change and change), drivers place themselves and others in potential danger.*

Agent



# 2

ELECTRONIC  
SIGNS

SCENIC AMERICA'S STATEMENT

# Scenic America Issue Alert

## WARNING SIGNS: Industry Tactics to Watch Out For

Billboard owners often lament on industry websites that current regulations and public sentiment present their biggest hurdles to mass deployment of digital signs. But in addition to the industry's normal political influence, it frequently employs some common strategies with local officials for overcoming those roadblocks. Here is what your community can expect to encounter if permission is sought for electronic signs:

### Amber Alerts and Other Public Service Announcements

When Clear Channel installed a network of 10 digital billboards in Albuquerque, part of its deal with the state was that it would run Amber Alerts and other emergency messages for free. It made the same deal in Cleveland. "Strategic relationships with the community are important," a company representative told the *Albuquerque Tribune*.

But many cities and states don't need digital billboards to run Amber Alerts. Existing government-operated digital highway signs, which have been in place for many years, as well as television and radio, already provide a system for emergency communication.

Nonprofits and police departments should not allow themselves to be used as justification for the visual degradation of their community. No amount of donated ad space or Amber Alerts can compensate for the aesthetic and safety damage done by these signs.

### Let's Trade

To erect seven digital billboards on highways entering Cleveland, Clear Channel took down several hundred billboards elsewhere in the city.

This might look like a good deal, but the truth is most of the boards taken down in these swaps are nonconforming or unprofitable signs anyway. Billboard companies are willing to make the swap because

the digital boards are so much more profitable, and because they would otherwise be unable to erect them, since many localities have limitations on erecting new boards. And once the digital signs go up, they become cost-prohibitive to remove should the government later need to buy them out due to road improvements, commercial development, or if the signs are proven to be hazardous.

Governments should not fall for offers to take down old signs in exchange for permitting new digital ones. Whatever perceived benefits accrue from such deals don't outweigh the introduction of devices that will potentially lead to traffic deaths and injuries and degrade the visual character of the community. Further, in the absence of a complete moratorium on new signs, the old signs will inevitably be replaced somewhere within the jurisdiction.

### When an Improvement is Not an Improvement

These days, governments should be wary of seemingly innocuous applications to "improve" old signs or "add or upgrade lighting," which may hide a plan by a sign company to replace a static billboard with a digital sign. Installing digital technology over a regular board is not an update or "improvement," but should be treated as construction of an entirely new sign.

Some sign companies, in their eagerness to convert their signs, simply ignore rules and regulations and make changes without permission, hoping to intimidate local governments with the prospect of long and expensive legal battles or counting on a lack of political will to enforce the law.

## What Does the Public Think?

Billboard companies often claim that digital signs are very popular with the public, but never cite data to back up the claim. Perhaps that's because research shows the opposite.

A 2005 survey conducted in Arizona found that by a margin of 73 percent to 21 percent, citizens opposed laws that would allow electronic billboards on the state's highways. When the 21 percent favoring digital signs were then asked if they would still support the signs if they "might distract drivers," the opposition to electronic signs grew to 88 percent.

The survey of 682 adults had a statistical precision of plus or minus 3.8 percent.

## DON'T TAKE OUR WORD FOR IT...

### How Big is the Issue?

Electronics industry analyst, iSuppli, "predicts that by 2010, 75,000, or 15 percent of total billboards in the U.S., will be digital displays, up from a mere 500 digital billboards, or 0.1 percent, of all billboards in 2006."

Source: "Channel Viewpoint: Consumer electronics—just the sideshow to the advertising at CES," *ChannelLine Daily News*, January 9, 2007

### What's Bad for You is Good for Them

"Nobody likes being stuck in a traffic jam, but Clear Channel executives are coming to love them. 'Hey, traffic is a good thing,' quips Clear Channel Communications Inc. CEO Mark Mays. 'People listen to more radio, and they have more time to look at billboards.' Now that's a captive audience."

Source: *Business Week Online*, June 20, 2005

### And You Thought You'd Never Get that Big-Screen TV

"As one drives along Hwy 101 between San Jose and San Francisco, there are many billboards that vie for your attention. But just as you near San Carlos, it is tough if not impossible to miss one particular two-sided billboard. Its excellent positioning allows it to be seen by traffic as far

as one kilometer from either side. But then you couldn't miss a 34 ft x 19 ft Hi Definition TV on the side of the road that stands almost 40 feet above the ground, could you? And that's exactly what SiliconView's LED billboard looks like, a giant TV."

Source: *Outdoor Today*, January 2005

### If You Build It, They Will Stare... for More Than Two Seconds

"[Electronic] Billboard scheduling is based on a 'repeating loop' of advertising messages. The SiliconView loop contains six different messages, each displayed for five seconds with a one-second pause between each message. Thus, one message loop lasts approximately 36 seconds. The loop continuously repeats on a 24-hour basis, which gives each advertiser at least 2,880 viewing exposures per day. A factor that determines dwell time, or the amount of time a commuter sees a billboard, is the vehicle's speed approaching the board. *At 65 mph, a Highway 101 driver sees one full rotation of the SiliconView billboard. During peak hours, when traffic slows, a driver could see three to five loops.*" [emphasis added]

Source: "Pixels and Prints: Outdoor's Future Fusion," *Signs of the Times*, August 2003

## ADDITIONAL RESOURCES

*A definitive study on the safety of electronic billboards has yet to be done, but the following documents contain information that is important to the current debate. The research papers referenced below are available as PDF files at the Scenic America website at [www.scenic.org/billboards/electronic](http://www.scenic.org/billboards/electronic). You will need to have the Adobe Acrobat Reader on your computer to read them.*

### **The Impact of Driver Inattention on Near-Crash/ Crash Risk: An Analysis Using the 100-Car Naturalistic Driving Study Data**

*April 2006, National Highway Traffic Safety Administration,  
U.S. Department of Transportation*

A major study of driver inattention, primarily involving distractions inside the car, but finding that any distraction of more than two seconds is a potential cause of crashes and near crashes.

### **Traffic Safety Evaluation of Video Advertising Signs**

*Transportation Research Record: Journal of the Transportation Research Board,  
No. 1937, 2005*

A study of electronic signs in Toronto, which finds that "On the basis of the eye fixation study and the public survey data, it is apparent that video advertising can distract drivers inappropriately and lead to individual crashes," but calls for additional research due to other conflicting data.

### **Research Review of Potential Safety Effects of Electronic Billboards on Driver Attention and Distraction**

*September 11, 2001, Federal Highway Administration,  
U.S. Department of Transportation*

A summary of existing research (as of 2001), on the subject of the safety of electronic signs and a call for additional studies.

### **Milwaukee County Stadium Variable Message Sign Study: Impacts of an Advertising Variable Message Sign on Freeway Traffic**

*December 1994, Wisconsin Department of Transportation*

Study of the dangers posed by an electronic sign in Milwaukee along I-94, that concluded that "It is obvious that the variable message sign has had an effect on traffic, most notably in the increase of the side swipe crash rate."

BE SURE TO VISIT THE SCENIC AMERICA WEBSITE AT [WWW.SCENIC.ORG](http://WWW.SCENIC.ORG)  
FOR ADDITIONAL AND UPDATED INFORMATION ABOUT THIS AND OTHER SIGN CONTROL ISSUES.

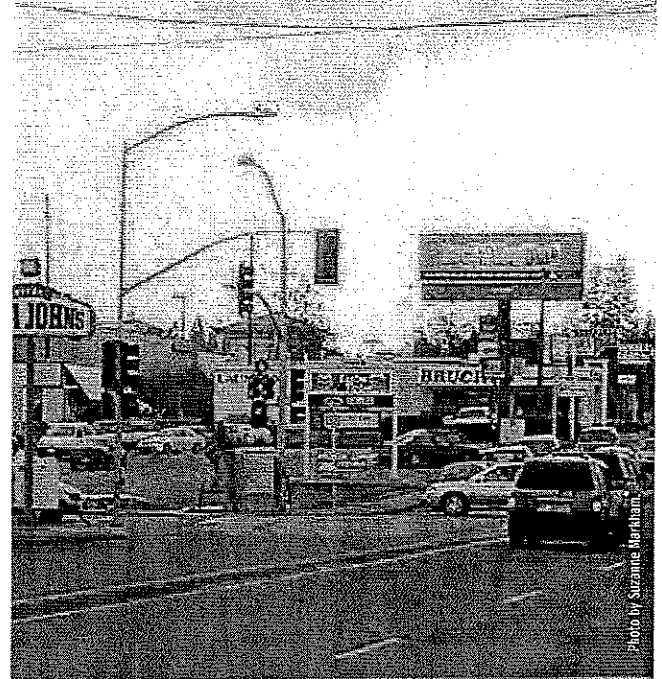


Photo by Suzanne Liebman

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Washington, DC 20006

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For additional information about this and other issues, visit [www.scenic.org](http://www.scenic.org).

Kevin E. Fry, *President, Scenic America*  
Laura Williamson McCafferty, *Writer*  
Kristen Argenio, *Ideal Design Co., Designer*

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Richard King Mellon Foundation.*

Scenic America is the only national nonprofit organization dedicated solely to preserving and enhancing the scenic character of America's communities and countryside. Through national advocacy efforts and technical assistance services, local and national projects, and the support of its 11 state affiliates, Scenic America fights to reduce billboard blight and other forms of visual pollution; preserve the scenic character of the nation's highways and byways; promote context-sensitive highway solutions; ensure the mitigation of the visual impact of cell-phone towers and other intrusions in the landscape; and promote scenic easements and other strategies to protect open space and preserve irreplaceable scenic resources.

**Change is inevitable. Ugliness is not.**

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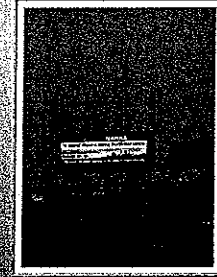
# Scenic America Powerpoint

## Digital Billboards

Unsafe and Unsightly at Any Speed

### What's wrong with digital signs?

- Aesthetic Concerns
- Highway Safety Implications
- Environmental Consequences



## Aesthetics

- Brightest objects in the landscape
- Become dominant visual element and overwhelm the fundamental character of the place
- On-premise digital displays with motion can be particularly garish
- Distraction from other visual/scenic qualities
- Clash with historic or established architectural elements, even at great distances

## Other Considerations

- Effects on property values
- Light and noise effects on nearby households and businesses
- Enormous compensation costs if signs are altered, moved, or removed



# Scenic America PowerPoint

## Highway Safety

- Brightest object in the driver's field of vision especially at night
- Cause inadvertent and instinctual glances
- Images rotate every 4.6 or 8 seconds causing lingering looks to see what's next
- Complex messages often take 5 seconds to comprehend



## How bright is a digital billboard?

- The sun is measured at 6,500 nits
- During the daytime, a digital sign can be set at over 10,000 nits
- The Virginia Tech Transportation Institute found digital billboards to be 10X brighter than the surrounding area, and 3X brighter than a traditional billboard



## What do we know?

(Source: 100-Car Naturalistic Driving Study USDOT National Highway Traffic Safety Administration)

- Anything that distracts the driver from the forward roadway for more than **two seconds** significantly increases the chances of crashes and near crashes.
- 23% of crashes and near-crashes that occur in metropolitan environments are attributable to eyes off the forward roadway greater than **two seconds**.
- Nearly 80% of the crashes and 65% of near crashes were caused by distractions that made the driver look away for **up to three seconds**.

## Some common-sense math: add it up

Brightest object in driver's field of vision that attracts inadvertent and unwilling glances  
+  
Frequently changing intermittent messages cause glances to linger to see what's next in the show  
+  
Complex advertising messages that take five seconds to comprehend  
=  
**More than two seconds**

*The scientifically established driver distraction threshold is shattered by digital signs.*

# Scenic America PowerPoint

## Can a digital sign simultaneously be safe for motorists and effective as an advertising medium?

- If the motorist spends enough time to read and comprehend the sign by definition they have taken their eyes away from the driving task too long
- Digital signs are designed to pull drivers' attention from the roadway otherwise they are useless as advertising
- Drivers already have too much distraction inside and outside the car
- Digital signs, because they are especially distracting due to bright light, vibrant color, and image changes or motion, divert attention from official signs that are necessary for the safe operation of the car

## What research is coming?

- Federal Highway Administration is planning research (completion 2009)
- The American Association of State Highway and Transportation Officials (AASHTO) is sponsoring preliminary research leading to future investigations
- The Transportation Research Board of the National Academy of Sciences is conducting a human-factors workshop and will manage AASHTO research

## What Should State and Local Governments Do ?

The only responsible action is a **moratorium** on electronic billboard permits until all the data is in and public safety can be assured,

because .....

## Communities may expose themselves to enormous liabilities

- The Highway Beautification Act requires cash compensation to sign owners of billboards on Interstate and federal-aid highways
- Compensation is usually defined as the value of the structure plus lost revenue, making each digital sign worth millions of dollars
- The costs of compensating billboard owners will be enormous even in the course of normal highway widenings and improvements if the signs need to be moved or taken down
- Once studies are completed, and if the signs are found to be unsafe in their current configurations, any required changes to sign operations may cost governments millions in compensation payments
- Who will be held liable if accidents are influenced by the signs if it is shown that governments knowingly permitted their construction even in the face of pending research or critical safety studies?



# Scenic America PowerPoint

## But isn't there research that says these signs are safe?

The billboard industry sponsored two studies of digital signs in Cleveland conducted by Suzanne E. Lee and Tantara Associates purporting to show they are safe

According to the Philadelphia Inquirer (8/21/07), Clear Channel claims they paid for the research, although the reports say the Foundation for Outdoor Advertising Research and Education, an arm of the Outdoor Advertising Association of America

The Maryland State Highway Administration commissioned human-factors expert Jerry Wachtel to assess the validity of the studies and prepare a peer-review report

## The Wachtel Report

Found serious deficiencies in both reports in terms of:

- Decisions and assumptions made in support of the research
- Methodology
- Review and application of cited literature
- Statistical methods controls and analyses
- Misleading and inconsistent reporting and evidence of bias

**"Having completed this peer review, it is our opinion that acceptance of these reports as valid is inappropriate and unsupported by scientific data, and that ordinance or code changes based on their findings is ill advised."**

Jerry Wachtel, CPE  
The Veridian Group, Inc.  
Berkeley California

*A Critical, Comprehensive Review of Two Studies Recently Released by the Outdoor Advertising Association of America*

Prepared for  
Maryland State Highway Administration  
October 18, 2007

## Digital Signs and the Highway Beautification Act

- Violate the Highway Beautification Act itself
- Violate HBA regulations which prohibit 'intermittent' lights
- Catastrophic Federal Highway Administration memorandum of September 25 ignores law regulations existing research future research potential financial liabilities and common sense

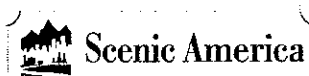
# Scenic America PowerPoint

## FHWA memorandum

- Violates HBA provisions on off-premise signs
- Violates regulatory prohibition on signs with "intermittent" lights
- Permits signs before FHWA research completed
- Ignores NHISA findings on two-second distraction threshold
- Ignores later costs if signs must be altered or removed
- Subverts federal rule-making requirements

## Environmental Considerations

- Digital signs may consume over 15X the amount of electricity as a traditional billboard
- Consume 4,800 watts per square yard per hour
- Standard size billboard contains 449,280 light-emitting diodes



For More Information

[www.scenic.org](http://www.scenic.org)



## Letters from the Public

### **Knoxville-Knox County Metropolitan Planning Commission**

October 25, 2007

#### **RE: Digital Billboards**

Knoxville has made the decision that no new billboards will be erected in the City. For that decision, the City and its leaders are commended!

This meeting is intended to provide public input to a discussion on digital billboards begun in February of this year by a committee appointed by Mayor Haslam in response to a request by Lamar Advertising. The report of that committee appears to presume that digital billboards are considered acceptable in the City and that an ordinance is being considered that will provide standards of size of digital billboards, spacing between billboards, level of illumination, and changing of messages on signs converted from traditional billboards to digital billboards.

It should be acknowledged that the use of digital billboards on Interstate and federal aid highways is in conflict with provisions of the Highway Beautification Act and federal-state agreements which ban billboards that employ "flashing, intermittent, or moving light or lights". Digital signs, by definition, employ intermittent lights. Even if the State's new law, which takes a permissive position on digital signs, is upheld by the Attorney General's review now in progress, it remains a local government prerogative to exercise stricter controls than the State.

The financial incentive that makes the conversion of traditional billboards appealing to the billboard industry is part of the reality of this situation. The rapid change of advertising messages typical of digital signs allows the industry to multiply the income from each sign six to eight times. So we understand why the industry is so determined to install digital billboards, and, in fact, an electronics industry analyst "predicts that by 2010, 75,000, or 15% of total billboards in the U.S. will be digital displays, up from a mere 500 digital billboards in 2006".

That said, the issue is really whether Knoxville wants digital billboards, or whether the brightly illuminated signs, which by their nature cause potentially hazardous distractions and are likely to result in more accidents, will provide sufficient public benefit to warrant special accommodation through revision of our local sign ordinance. If there were not serious concerns about the safety of the digital displays, why would the Federal Highway Administration have allocated \$150,000 to a safety study now in progress? The issue becomes more serious when, as FHWA studies point out, the drivers most likely to be distracted by the digital displays are the young and inexperienced (ages 16-24), and the elderly (over 65) drivers, who for reasons of increased longevity and improved health conditions, are on the increase. The inexperienced and older drivers, who have less attention to spare, would be placed at greater risk by use of digital billboards.

We already know from previous research that the distraction of a driver from the road of two seconds or more has been proven to result in accidents, and can conclude with little fear of contradiction that bright digital displays changing at the rate of every six to eight seconds are likely to cause such hazardous distractions. The stakes are too high – lives of our fellow citizens hang in the balance – for the City to gamble on use of digital billboards. The digital technology is here to stay, and there are safe and appropriate applications, but we do not need them on our local thoroughfares bombarding us with their insistent advertising – far in excess of what we can reasonably take in, much less assimilate into useful information. In addition, the City will have to deal with the liability it assumes in approving such signs if accidents result, as well as the subsequent removal of the signs, which are reported to cost at least \$500,000 each. If safety of our roads is a major community concern, further consideration of digital billboards in Knoxville should stop at this point.

Respectfully submitted,  
Gene Burr, AIA, AICP  
President, Scenic Tennessee

Oct 26, 2007  
Mr. Donaldson,  
I had my remarks  
on rate cards for con-  
venience but want  
these concerns to be  
a part of the record.

In addition, a  
comment I failed to  
make is as follows:  
"I do not believe those  
that are to be regulated,  
should write the regulations."

Please let us know  
if there are other public  
dates other than Nov 15  
and Dec. 13th for public  
input. Thank you,  
Dan Harter

Comments from Public Meeting MPC on Oct 25th  
Digital Billboards

Ann Warter, 6004 Grove Park Rd. Knoxville, TN 37918.

First thank you for the opportunity for the public to speak about digital billboard concerns. Since Mr Donaldson told me there will be more public meetings, I hope the next ones will be better publicized so the public will know.

Common sense tells us that digital technology does not belong on billboards or highways. By their very nature billboards are designed to distract drivers to their message. Can you imagine changing messages and pictures every few seconds using a series of extremely bright, intermittent colored light images? This is certainly a major distraction for any motorist!

Over the years (since 1984) that my husband and I have been involved in scenic conservation issues, we have experienced a wide variety of billboard industry tactics used to weaken our city and county sign ordinances to fit their needs. (their need for more billboards and more money). This is not unique to Knoxville.. It is happening in many localities and states. These attempts are a dangerous threat to our community as this latest

attempt for digital billboards is a definite safety hazard. That is one reason ordinance missions include safety and aesthetics and the public welfare as part of a local comprehensive plan.

So can our local government prohibit digital billboards and create stricter standards than the state or federal standards? The answer is YES!

I believe we must stand firm as a community against being "snowed" or intimidated or asked to "just go along." Let's strengthen not weaken our standards. This is more than just a battle against blight. There is much more at stake than ever because it is a strong public safety issue.

Already Lamon's lawyer was quoted in the Sentinel article on Sept 14th that applying our code to this technology is "an unreasonable restraint on commercial speech" that violates the First Amendment right to free speech. This is NOT true!

Localities may ban billboards outright or may restrict the size and type of billboards that are allowed.

The only thing they cannot restrict is what they say.

I did not know until recently that the state of Kentucky prohibits both digital billboards (L.E.D.'s) and Tri-Vision. Their state lawmakers stood firm!

Let us not be fooled in Knoxville by promises such as "Amber Alerts" or "Let's trade" or "we're just modernizing" or "they are an improvement". We all know that when they are adding digital technology to a regular board they are creating a new sign. We know there are alternatives already available for Amber Alert signs and other government signs and messages.

Let's understand that if the digital billboards were allowed they are more expensive to remove and we will be unable to afford ever getting them down.

The industry representatives were a part of this appointed committee but surely our own law dept. will not be intimidated by them and can do any clarification and that they will protect the public welfare.



She have many good business men in Knoxville who have realized the definite link between how a community looks and how having high standards pay off economically. They will need to speak out

She have good tourism leaders who know tourists don't come to our region or city to see digital displays along our streets and highways. They should speak out.

She have <sup>an</sup> excellent AAA that puts safety as a priority. They must "just say NO"!

As you see I am very concerned and passionate about this issue. And I know that I am not alone. Nine Counties / One Vision showed us that so many really care - not only for a vibrant downtown but their next concern was about billboards, sign clutter and loss of scenic beauty.

I know if we, as a city, keep accepting what I call "the lowest common denominator", that is exactly what we will get.

6004 Grove Park Rd  
Knoxville TN 37918  
Nov. 10, 2007

To: Knoxville City Council  
From: Ann Harter  
re: Digital Billboards

Dear Council,

I want to ask that as you hear the concerns at the Thurs., Nov. 15th workshop about the issues surrounding digital billboards, you will reject them as unacceptable for our city.

The lobby promoting this technology for billboards is strictly for their own monetary benefit - not the safety or the public welfare that you promised to protect.

I am not opposed to the technology. We all use it in many ways in our homes and our city has allowed small sized digital messages on "on-premise" businesses. However, common sense tells us Knoxville's streets and interstate highways are not the place for motorist distractions, safety concerns, intense illumination and intermittent messages on billboards - let alone the aesthetic insult they convey.

The vision often expressed for Knoxville to attract tourism and economic development is not going to be advanced by giving the outdoor advertisers their "wish list."

Please do not consider their regulations,  
just prohibit "digital" billboards. It  
is the right of a comprehensively-  
zoned city or county to impose  
stricter standards than the state has  
sadly accepted. Our ordinance rightly  
limited this technology for "on-premise"  
signs (EMC's) as the Federal amendment  
in the Highway Beautification Act does.

Thank you for serving our community.

Sincerely,

Ann Harter

## (Summary) Closing Statement

On the basis of safety and aesthetics the proposed regulations should be rejected. We, as a community should stand firm and reject efforts to convert existing billboards to mammoth electronic eyesores that will permanently harm the cherished visual qualities that we say we support.

The public interest is being sacrificed to the advantage of a single industry that is trying to undermine our local authority and the desire of the community for aesthetic protection.

Ann Harten

6004 GROVE PARK ROAD  
KNOXVILLE, TN. 37918  
Nov. 10, 2007

TO: KNOXVILLE CITY COUNCIL  
FROM: JIM HARTER  
RE: DIGITAL DISPLAY BILLBOARDS

THE JUMBOTRON IN NEXLAND STADIUM IS A VIDEO DISPLAY THAT IS APPROPRIATE FOR THIS LOCATION.

DIGITAL DISPLAY BILLBOARDS - ON THE OTHER HAND - ARE A VERY REAL DANGER TO ANY DRIVER WHOSE ATTENTION IS DISTRACTED FOR MORE THAN TWO (2) SECONDS. A VEHICLE TRAVELLING AT 60 MPH (88 FT/SEC) COVERS 59 YARDS (OVER HALF THE LENGTH OF A FOOTBALL FIELD) WHILE THE DRIVER IS LOOKING AT A BILLBOARD INSTEAD OF WATCHING THE ROAD.

THE BILLBOARD LOBBYISTS HOODWINKED THE STATE LEGISLATORS INTO BELIEVING THAT DIGITAL BILLBOARDS WERE INEVITABLE AND REGULATIONS WERE MANDATORY.

KNOXVILLE CAN REJECT THE INDUSTRY AGENDA AS A DEVIANT ATTEMPT TO AVOID OUR CITY ORDINANCE THAT PROHIBITS OFF-PREMISE ELECTRONIC MESSAGE BOARDS. THEY THREATEN LITIGATION IF THEIR TRANSPARENT EFFORTS THAT VIOLATE NOT ONLY OUR CITY ORDINANCE BUT ALSO OUR STATE-FEDERAL ADVERTISING REGULATION CONTROL AGREEMENT ARE DENIED. THEY CLAIM THAT 8 SECOND DISPLAY FOLLOWED BY 2 SECONDS OFF IS NOT INTERMITTENT (WEBSTER'S DICTIONARY SAYS "NOT CONTINUOUS")  
YOU ARE NOT REQUIRED TO ACCEPT THEIR RECOMMENDATIONS BUT CAN SIMPLY REJECT DIGITAL DISPLAY BILLBOARDS.  
THANK YOU.

SINCERELY,

James A. Harter

Julie Webb's statement on Digital Billboards

When the participants of Nine Counties/One Vision chose their most important issues, second only to the revitalization of downtown Knoxville was the public's outcry for BILLBOARD CONTROL.

Now we are facing the possibility of digital billboards.

They present a real safety hazard. With a change of billboards every 10 seconds a driver will be more distracted. In fact, if a driver is going 35 miles per hour and looks at the billboard for only two seconds, the car will have gone 70 feet with the driver's eyes off the road.

We all know that driving while talking on a cell phone is like driving mildly drunk. Add the distraction of the digital billboard changing every 10 seconds. That---is a lethal combination.

Obviously one can make a lot more money with a digital billboard changing every 10 seconds. But is it worth the cost of even one life? I hope it's not my grandchild!

Julie Webb  
562 Riverfront Way  
Knoxville, TN 37915  
juliedwebb@aol.com

*NICHOLAS A. DELLA VOLPE  
5216 CRESTWOOD DRIVE  
KNOXVILLE, TENNESSEE 37914  
(865) 525-2880 (H)  
(865) 525-4600 (W)*

October 24, 2007

Mayor Bill Haslam  
City Council Members  
Metropolitan Planning Commission  
City-County Building  
Knoxville, Tennessee 37901

Re: Digital Display Billboard Committee Report/Recommendation

Ladies and Gentlemen:

I am writing to you about the latest assault on our City's shrinking natural beauty, via proposed changes to the billboard regulations of this community. I understand the mayor has empowered a Task Force to "study" possible regulations for "controlling" or converting regular flat sign billboards into multi-changing digital display billboards. No doubt there is pressure from the powerful billboard lobby. Perhaps it is naïve for a citizen to even attempt to voice concerns in the face of such moneyed interests.

You got to hand it to 'em. The Outdoor Advertising giants are clever in their new approach. This entire campaign has been waged under the guise of promoting regulation and control of electronic signs. That is little more than a subterfuge to get what they want, i.e., more signs, more advertising bucks per sign, more glimpses at our dollar-spending eyeballs. Don't get me wrong, commerce in general is a good thing. But there are significant community tradeoffs and hidden costs here, including human safety and aesthetics. We the people lose something every time another one of these monoliths perches on our east Tennessee landscape. Billboards are visually ugly. They create driver distractions that can lead to more accidents and deaths. By their nature, they harvest eyeballs placed and paid for by our billions of tax dollars invested in building the roadways they wish to perch on or near, in order to swoop down on passing prey . . .

Several years ago, we the people spoke—after much thought and debate—and said: "Enough is Enough." We voted in an ordinance proclaiming: "No New Billboards." We meant that. As a community, we have enough signs to advertise our wares. Perhaps too many. We need to keep and foster some natural beauty for ourselves and make visitors truly welcome in our East Tennessee home. Blink too long and we may become Pigeon Forge. May the good Lord spare us from that!

October 24, 2007

Page 2

Back to the current campaign, nicely camouflaged by the Sign Guys as a regulatory proposal. They've gotten pretty far. They've eased past the feds and our gullible state legislators. Now they are seeking to slide into our home base. Knoxville, we need to stop and reflect. I submit that we need to say NO in forceful terms. We at least need to rethink the effect of this proposal.

History. How do we get there? A bit of recent history bears recounting:

- 1) The FHWA recently ruled that these electronic signs were not "intermittent or flashing light emission sources" (a regulated activity) and, so, were not prohibited by the highway beautification laws and regulations, and, thus, states can regulate them, if they care to. Curiously, a federal highway safety study about such signs "should be available" in 2009 ... well after the fact. Let the camel's nose in under the tent, then there is no stopping him. Hard to control, Grandfathered Signs, will be well ensconced by then.
- 2) Our state legislature "amended" the billboard act this spring (Public Chapter 76, effective May 5, 2007)—and allowed the "regulation" of intermittent display signs as an alleged "reform," thereby opening the state door to make such signs permissible.
- 3) Several years ago, Knoxville adopted a No New Billboard ordinance, but the industry now suggests a way around that: Turn every Interstate and Major Artery "conforming" sign (where else would you spend the big \$, but on the high daily traffic sites provided by such major roadways??) into an infinite number of signs. These will change the face display every 10 seconds. (Their report uses a regulatory approach: punish those non-conforming signs).
- 4) The FHWA says these signs can change every 8 seconds, with a 1-2 second transition. The Knoxville study committee "got tough" and will only change them every 10 seconds. (Gee, there are 86,400 seconds in a day. That means each sign can now show 8600 displays!!!). No New Billboards ... just convert each one to many flashing signs. Smart
- 5) They will be bright (although FHWA says should not be "not unreasonably bright" and the local study committee says give the enforcement guys light measuring devices to protect us), and a changing visual images. These are yet another distraction to drivers who are already distracted on their cell phones or (God help us) texting their friends instead of watching the road. How many lives is this worth?
- 6) Our community and its leaders need to examine their real priorities:
  - Should our roads be safe?

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October 24, 2007  
Page 3

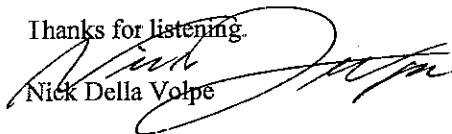
- Is this a driver distraction? An attractive nuisance?
- Is it more visual pollution?
- Does the almighty dollar/opportunity trump common sense?
- Why are our roads and communities uglier than say Charlotte's? or Vermont's? or England's?
- Isn't enough enough?

Money. The conversation could stop here. We don't need more billboards or changing sign faces. But I must ask a question: *Is this even good business from our end?* Given the large dollars generated by the sign advertising industry—it is a business after all—we need to ask a pertinent question: If we the taxpayers are spending billions of dollars to build these highways—to aggregate the cars and thus captive eyeballs these guys want to sell to—why don't we the taxpayers get a share of the ad revenues to offset some of our taxes? I'm not talking about income taxes that everyone pays for dollars they earn or take home. We are selling the opportunity to advertise in our "newspaper," i.e., our highways. Shouldn't these businesses be paying us to place ads in our "paper"? If this is valuable (definitely), why aren't we selling our tax-created opportunity?

Quid-Pro-Quo. Finally, if even in the face of real safety concerns and negative visuals, you remain determined to give the Moneyed Sign Boys some of what they want—valuable electronic signs capable of pitching 8600 different ads/day for every old, flat sign face replaced, then we should extract a fair communal purchase price. Q. "Want a valuable face-changing sign?" Then tear down say 4 other billboards and restore some natural beauty to part of our community. If you must play this game, then they should at least pay a fair price.

Please vote no to such signs for Knoxville.

Thanks for listening.



Nick Della Volpe

January 8, 2008



MPC Executive Director Mark Donaldson  
Suite 403, City County Building  
400 Main Street  
Knoxville, TN 37902

Dear Mr. Donaldson:

RE: City of Knoxville Digital Display Outdoor Advertising Structures

As you are aware, the City of Knoxville has been analyzing the issues of digital display devices for nearly one year. Most large metropolitan areas in Tennessee, including Memphis, Nashville, Chattanooga, The Tri-Cities, Cookeville, and Knox County allow digital displays. This technology presents a more aesthetic outdoor advertising device and, contrary to a vocal minority, is less luminescent than a traditional outdoor advertising device. Significantly the Tennessee Legislature in HB 0750/SB 0593 amended the state law to define outdoor advertising structures to include a digital display. It appears certain that digital displays will have the exact same legal rights as billboards.

Lamar is attempting to work with the City to develop a regulatory scheme with more structure than is currently permitted by state law and Knox County. During this process do not be swayed by the vocal minority that has opposed any and all kinds of commercial speech involving billboards for nearly 30 years. Simply put this group would oppose any form of commercial speech whether digital, vinyl, or existing wooden structures.

I am enclosing a copy of the Knoxville News Sentinel article regarding the value of digital displays as it relates to "Amber Alerts" and other law enforcement endeavors such as capturing fugitives. Local law enforcement has stated that the amber system and digital displays are significant for our community.

Last, there have been some significant misunderstandings regarding the studies that confirm or deny whether digital displays are distracting to drivers. The information referenced by the MPC is not representative of scientifically based studies in this field. Simply put, there is not a scintilla of evidence that digital displays cause any increased distraction to the safety of drivers.

I would like to encourage everyone to visit the digital display structures located in Knox County to form your own opinion regarding this issue. The structures are located at the following locations:

- a. Turkey Creek – Southbound on Lovell Road;
- b. Clinton Highway at Old Callahan Road; and,
- c. Southbound on Pellissippi Parkway at Solway Bridge.

It is Lamar's sincere desire to work with the City to formulate proper regulations. This is an opportunity to reasonably regulate this issue without the downside of litigation or unregulated proliferation. Should you have any questions, please do not hesitate to contact me personally at 865-546-5011.

Sincerely,

A handwritten signature in cursive script, appearing to read "David Jernigan".

J. David Jernigan  
General Manager/Vice President

Attachment

3009 W. Industrial Parkway, Knoxville, TN 37921

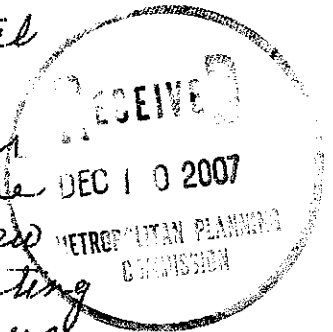
Ph. (865) 546-5011 / 1-800-283-5011

MPC February 14, 2008 Fax (865) 637-4603 / www.lamar.com

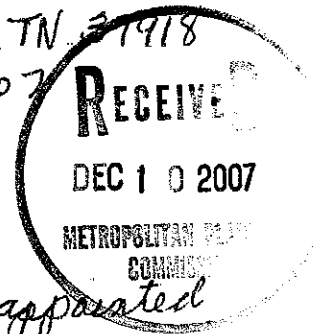
Agenda Item # 6

Note: My husband and I have been able to attend and convey our concerns about digital billboards at the MPC public presentation and the City Council workshop. However, Mr. Narter is just out of the hospital and we are unable to come to your agenda review workshop Tues. as the regular MPC meeting this Thurs. Therefore, we are sending our written comments. In addition we hope our comments from the first two meetings have been included in your packets.

Jan G. Narter



6004 Grove Park Rd  
 Knoxville, TN 37918  
 Dec 8, 2007



To: MPC Planners and Commissioners  
 From: Ann and Jim Harter  
 re: Digital Billboards.

We are very concerned that the committee appointed by Mayor Haslam is recommending that we must simply regulate digital billboards for the city of Knoxville. It is as if we have no other choice. Our ordinance rightfully has limited the size of digital technology advertising where it is appropriate.

First, it is not an issue of digital technology or no digital technology. We, of course know there is a place for this technology but certainly not on our Interstates or arterials as yet another distraction for motorists.  
Second, this is not an issue of developers or advertisers against citizens or neighborhoods.  
Third, even if there are no accepted studies whether they are safe or unsafe, common sense tells us they are a definite distraction by design.

We contend it is a quality of life issue for our community. You as professional planners and appointed commissioners who serve without pay have a unique opportunity to set a higher standard than either the federal or state governments accept.

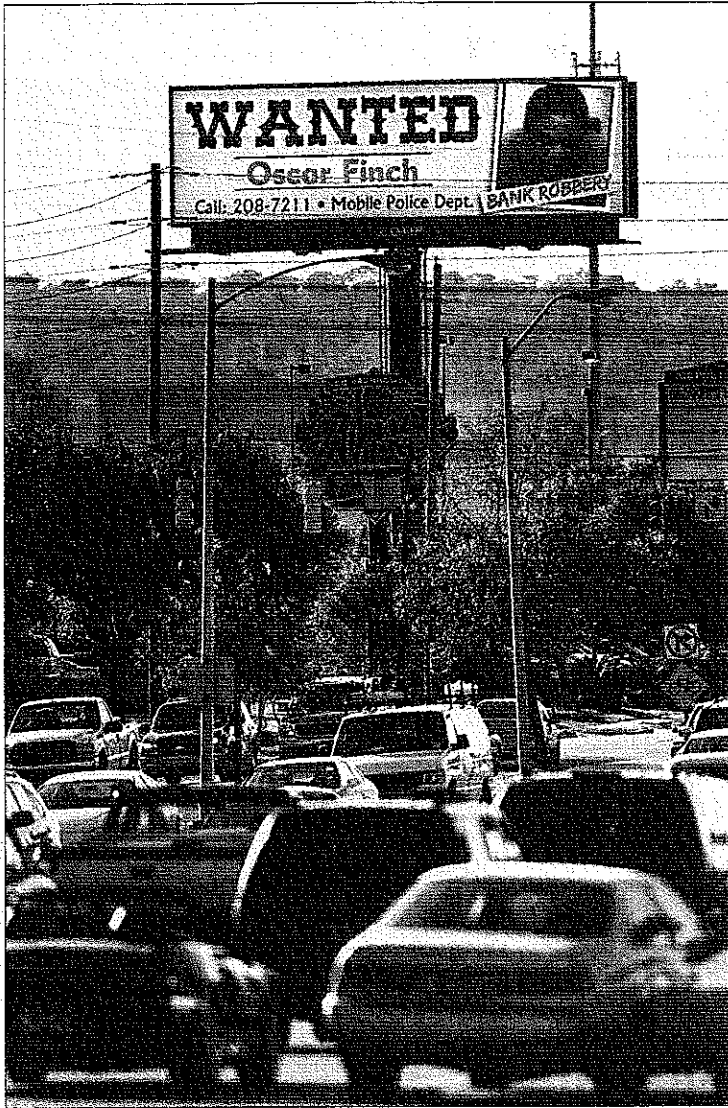
There are other legal concerns as well. How would allowing this additional technology not violate the "customary maintenance"

clause of our ordinance? How does this not become essentially a "new" billboard? How can "non-conforming billboards" be enforced since at this point no determination has been made of what is non-conforming. In 1984 none were declared as required by ordinance. Why are we being asked to accept the recommendations of an obviously industry dominated committee that concluded their deliberations last June but are just now being pushed? Why were there no minutes to review from their meetings?

We respectfully ask that you recommend to City Council that digital technology on billboards is not in the best interest of the public welfare, safety or aesthetic protection.

Thank you,

Ann and Jim Haster



BILL STARLING/ASSOCIATED PRESS

A billboard in Mobile, Ala., shows a wanted poster on Oscar Finch, who was being sought for bank robbery. It only took one day for Finch to be brought into custody.

## It's digital answer to Wild West posters

BY GARRY MITCHELL  
Associated Press

MOBILE, Ala. — Between ads for hamburgers and liposuction, the giant digital billboards flashed an image of Oscar Finch's face taken by a surveillance camera. The young man wasn't selling anything. He was running from police.

Finch, a suspect in a bank robbery, was in custody just a day later, and police say his swift capture is an example of how the eye-catching electronic signs can be used as a 21st century version of the Wild West wanted poster.

"We had been looking for this individual for 10 days and turned it around in 24 hours," said Mobile police spokeswoman Nancy Johnson. "So we're thinking it's going to be highly effective. I think it's a great asset for us."

Authorities across the country are also using the technology to search for missing children and to warn the public in emergencies.

Twelve billboards showed a grainy mugshot of Finch taken during the Nov. 20 heist.

The image, which was mixed in with commercial ads, included his name, his alleged offense and a phone number to contact police.

The 21-year-old Finch, who was the first suspect featured on an electronic billboard in Mobile, turned himself in on Dec. 1, just a day after his photo was posted. He apparently surrendered after seeing news coverage of the billboards, Johnson said.

With digital billboards, police can now display a suspect's face to thousands of people, sometimes almost immediately after a crime is reported.

"We can be up in 15 minutes" of getting a suspect's photo, said Troy Tatum, general manager of Lamar Advertising, the Baton Rouge, La.-based company that provided free use of the billboards in Mobile as a public service.

When the electronic boards aren't showing suspects, they display regular advertising in moving, full-color images that stand 14 feet tall and 48 feet wide.

They can also be used for Amber Alerts for missing children and to deliver weather bulletins.

"We have a special slot set up for local emergencies," Tatum said.

Mobile Police Chief Phillip M. Garrett doesn't want to give such prominent display to "every lawnmower thief" wanted by police.

He said the billboards will be used only in high-profile cases or in searches for missing people.

Only a fraction of U.S. billboards are digital — 500-plus out of an estimated 450,000 total signs, according to the industry.

But production of electronic boards is expected to grow.

Police in other parts of the country are also beginning to use the billboards.

In September, Florida authorities arrested a drug suspect two weeks after his photo was displayed on a billboard in Daytona Beach.

A tipster who saw the suspect's picture found him sitting in a McDonald's.

The billboards have also been useful in disasters. When an interstate bridge collapsed in August in Minneapolis, billboards displayed an emergency message within 15 minutes.

The signs also have critics. Mobile City Council member Connie Hudson has proposed a temporary moratorium on any new billboards, saying the city needs safety regulations to control the number and spacing of the signs because they may distract drivers.

The full council has not acted on Hudson's concerns.

Ken Klein, vice president of the Outdoor Advertising Association of America Inc., in Washington, D.C., said billboard wanted posters became more common after a young woman was slain in 2002 in Leawood, Kan.

The victim's father, Roger Kemp, approached Lamar Advertising for help, and the company posted a composite sketch of the suspect on a conventional billboard. A tipster who saw the sketch led authorities to Benjamin Appleby, 31.

Appleby was convicted in 2006 and sentenced to life in prison for killing 19-year-old Ali Kemp.

# Bad guys' photos on billboards help police corral them

December 12, 2007

Metropolitan Planning Commission  
City-County Building 400 Main Street  
Knoxville, TN 37901

Dear MPC and Commissioners:

At the last board meeting of Fountain City Town Hall, Inc., we discussed digital billboards, and the board voted unanimously to speak out regarding this issue.

We are asking <sup>MPC</sup> ~~City Council~~ to prohibit the use of digital billboards rather than consider regulations governing them for the following reasons:

- 1) The Federal Highway Administration has agreed to conduct research into safety issues associated with digital billboards that will not be completed until 2009. The safety of these billboards regarding distraction of drivers is a very real issue. A 2006 National Highway Safety Administration study showed that anything that distracts drivers for more than two seconds significantly increases the chances of accidents.
- 2) These billboards would cause additional visual degradation across our city.
- 3) Knoxville is trying to be a "greener" city. At a time when the public is being encouraged to conserve energy, we do not need to be using electricity for these billboards. Each billboard consumes 4,800 watts of electricity per square yard per hour and is powerful enough to be seen one-half mile away!
- 4) Once this law is changed, it is forever. There is no turning back.

Brochures for economic development have scenic photos of our beautiful dogwood trees, our lovely parks, picturesque mountains and lakes, or our magnificently refurbished downtown buildings. Wouldn't it be a shame to be recognized and remembered for the visual blight of our digital billboards?

We ask you to protect our city from this hazardous distraction to drivers and the visual blight of digital billboards.

Thank you for your consideration.

Sincerely,

Mark C. Campen  
Chairman  
Fountain City Town Hall