

City Council Agenda Item #14B
Meeting of June 25, 2007

Brief Description: An ordinance regulating dynamic signs.

Recommended Action: Adopt the ordinance.

Background

The city council and planning commission discussed the regulation of dynamic signs at a joint study session on May 14, 2007. Staff subsequently prepared an ordinance incorporating direction from that meeting. The ordinance was introduced at the June 4, 2007 council meeting, and was considered by the planning commission on June 14. In formulating the proposed ordinance, staff consulted with SRF Consulting and Gerald Wachtel, a national expert on changeable message signs. Their final report is attached on pages A1-A42.

General Framework

The easiest approach to dynamic signs, from both a legal and enforcement standpoint, is to either prohibit all of them or allow them with no restrictions. Instead, the ordinance incorporates a balanced approach to dynamic sign regulation that adequately protects community interests, while recognizing the need to reasonably accommodate evolving sign technologies.

The term “dynamic” display is defined in the ordinance to identify all displays that have changing messages, regardless of the means. By avoiding descriptions that identify the type of change, such as “electronic,” the ordinance can better deal with future technologies that have not yet been developed. This approach also recognizes that changing messages by any means can be distracting to the driving public.

Signs are a form of “speech” protected by federal and state constitutions. As a result, cities must be very careful that sign regulations generally do not discriminate on the basis of message content. It can be a challenge to defend an ordinance that draws fine distinctions when allowing certain kinds of signs to be dynamic while prohibiting others.

Accordingly, the dynamic sign provisions will “overlay” the city’s existing sign regulations. There would be no change to the existing standards regarding such things as zoning, number, size, and location. As a general matter, the dynamic regulations would apply equally to all signs, with few distinctions between zoning districts or between on- and off-premise signs.

Although residential districts are deserving of more protection than other zoning districts, that is taken into account in the underlying regulations. Additionally, there are

uses in residential districts that could benefit from having changing messages, such as churches, schools and government offices. The ordinance allows dynamic signs for conditionally permitted uses in residential districts and for all uses in other districts. Through controls the potential impacts can be addressed by appropriate restrictions, which are discussed below.

The ordinance does not include any spacing requirements. Spacing restrictions could result in unequal treatment of property owners, since the first property owner to install a dynamic sign could prevent the neighboring property owner from also having a dynamic sign. This would be unfair, and could actually increase the frequency of such uses by creating an incentive for nearby property owners to race each other to convert their signs.

The only location requirement is that dynamic messages are limited to pylon and monument signs. Dynamic messages would not be permitted on building signs.

Operational Mode

Dynamic signs have the capability of operating in many different modes, ranging from static messages to scrolling text to full motion video. These operational modes have obvious implications for the distracting nature of dynamic signs.

The city's consultants concluded that there can never be definitive proof of a causal connection between dynamic signs and highway accidents. This is because state-of-the-art driving simulators cannot truly simulate real-life conditions. Further, controlled roadway studies cannot be performed, because controlled roadways can not be filled with hundreds or thousands of cars operating under normal conditions. Finally, eye movement studies use a very limited pool of test subjects who are operating under circumstances that are designed to avoid accidents.

Nevertheless, the studies performed to date provide important insight. For example, some studies indicate how drivers tend to react to signs in different settings, while other studies inform how different degrees and types of distraction are associated with accidents. By considering those individual pieces together, the city can thoughtfully evaluate the risks posed by dynamic signage.

Studies do show that there is a correlation between moving signs and the distraction of highway drivers. An eye movement study showed that changing signs may distract drivers by as much as two seconds. The Federal Highway Administration has determined that being distracted for two seconds or more can result in traffic accidents.

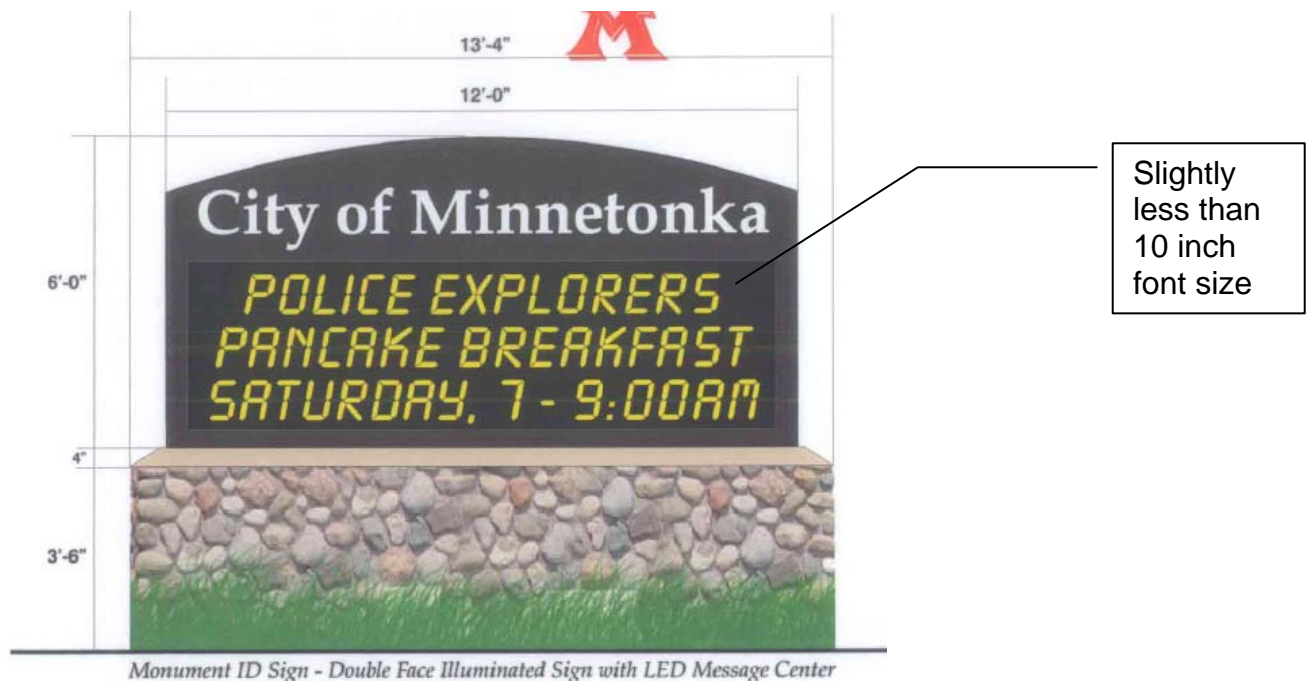
Drivers can be distracted not only by a changing message, but also by knowing that the sign has a changing message. Drivers may watch a sign waiting for the next change to occur. Drivers are also distracted by messages that do not tell the full story in one look.

An example is a scrolling sign - 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.

The consultants also concluded that 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.

In response to these conclusions, the ordinance allows only static displays. No animation, motion or video would be permitted. Additionally, the message change would have to be instantaneous, without any distracting effects, such as dissolving, spinning or fading. Sequential messages, such as a two-stage message for a single product, service or business, would also be prohibited. This would apply whether the sequential messages are on the same sign or multiple signs.

The ordinance also requires a minimum font size to avoid messages that are too small to easily read or that contain too much information. The required minimum is seven inches on a road with a speed limit between 25 and 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. These are the recommended heights given in Issue 51 (2007) of *Signline*, a publication of the International Sign Association. As an example, the city's changeable message sign has a font size of slightly less than 10 inches for a three-line message and 12 inches for a two-line message:



The ordinance provides that if the allowed portion of the sign is too small to meet this minimum size, then no dynamic display is allowed.

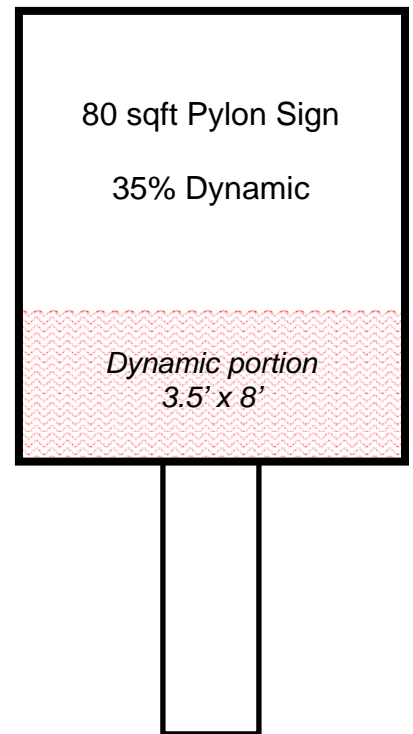
Size of Dynamic Portion

One objective of dynamic sign regulation is the prevention of driver distraction. Public safety is also protected by ensuring that people can find their way to where they want to go. If “way-finding” is compromised, driving conduct can be adversely affected by last-second lane changes or turns, which could result in traffic accidents.

A significant portion of permitted signs should remain constant, so that identity and location can be more readily determined. This way-finding purpose should be given significantly more weight than any advertising purpose of a dynamic message. Limiting the amount of sign face that can be dynamic also serves aesthetic and public safety purposes by discouraging the proliferation of multiple changing signs and reducing exposure to the public.

Staff recommended at the study session that no more than 35 percent of the message area of a permitted sign could contain a dynamic message. This favors way-finding over advertising by a 2:1 factor. There was some concern expressed that this would not be enough room in all situations.

The following show some existing signs in the city:





Total Sign: 70 sq. ft.
Dynamic: 16.5 sq. ft
% Dynamic: 23.6%
(*approximate)



Total Sign: 57 sq. ft.
Dynamic: 8.6 sq. ft
% Dynamic: 15.1%

The proposed ordinance continues to include the 35 percent maximum because this provides a reasonable amount of space for the new technology while giving a 2:1 preference to the primary objective of providing a permanent message that allows property owners to identify their locations and citizens to find intended destinations.

The ordinance also provides that the remainder of the sign cannot have dynamic capabilities even though not used. This is needed to ensure compliance. It also provides that there can be only one dynamic display on a sign.

Minimum Display Time

Because there is no ban on dynamic signs and no spacing requirements, 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 signs 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. Accordingly, a longer display time is appropriate.

The ordinance establishes a minimum display time of 20 minutes, which is the standard adopted by the city of Bloomington following its own thorough study. This is less than the one-hour display time that is currently in effect through the district court's temporary injunction, and thus provides greater flexibility to sign owners. There would be an exception for time and temperature signs, which the federal court has recognized as a legitimate exception to limitations on variable message signs. The ordinance provides that a display of time, date, or temperature must remain for at least 20 minutes before changing to a different display, but the time, date, or temperature information itself may change no more often than once every three seconds.

The ordinance provides that each sign must be designed 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.

Brightness Levels

The consultants determined that the brightness of signs can be distracting, and if very bright, can actually result in a "blinding" effect, particularly at night. Pure white light appears the brightest, and has the most blinding capability.

Unfortunately, there is currently no good way to measure the brightness of signs in the field. Sign manufacturers can measure the light emitted by LED signs in a controlled factory setting by measuring the "nit" level, but those conditions cannot be re-created in actual field conditions. Additionally, the instruments used to measure brightness are currently very expensive.

With no good way of measuring brightness, the ordinance incorporates the general standard adopted by the Wisconsin Department of Transportation: "No [sign] may be illuminated to a degree of brightness that is greater than necessary for adequate visibility." The general philosophy is that dynamic signs should have the same appearance as regular signs both during the day and at night. Additionally, the ordinance contains two other general standards found in Indiana and Ohio regulations, which provide:

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.

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

The ordinance includes a process that allows city staff to make the initial determination, but allows a sign owner to appeal this determination to an independent panel. The appeal panel would consist of one person selected by the city, one person selected by the sign owner, and one person selected by the first two people. This approach was discussed at a meeting with sign industry representatives and appears to be generally acceptable.

The ordinance currently does not prohibit the use of pure white light, but staff is hopeful that industry representatives will help staff define that term.

Application to Existing Signs

The ordinance provides that existing dynamic displays must comply with the operational standards. An existing dynamic display that does not meet the percent of sign face requirement may continue as a non-conforming development. An existing dynamic display that cannot meet the 10 inch minimum size requirement must use the largest size possible for one line of copy to fit in the available space.

Incentives

The ordinance also includes incentives to encourage the removal of non-conforming outdoor advertising signs. The advent of dynamic technology creates an important community planning opportunity. A single dynamic sign can serve the function otherwise performed by multiple traditional billboards. Thus, outdoor advertising companies ought to be encouraged to use dynamic sign displays to consolidate such activities in appropriate locations while removing traditional billboards from areas where large signs are not appropriate.

The city of Minnetonka previously made a determination that off-premise signs are no longer allowed in the city because they are inherently distracting and do not serve the need of property owners to identify themselves and their businesses. Those signs remain now as non-conforming uses. State and federal laws severely limit the city's ability to require the removal of those signs.

The ordinance allows an off-premises sign to use 100 percent of the message area for dynamic messages and an eight-second message display time if the owner removes two other off-premise signs and commits to keep another sign without dynamic displays, subject to certain minimum size and other conditions. This trade would offset the distraction of a larger message area by removing the inherent distraction from another sign and would reduce the number of non-conforming signs in the city. Because outdoor advertising signs do not have the need for on-premises identification and also will not proliferate since they are not allowed, this approach appears appropriate.

Public Comments

At the writing of this report, the city had received comments about the proposed ordinance from Clear Channel Outdoor and from Roger Brown of Daktronics (see pages A55-56), a manufacturer of dynamic signs. The following summarizes Clear Channel's comments and staff's responses:

1. It is inappropriate to say that outdoor advertising signs are distracting when the city's own consultants have concluded that there can never be definitive proof of a causal connection between dynamic signs and highway accidents.

Response: This comment does not recognize that there are two different concepts. No single study has conclusively proven that a particular dynamic display caused particular traffic accidents that otherwise would not have occurred. Because of the number of variables involved and the impossibility of recreating all of them in a laboratory-type setting, that level of proof is impossible. However, studies performed thus far provide more than sufficient support for the city to conclude that outdoor advertising signs are, in fact, distracting to drivers, and that distractions can lead to traffic accidents.

2. The company usually occupies property as a tenant, and it may not have the authority to excavate to remove foundations.

Response: The city requires that foundations be removed as part of all other demolition permits. This is done to protect public safety (from tripping over them) and to avoid problems in the future.

3. The surrender of the state permit should be required upon removal of the sign, not upon issuance of the enhanced dynamic display permit.

Response: This makes sense, and the change has been made in the ordinance. An additional sentence is added that provides that the enhanced dynamic display cannot begin to operate until proof is provided that the state permit has been surrendered.

4. An enhanced dynamic display permit requires the sign company to commit to never put a dynamic display on another existing sign. What happens if that existing sign is subsequently removed?

Response: Subsequent events do not affect the permit. The permit is judged by the circumstances existing at the time the permit is issued. Language was added to the ordinance to clarify this.

5. The brightness standard of “adequate visibility” may be interpreted to mean a bare minimum when in fact a sign that is too dim may also be distracting because people strain to read it.

Response: To avoid this unintended interpretation, staff has added two words requested by the company: “No sign may be brighter than is necessary for **clear and** adequate visibility.”

The following summarizes Mr. Brown’s comments and staff’s responses:

1. Signs are expensive and it is unlikely that there will be many area with multiple dynamic signs.

Response: As technology advances, these signs will become less and less expensive, just like home computers. This trend has already begun, and will continue to make dynamic signs more affordable, leading to the proliferation of such signs throughout the community. As Daktronics said last year in its 10-Q filing with the Securities and Exchange Commission, its revenues on the sales of its digital displays to outdoor advertising companies has increased in part because of the lower cost of displays.

2. There is no reason to give off-premises signs a shorter duration time than on-premise signs. Logically the opposite is true because off-premises signs are usually larger.

Response: As a general rule, the ordinance is not making any distinction between off- and on-premise signs. However, the ordinance provides a shorter duration as an incentive to eliminate billboards on nearly a 2 to 1 basis and to prohibit dynamic displays on an additional billboard. The city is getting significant public safety (and aesthetic) enhancements in return for these concessions from the off-premise sign owner. On-premise sign owners are in no position to offer the community the same benefits for that privilege.

3. On-premise signs are smaller and may need multiple frames to communicate most messages.

Response: Studies show that drawn-out messages (such as sequential messages) are more distracting than unrelated messages, and the ordinance will not allow them. There is still a reasonable opportunity to provide a concise message within the standards of the ordinance.

4. The percent of the sign face and a minimum font size unrelated to distance will make the ability to communicate a message with one frame virtually negligible.

Response: Photos in the staff report show examples of existing signs that meet the percent and font size requirements. The font sizes incorporated into the

ordinance are recommendations directly from the International Sign Association, whose motto is "supporting, improving, and promoting the sign industry."

5. An exception for time and temperature signs is not legal because it is based on content. City staff has misread the law.

Response: The 8th Circuit Court of Appeals specifically allowed an exception for time and temperature signs in *La Tour v. City of Fayetteville*, 442 F.3d. 1094, 1097 (8th Cir. 2006): "We agree with the district court that, because a message displaying the time and/or temperature is short and rudimentary, such a message poses less of a traffic hazard than other messages. In light of all of these reasons, we find the Ordinance to be content-neutral."

6. It is not valid to adopt the 20-minute hold time simply because another city did the same thing.

Response: The reasons for the 20-minute duration time are explained. The fact that another city chose the same period after its own thorough study is support, but not the sole reason, for the result.

7. The Small Business Administration (SBA) has found that sales increase with the use of dynamic signs.

Response: The question of maximizing marketing opportunities is not germane to the ordinance discussion. Unlike the city, the SBA's goals are marketing and sales, not public safety and community aesthetics.

8. A one-second duration is appropriate for an on-premise sign. Animations and video should be allowed in appropriate areas.

Response: These suggestions are contrary to the findings of the legitimate safety studies.

8. Requiring the name of the business on the sign is also a prohibited content-based regulation.

Response: The ordinance does not require that the name of the business be on the sign. The ordinance requires only that a permanent message be on the sign, which we presume will be some kind of an identifying message that will increase the likelihood that citizens can find a destination. The sign owner is free to decide what that message is.

9. The reference to the potential for distraction is not an appropriate basis for regulation. Other things can also be distractions. The studies have found no safety hazard.

Response: The legitimate studies have found a correlation between dynamic signs and distractions. Those studies have also identified that distractions can result in accidents. That is enough to justify regulation. Other things may also cause distractions, but the city has no control over them. Moreover, the Supreme Court has repeatedly emphasized that governments need not choose between attacking all facets of a problem (or none at all). The city has the ability to regulate where it can to minimize the amount of driver distractions.

11. An "8 second hold time is appropriate and in line with Federal and State safety studies."

Response: Since December the city, its consultants, and its counsel have been gathering studies that inform the regulation of dynamic signs. Because Mr. Brown's assertion was not borne out by the State and Federal studies that had been collected thus far, we requested Mr. Brown to provide those studies to us. What he provided to us, while voluminous, did not include any Federal and State safety studies that show that an eight-second hold time is appropriate.

- ❖ He referenced a 1980 safety study and a 2001 research review performed by or for the Federal Highway Administration. While those documents note that the data were not conclusive when those reports were issued and that there would be value in further research, they provide far more support for the City's position than for Mr. Brown's position (that "there was no correlation between the usage of the signs and traffic safety."). That is why the city (and, in turn, Judge Zimmerman in District Court) relied on each of those documents in the pending civil action, where the court allowed a substantially longer "hold time" (of one hour) than would be allowed under the proposed amendments.
- ❖ He has also provided two links to web pages on the site of the Small Business Administration, the contents of which he describes as "that organization's findings regarding EMC safety concerns." These do not appear to be the "findings" of any agency, let alone of an agency with special expertise in traffic safety. The content on the SBA's web pages appears to have been provided by "The Signage Foundation for Communication Excellence, Inc.", an organization that is a joint enterprise between sign industry organizations and the SBA. The purpose of those pages, according to the Foundation's webpage, was "to acquaint small business with the value of on-premise signage." While the page regarding safety cites the 1980 Wachtel and Netherton study, the actual text of that study undermines the assertions on the page, particularly when that study is viewed as a whole. The only other study referenced by the Foundation on the page regarding safety was written by a *former* FHWA official, Richard Schwab.

Further investigation shows that the Schwab report was done for the Foundation itself and the International Sign Association (whose motto is “supporting, improving, and promoting the sign industry.”).

- ❖ The only state agency document that he provided was not the result of a study in any ordinary sense of the term. It is the two-page MnDOT internal technical memorandum that the plaintiff in the pending litigation tried and failed to rely upon in seeking an order allowing it to resume using a dynamic display with an eight-second interval. It simply reflects the application of a formula for applying state billboard spacing requirements in the context of digital displays. On pages 8-9 of his January ruling, Judge Zimmerman explained the very limited significance of that document. Moreover, Scott Robinson of MnDOT has explained to the city’s consultants that the memo is not a Mn/DOT policy, statute or rule, but rather it was written to provide internal guidance.

- ❖ Mr. Brown also provided two studies commissioned by the sign industry itself. The first was a study performed for the Outdoor Advertising Association’s own foundation, The Foundation for Outdoor Advertising Research and Education, by Suzanne Lee and others at Virginia Tech entitled “Driving Performance in the Presence and Absence of Billboards.” The second was “An Examination of the Relationship Between Signs and Traffic Safety,” performed by a private consulting firm for the foundation of the United States Sign Council. Neither study focused on digital displays or the special issues that digital displays present. Moreover, the Lee study has been subjected to an extraordinary level of judicial criticism. When rejecting the Lee study’s conclusions regarding the supposed absence of a relationship between billboards and traffic safety, a federal judge found that the Lee study “is so infected by industry bias as to lack credibility and reliability.” *Nichols Media v. Town of Babylon*, 365 F.Supp.2d 295, 308 (N.D.N.Y. 2005). Following a full trial in which Ms. Lee was cross-examined regarding the report, the court held that “this conclusion is supported not only by industry involvement in the design and execution of the study but also by the lack of peer review and the fact that there is no other scientific study with the same or similar conclusions regarding driver distraction.” *Id.* Even if the information in the Tantala Group report were more relevant to digital displays, its genesis has much in common with the Lee study. According to the website of the United States Sign Council “if you’re in the sign business, USSC is for you USSC is managed by sign people for the benefit of sign people.”

- ❖ Mr. Brown's email also includes a quotation from a "Professor Taylor" at Villanova University, in which he stated that "there appears to be no reason to believe that changeable message signs represent a safety hazard." Villanova Professor Charles R. Taylor is a Professor of Marketing. His Villanova web biography states that his nonacademic positions include "consulting" for Clear Channel and Eller Media (Clear Channel Outdoor's predecessor), as well as for outdoor advertising company Magic Media. An expert whose expertise is not traffic safety is not qualified to opine on the subject of traffic safety.

Planning Commission Recommendation

On June 14, 2007, the planning commission recommended that the city council adopt the proposed ordinance, with further consideration of three points of interest: minimum display time, maximum dynamic portion of the sign, and "permanent" portion of the sign. (See the minutes on pages A57–A65.)

1. *Minimum display time.* The planning commission agreed with the need for a definite hold time that would not impact the traveling public, but suggested consideration of some interval less than 20 minutes.

Response: After further consideration, staff continues to believe that the recommended 20 minute hold time is an integral part of the ordinance for two reasons. First, safety experts advise longer hold times to decrease the tendency of drivers and pedestrians to stare at signs they expect to change. Longer hold times lower expectations over time that a sign will change while viewers are watching it.

Second, as dynamic displays become more prevalent (as is expected to occur with on-premise signs), it will be more likely that multiple uncoordinated dynamic displays will be in view at the same time. This will cause one or more distracting changes to be visible with increasing frequency, thus heightening the distraction. Requiring more time between transitions reduces the likelihood that multiple signs will cause distractions.

2. *Maximum dynamic portion of sign.* The planning commission also suggested that consideration be given to allowing a greater portion of the sign face to be dynamic.

Response: After additional review, staff continues to recommend a 35 percent maximum to address wayfinding needs, and also for aesthetic considerations. The following issues were considered in this determination:

- *Advertising vs. wayfinding.* Unlike off-premise commercial signs, which are predominantly intended for advertising purposes, on-premise commercial signs provide an important means for finding a location. Under the current ordinance, wayfinding is emphasized, but if the recommended ordinance would be modified

to make it even easier to temporarily replace the full message of an on-premise sign with advertising, that wayfinding function would be weakened. Staff believes that the 35 percent standard achieves a reasonable balance between wayfinding and advertising, especially considering that the recommended ordinance will already significantly expand a property owner's ability to advertise with their on-premise signs.

- *Effect on neighborhood character.* While the recommended ordinance focuses on public safety, community aesthetics are also an important consideration. This is particularly true in a community that places such a high value on its natural setting, and has traditionally restricted the proliferation of signage. The proposed ordinance does not prohibit dynamic signage in residential districts, which allow certain conditional uses (such as religious institutions and schools) that are more likely to use dynamic signage. As a result, the city must carefully consider the effects of dynamic signage in areas near or within neighborhoods. Limiting the dynamic portion of the sign to 35 percent reduces the likelihood for conflicts between land uses.
 - *Corridors of dynamic signage.* Corridors of dynamic signage must also be considered. Whether the sign is located on I-394 or State Highway 7 or on a less traveled arterial, the potential for proliferation of dynamic signs is an aesthetic concern. Allowing more cumulative dynamic signage by increasing the coverage allowance beyond 35 percent would be contrary to that goal.
3. *Clarify "permanent" portion of the sign.* The planning commission also requested that staff review the dynamic portion language to ensure that the portion of the sign considered "permanent" is clearly defined.

Response: Staff reviewed the definition of dynamic, and determined that the definition is complete in describing the aspects of signage that are at issue. The other portion of the sign, the remaining 65 percent, may not have dynamic qualities.

Staff Recommendation

Staff recommends the city council adopt the ordinance found on pages A43-A54, without modification of the originally recommended 20 minute hold time and 35 percent maximum dynamic sign face standards.

The recommended ordinance constitutes a major change in sign regulation, and far exceeds the allowances within current city code. With the exception of public service and time and temperature information, dynamic signs have been strictly prohibited in Minnetonka for more than four decades. The proposed ordinance represents a significant expansion of signage opportunities for commercial and institutional uses, but does so in a way that controls the potential distraction and manages the proliferation.

The standards incorporated in the recommended ordinance will allow the city to monitor and experience the use of dynamic signage over time. As the technology continues to develop, future adjustments can be made to the recommended allowances based on relatable, visual knowledge of the effects of this evolving industry. Considering the significant expansion of signage opportunities already incorporated into the ordinance, staff believes it most appropriate to take this first major step before further relaxing the hold time and coverage allowances. If later deemed appropriate, it would be far easier to expand the standards later, than to scale them back.

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**“DYNAMIC” SIGNAGE:
RESEARCH RELATED TO DRIVER DISTRACTION
AND
ORDINANCE RECOMMENDATIONS**

Submitted by
SRF Consulting Group, Inc.

Prepared for
City of Minnetonka
June 7, 2007

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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 though 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.

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?*

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.

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? ¹

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) ²

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)³

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.

Faustman (California Route 40) Field Study (1961)⁴ and Federal Highway Administration, Reanalysis of Faustman Field Study (1973)⁵

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)⁶

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.

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

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)⁸

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.

University of Toronto

Impact of Video Advertising on Driver Fixation Patterns (Smiley et al., 2001)⁹

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)¹⁰

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.

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)¹¹

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

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) ¹²

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) ¹³

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

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)¹⁴

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)¹⁵

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.

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)¹⁶

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)¹⁷

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

Causal Category	Percentage of Drivers Contributing to Causation
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)¹⁸

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.

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% [@]	0.1% [@]
Distracted while adjusting climate controls	0.2% [@]	0.3% [@]
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."
[@] - 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)*¹⁹**

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

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)²⁰

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)²¹

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

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)**²²

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.²³

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

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

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.²⁵

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

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) ²⁶

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

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) ²⁷

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) ²⁸

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.

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.

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 Service²⁹.

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

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.

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

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.

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

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

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.

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

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.

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.

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

PRELIMINARY DRAFT FOR REVIEW BY CITY OF MINNETONKA

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Appendix A

Current Sign Technologies

PRELIMINARY DRAFT FOR REVIEW BY CITY OF MINNETONKA

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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 20th 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

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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

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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 TS-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.

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*****

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.

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- ¹³ "NHTSA Driver Distraction Forum: Summary and Proceedings," <<http://www-nrd.nhtsa.dot.gov/pdf/nrd-13/FinalInternetForumReport.pdf>>, accessed on February 14, 2007.
- ¹⁴ "Report of the Road Safety Committee on the Inquiry into Driver Distraction," Parliament of Victoria, Australia, Victoria, Australia, 2006, p. 110.
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ORDINANCE NO. 2007-

**AN ORDINANCE AMENDING CITY CODE SECTION 300.30
REGARDING DYNAMIC SIGNS**

The City of Minnetonka Ordains:

Section 1. City code §300.30, subd. 1 is amended as follows:

1. Purpose and Findings.

The purpose and findings of the sign ordinance are as follows:

a) Purpose: the sign ordinance is intended to establish a comprehensive and balanced system of sign control that accommodates the need for a well-maintained, safe, and attractive community, and the need for effective communications including business identification. It is the intent of this section, to promote the health, safety, general welfare, aesthetics, and image of the community by regulating signs that are intended to communicate to the public, and to use signs which meet the city's goals by authorizing:

- 1) permanent signs which establish a high standard of aesthetics;
- 2) signs which are compatible with their surroundings;
- 3) signs which are designed, constructed, installed and maintained in a manner that does not adversely impact public safety or unduly distract motorists;
- 4) signs which are large enough to convey the intended message and to help citizens find their way to intended destinations;
- 5) signs that are proportioned to the scale of, and are architecturally compatible with, principal structures;
- 6) permanent signs which give preference to the on-premise owner or occupant; and
- 7) temporary commercial signs and advertising displays which provide an opportunity for grand openings and occasional sales events while restricting signs which create continuous visual clutter and hazards at public right-of-way intersections.

b) Findings: the city of Minnetonka finds it is necessary for the promotion and preservation of the public health, safety, welfare and aesthetics of the community that the construction, location, size and maintenance of signs be controlled. Further, the city

The ~~stricken~~ language is deleted; the underlined language is inserted.

finds:

- 1) permanent and temporary signs have a direct impact on and relationship to the image of the community;
- 2) the manner of installation, location and maintenance of signs affects the public health, safety, welfare and aesthetics of the community;
- 3) an opportunity for viable identification of community businesses and institutions must be established;
- 4) the safety of motorists, cyclists, pedestrians and other users of public streets and property is affected by the number, size, location and appearance of signs that unduly divert the attention of drivers;
- 5) installation of signs suspended from, projecting over, or placed on the tops of buildings, walks or other structures may constitute a hazard during periods of high winds and an obstacle to effective fire-fighting and other emergency service;
- 6) uncontrolled and unlimited signs adversely impact the image and aesthetic attractiveness of the community and thereby undermine economic value and growth;
- 7) uncontrolled and unlimited signs, particularly temporary signs which are commonly located within or adjacent to public right-of-way or are located at driveway/street intersections, result in roadside clutter and obstruction of views of oncoming traffic. This creates a hazard to drivers and pedestrians and also adversely impacts a logical flow of information;
- 8) commercial signs are generally incompatible with residential uses and should be strictly limited in residential zoning districts; and
- 9) the right to express noncommercial opinions in any zoning district must be protected, subject to reasonable restrictions on size, height, location and number.

Section 2. City code §300.02, subd. 2, is amended by the deletion of the following definitions and the re-numbering of the remaining clauses consecutively.

~~“Message center/time and temperature display” – a sign having electrically changing copy which displays current time, temperature, and/or public service announcements.~~

~~“Public service announcement” – any sign display intended primarily to promote~~

The ~~stricken~~ language is deleted; the underlined language is inserted.

~~items of general interest to the community such as time, temperature, date, atmospheric conditions, Dow Jones industrial average, news, etc. This does not include any information which would be related to commercial products or services located at the display site.~~

~~“Readerboard sign” – any sign having a message not permanently affixed to the sign face and the copy is manually changed.~~

Section 3. City code §300.30, subd. 2, is amended by the addition of the following definition which is to be inserted alphabetically and the following clauses renumbered consecutively:

“Dynamic display” –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.

Section 4. City code §300.30, subd 4(a) is amended as follows:

a) Monument identification signs:

- 1) one sign per development;
- 2) maximum copy and graphic area as follows:

width of adjacent	copy and graphic
right-of-way	area
less than 100 feet	36 square feet
100 feet or greater	50 square feet

3) maximum monument area is two times the potential copy and graphic area;

The ~~stricken~~ language is deleted; the underlined language is inserted.

4) copy and graphic display limited to three items of information; (Figure 30-16)

Figure 30-16

5) 15 foot maximum height; and

6) signs which are not internally illuminated shall have light fixtures and sources screened from view; ~~and~~

~~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.~~

Section 5. City Code §300.30, subd. 10 is amended as follows:

10. Prohibited Signs.

The following types of signs are expressly prohibited in all districts:

a) roof signs including signs mounted on a roof surface or projecting above the roof line of a structure if either attached to the structure or cantilevered over the structure;

~~b) revolving and moving signs except electronic message center/time and temperature display signs according to subdivision 4 and search lights according to subdivision 8;~~

~~cb) 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~~
signs with dynamic displays except search lights under subdivision 8 and those allowed under subdivision 14;

~~dc) portable signs, except temporary signs that are specifically permitted in section 300.30;~~

~~ed) projecting signs. Wall signs shall be mounted parallel to the building and shall not project more than 18 inches from the face of the building;~~

~~fe) painted wall signs including signs painted on the face of a structure. Works of art~~

The ~~stricken~~ language is deleted; the underlined language is inserted.

which are not commercial messages are exempt;

gf) signs attached to trees and utility poles;

hg) signs within public right-of-way except for official traffic signs and those specified in subparagraph 9(k) and (l);

ih) signs which are designed to resemble official traffic signs except signs which are used to control traffic on private property;

ji) abandoned signs or signs other than outdoor advertising structures that advertise an activity, business, product or service no longer available on the premises on which the sign is located;

kj) signs attached to fences except athletic field fence panels according to subdivision 1;

kl) illuminated signs which exhibit any of the following:

1) external illumination that is determined to interfere with safe traffic operations;

2) the sign is directly oriented to any residential district; ~~or~~

3) illumination of a commercial sign in a residential district, except a sign used for a conditionally permitted use; or

4) the level of illumination exceed standards specified in section 300.28, subd. 2.

ml) signs that obstruct the vision of pedestrians, cyclists, or motorists traveling on or entering public streets;

nm) exterior signs that obstruct any window, door, fire escape, stairway or opening intended to provide light, air, ingress or egress for any structure;

on) signs that are in violation of the building code or the electrical code adopted by the city;

po) blank signs;

qp) merchandise boxes or signs not affixed to a principal structure excluding signs

The ~~stricken~~ language is deleted; the underlined language is inserted.

permitted in subdivision 8(d);

rg) outdoor advertising signs are not permitted in any zoning district, except that the provisions of this paragraph do not apply to temporary outdoor advertising signs permitted under Subd. 9 (k) above. Outdoor advertising signs which exist on the effective date of this section shall be considered as nonconforming signs and are subject to standards contained in section 300.29. An outdoor advertising sign is a principal use of property. No permitted or conditionally permitted use or any part of such use may be located on the same parcel of property as such a sign. The parcel on which such a sign is located may not be subdivided to segregate the sign from the remaining property. For the purposes of this paragraph, "parcel of property" means any property for which one property identification number has been issued by the county, or all contiguous property in common ownership as of October 15, 1997, whichever is greater; and

sr) any sign not expressly permitted by the provisions in section 300.30.

Section 6. City code §300.30 is amended by the addition of a new subdivision 14 to read as follows:

14. Dynamic Displays.

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

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

The ~~stricken~~ language is deleted; the underlined language is inserted.

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

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

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

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

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

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

3) The images and messages displayed must be static, and the transition

The ~~stricken~~ language is deleted; the underlined language is inserted.

from one static display to another must be instantaneous without any special effects;

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

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

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

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

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

c) **Incentives.** Outdoor advertising signs do not need to serve the same way-finding function as do on-premises signs. Further, outdoor advertising signs are no longer allowed in the city, and there is no potential that they will proliferate. Finally, outdoor advertising signs are in themselves distracting and their removal serves public safety. The city is extremely limited in its ability to cause the removal of those signs. This clause is intended to provide incentives for the voluntary and uncompensated removal of outdoor advertising signs in certain settings. This removal results in an overall advancement of one or more of the goals set forth in this section that should more than offset any additional burden caused by the incentives. These provisions are also based on the recognition that the incentives create an opportunity to consolidate outdoor advertising services that would otherwise remain distributed throughout the community.

The ~~stricken~~ language is deleted; the underlined language is inserted.

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

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

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

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

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

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

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

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

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

(d) If the removed sign face is one for which a state permit is required by state law, the applicant must 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

The ~~stricken~~ language is deleted; the underlined language is inserted.

to operate until proof is provided to the city that the state permit has been surrendered.

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

2) If the applicant complies with the permit requirements noted above, the city will issue an enhanced dynamic display permit for the designated outdoor advertising sign. This permit will allow a dynamic display to occupy 100 percent of the potential copy and graphic area and to change no more frequently than once every eight seconds. The designated sign must meet all other requirements of this ordinance.

Section 7. City code §300.30 is amended by the addition of a new subdivision 15 to read as follows:

15. Brightness Standards.

a) All signs must meet the following brightness standards in addition to those in subdivision 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 clerk within 10 days after the city's non-compliance notice. The written appeal

The ~~stricken~~ language is deleted; the underlined language is inserted.

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 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 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 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 business days after the hearing commences. The decision will be binding on both parties.

c) All signs installed after (insert the effective date of this ordinance) 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.

Section 8. A violation of this ordinance is subject to the penalties and provisions of Chapter XIII of the city code.

Section 9. This ordinance is effective upon adoption.

Adopted by the city council of the City of Minnetonka, Minnesota, on June 25, 2007.

Janis A. Callison, Mayor

ATTEST:

The ~~stricken~~ language is deleted; the underlined language is inserted.

David E. Maeda, City Clerk

ACTION ON THIS ORDINANCE:

Date of introduction:

Date of adoption:

Motion for adoption:

Seconded by:

Voted in favor of:

Voted against:

Abstained:

Absent:

Ordinance adopted.

Date of publication:

CERTIFIED COPY:

I certify that the foregoing is a correct copy of an ordinance adopted by the city council of the City of Minnetonka, Minnesota, at a meeting held on June 25, 2007.

David E. Maeda, City Clerk

The ~~stricken~~ language is deleted; the underlined language is inserted.

From: Roger Brown [RBrown@daktronics.com]

Sent: Wednesday, May 30, 2007 3:16 PM

To: Janis Callison; Dick Allendorf; Terry Schneider; Bob Ellingson; Tony Wagner; Brad Wiersum; Al Thomas; shart@eminnetonka.com; mbrandt@eminnetonka.com; sadams@eminnetonka.com; jcheleen@eminnetonka.com; mdahl@eminnetonka.com; plehman@eminnetonka.com; sschmitz@eminnetonka.com

Cc: Kelly Koenig; Adam Skare; Erik Minge; Julie Wischnack; Cindy Gray; Roger Brown

Subject: Minnetonka sign ordinance

After attending the May 14th Minnetonka City Council Study Session, I felt compelled to write a letter noting my concerns about the manner in which the city is planning on regulating dynamic signs.

I applaud the city staff and the SRF Consulting Group for their interest in speaking with Daktronics and allowing us to be a part of the discussion. Our advice regarding the proper regulation of dynamic signs, however, does not seem to be filtering through. Since we were not allowed to speak to the council members present at the May 14th meeting, this letter is to provide some background on our positions regarding regulations of dynamic signs.

The current plan to “overlay” the new dynamic sign provisions onto the city’s existing sign regulations is sound. The current code gives a strong basis upon which to build and adapt to the new technologies available, as well as those to be developed in the future.

To begin, there does need to be a difference between regulations for on-premise and off-premise signs as these signs are tools that require different parameters to communicate properly.

The city announced a proposed plan at the May 14th meeting to allow some off-premise signs (billboards) to become dynamic and change a static image every 8 seconds. This 8 second hold time is appropriate and in line with Federal and State safety studies.

The city staff, however, recommends that all other dynamic signs be restricted to a 20 minute hold time. The thinking behind such a lengthy hold time was concern over the signs becoming pervasive and drivers being “subjected to an unsafe degree of distraction and sensory overload.” This concern is misplaced and not an appropriate basis for regulating dynamic signs.

First off, these signs are expensive and it is unlikely that there will be many areas where multiple dynamic signs will be seen on a single city block. Secondly, there is no reason to regulate on-premise signs with longer hold times than off-premise signs. In fact, logically, the opposite is true. Off-premise signs are traditionally larger with more signage area. This allows the sign owner to communicate a complete message in one frame. On-premise signs are smaller, however, and multiple frames may be necessary to communicate even the most concise of messages.

This point is pushed even farther due to other conflicting regulations. The city staff is recommending that only a portion of an on-premise sign may be dynamic. This further limits the sign face area. Add to this the idea that was floated of requiring a certain minimum font size, regardless of the distance of the sign to the public, and the ability of a sign owner to communicate a message with only one frame is virtually negligible.

Another point regarding minimum hold times: it was noted in the May 14th materials that time and temperature signs were an exception found by the federal court for hold times. This is a misreading of the law. The courts have not simply exempted time and temperature signs because of their public service background. The current law is that dynamic message centers should not be regulated based on the content of the sign. When cities create a loophole to allow certain content lesser regulation, they are unconstitutionally infringing on the 1st amendment rights of the sign owner.

Adopting a 20 minute standard for no other reason than that it is a standard another city has adopted is not a good enough reason for denying businesses such an important asset. The Small Business Administration has found that dynamic signs increase sales anywhere from 15-150%. These added sales not only increase the business owner's business, but increase tax revenues for the city as well.

A proper regulation of on-premise signs would be a hold time of one second. This would stop the flashing signs that are most aesthetically displeasing, while allowing a sign owner the ability to speak to the public. No minimum font size or maximum portion of a sign face's area should be included. Some provision might also be added to allow animations and even video at locations where the community deems them appropriate. Finally, a suggestion has been raised of instituting a requirement that the name of the business be a part of the sign face. This, again, is a content specific regulation and would be found unconstitutional.

One last note on safety: the city staff repeatedly refers to a dynamic sign's potential for being distracting. This is not a proper basis for regulations. Many things in this world may become a distraction; including listening to the radio and having kids in the car, but that does not give a municipality the power to legislate against such behavior. A city must have a factual basis to show that it is counteracting a shown harm. As the city staff has acknowledged, these signs have been studied repeatedly and no safety hazard has been found. The repeated references to distractions are not an appropriate foundation for regulations.

Once again, thank you for the opportunity to be involved in this matter. Please feel free to contact me with any questions you have in this matter.

Sincerely,

Roger Brown
Signage Legislation
Daktronics

B. An ordinance amending City Code Section 300.30 regarding dynamic signs (97054.07a)

Acting Chair Cheleen introduced the proposal and called for the staff report.

Wischnack reported. She recommended approval of the application based on the findings.

Cheleen asked if an existing dynamic sign would be grandfathered, exempt, from the ordinance. Wischnack explained that an existing dynamic sign would be considered nonconforming and that if the owner wanted to expand the sign, it would have to comply with the existing ordinance. The next step in the process would be to amend controls regarding message content.

In response to Cheleen's question, Wischnack will find out if the three-person panel would need to be unanimous in its decisions or if a majority would be sufficient.

Cheleen asked if the dynamic sign, traded for two static signs, would have to be located where one of the two static signs was located. Wischnack explained the rationale for the amendment.

Lehman asked how the permanent portion of a sign is defined and if it could be changed. Wischnack explained that in order to replace a sign, a permit would be required. A permanent sign face replacement would also require a sign permit. The permanent portion could not be dynamic.

Lehman asked how the ordinance would relate to an application for a permanent, totally electronic sign. Wischnack will discuss that point with the city attorney. Cheleen commented that back lighting may be considered dynamic.

Rankin explained the intent of the ordinance. Wischnack explained that allowing a percentage of the sign to be changed on a regular basis would be done to provide recognition for people trying to find their way to businesses.

Lehman asked why a permanent sign would have to be paint and wood and not electronic. He wanted to understand the rationale. Wischnack will review the issue with the city attorney to make sure that is covered.

Schmitz reviewed that up to 35 percent of a sign could be dynamic. Lehman did not see a definition of a permanent, static sign.

Schmitz stated that the Lecy Brothers Home sign is smaller than what is allowed. She questioned if sign owners would want to increase the size of signs in order

to have 35 percent of it dynamic. Wischnack saw that possibility. There are no restrictions regarding limiting the size of a sign when replacing one.

In response to Schmitz's question, Wischnack stated that the amendments would only apply to pole signs and monument signs, not wall signs. A wall sign is not allowed to be dynamic.

Adams was most concerned with the Clear Channel billboards on Interstate 394. Wischnack explained that the billboards are considered nonconforming signs and are prohibited. A current lawsuit is in the settlement phase.

Wischnack explained that removing two signs would provide some benefit and could be traded for one sign that could be up to 100 percent dynamic and allowed to change every 8 seconds. A new permit would not be granted for an outdoor advertising sign.

Adams asked if the ordinance would result in Clear Channel having a monopoly in Minnetonka for billboards. Rankin confirmed that, coincidentally, Clear Channel currently owns many outdoor advertising signs. The result will end with an overall reduction for advertising signs.

Cheleen recognized another result would be that most of the signs would be located near the freeways.

Dahl asked if the ordinance would apply to signs on the back of trucks. Wischnack stated that the ordinance would not have jurisdiction over licensed vehicles traveling on roads. It also would not be applied to vehicles parked with the intent of being used primarily as a sign, but that is a good issue to consider.

The public hearing was opened.

Kelly Koenig, Brookings, South Dakota, applauded staff for considering an update to the sign ordinance. Many cities are doing the same and looking at Minnetonka's actions for guidance. He stated:

- Prohibitions and no restrictions would not be a good course.
- Performance based rather than technology based is brilliant.
- Signs are designed for "way finding" and for advertising. The sign owner would best determine what percentage of the sign should be used for identification.
- Technology changes. To stand the test of time, a static sign may be comprised of different materials.
- The 20-minute change should be the same for advertising and public service announcements. Content is irrelevant. An Anoka County Judge ruled an ordinance unconstitutional that prohibited

changing a message every 15 minutes except for time, temperature, and/or date because the restriction was content based.

- In order to get an entire thought across, a hardship would be created due to minimum character height and the sign restriction. It is his belief that the city would receive a number of requests for variances.
- The brightness portion of the proposal is perfect. If it appears too bright, then it probably is.

Lehman asked if Mr. Koenig represented a sign company. Mr. Koenig answered affirmatively. He worked for Daktronics, a manufacturer of electronic signs.

Lehman asked why an owner would want an electronic sign. Mr. Koenig explained that small business owners agree that electronic displays enable a business to advertise more economically than they can with any other type of medium. It can be owned, changed, and provides new advertising without having to change letters manually. That can be dangerous and cause property damage. One person would be able to operate a convenience store and change the gas price at the same time. It would make a business more profitable.

Lehman asked how the proposed ordinance would impact his business. Mr. Koenig explained that his business model would not change. The company would look for another city to sell signs in. Every business has a different frontage. One may only be able to fit two words to three words on the sign. To limit the physical size and the frequency of change would not be of much value to a business.

Gene Stageberg, Lake Street Extension, appreciates the low property taxes provided partially by successful businesses in Minnetonka. The sign a business is allowed to use is an important part of running a business. He disagreed with limiting electronic signs. The sign owner should be able to put what is most important to the business on the sign. The business owner invests money into the business and sign.

Roger Brown, Brookings, South Dakota, employed by Daktronics, stated that:

- He has been working with the city's consultants and looking at the ordinance as a whole. It has been a frustrating process.
- He did not believe that the ordinance is performance based and not technology based.
- There is no point to limit the dynamic portion of a sign to 35 percent. It would limit the amount of communication that a sign owner can communicate with the public. Electronic signs increase business by increasing communication with the public.

UNAPPROVED PLANNING COMMISSION MINUTES
JUNE 14, 2007

- The proposed ordinance's end result basically bans the company's products. It would be banning a medium of communication that is important to small and new businesses.
- It is almost silly for an ordinance to decide what the appropriate amount of area should be used to promote the name of a company. That determination is best left for the market place.
- To make a mandatory rule of how the sign could be used does not make sense. It would not be a good rule. It would be a content-based restriction.
- Clear Channel had something to bargain with. Small and new businesses are not here to argue that point, but it is a huge point when it comes to economics in the future. Sign owners are going to enter into a market that is already established, unable to communicate to the market as other establishments.
- There are situations where animation and video are appropriate. He left that for local communities to decide what to allow. He would not ban it everywhere in the city.
- He found it difficult to justify the 20-minute hold time. Billboards are allowed to change every 8 seconds. There is no argument that the changing messages would create a safety hazard. There has not been a study to determine if dynamic signs have a positive or negative impact on keeping drivers' alert.
- The proposed ordinance would be an attack on the sign industry and business. It is a substantial government interest. The proposed ordinance would regulate signs to the point that they would be banned and the purpose of having a dynamic sign would be defeated.
- This proposal is not the least restrictive way to appropriately regulate signs.
- Signs should be regulated for brightness and there should be a dimming capability.
- Aesthetics-based regulations need: a 1 second hold time per frame to stop any kind of flashing and prevent strictly eye-catching techniques rather than a communicative device and to allow animation in certain areas of the city.

Cheleen recalled that the ordinance does have a requirement regarding dimming. Wischnack provided the wording. Mr. Brown provided clarification of the methods available to dim a sign.

Cheleen suggested that reading part of a message, but not having the remainder of the message displayed prior to passing the sign would be distracting. Mr. Brown stated that no study has supported that theory. There still needs to be concise messages. Cheleen felt common sense indicated that a safety hazard would possibly be created by signs with scrolling messages.

Mr. Brown felt that on-premise signs should be regulated at a decreased amount. The 20-minute hold time makes no sense except to ban that type of sign.

Dahl asked if a market research study had been conducted. Mr. Brown did not know of market research. He is new to a fairly small company. The company's best practices guidelines are based on their business practices for the last 20 years.

Dahl asked Mr. Brown if he knew what percentage of small businesses use Daktronic's signs. Mr. Brown guessed it would be a small percentage. The signs are expensive and would not be affordable for numerous privately owned small businesses. Pharmacies and restaurants use the signs. The proposed ordinance would block on-premise signs that would otherwise be provided in the city.

Dahl stated that the Minnetonka High School sign and the Minnetonka City Hall signs communicate messages effectively with short messages. Mr. Brown stated that his business recommends the scrolling message be set up depending on the traffic speed, number of vehicles, and screening in the area. The one-second hold time prevents the most obtrusive use of the signs. A sign owner would understand the best way to use the sign. Dahl felt messages could be communicated and meet the proposed ordinance's requirements.

Dahl asked if businesses complained that products could not be advertised on signs. Wischnack stated that the proposed ordinance would address content based signs.

Mr. Brown stated that a meeting was held with the sign industry. A room full of people were concerned with the proposed changes to the ordinance. It would hurt the businesses.

John Baker, attorney who represents the City of Minnetonka, clarified:

- With one exception, dynamic signs have been denied flatly in Minnetonka for 41 years. That exception is for electronic message centers that provide time and temperature. Time and temperature exceptions are not content based. What makes time and temperature different is that it is the kind of information that becomes inaccurate if it is not allowed to change frequently. In its customary use, it is of the form that is least likely to distract because it is the kind of information that people are able to digest in a single glance. Public service information does not have as clear a determination.
- The city is considering creating an opportunity that right now does not exist and has not existed for 41 years for people to use signs as

described that would control the distraction in order to control the proliferation. The font requirements and the measurements came from the international sign association.

- The sign owner could use the sign to permanently advertise. The more important message is identifying the business. City's have the right to prefer the value of "way finding" over the value of the business because if it is allowed to cycle through messages frequently, it would increase the likelihood that when a motorist looks at that part of the sign he or she may miss the name and become lost.
- Proof of cause and effect is elusive in this field, but that does not preclude thoughtful regulation. Legitimate studies of sign safety conducted by parties who do not have a financial interest form the pieces of a broader puzzle. The SRF report helps demonstrate that the replacement of static signs by dynamic, frequently changing signs can create an added safety hazard. That is all that is needed to regulate them and has been allowing cities to do that for decades. There is reason to believe that billboards cause distraction and there is reason to believe that dynamic billboards distract drivers to a greater degree. When people expect something to change, they will look at it longer. The city has an absolute right and authority to write an ordinance to preclude that.
- The occasion in which a sign with a 20-minute hold changes would not be the pattern. The change would be the rare exception. That is how the safety consequences relate to the proposed ordinance changes.
- If the businesses placed the same weight on safety that the city does and subordinated the interest in letting the public know that a soft drink is on sale, there would not be a need for regulation. The police power exists because there are circumstances, just like this, in which there is a greater good.

Chris Erickson, 1225 Orono Oaks Drive, Orono, owns a business in Minnetonka. He stated that:

- He could see the point that a large retailer would have an advantage over a small business owner who could only have one sign at the one location.
- If a sign was not well lit, a person might have to strain to see and cause a traffic accident. He questioned if one complaint should be able to limit the brightness.

Adams asked Mr. Erickson his opinion regarding what would be appropriate regulations for a dynamic sign. Mr. Erickson understood the need for a safe environment; however, if a business owner puts a lot of money into the sign, he

or she should receive some benefit from it. If the safety issue is inconclusive, then the regulations would be a waste of time. It would definitely be worth regulating if it caused a safety hazard. He suggested waiting until there was a safety concern and then deal with the issue. Mr. Erickson was considering a dynamic sign, but was going to use the capital for something else. He understood the benefit of advertising products. Adams appreciated hearing from a business owner.

Mr. Brown responded to the report done by SRF and Mr. Baker's comments:

- Mr. Brown knew of a case in Fridley and one in New Hampshire that he felt indicated there was no nation wide settled case law.
- A business owner knows best what to include on the sign to drum up business. It should not be the city's place to mandate over two thirds of what a business owner's sign should say.
- No study has shown that dynamic signs cause safety hazards. Studies have shown that distractions that occur inside the vehicle are a greater concern.
- The number of billboards has already been limited. The dynamic signs are expensive and would not be that popular because many businesses would not be able to afford them.

Mr. Koenig stated that dynamic signs create awareness and increase "way finding." The signs have been around for decades. If there was a safety factor, then it would be in the news and restricted in many more places. A pharmaceutical company installed a dynamic sign and found that it increased the opening day's foot traffic by 30 percent. The signs do more good than negative. The two complaints relate to too bright at night and flashing messages. A minimum hold time of 1 second and limiting the night-time illumination with the use of a photo cell would create a very successful ordinance. Mr. Koenig would stare at a sign for 20 seconds to see the time and temperature.

No additional testimony was submitted and the hearing was closed.

Dahl felt that the studies may have been inconclusive because if there is a traffic accident, then a driver would not report to the city that it was caused by staring at a dynamic sign.

Lehman disclosed that he was involved in purchasing an electronic sign from Daktronics. He has no financial interest in the company. He felt that the proposed changes are leaning in the direction of solving more problems than exist. It might be going a little farther than he would expect in certain respects. The 20-minute hold changes the dynamic sign into a static sign. The individual view would get one message from the sign. He leaned toward allowing the sign to be 100 percent electronic.

Schmitz was distracted by dynamic signs she saw in another city. She did not pay attention to the light or turn arrow. She complimented staff for taking on the issue. Her recommendation would be to allow 35 percent of a sign allowed by ordinance to be dynamic. This would allow a smaller sign to have equal amount of dynamic space as that of a sign as large as the maximum allowed by ordinance. The changes would not regulate content. Billboards would need a large font size and be in areas predominantly utilized by businesses. On-site signs would be located close to residential areas, be more distracting, and the traffic patterns would create a lot more stopping and starting again.

Adams felt the safety issue needs to be considered. SRF provided reports that indicated increase crash rates in areas that had dynamic signs. He would consider increasing the dynamic area up to 50 percent. The 20-minute hold would not be fair to some businesses. He agreed with Schmitz that a more frequent change would create an issue. He noted that the Minnetonka City Hall sign would be nonconforming. Wischnack confirmed the sign is 67 percent dynamic and would become nonconforming. He would consider a larger dynamic area and shorter change duration.

Dahl concurred. He asked if another company or several other companies could advertise a product on a different business' sign. Mr. Baker stated that off-premises advertising currently was and would still be prohibited by the sign ordinance. The more variety allowed for a dynamic sign, the more a sign owner may push the envelope. A business in St. Louis Park has ads for AAA.com and a travel package on its dynamic sign. Because Georgia Tech stadium sells a particular soft drink, the department of transportation in Georgia said that it could advertise that soft drink on the dynamic sign. The off-premise and on-premise distinction becomes blurred. That equals challenges to enforcement and constitutional distinctions.

Brandt does not like the aesthetic impact billboards create. Advertising is important for businesses and needs to be controlled. He believed 20 minutes would be too long to wait for a change. He proposed a shorter time, 5 minutes to 7 minutes, be recommended to the city council.

Cheleen felt the city should error on the side of protecting public safety. There is free speech and the need for businesses to do well. The city council may want to take a closer look at restricting the dynamic area to 35 percent and decreasing the 20 minute hold time.

In response to Lehman's procedural question, Wischnack explained that the planning commission has the right to recommend changes to the proposed ordinance. Concerns regarding increasing the dynamic proportion; decreasing the 20 minute hold; and making sure the ordinance does not prohibit the content

of the permanent portion of the sign would be contained in staff's report. She suggested including the changes in the motion.

Lehman moved, second by Schmitz, to recommend that the city council adopt the ordinance found on pages A43-A54 of the staff report with the inclusion of statements of interest regarding modifications that are appropriate for consideration by the city council and modifications provided in the change memo dated June 14, 2007.

Lehman, Schmitz, Adams, Brandt, Dahl, and Cheleen voted yes. Hart was absent. Motion carried.

Rankin explained that staff will present the planning commission's discussion to the city council.

Lehman reiterated the issues: increasing the dynamic proportion; decreasing the 20 minute hold; and making sure the ordinance does not prohibit the content of the permanent portion of the sign.

Cheleen recognized the issue was not an easy one. It needs to be closely looked at by the city council. It is tentatively scheduled to be reviewed by the city council on June 25, 2007.

City Council Agenda Item #15A
Meeting of June 25, 2007

Brief Description: Student representative appointments.

Recommended Action: Approve the recommended appointments.

Background

On June 11th, the city council interviewed Tess Komarek, Cameron French, Robbie Rosenthal and Gauri Subramani for the student representative openings on the park board, police advisory commission, community commission and the EDA. All expressed a willingness to dedicate the time and energy necessary to be contributing members of the commission and I recommend that they be appointed. Their applications are attached for review along with the current rosters.

Recommendation

To appoint the following:

- Tess Komarek, as a park board student representative, to serve the remainder of a two-year term, effective June 26, 2007 and expiring on January 31, 2008.
- Cameron French, as a police advisory commission student representative, to serve the remainder of a two-year term, effective June 26, 2007 and expiring on October 1, 2007.
- Robbie Rosenthal, as a community commission student representative, to serve a one-year term, effective June 26, 2007 and expiring on January 31, 2008.
- Gauri Subramani, as a EDA student representative, to serve the remainder of a two-year term, effective June 26, 2007 and expiring on January 31, 2008.

Respectfully submitted,
Janis A. Callison
Mayor



Please return application to:
Karen Telega
Administrative Assistant
 City of Minnetonka
 14600 Minnetonka Boulevard
 Minnetonka, MN 55345
 952.939.8211 - Phone
 952.939.8244 - Fax

received #12/07

BOARDS & COMMISSIONS APPLICATION

Thank you for your interest in serving your community! Please indicate by order which of the following boards and commissions you are interested in serving on (1,2,3, etc.):

- | | |
|--|--|
| <u>3</u> Planning Commission | <u>1</u> Park Board |
| <u> </u> Economic Development Authority | <u>2</u> Community Commission |
| <u> </u> Charter Commission | <u> </u> History Commission |
| <u> </u> Senior Citizens Advisory Board | <u> </u> Police Advisory Committee |
| <u>4</u> Lake Minnetonka Conservation District | <u> </u> ArtsCenter on 7 Advisory Committee |

(Student Rep)

Residents of Minnetonka are eligible for nomination to any of the advisory boards established by the city council. Please complete the following information, and attach extra sheets if necessary. You may also attach a resume if you wish. The selection process will vary by board and according to the number of applicants and vacancies, and may include interviews with some candidates. Accommodations will be provided, upon request, to allow individuals with disabilities to participate in the application process. For more information, please contact Karen Telega (952.939.8211).

DATA PRACTICES ADVISORY

We are required to provide the following information to you. Under Minnesota law, some of the information requested below is public information, which must be provided to anyone who requests it. Some of it is classified as private information, which is not generally available to the public. However, all of information will be used by the city council in determining whether you should be appointed to a board or commission. Therefore, the information will be provided to the city council in a public forum and will be reviewed in public. It will therefore be part of the public record, which will be available to anyone. Failure to provide the requested information may result in your not being considered for an appointment. If you have concerns about providing any of the requested information, please contact David Maeda (952.939.8218).

PERSONAL INFORMATION

Name Tess Komarek Ward 2^{KT}
 Address 2351 Sherwood Hills Road Zip 55305
 Phone (H) 952-417-0451 (B) _____ (Cell) 612-590-6652
 E-mail takbs99@earthlink.net How long have you been a Minnetonka resident? 9 years

ADDITIONAL INFORMATION

Employer: _____

Occupation: student

Education: Hopkins High School

Community service, civic and professional activities:

I have volunteered at Foodshelves through my synagogue, I have donated to R.A.G.O.M. (Retriever A Golden of Minnesota). I currently play varsity soccer and basketball at Hopkins High School. I also volunteer for Hopkins Dynamo Soccer Club.

Why are you interested in being appointed to a city advisory board?

I am very interested in learning about how the community works. I would also be able to provide a young person's viewpoint in making decisions. I am an active person and I use the parks often, it would be interesting to be involved in the community's decisions and how that process works.

What strengths and abilities would you bring to the board?

I would research possible new ideas for the parks and recreational facilities. I would also bring ideas that interest different groups of people, especially younger people.

What are the most important issues facing our community over the next several years? What do you think the role of your board should be in addressing those issues?

Some important issues are maintaining and conserving the wetlands, yet still allow it to coexist with the parks, creating new youth programs that would interest young people to be a part of. With these new ideas, the board should listen to the different opinions and discuss the benefits and consequences of the plans. From that, the board should decide on the most appropriate decisions that would benefit the community.

POTENTIAL CONFLICTS

I am **NOT available** for board or commission meetings on the following evenings (circle):

Monday Tuesday Wednesday Thursday Friday

Are you or any of your family members presently employed by the city of Minnetonka or serving on any of the city's advisory boards?

Yes ___ No If yes, explain: _____

Conflicts of interest may arise by the participation in any activity, recommended action, or decision from which you receive or could potentially receive direct or indirect personal financial gain. In accordance with this definition, do you have any legal or equitable interest in any business, however organized, which in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes ___ No If yes, please provide details on a separate sheet of paper.

Do you own any real property located in Minnetonka, other than your residence, in which you have a legal or equitable interest which, in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes ___ No If yes, please provide details on a separate sheet of paper.

As a board or commission member, what issue(s) might cause conflict between your civic responsibility and personal or professional interests? How would you manage these conflicts?

As a student, I have no real conflicts of interest. None of my immediate family would gain or lose based on my involvement as a board member.

Thank you again for your interest in serving on an advisory board for the city of Minnetonka!

~~FAA D. KOMAR~~
Applicant's signature

MARCH 30, 2007
Date



Please return application to:
Karen Telega
Administrative Assistant
 City of Minnetonka
 14600 Minnetonka Boulevard
 Minnetonka, MN 55345
 952.939.8211 - Phone
 952.939.8244 - Fax

BOARDS & COMMISSIONS APPLICATION

Thank you for your interest in serving your community! Please indicate by order which of the following boards and commissions you are interested in serving on (1,2,3, etc.):

- | | |
|--|---|
| <u>5</u> Planning Commission | <u>1</u> Park Board |
| <u>7</u> Economic Development Authority | <u>6</u> Community Commission |
| <u>9</u> Charter Commission | <u>8</u> History Commission |
| <u>10</u> Senior Citizens Advisory Board | <u>4</u> Police Advisory Committee |
| <u>2</u> Lake Minnetonka Conservation District | <u>3</u> ArtsCenter on 7 Advisory Committee |

Residents of Minnetonka are eligible for nomination to any of the advisory boards established by the city council. Please complete the following information, and attach extra sheets if necessary. You may also attach a resume if you wish. The selection process will vary by board and according to the number of applicants and vacancies, and may include interviews with some candidates. Accommodations will be provided, upon request, to allow individuals with disabilities to participate in the application process. For more information, please contact Karen Telega (952.939.8211).

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PERSONAL INFORMATION

Name Cameron Goodman French Ward 4

Address 5716 Creek Park Drive Zip 55345

Phone (H) 952-294-8387 (in the process of new phone line – you may have to call 612-761-1151
 Mother's work (Target – HQ) number

E-mail: MLS_thirteen@hotmail.com How long have you been a Minnetonka resident? 7 years

ADDITIONAL INFORMATION

Employer: _____ Target Stores – Minnetonka, MN _____

Occupation: ___ Student _____

Education: ___ Junior at Minnetonka High School _____

Community service, civic and professional activities: None

Why are you interested in being appointed to a city advisory board?

To gain valuable experience in policy, economics, and government. I am also very keen on protecting the environment and preventing any kind of pollution to it. I would also like to improve the City of Minnetonka in any way that I can.

What strengths and abilities would you bring to the board?

I am very hard working and very devoted to the environment. I go and spend most of my summers canoeing in the BWCA (Camp Menogyn) and in the Quetico /Canada. These trips to the BWCA have been a life changing experience for me especially last summer with a 21 Day Trip and this July I will be embarking on a 32 Day Canoe trip which is called a Norwester'. I'm very organized regarding my school work (IB program at MHS) and having a balance between work at Target, social life, school work and home life.

I'm active in Concert Choir and this spring decided to be involved in the school musical "Oklahoma" – my part is not big but I do enjoy the singing/dancing and being part of a great musical. It's a lot of fun.

I know right from wrong when it comes to drugs, alcohol, smoking, driving. I follow the rules that are set upon me and I don't hang out w/ kids who abuse.

I also will be attending college and my top 3 choices are UMD, UW-Madison, UofM. Area of study Biology/Sciences – maybe pre-pharmacy. I excel in Biology/Science area.

What are the most important issues facing our community over the next several years? What do you think the role of your board should be in addressing those issues?

Drugs (school/DWI), roads, cleanliness of lakes, global warming. I believe that the board should be a leader for other countries/communities and take charge to lead in making this community, and the world, a better, safer place.

POTENTIAL CONFLICTS

I am **NOT available** for board or commission meetings on the following evenings (circle):

Available all nights

Monday Tuesday Wednesday Thursday Friday

Are you or any of your family members presently employed by the city of Minnetonka or serving on any of the city's advisory boards?

Yes ___ No X If yes, explain: _____

Conflicts of interest may arise by the participation in any activity, recommended action, or decision from which you receive or could potentially receive direct or indirect personal financial gain. In accordance with this definition, do you have any legal or equitable interest in any business, however organized, which in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes ___ No X If yes, please provide details on a separate sheet of paper.

Do you own any real property located in Minnetonka, other than your residence, in which you have a legal or equitable interest which, in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes ___ No ___ If yes, please provide details on a separate sheet of paper.

As a board or commission member, what issue(s) might cause conflict between your civic responsibility and personal or professional interests? How would you manage these conflicts?

Should any conflicts arise, my civic responsibility is first and foremost to the City of Minnetonka. Everything else comes second, no matter what.

Thank you again for your interest in serving on an advisory board for the city of Minnetonka!



Applicant's signature

4/12/07
Date

Cameron French

BOARDS & COMMISSIONS APPLICATION

Student received 4/13/07

Thank you for your interest in serving your community! Please indicate by order which of the following boards and commissions you are interested in serving on (1,2,3, etc.):

- | | |
|--|---|
| <input type="checkbox"/> Planning Commission | <input checked="" type="checkbox"/> 2 Park Board |
| <input checked="" type="checkbox"/> 1 Economic Development Authority | <input checked="" type="checkbox"/> 4 Community Commission |
| <input type="checkbox"/> Charter Commission | <input type="checkbox"/> History Commission |
| <input type="checkbox"/> Senior Citizens Advisory Board | <input checked="" type="checkbox"/> 3 Police Advisory Committee |
| <input type="checkbox"/> Lake Minnetonka Conservation District | <input type="checkbox"/> ArtsCenter on 7 Advisory Committee |

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PERSONAL INFORMATION

Name Robbie Rosenthal Ward 3^{1st}
Address 14841 Copperfield Place Zip 55391
Phone (H) 952-938-7676 (B) — (Cell) 612-859-7880
E-mail Robb0845@aol.com How long have you been a Minnetonka resident? 17 yrs.

POTENTIAL CONFLICTS

I am **NOT available** for board or commission meetings on the following evenings (circle):

Monday Tuesday Wednesday Thursday Friday

Are you or any of your family members presently employed by the city of Minnetonka or serving on any of the city's advisory boards?

Yes No If yes, explain: _____

Conflicts of interest may arise by the participation in any activity, recommended action, or decision from which you receive or could potentially receive direct or indirect personal financial gain. In accordance with this definition, do you have any legal or equitable interest in any business, however organized, which in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes No If yes, please provide details on a separate sheet of paper.

Do you own any real property located in Minnetonka, other than your residence, in which you have a legal or equitable interest which, in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes No If yes, please provide details on a separate sheet of paper.

As a board or commission member, what issue(s) might cause conflict between your civic responsibility and personal or professional interests? How would you manage these conflicts?

Thank you again for your interest in serving on an advisory board for the city of Minnetonka!

Robbie Rosenfeld

Applicant's signature

4/10/2007

Date

Robbie Rosenthal
Application Response

1. Community Service, civic and professional activities:

Social Action Vice President at my Synagogue
Hopkins High School Student Government Board Member (2005-present)
West Junior High Student Council Executive Committee (2002-2005)
 President
 Vice President
 Treasurer
Teen Coalition: Justice Squared (Teen Advocacy)
 Executive Media Liaison
Meals on Wheels organizer (Temple Israel)
Night on the Streets Organizer
 2006 and 2007
Umpire
 2006-present

2. Why are you interested in being appointed to a city advisory board?

I have always been interested in being involved in the community, and I have always believed that if I want something to be accomplished I must get it done myself. I have participated on many boards and committees before, and I would like to expand out even farther. I believe that being a voice for the student body is very important, but I also believe that being able to voice concerns and opinions about the city you live in is just as important. These are some of the major reasons why I am extremely interested in being appointed.

3. What strengths and abilities would you bring to the board?

Since I have been on numerous of boards, with great variety among them, I have lots of experience and familiarity. Also, I think of myself as a leader and try to work my absolute hardest at what ever task I am given. If I am appointed, I feel that I must earn it and that is a major motivational factor that I use. I also work well with others, and try to accomplish what ever I am doing to the absolute best of my ability. I hope that these attributes would fit well within the board and along with the other members.

4. What are the most important issues facing our community over the next several years? What do you think the role of you board should be in addressing those issues?

First of all, I believe that spreading the word about the city and its opportunities is a very important thing that needs to be improved upon. I had no idea about these board opportunities unless if it was for my mom. As a board member, I feel that it

would be my responsibility to take an initiative and establish some sort of community connection. Also, the city of Minnetonka needs to keep up its fantastic reputation as well as the jobs that it does with its police force, park maintenance and overall production. As a board member, I need to figure out ways to use our current system as a guideline and find other areas where we could branch off and improve in order to create an even better city. It is the responsibility of the board to address not just the issues of the city, but also the highpoints and make sure that they continue.

Thank you for taking time to read my application.

Robbie Rosenthal

A handwritten signature in cursive script that reads "Robbie Rosenthal". The signature is written in black ink and is positioned below the typed name.



Please return application to:
Karen Telega
Administrative Assistant
 City of Minnetonka
 14600 Minnetonka Boulevard
 Minnetonka, MN 55345
 952.939.8211 - Phone
 952.939.8244 - Fax

Student

received 4/16/07

BOARDS & COMMISSIONS APPLICATION

Thank you for your interest in serving your community! Please indicate by order which of the following boards and commissions you are interested in serving on (1,2,3, etc.):

- | | |
|---|--|
| <input type="checkbox"/> Planning Commission | <input checked="" type="checkbox"/> <u>3</u> Park Board |
| <input checked="" type="checkbox"/> <u>1</u> Economic Development Authority | <input checked="" type="checkbox"/> <u>2</u> Community Commission |
| <input type="checkbox"/> Charter Commission | <input type="checkbox"/> History Commission |
| <input type="checkbox"/> Senior Citizens Advisory Board | <input checked="" type="checkbox"/> <u>4</u> Police Advisory Committee |
| <input type="checkbox"/> Lake Minnetonka Conservation District | <input type="checkbox"/> ArtsCenter on 7 Advisory Committee |

Residents of Minnetonka are eligible for nomination to any of the advisory boards established by the city council. Please complete the following information, and attach extra sheets if necessary. You may also attach a resume if you wish. The selection process will vary by board and according to the number of applicants and vacancies, and may include interviews with some candidates. Accommodations will be provided, upon request, to allow individuals with disabilities to participate in the application process. For more information, please contact Karen Telega (952.939.8211).

DATA PRACTICES ADVISORY

We are required to provide the following information to you. Under Minnesota law, some of the information requested below is public information, which must be provided to anyone who requests it. Some of it is classified as private information, which is not generally available to the public. However, all of information will be used by the city council in determining whether you should be appointed to a board or commission. Therefore, the information will be provided to the city council in a public forum and will be reviewed in public. It will therefore be part of the public record, which will be available to anyone. Failure to provide the requested information may result in your not being considered for an appointment. If you have concerns about providing any of the requested information, please contact David Maeda (952.939.8218).

PERSONAL INFORMATION

Name Gauri Subramani Ward 4 ¹⁶⁹

Address 6017 Valewood Drive Zip 55345

Phone (H) 952-974-9639 (B) _____ (Cell) 612-296-7500

E-mail gawi.subramani@gmail.com How long have you been a Minnetonka resident? 10 years

ADDITIONAL INFORMATION

Employer: _____

Occupation: Student

Education: Hopkins High School - junior

Community service, civic and professional activities:

- Volunteer at Minnetonka library (2005) - ^{Hopkins} Debate team captain
- Volunteer at Hindu Temple of MN (2006-present)
- Intern at Minnesota Advocates for Human Rights (2006-present)

- Designer, coordinator, + panelist for a workshop on teen girls issues at the International Women's Day celebration in MN (March 2007)

Why are you interested in being appointed to a city advisory board?

I am interested in issues that affect my community and I believe I can bring a unique perspective and add value to an advisory board. I feel that it is important to play a role in the local government and be an aware and involved citizen. Participating on an advisory board will allow me to play a role in making decisions that affect me and my community and will help me be a more knowledgeable ~~and aware~~ citizen.

What strengths and abilities would you bring to the board?

I am active in my school community and am a committed ~~and~~ student, and my involvement with ~~the~~ issues at school will allow me to have a different and often unheard opinion on issues that affect the schools and students. I am able to carefully consider and weigh different options, and my experience with debate has allowed me to evaluate ideas and propositions objectively.

What are the most important issues facing our community over the next several years? What do you think the role of your board should be in addressing those issues?

- The budget problems of local school districts are a major issue, and various helpful and enriching programs are being cut. The board should provide appropriate oversight when addressing these problems, and along with making sure the school districts are responsive to the needs of students and parents, overdevelopment and the use of eminent ^{domain} for commercial development are problems that create discord within the community. ~~and~~ The board should address this complex issue by involving the citizens and allowing for community input to make the best decision.

POTENTIAL CONFLICTS

I am **NOT available** for board or commission meetings on the following evenings (circle):

Monday Tuesday Wednesday Thursday Friday

Are you or any of your family members presently employed by the city of Minnetonka or serving on any of the city's advisory boards?

Yes ___ No If yes, explain: _____

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Yes ___ No If yes, please provide details on a separate sheet of paper.

Do you own any real property located in Minnetonka, other than your residence, in which you have a legal or equitable interest which, in the course of your participation in a city advisory board, could give rise to a conflict of interest?

Yes ___ No If yes, please provide details on a separate sheet of paper.

As a board or commission member, what issue(s) might cause conflict between your civic responsibility and personal or professional interests? How would you manage these conflicts?

I do not foresee any conflicts between my personal or professional interests and my civic duty.

Thank you again for your interest in serving on an advisory board for the city of Minnetonka!

Mami Subramani
Applicant's signature

4/13/07
Date

Park Board

This board is comprised of seven members plus one student representative. This board consults with the city council and staff in matters relating to parkland, park facilities, programs, and finances. The board's functions include long and short range planning related to capital improvement projects, acquisition, development and use of parklands, park facilities, recreational and leisure time facilities, and recreational programs. Park board members also represent the city on a joint recreation board, directing primary attention to recreation programs and activities developed and offered through the joint board; and making recommendations to the city council through the joint board concerning policies on recreational programs and activities. This board meets the first Wednesday of each month at 7:00 p.m. Members serve two-year terms.

Name: Jahn Anderson	Ward: 3	Appointed: 2/14/2005	Term Expires: 1/31/2009
Address: 4001 Skyview Road Minnetonka MN 55345	Comments:	Reappointed: 12/18/2006	Reappointed:
Name: Kyle Gallagher	Ward: 2	Appointed: 2/26/2007	Term Expires: 1/31/2009
Address: 3157 Vicki Lane Minnetonka MN 55305	Comments:	Reappointed:	Reappointed:
Name: Bruce Gefvert	Ward: 1	Appointed: 6/23/2003	Term Expires: 1/31/2008
Address: 11610 Vista Drive Minnetonka MN 55343	Comments:	Reappointed: 1/26/2004	Reappointed: 1/23/2006
Name: Tim Goodyear	Ward: 4	Appointed: 2/9/2004	Term Expires: 1/31/2008
Address: 17022 Clear Spring Terrace Minnetonka MN 55345	Comments:	Reappointed: 1/23/2006	Reappointed:
Name: Amber Greves	Ward: 3	Appointed: 2/26/2007	Term Expires: 1/31/2009
Address: 4545 Wilson Street Minnetonka MN 55345	Comments:	Reappointed:	Reappointed:
Name: Tess Komarek	Ward: 2	Appointed: 6/25/2007	Term Expires: 1/31/2008
Address: 2351 Sherwood Hills Rd. Minnetonka MN 55305	Comments: Student Rep.	Reappointed:	Reappointed:
Name: Denny Lambert	Ward: 1	Appointed: 2/14/2005	Term Expires: 1/31/2009
Address: 13111 Homestead Lane Minnetonka MN 55305	Comments:	Reappointed: 12/18/2006	Reappointed:
Name: Cathy Rude	Ward: 1	Appointed: 2/28/2005	Term Expires: 1/31/2008
Address: 12011 Arbor Circle Minnetonka MN 55305	Comments:	Reappointed: 1/23/2006	Reappointed:

Staff Liaisons:

Geralyn Barone, Assistant City Manager Ph# 952-8216

Dave Johnson, Recreation Services Director, Ph# 952-8360

Police Advisory Committee

Current Members

This committee is intended to serve as a community advisory group to the police department regarding service needs within the community, enhancing understanding of the limitations/capabilities of the police in providing services to the community, and identifying programming of interest in the areas of safety education, crime prevention and youth-related initiatives. The committee will consist of nine to eleven members reflecting the diversity of the community, including the city council, youth, business, Crime Watch block captains, and the four wards. Student representatives serve a two-year term, all other members serve a two or three-year term.

Name: Open Position	Ward Representing:	Appointed:	Term Expires: 10/1/2007
Address:	Comments: Student Rep.	Reappointed:	
		Reappointed:	
		Reappointed:	
Name: Darrell Ansel	Ward Representing: 2	Appointed: 2/26/2007	Term Expires: 10/31/2009
Address: 11472 Fairfield Rd., Unit 404 Minnetonka MN 55305	Comments:	Reappointed:	
		Reappointed:	
		Reappointed:	
Name: Lorraine Clugg	Ward Representing: 4	Appointed: 9/24/2001	Term Expires: 10/1/2009
Address: 5709 Lake Rose Drive Minnetonka MN 55345	Comments:	Reappointed: 1/26/2004	
		Reappointed: 9 /11/2006	
		Reappointed:	
Name: Kim Flemmer	Ward Representing: 3	Appointed: 9/24/2001	Term Expires: 10/1/2007
Address: 3650 Fairlawn Drive Minnetonka MN 55345	Comments:	Reappointed: 10/18/2004	
		Reappointed:	
		Reappointed:	
Name: Cameron French	Ward Representing: 4	Appointed: 6/25/2007	Term Expires: 10/1/2007
Address: 5716 Creek Park Drive Minnetonka MN 55345	Comments: Student Rep	Reappointed:	
		Reappointed:	
		Reappointed:	
Name: Melissa Hill	Ward Representing: 2	Appointed: 9/24/2001	Term Expires: 10/1/2009
Address: 11100 Cedar Lake Road #325 Minnetonka MN 55305	Comments:	Reappointed: 10/14/2002	
		Reappointed: 1 /26/2004	
		Reappointed: 9 /11/2006	
		Reappointed:	
Name: Corey Reuben	Ward Representing: 2	Appointed: 9/24/2001	Term Expires: 10/1/2007
Address: 13508 Minnetonka Blvd Minnetonka MN 55305	Comments: Vice Chair	Reappointed: 10/18/2004	
		Reappointed:	
		Reappointed:	
Name: Phil Riley	Ward Representing: 3	Appointed: 9/15/2003	Term Expires: 10/1/2008
Address: 14233 Prince Place Minnetonka MN 55345	Comments:	Reappointed: 10/18/2004	
		Reappointed: 9 /11/2006	
		Reappointed:	
Name: Monica Sadar	Ward Representing: 4	Appointed: 9/24/2001	Term Expires: 10/1/2007
Address: 5106 Stoney Bridge Court Minnetonka MN 55345	Comments:	Reappointed: 10/18/2004	
		Reappointed:	
		Reappointed:	
Name: Wendy Steinmetz	Ward Representing: 3	Appointed: 1/27/2003	Term Expires: 10/1/2008
Address: 3707 Sunrise Drive East Minnetonka MN 55345	Comments:	Reappointed: 1/3/2005	
		Reappointed: 9 /11/2006	
		Reappointed:	

Name: Brad Wiersum **Ward Representing:** 3 **Appointed:** 1/26/2004 **Term Expires:** 10/1/2008
Address: 16370 Eagle Ridge Drive **Comments:** City Council Rep. **Reappointed:** 9/11/2006
Minnetonka MN 55343 **Reappointed:**
Reappointed:

Staff Members:

Mark Raquet, Police Chief, Ph # 939-8578

Jill Schmidt, Administrative Assistant, Ph #939-8542

Community Commission

Current Members

The community commission has been established to continue the community partnerships established throughout the course of planning the city of Minnetonka's 50th anniversary celebration, and to engage the community in meaningful activities. The commission will consist of 12 members, appointed by the city council to two-year terms. To the extent possible, members will include representatives of local school districts, the business community, youth (under 18), community and faith organizations, the rental housing community and ethnic/immigrant populations.

Name: David Hakensen	Ward: 1	Appointed: 2/5/2007	Term Expires: 1/31/2009
Address: 3626 Baker Road Minnetonka MN 55305	Comments:	Reappointed:	Reappointed:
<hr/>			
Name: Robbie Rosenthal	Ward: 3	Appointed: 6/25/2007	Term Expires: 1/31/2008
Address: 14841 Copperfield Place Minnetonka MN 55391	Comments: Student Rep.	Reappointed:	Reappointed:
<hr/>			
Name: Anne Van Horne	Ward: 1	Appointed: 5/7/2007	Term Expires: 1/31/2009
Address: 4000 Merriam Rd. Minnetonka MN 55305	Comments: Student Rep.	Reappointed:	Reappointed:
<hr/>			
Name: Barb Westmoreland	Ward: 1	Appointed: 5/7/2007	Term Expires: 1/31/2009
Address: 4640 Caribou Drive Minnetonka MN 55345	Comments:	Reappointed:	Reappointed:
<hr/>			
Name: Courtney Wieden	Ward: 4	Appointed: 5/7/2007	Term Expires: 1/31/2009
Address: 5512 Holiday Rd. Minnetonka MN 55345	Comments: Student Rep.	Reappointed:	Reappointed:
<hr/>			
Name: Melissa Williamson-Herren	Ward: 2	Appointed: 5/7/2007	Term Expires: 1/31/2009
Address: 12928 Minnetonka Blvd. Minnetonka MN 55305	Comments: Business Rep.	Reappointed:	Reappointed:

Other Commission Members: Jacque Larson- City of Minnetonka Staff Liaison Ph # 939-8207

EDA

Current Members

The Economic Development Authority (EDA) advises the city council regarding economic development, housing and redevelopment matters, and exercises certain powers as authorized by the council. This board is comprised of seven members, of which two must be city council members, plus one youth representative. Youth representatives serve a one-year term, all other members serve a six-year term. Meetings are held on the second Tuesday of each month at 6:00 p.m.

Name: Elizabeth Bayer	Ward: 4	Appointed: 3/27/2006	Term Expires: 1/31/2008
Address: 15697 Woodgate Rd. S. Minnetonka MN 55345	Comments: Student Rep.	Reappointed: 12/18/2006	Reappointed:
Name: Daniel Duffy	Ward: 4	Appointed: 5/8/2000	Term Expires: 1/31/2011
Address: 17900 Susan Lane Minnetonka MN 55345	Comments: Vice-President	Reappointed: 1/3/2005	Reappointed:
Name: Bunny Robinson	Ward: 2	Appointed: 1/27/2003	Term Expires: 1/31/2012
Address: 12800 Meadow Circle Minnetonka MN 55305	Comments:	Reappointed: 1/23/2006	Reappointed:
Name: Peter St. Peter	Ward: 2	Appointed: 11/9/1998	Term Expires: 1/31/2012
Address: 1901 Timberline Spur Minnetonka MN 55305	Comments: President	Reappointed: 12/13/1999	Reappointed: 1/23/2006
Name: Gauri Subramani	Ward: 4	Appointed: 6/25/2007	Term Expires: 1/31/2008
Address: 6017 Valewood Drive Minnetonka MN 55345	Comments: Student Rep	Reappointed:	Reappointed:
Name: Al Thomas	Ward: 4	Appointed: 1/27/2003	Term Expires: 1/31/2008
Address: 15101 Peteler Lane Minnetonka MN 55345	Comments: City Council Rep.	Reappointed:	Reappointed:
Name: Tony Wagner	Ward: 2	Appointed: 1/26/2004	Term Expires: 1/31/2009
Address: 1804 Traymore Road Minnetonka MN 55305	Comments: City Council Rep	Reappointed:	Reappointed:
Name: Robert Walker	Ward: 1	Appointed: 3/5/2001	Term Expires: 1/31/2010
Address: 4553 Ellerdale Road Minnetonka MN 55345	Comments:	Reappointed: 1/26/2004	Reappointed:
Name: Bill Yaeger	Ward: 3	Appointed: 2/26/2007	Term Expires: 1/31/2013
Address: 15694 Sussex Drive Minnetonka MN 55345	Comments:	Reappointed:	Reappointed:

Staff Liaisons:

Ron Rankin, Community Development Director, Ph# 952-939-8282