Signs of Success

An overview of the regulation of electronic message displays

REGULATION OF ELECTRONIC MESSAGE DISPLAY SIGNS
Overview

We are all very fortunate to live in a society that places a premium value on freedoms, and limits governmental intrusion upon those freedoms. Freedom of speech is one of those essential freedoms, and one that is embodied within the Constitution that molds the rule of law governing this great nation. Many reputable organizations, like the U.S. Small Business Administration and the International Sign Association caution against sign regulations that interfere with the freedom of exercising commercial speech.

The following information has been assembled by a coalition of manufacturers of electronic message display signs. We recognize the uncertainty surrounding the legality of certain sign regulations. We also respect the desire by communities to regulate signs, including electronic message display signs, and the need for responsible sign codes. Without engaging in debate over the legality of regulations affecting electronic message displays, the following materials are intended to develop a more sophisticated understanding of the current state of the technology, and to promote regulations that reflect the broad variations in the use of electronic message displays.

The History of Changeable Message Signs

In the day when signs were primarily painted, changing messages on a sign merely required painting over the existing message. More recently, signs with removable lettering made it possible to manually change the lettering on a sign to display a new message. Electrical changeable message signs followed the invention of the light bulb, and included light bulbs arranged in a pattern where, by lighting some light bulbs and not the others, letters and numerals could be spelled out.

With the advent of solid-state circuitry in the early 1970s, electronic changeable message signs became possible. The first of these products were time and temperature displays and simple text message displays using incandescent lamps. These lamps were very inefficient. They used a great deal of power and had short life expectancies.

During the energy crunch of the 1980s, it became necessary to find ways to reduce the power consumption of these displays. This need initially spawned a reflective technology. This technology typically consisted of a light-reflective material applied to a mechanical device, sometimes referred to as "flip disk"

displays. Electrical impulses were applied to a grid of disks with reflective material on one side of the disk, and a contrasting finish on the other side. The electrical impulses would position each disk within the grid to either reveal or conceal the reflective portion of the device as required, to produce an image or spell out a message. These technologies were energy efficient, but due to the mechanical nature of the product, failures were an issue.

Shortly after the introduction of the reflective products, new incandescent lamps emerged. The new "wedge base" Xenon gas-filled lamps featured many positive qualities. Compared to the larger incandescent lamps that had been used for several years, the wedge base lamps were very bright, required less power to operate and had much longer lifetimes. These smaller lamps allowed electronic display manufacturers to build displays that featured tighter resolutions, allowing users to create more ornate graphic images.

Next in the evolution of the changeable message sign was the LED. LED (light emitting diode) technology had been used for changeable message displays since the mid 1970s. Originally, LEDs were available in three colors: red, green and amber, but were typically used for indoor systems because the light intensity was insufficient for outdoor applications and the durability of the diodes suffered in the changing temperatures and weather conditions. As technology improved, manufacturers were able to produce displays that had the intensity and long life required for outdoor use, but were limited in the viewing angle from which they could be effectively seen.

Recently, breakthroughs in this field have made available high intensity LEDs in red, green, blue and amber. These LEDs have made it possible to produce displays bright enough for outdoor use with viewing angles that are equal to, or better than, other technologies currently available. They are energy-efficient, can be programmed and operated remotely, and require little maintenance. In addition, the computer software has evolved such that a broad range of visual effects can be used to display messages and images. The spacing of the LEDs can be manipulated to achieve near-television resolution. Earlier "flip disk" and incandescent technologies have become nearly obsolete as a result.

Types of Changeable Message Signs

Changeable message signs can be placed into two basic categories: manually-changed and electronically-changed. The most common form of manually-changed sign involves a background surface with horizontal channels. Letters and numerals are printed on individual plastic cards that are manually fitted into the channels on the sign face. A broad range of letter styles and colors are available. The manually-changed sign is relatively inexpensive and is somewhat versatile. Some discoloration has been experienced in the background surface materials

with exposure to weather and the sun. Changing the message on such a sign is accomplished by having an employee or technician remove the existing plastic letter cards and replacing them with cards displaying the new message. Occasionally, such signs have been the subjects of vandals who steal the letters or, as a prank, re-arrange them to spell out undesirable messages. Over time, as letters are replaced with lettering styles that deviate in color or type style from the original set, such signs have had a tendency to take on a mix-and-match appearance.

Electronic changeable message signs are generally of two types: light emitting and light reflective. Current light emitting display technologies include LED and incandescent lamp. Light reflective displays typically consist of either a reflective material affixed to a mechanical device (like a "flip disk") or a substance commonly referred to as electronic ink.

Many of the above mentioned technologies have the capabilities to display monochromatic (single color) or multiple color images. Monochrome changeable message signs are typically used to display text messages. Multiple color displays are more common in applications where color logos or video is displayed.

Operational Capabilities of Electronic Signs

Electronic signs have evolved to the point of being capable of a broad range of operational capabilities. They are controlled via electronic communication. Text and graphic information is created on a computer using a software program. This software is typically a proprietary component that is supplied by the display manufacturer. These software programs determine the capabilities of the displays. The software is then loaded onto a computer that operates the sign. The computer may be installed within the sign itself, operated remotely from a nearby building, or even more remotely by a computer located miles away and connected to the sign with a telephone line modem or other remote communication technology.

Since most of the software programs are proprietary, one can assume that each software program is slightly different. However, the capabilities that the programs offer are all very similar. Changeable message sign manufacturers provide software that allows the end user to be as creative or as reserved as they like. The sign can be used to display static messages only, static messages changed by a computer-generated transition from one message to the next, moving text, animated graphics and, in some applications, television-quality video.

Text messages or graphic images can simply appear and disappear from the display or they can be displayed using creative entry and exit effects and transitions.

Example:
Oftentimes a display operator will choose to have a text message scroll onto the display and then "wipe-off" as if the frame has been turned like the page of a book.

If a display has the capabilities to display graphics, logos or even video, it is common for the display operator to add motion to these images.

Example:
A display operator at a school may wish to create an animation where their school's mascot charges across a football field and runs over the competing school's mascot.

Video-capable displays can operate much like a television. These displays can show live video, recorded video, graphics, logos, animations and text.

All display capabilities are securely in the hands of the display operators. They are ultimately responsible for what type of, and how, information is displayed on their changeable message sign.

Traffic Safety Considerations

Electronic message displays (EMDs) are capable of a broad variation of operations, from fully-static to fully-animated. In exterior sign use, they are often placed where they are visible to oncoming traffic. Concerns are often raised as communities change their sign codes to expressly permit such signage about the traffic safety implications for signage with moving messages. These concerns are largely unfounded.

EMDs have been in operation for many years. As is typical with many technological advances, the regulatory environment has been slow to respond to advances in the technology itself. In 1978, after many years of the use of electronic signs, Congress first passed legislation dealing with the use of illuminated variable message signs along the interstate and federal aid primary highway system. The Surface Transportation Assistance Act permitted electronic message display signs, subject to state law, provided each message remained fixed on the display surface but "which may be changed at reasonable intervals by electronic process or remote control," and did not include "any flashing, intermittent or moving light or lights." *23 U.S.C. § 131.*

In 1980, and in response to safety concerns over EMDs along highways, the Federal Highway Administration published a report titled *"Safety and Environmental Design Considerations in the Use of Commercial Electronic Variable-*

Message Signs." This report was an exhaustive analysis of the safety implications of EMDs used along highways. The report highlights the inconclusive nature of safety studies that had occurred to that time, some concluding that roadside signs posed a traffic distraction, and others concluding that roadside signs do not cause traffic accidents. In view of the inevitable use of the technology in signage, the report made some sensible observations about traffic safety considerations for such signs:

1. *Longitudinal location.* The report recommended that spacing standards be adopted to avoid overloading the driver's information processing capability. Unlike the standard for sign regulations in 1980, most communities today have spacing standards already integrated into their sign codes.

2. *Lateral location.* Often referred to as "setback," the report initially recommended the common sense requirement that such signs be placed where the risk of colliding into the sign is eliminated. This was a legitimate concern, as such signs were being contemplated for use by highway departments themselves in the right-of-way. Private use of roadside signs is generally limited to locations outside the right-of-way, so this should not be a significant concern. The next issue addressed by the report was visibility. The report advocated the minimum setback feasible, stating that "standards for lateral location should reduce the time that drivers' attention is diverted from road and traffic conditions. Generally this suggests that signs should be located and angled so as to reduce the need for a driver to turn his head to read them as he approaches and passes them." This can best be handled by permitting such signs to be located at the property line, with no setback, and angled for view by oncoming traffic.

3. *Operations: Duration of message on-time.* The report states that the duration of the message on-time should be related to the length of the message, or in the case of messages displayed sequentially, the message element. For instance, based on state highway agency experience, "comprehension of a message displayed on a panel of three lines having a maximum of 20 characters per line is best when the on-time is 15 seconds. In contrast, the customary practice of signing which merely displays time and temperature is to have shorter on-times of 3 to 4 seconds." Since this 1980 report, state highway agencies have adopted, for use on their own signs, informal standards of considerably shorter "on" time duration, with no apparent adverse effects on traffic safety. Federal legislation affecting billboard use of electronic signs

requires only that messages be changed at "reasonable intervals."[1] Moreover, the U.S. Small Business Administration, in a report on its website reviewing safety information compiled since the 1980 report, has concluded that there is no adverse safety impact from the use of EMD signs. See http://www.sba.gov/starting/signage/safelegal.html. The most recent study was performed in 2003 by Tantala Consulting Engineers, available through the U.S. Sign Council at http://www.ussc.org/publications.html, also concluding based on field studies that EMD signs do not adversely affect traffic safety. Many small businesses using one-line EMD displays are only capable of displaying a few characters at one time on the display, changing frequently, which takes virtually no time for a driver to absorb in short glances. These signs have likewise not proven to be a safety concern, despite many years of use.

4. *Operations: Total information cycle.* EMD signs can be used to display stand-alone messages, or messages that are broken into segments displayed sequentially to form a complete message. As to the sequential messages, the report recommended a minimum on-time for each message "calculated such that a motorist traveling the affected road at the 85th percentile speed would be able to read not more than one complete nor two partial messages in the time required to approach and pass the sign."

5. *Operations: Duration of message change interval and off-time.* The report defines the message change interval as the portion of the complete information cycle commencing when message "one" falls below the threshold of legibility and ending when message "two" in a sequence first reaches the threshold of legibility. This is relevant when operations such as "fade off-fade on" are used, when the first message dissolves into the second message, or when the two messages move horizontally (traveling) or vertically (scrolling) to replace the first message with the second. Off-time, on the other hand, is a message change operation that involves the straightforward turning off of the first message, with a period of blank screen, before the second message is instantly turned on.

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[1] The appropriate interval of message change may be affected by a variety of factors, and one standard does not fit all situations. Imagine, for instance, a bridge that serves two roadways, one with a speed limit of 30 mph and the other a highway with a speed limit of 60 mph. In a situation where the bridge is socked in by fog, an electronic sign on the approach to the bridge may be used to convey the message, "Fog ahead...on bridge...reduce speed...to 15 mph." The driver on each roadway needs to see all the segments to the full message. The rate of changing each segment of the message needs to be different for each roadway. If the change rate were based only on the 60 mph speed, the sign on the slower roadway may appear too active. If the change rate were based only on the 30 mph speed, the result could be fatal to drivers on the highway.

The report takes an extremely conservative approach as to message change interval, advising against the use of operations other than nearly instantaneous message changes. If such operations are permitted, the report suggests "that the figure commonly used as a measure of average glance duration, 0.3 second, be used here as a maximum permissible message change time limit." The report further advocates minimizing off-time between messages, where static message changes are used, stating that "[a]s this interval of off-time is lengthened, the difficulty of maintaining the continuity of attention and comprehension is increased."

The conservative nature of the authors' position is reflected both in the report, and in over twenty years of practice since the report was issued. The report cites studies indicating that, in some situations, the use of electronic operations had a beneficial effect on traffic safety, by creating a more visually-stimulating environment along an otherwise mind-numbing segment of highway, helping to re-focus and sharpen the driver's attention to his or her surroundings.

In over twenty years of experience, with numerous electronic signs nationwide utilizing the various operational capabilities for message change, there has been no significant degradation to highway safety reported. Many electronic signs used by highway departments now use a mode of transition between messages or message segments, such as traveling or scrolling. Drivers are apparently capable of attaching primacy to the visual information most critical to the driving task, with sign messages taking a secondary role.

The report further expresses its limited focus upon interstate and federal aid primary highways. Noting the stimulating visual environment created by full-animation signage in places like Times Square, Las Vegas and Toronto's Eaton Centre, the authors of the report agreed that such signs added vitality and dimension to the urban core, but discouraged the use of animation alongside the highway. The report did not deal with the use of such signs, or their operational characteristics, on roadways between the extremes of the interstate highway and the urban core. In addition, animation has now been used on highway-oriented signs in many locations for years, with no reported adverse effect of traffic safety.

In sum, the report acknowledged the appropriateness of full-animation electronic signs within the urban core, but recommended that full-animation not be used along interstate and primary highways. It took a conservative position on operations of such signs along highways, advocating static message change sequences only, with no more than 0.3 seconds of message change interval or "off-time" between messages. The message changes on sequential segmented messages should be displayed such that a motorist can see and read the entire chain of message segments in a single pass. Messages should be permitted to change at "reasonable intervals." Such signs

change interval or "off-time" between messages. The message changes on sequential segmented messages should be displayed such that a motorist can see and read the entire chain of message segments in a single pass. Messages should be permitted to change at "reasonable intervals." Such signs should have adequate spacing between signs, but be set back from the right-of-way as little as feasible.

Since 1980, no new information has become available supporting a traffic safety concern about EMDs. They have been installed in highway locations, along city streets and in urban core settings, using all forms of operations: static, sequential messaging and full animation. Despite such widespread use, and the presence of environmental organizations generally adverse to sign displays, no credible studies have established a correlation between EMDs and a degradation in traffic safety.

An article in the *Journal of Public Policy and Marketing* in Spring, 1997, arrived at the same conclusion. Professor Taylor, of Villanova University, analyzing this lack of data to support such a correlation, concluded that "there appears to be no reason to believe that changeable message signs represent a safety hazard."

From a safety standpoint, and based on the studies and practical experience that has been accumulated since the widespread use of EMDs, some conclusions can be reached:

- In an urban core setting, where a sense of visual vitality and excitement is desirable, full-animation EMDs have been shown to be viable without degrading traffic safety.

- In an urban setting, such as along arterial streets, EMDs have been used with static messages changed by use of transitions such as traveling, scrolling, fading and dissolving, without any apparent impact on traffic safety. Quite likely, this can be attributed to the primacy of the navigation task, and the secondary nature of roadside signage.

- Along interstate and other limited access highways, the only significant traffic safety analysis recommends the use of static messages only, and the federal government permits message changes at "reasonable intervals." Many highway departments change messages on their own signs every 1-2 seconds. The report further recommends that sequential messages be timed to ensure that the entire sequence of messages be displayed in the time it takes a car to travel from initial legibility to beyond the sign. In practice, and in the 20+ years since publication of this report, the operational characteristics of such signs have been expanded to include

fading, dissolving, scrolling and traveling, without any apparent adverse effect on traffic safety.

Regulation of Electronic Signs

The history of the regulation of electronic signs has been largely marked by polar extremes in regulation. A number of zoning and sign codes have treated such signs as any other sign, with no special regulations. Others have attempted to prohibit their use in the entirety, largely out of concerns for traffic safety, and in some cases in the stated interest of aesthetics.

For the reasons stated above, the traffic safety concerns have been largely unfounded. In decades of use and intense scrutiny, no definitive relationship between electronic signs and traffic accidents has been established. In fact, some studies have suggested that animated electronic signs may help keep the driver whose mind has begun to wander re-focused on the visual environment in and around the roadway. No studies support the notion that an electronic sign with a static display has a visual impact, from either a traffic safety or aesthetic impact, different from that of any other illuminated sign.

Despite this, the fear of negative impact from potentially distracting signs has in the past motivated some communities to attempt to prohibit electronic signs altogether. Two common approaches have been to prohibit sign "animation" and the "intermittent illumination" of electronic signs. Both approaches have had their limitations.

Electronic signs that are computer-controlled often have the capability to be displayed with a multitude of operational characteristics, many of which fall within the typical definition of "animation." However, static display techniques are quite commonplace with electronic signs, and the cost of using electronics in relatively typical sign applications has become more affordable. The programming of an electronic sign to utilize static displays only is simple and straightforward, yet probably overkill in the legal and practical sense.

Nonetheless, out of fear that the programming may be changed to animation after a sign is permitted and operational, some local regulators have attempted to take the position that LED and other electronic signs are prohibited altogether. This position is unsound. There is no legal basis to deny a static-display electronic sign, as it is legally indistinguishable from any other illuminated sign. We don't prohibit car usage merely because the cars are designed so that they *can* exceed the speed limit; we issue a ticket to the driver if they *do* exceed the speed limit. Likewise, if a sign owner *actually* violates the zoning or sign code, the remedy is to cite them for the violation, not to presume that they will do so and refuse to issue

permits at the outset. Moreover, most communities permit changing messages on signs displaying time and temperature, with no restrictions on timing. To apply a different standard to signs displaying commercial or noncommercial messages would be to regulate on the basis of the content of the sign, in violation of the First Amendment to the U.S. Constitution.

The code technique of prohibiting "intermittent illumination" has its own limitations as it relates to electronic signs. The term "intermittent" suggests that the sign is illuminated at some times, and not illuminated at others. This is no basis to distinguish between an electronic sign and any other illuminated sign. Virtually all illuminated signs go through a cycle of illumination and non-illumination, as the sign is turned off during the day when illumination is not needed, or during the evening after business hours. If this were the standard, most sign owners would be guilty of a code violation on a daily basis.

Other terminology may be used in sign codes, but the fact is that a regulation must be tailored to the evil it is designed to prevent. Community attitudes toward viewing digital images have changed nationwide, with personal computer use and exposure to electronic signs becoming widespread. People are simply accustomed to the exposure to such displays, more so than in years past. In some communities, there remains a concern about the potential that such signs may appear distracting, from a safety or aesthetic standpoint. Yet, static displays do not have this character, and even EMDs with moving text have not proven to have any negative impact. The real focus should be on the operations used for the change in message, and frame effects that accompany the message display. Many of these transition operations and frame effects are quite subtle, or otherwise acceptable from a community standpoint. It is now possible to define these operations, in the code itself, with sufficient specificity to be able to enforce the differences between what is acceptable and what is not.

The critical regulatory factors in the display of electronic changeable message signs are: 1) Duration of message display, 2) Message transition, and 3) Frame effects. With the exception of those locations where full animation is acceptable, the safety studies indicate that messages should be permitted to change at "reasonable intervals." Government users of signs have utilized 1-2 seconds on their own signs as a reasonable interval for message changes, and other communities permit very short display times or continuous scrolling on business signs without adverse effect. As a policy matter, some communities have elected to adopt longer duration periods, although to do so limits the potential benefits of using an electronic sign, particularly where messages are broken down into segments displayed sequentially on the sign.

The message transitions and frame effects are probably the greater focus, from a sign code standpoint. It is during the message transition or frame effect that the eye is most likely drawn to the sign. What is acceptable is a matter of community

attitude. Flashing is a frame effect that is prohibited in many communities, but other more subtle transitions can be accepted. It is relatively easy to define four basic levels of operational modes for message transitions that can be incorporated into a sign code:

Level 1 *Static Display Only (messages changed with no transition)*

Level 2 *Static Display with "Fade" or "Dissolve" transitions, or similar subtle transitions and frame effects that do not have the appearance of moving text or images*

Level 3 *Static Display with "Travel" or "Scrolling" transitions, or similar transitions and frame effects that have text or animated images that appear to move or change in size, or be revealed sequentially rather than all at once*

Level 4 *Full Animation, Flashing and Video*

There are, in fact, other operations recognized within the industry. However, in practice they can be equated in visual impact with "fade," "dissolve," "travel" or "scrolling," based on their visual effect, or otherwise be considered full animation.

Different transition operations may be acceptable in different locations. For example, communities like Las Vegas accept full animation as a community standard, whereas others accept full animation only in urban core locations where a sense of visual vitality and excitement is desirable. Some communities may desire not to have an area with such visual stimuli, and elect to prohibit animation everywhere. However, in such a community, fade or scrolling may be acceptable forms of message transitions for static displays. In the most conservative communities, static displays with no observable transition between messages may be the only acceptable course.

The next decision point for a community seeking to regulate electronic signs is procedural. Some signs may be acceptable always, while the community may determine that others are acceptable only in certain given circumstances. Alternatives to be considered for a sign code are as follows:

- Permit electronic signs "as a matter of right"

- Permit electronic signs with certain transitions "as a matter of right"

- Permit electronic signs, subject to a review procedure

- Permit electronic signs, with certain transitions, subject to a review procedure

- A hybrid of the above

For instance, one community may find it acceptable to permit electronic signs, with full animation, as a matter of right. Other than a straightforward sign permit, no other review is required. In another community, the sign code structure may permit: 1) Static displays with no transitions as a matter of right, 2) static displays using fade or dissolve transitions as a matter of right in certain commercial zoning districts, 3) static displays using travel and scrolling transitions and animations in certain commercial districts, subject to approval of a special use permit, where the approving board can consider compatibility with surrounding land uses and attach conditions on the rate of message changes, and 4) Fully-animated/video displays in the downtown commercial district only, subject to approval of a special use permit. The level of procedure involved should be tailored to the acceptance level of the community, and the resources available should public review be desired.

In the following section, we have provided model code language that can be used, for reference, to incorporate into a community's sign code. The model language suggests code scenarios based on each of the four levels of display transitions. It also provides alternative language, for some scenarios, to either incorporate a special review procedure or not. Of course, the model language must be tailored to a particular community's sign code. Variation may be necessary, where, for instance, the special review procedure would be by the local planning commission, city council or design review board. With ease, the model code language can be modified to meet local conditions.

Model Sign Code Provisions for Electronic Signs

Level 1-Static Display *(Message Changed with no Transition)*

Definitions

ELECTRONIC MESSAGE DISPLAY – A sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means.

Electronic Message Displays may be permitted [with the approval of a use permit] [in the _____ zoning districts] subject to the following requirements:

a. *Operational Limitations.* Such displays shall contain static messages only, and shall not have movement, or the appearance or optical illusion of movement, of any part of the sign structure, design, or pictorial segment of the sign, including the movement or appearance of movement of any illumination or the flashing, scintillating or varying of light intensity.
b. *Minimum Display Time.* Each message on the sign must be displayed for a minimum of (insert reasonable interval) seconds.
c. *Message Change Sequence.* [Alternative 1: The change of messages must be accomplished immediately.] [Alternative 2: A minimum of 0.3 seconds of time with no message displayed shall be provided between each message displayed on the sign.]

Model Electronic Sign Code Provisions
Level 2-Static Display *(Fade/Dissolve Transitions)*

Definitions

ELECTRONIC MESSAGE DISPLAY – A sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means.

DISSOLVE – a mode of message transition on an Electronic Message Display accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.

FADE – a mode of message transition on an Electronic Message Display accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.

FRAME – a complete, static display screen on an Electronic Message Display.

FRAME EFFECT – a visual effect on an Electronic Message Display applied to a single frame to attract the attention of viewers.

TRANSITION – a visual effect used on an Electronic Message Display to change from one message to another.

Electronic Message Displays may be permitted [with the approval of a use permit] [in the _____ zoning districts] subject to the following requirements:

    a. *Operational Limitations.* Such displays shall contain static messages only, changed 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 movement, of any part of the sign structure, design, or pictorial segment of the sign, including the movement of any illumination or the flashing, scintillating or varying of light intensity.

    b. *Minimum Display Time.* Each message on the sign must be displayed for a minimum of (insert reasonable interval) seconds.

Model Electronic Sign Code Provisions
Level 3-Static Display *(Travel/Scroll Transitions and Animations)*

Definitions

ELECTRONIC MESSAGE DISPLAY – A sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means.

DISSOLVE – a mode of message transition on an Electronic Message Display accomplished by varying the light intensity or pattern, where the first message gradually appears to dissipate and lose legibility simultaneously with the gradual appearance and legibility of the second message.

FADE – a mode of message transition on an Electronic Message Display accomplished by varying the light intensity, where the first message gradually reduces intensity to the point of not being legible and the subsequent message gradually increases intensity to the point of legibility.

FRAME – a complete, static display screen on an Electronic Message Display.

FRAME EFFECT – a visual effect on an Electronic Message Display applied to a single frame to attract the attention of viewers.

SCROLL – a mode of message transition on an Electronic Message Display where the message appears to move vertically across the display surface.

TRANSITION – a visual effect used on an Electronic Message Display to change from one message to another.

TRAVEL – a mode of message transition on an Electronic Message Display where the message appears to move horizontally across the display surface.

Electronic Message Displays may be permitted [with the approval of a use permit] [in the _____ zoning districts] subject to the following requirements:

a. *Operational Limitations.* Such displays shall be limited to static displays, messages that appear or disappear from the display through dissolve, fade, travel or scroll modes, or similar transitions and frame effects that have text, animated graphics or images that appear to move or change in size, or be revealed sequentially rather than all at once.
b. *Minimum Display Time.* Each message on the sign must be displayed for a minimum of (insert reasonable interval) seconds.

Model Electronic Sign Code Provisions
Level 4-Video/Animation

Definitions

ELECTRONIC MESSAGE DISPLAY – A sign capable of displaying words, symbols, figures or images that can be electronically or mechanically changed by remote or automatic means, including animated graphics and video.

Electronic Message Displays may be permitted [with the approval of a use permit] [in the _____ zoning districts]