State of the Practice for Displaying Non-traffic Related Messages on Dynamic Message Signs

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This project assessed professional opinions regarding Dynamic message sign (DMS) usage during normal traffic conditions. The research was preliminary and was intended to form the basis for a larger effort to assess professional and public perceptions of ITS technologies as they are deployed in Alabama. The work consisted of a literature review and a limited email survey distributed to ITS professionals working with DMS. The impetus for the research was an expressed interest in displaying general TCM-related messages to inform motorists of ozone conditions with the intention of affecting (reducing) travel behavior and thus improving air quality. Although the research was preliminary, the following conclusions are offered.

Most agencies surveyed (61%) did display messages during normal traffic conditions. The majority of messages displayed during normal traffic conditions consisted of general safety-related information and slogans. Some agencies displayed travel time, special event, and tourist-related messages during normal traffic conditions. Most regulations for DMS operations during normal traffic conditions required that messages be related to traffic and that they attempt to positively affect driver behavior. Motorists were generally amenable to general messages on DMS providing they were carefully worded and informative. At least one agency used DMS to broadcast air quality-related information.

While it was obvious that DMS should be used for traffic-related information, there appeared to be considerable subjectivity as what constituted traffic-related and the proper use of DMS during normal traffic conditions. A follow-up study was recommended to assess both professional and public opinions regarding the use of DMS for dissemination of general interest traffic information as opposed to only specific applications such as incident management, work zone control, etc.
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Executive Summary

This project assessed professional opinions regarding Dynamic message sign (DMS) usage during normal traffic conditions. The research was preliminary and was intended to form the basis for a larger effort to assess professional and public perceptions of ITS technologies as they are deployed in Alabama. The work consisted of a literature review and a limited email survey distributed to ITS professionals working with DMS. The impetus for the research was an expressed interest in displaying general TCM-related messages to inform motorists of ozone conditions with the intention of affecting (reducing) travel behavior and thus improving air quality. Although the research was preliminary, the following conclusions are offered.

Most agencies surveyed (61%) did display messages during normal traffic conditions. The majority of messages displayed during normal traffic conditions consisted of general safety-related information and slogans. Some agencies displayed travel time, special event, and tourist-related messages during normal traffic conditions. Most regulations for DMS operations during normal traffic conditions required that messages be related to traffic and that they attempt to positively affect driver behavior. Motorists were generally amenable to general messages on DMS providing they were carefully worded and informative. At least one agency used DMS to broadcast air quality-related information.

While it was obvious that DMS should be used for traffic-related information, there appeared to be considerable subjectivity as what constituted traffic-related and the proper use of DMS during normal traffic conditions. A follow-up study was recommended to assess both professional and public opinions regarding the use of DMS for dissemination of general interest traffic information as opposed to only specific applications such as incident management, work zone control, etc.
SECTION 1.0
INTRODUCTION

1.1 Overview of Dynamic Message Signs

Dynamic message signs (DMS), also referred to as changeable message signs (CMS) and variable message signs (VMS), have been used for over 30 years to provide traffic information to motorists and have become a prominent component of intelligent transportation systems (ITS). Consequently, they have become key elements of many advanced traveler information and traffic management systems. DMS provide dissemination of real-time traffic information to motorists and are generally deployed in urban areas to inform motorists of traffic conditions (e.g., expected delays, estimated travel times, diversion routes, lane closures). DMS have become an important source of motorist information during incidents, special events, and work zone traffic control. The value of DMS, or any traffic information source, is dependent on two items:

- The accuracy and usefulness of the information disseminated.
- Motorists’ willingness and ability to understand and utilize the information.

The latter point involves the public perception of traffic information technologies. The quality of traffic-related messages as well as the overall presence of DMS affects the public perception. Traffic management agencies must understand that DMS affect public perception even when they are not actively conveying traffic-related information. Motorists may perceive blank signs as inoperable or may question the allocation of resources to technologies that seem to be (from their perspective) underutilized. On the other hand, displaying information not germane to real-time traffic conditions may erode the credibility of DMS and reduce their effectiveness as a traffic management tool.

1.2 Project Purpose and Scope

The purpose of the research presented herein was to assess professional opinions regarding DMS usage during normal traffic conditions. The work was conducted at the request of the Alabama Department of Transportation’s (ALDOT) Multimodal Bureau as it readies to deploy several DMS on the interstates in and around Birmingham. Birmingham is an ozone non-attainment area and uses “ozone alerts” as one of its traffic control measures (TCM) during ozone season. Ozone alerts are announced in local news venues, and red “ozone alert” flags are placed on municipal buildings and local transit buses. As Birmingham begins to deploy DMS as part of its regional ITS, an interest has been expressed in using the DMS as a TCM tool to communicate air quality status to motorists. Proponents suggest that this would be an appropriate use of DMS technology, especially as the ITS program in Birmingham was funded primarily through the Congestion Mitigation/ Air Quality (CMAQ) funds. Opponents maintain that messages unrelated to specific traffic management objectives would erode the credibility, and ultimately, the effectiveness of the devices, and regional traffic management goals.
This project was conducted as a preliminary step, and was intended to form the basis for a larger effort to assess professional and public perceptions of ITS technologies as they are deployed in Alabama. The work consisted of a literature (and Internet) review and a limited email survey distributed to ITS professionals currently working with DMS.
SECTION 2.0
STUDY METHODOLOGY

2.1 Literature Review

The purpose of the literature review was to identify and synthesize current specifications and policies related to DMS use during normal traffic situations. Information from numerous traffic-related websites (ITS America, the Institute of Transportation Engineers, federal and state transportation agencies, etc.) was reviewed in addition to various journals and technical publications. Information gathered during the review was compiled into an annotated bibliography (Appendix A) and was used to guide the development of survey questions.

2.2 E-mail Survey

An e-mail survey was sent to a sample of professionals who were determined to likely work with DMS or in the area of ITS. The survey group was identified from various ITS-related websites and ITS sections of the individual state DOT websites. The majority of the professionals were from state DOT’s. A copy of the survey questions is provided in Appendix B and the list of the e-mail addresses is provided in Appendix C.

2.3 ITE Listserver Survey

During the course of the project, an individual not associated with the work presented herein raised an identical question on the Institute of Transportation Engineers (ITE) Listserver. The ITE Listserver is an on-line discussion group of transportation professionals sponsored by ITE. Due to its relevance, the information exchanged on the ITE Listserver was incorporated into the project. Excerpts from the Listserver discussion are provided in Appendix D.

2.4 Analysis

The information gathered from all sources was used to draw conclusions, starting with a simple tabulation of survey results. The replies to individual questions, tabulations, and conclusions are presented in the next section of this report.
SECTION 3.0
RESULTS

3.1 Literature Review

The majority of the literature was vague in reference to messages placed on DMS during normal traffic situations – the discussion of critical traffic messages and sign standardization were most prevalent in the reviewed material. The literature suggested various policies and practices among different agencies. Standards and guidelines for DMS operation have been established by the Federal Highway Administration (FHWA) and are addressed in the Manual on Uniform Traffic Control Devices (MUTCD). In addition, it was observed that some agencies maintain their own internal DMS operational guidelines (Miller, et al., 1995; Dudek 1997). It was evident that there was not a single accepted practice for DMS operation during normal traffic conditions.

For example, the MUTCD states that “[changeable] message signs should not be used to display information other than regulatory, warning, and guidance information related to traffic control” (FHWA, 2000).” This contradicts what the Atlantic County Department of Public Works in New Jersey displayed during the Christmas holidays, which consisted of messages such as “Survive the Holidays; Drive Alert, Sober and Buckle Up; Arrive Alive” (Atlantic, 2001).

All of the reviewed literature agreed that no advertising of commercial events or entities would be displayed, only messages that related to traffic would be allowed. Some public agencies would allow public safety messages to be displayed during normal traffic conditions, such as “lights on when raining.” The most popular messages displayed during normal traffic conditions were travel time messages (TranSafety, 1997).

Previous surveys have been performed on DMS operations and motorists’ acceptance. Such surveys generally addressed topics such as: the readability of the sign, the favorableness of the sign, and types of messages to be displayed on the signs (usually with regard to traffic-related conditions). One study suggested that half the drivers in one metropolitan area regularly used DMS installations for traffic information – two-thirds of these motorists supported general traffic safety messages that were not specific to current traffic conditions. The survey indicated that specific safety messages were more effective than vague safety messages (Wei, 1998).

A 1997 National Cooperative Highway Research Program (NCHRP) Synthesis reported that 77% (20 of 26) transportation agencies operating DMS display blank messages during normal traffic conditions. Five (19%) of the agencies surveyed display messages on a continuous basis. Among the messages displayed during normal traffic conditions, the report cited general safety information, time/date, and next exit information. The report cited a TCM application in the Los Angeles area that displayed messages to motorists on congested freeways that said “NEXT TIME TRY AMTRAK TO LAS VEGAS” and “RELIEVE CONGESTION-RIDESHARE.” The public reaction to such messages was reported to be “quite negative.” On the other hand, the NCHRP report presented an example of DMS that remained idle for 18 months in New York.
State during system construction resulting in a negative perception by the public. The agency responded with a policy to display some type of message on a continuous basis once the signs were operational. The report also mentioned that the general opinion among the transportation professionals surveyed suggested that non-traffic information would reduce DMS credibility and effectiveness (Dudek, 1997).

A 1996 Transportation Research Board report presented motorists’ attitudes, measured via telephone interview, on DMS content. The report indicated that 67% of the 517 survey respondents that general safety-related messages (e.g., DRIVE TO SURVIVE, SIGNAL BEFORE YOU CHANGE LANES) were a good use of DMS. These results contradicted the results of focus group studies cited by the author and may reflect subjectivity in survey questions wording (Benson, 1996).

The literature review revealed two state transportation agencies, the North Carolina Department of Transportation (NCDOT) and the Oregon Department of Transportation (ODOT), that explicitly allow the use of DMS to convey traffic-related messages during normal traffic conditions. The NCDOT regulations require that such messages assist “the Department in improving highway safety and reducing congestion…” and that the messages “require motorists to alter their driving” (Goins, 1999). The ODOT allow the display of a Public Service Announcement (PSA) on DMS that “is a brief message that does not require an immediate response but encourages the driver to change a future behavior.” The ODOT regulations also state that, “PSAs related to air quality alerts and transportation safety are permitted…” The regulations then go on to present numerous conditions regarding duration of messages and the relative priority of PSAs among other message types (ODOT, 2000). Finally, a recent technical memorandum from the ITS Joint Program Office state that “driver safety focused messages are acceptable to be displayed on [D]MS” (Johnson, 2001).

3.2 Survey of DOTs and Other Agencies

Of the 87 e-mails surveys distributed during this project, there were 14 people responses (some respondents did not answer all questions). Eleven of the respondents answered the survey and one commented on their policy for displaying messages on DMSs without answering the question. When asked if other messages should be displayed, if it would be beneficial to display public safety messages, and if displaying other messages would distract drivers during non traffic related situations, the respondents were split between yes and no, as shown in Figures 3-1, 3-2, and 3-3, respectively.
The respondents agreed that displaying messages other than essential traffic control messages would compromise traffic management objectives and cause drivers to ignore DMS messages, as displayed in Figures 3-4 and 3-5.
The results of the present work suggest that the professional consensus is that non-traffic related messages are poor practice for DMS operations. The variations in these results, however, display the subjectivity of the topic and may reflect confusion regarding one or more of the survey questions (a major source of subjectivity was the interpretation of “traffic-related” messages). Nonetheless, the results indicate that there is currently no definitive practice displaying messages during normal traffic conditions. In addition to questions 1 through 5, the survey allowed for the respondents to comment on their practices. In particular, the respondents were given the opportunity to describe any messages they might display during normal traffic conditions via the last two questions on the survey: (Relevant comments are summarized in Table 3-1):

- What messages do you currently display during normal traffic conditions (i.e. when no traffic message is warranted)?
- What messages would you recommend?

Relevant comments are summarized in Table 3-1.
Table 1. Survey comments

<table>
<thead>
<tr>
<th>What messages do you currently display during normal traffic conditions (i.e. when no traffic message is warranted)? (Question #7)</th>
<th>What messages would you recommend? (Question #8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normally, none. On rare occasions display non-essential traffic safety messages. A message has been displayed during inclement weather that reminds road users that our law requires headlights to be on when wipers are used. Back to school and holiday traffic safety reminders have been used in the past.</td>
<td>None.</td>
</tr>
<tr>
<td>Blank Face</td>
<td>Blank Face</td>
</tr>
<tr>
<td>Blank except in our Northern Virginia District where they display day, date, and time.</td>
<td>Blank</td>
</tr>
<tr>
<td>Special messages related to events and general safety messages such as buckle up for safety etc.</td>
<td>Information regarding travel time from point A to point B. We are exploring messages related to advertising, but we haven't done anything about this yet.</td>
</tr>
<tr>
<td>Blank Screen</td>
<td>None</td>
</tr>
<tr>
<td>None sign is blank</td>
<td>No Message</td>
</tr>
<tr>
<td>Messages vary by area and operations in force. Examples: KNOW YOUR SPEED, BUCKLE UP, DON'T DRINK &amp; DRIVE, DRIVE SAFELY, DRIVE COURTEOUSLY, SPEED LIMITS VARY, ETC.</td>
<td>Safety-related messages: KNOW YOUR SPEED, BUCKLE UP, DON'T DRINK &amp; DRIVE, DRIVE SAFELY, DRIVE COURTEOUSLY, SPEED LIMITS VARY, ETC.</td>
</tr>
<tr>
<td>In Cincinnati/Northern KY-travel times to major landmarks. Signs left blank In Louisville/Southern IN, sometimes time and temperature</td>
<td>Travel times, special events with major traffic impacts, maintenance and construction activities, congestion, road/ lane closures, snow and ice conditions</td>
</tr>
<tr>
<td>Nothing Displayed</td>
<td>Traffic control related messages only</td>
</tr>
<tr>
<td>Kansas DOT does not believe it appropriate to use the message boards for other than their intended traffic related purpose. I understand the just released edition of the MUTCD also does not condone the use of the signs for other than traffic related purpose</td>
<td>No answer</td>
</tr>
<tr>
<td>NYSDOT guidelines take into account that we have traffic management systems of greatly varying maturity in our various regions. In general, we encourage the use of a small symbol such as an X in the corners of the sign to indicate that the sign is functioning.</td>
<td>See previous answer</td>
</tr>
<tr>
<td>Nothing</td>
<td>None</td>
</tr>
<tr>
<td>We have used portable VMS successfully to deter the transportation of illegal fireworks into the County and to (in an emergency) advise neighborhoods of impending mosquito spraying. We are currently using VMS at various locations throughout the County to promote pedestrian and motorist safety. VMS should not be used for advertisement.</td>
<td>No answer</td>
</tr>
<tr>
<td>Blank Face. Occasionally display website <a href="http://www.COTrip.org">www.COTrip.org</a></td>
<td>Blank Face</td>
</tr>
</tbody>
</table>

The comments suggest that 8 of 13 (61%) respondents indicated some type of message was displayed during normal traffic conditions. These results differ from those reported in the NCHRP report where 77% of the surveyed agencies indicated that signs were left blank. The majority of the example messages cited in Table 3-1 were public safety-related. The results presented in Table 3-1 support those reported in Figure 3-2 where 50% (7 of 14) of the respondents were in favor of public safety messages. Other examples from Table 3-1 included travel times and special event information. Although most respondents indicated that “messages
other than essential traffic control messages” would erode the credibility and effectiveness of DMS (questions #4, #5, and #6), Table 3-1 suggests that the majority of respondents in fact do display such messages.

3.3 ITE Listserver Survey

A similar question was posed on the ITE Listserver regarding displaying messages during normal traffic conditions and received five responses. Printouts of the ITE Listserver thread are provided in Appendix C. The majority of the respondents said that the DMS they saw or work with are blank during normal traffic conditions. One respondent alluded to polls show that the public dislikes the displaying of irrelevant messages, while other polls show that the signs are a waste of time if there is no information on them.
SECTION 4.0
CONCLUSIONS

Although, the MUTCD prohibits the use of DMS for messages unrelated to specific traffic control objectives (regulatory, warning, and guidance), some agencies currently display general traffic-related messages such as: BUCKLE UP FOR SAFETY, DON’T DRINK AND DRIVE, etc. The impetus for the research was an expressed interest in displaying general TCM-related messages to inform motorists of ozone conditions with the intention of affecting (reducing) travel behavior and thus improving air quality. Although the research was preliminary, the following conclusions were drawn:

- Most agencies surveyed (61%) displayed messages during normal traffic conditions.

- The majority of messages displayed during normal traffic condition consisted of general safety-related information and slogans.

- Some agencies displayed travel time, special event, and tourist-related messages during normal traffic conditions.

- Most existing regulations for DMS operations during normal traffic conditions require that messages be related to traffic and attempt to positively affect driver behavior.

- Motorists are generally amenable to general messages on DMS providing they are carefully worded and informative.

- At least one agency currently uses DMS to broadcast air quality-related information.

While it is obvious that DMS should be used for traffic-related information, there appears to be considerable subjectivity as what constitutes traffic-related and the proper use of DMS during normal traffic conditions. It is recommended that a follow-up study be conducted to assess both professional and public opinions regarding the use of DMS for the dissemination of general interest traffic information as opposed to only specific applications such as incident management, work zone control, etc. A logical conclusion from this work would be that public education on the purpose(s) and use(s) of DMS would allow drivers to understand why some messages are more critical than others but that the devices are there for their benefit and are an important component of the traffic control system.

It is anticipated that another survey will be conducted in the Birmingham area once the DMS have been in place for an appropriate amount of time. The possibility of extending the survey to the national level will also be explored. Ultimately, it is intended that the results of such work may allow more specificity in operational standards (e.g., MUTCD, state or local regulations) on DMS usage.
SECTION 5.0
REFERENCES


Transportation Research Record, No. 1550. Transportation Research Board, National 
Academy of Sciences. Washington, D.C.

Changeable Message Signs (CMS). Transportation Research Board, National Academy of 
Sciences. Washington, D.C.

U.S. Department of Transportation, Washington, DC.

for the Effective Use of Variable Message Signs. Virginia Transportation Research 
Council, Report No. VTRC 95-R15. Charlottesville, VA.

ITS Joint Program Office. US Department of Transportation, Washington, DC.

TranSafety, Inc., 1997. Virginia Motorists Favor Variable-Message Signs That Are Simple, 
Reliable, and Useful. Road Management Journal. Sequim, WA

Wei, Wen-Bin. 1998. Probe Vehicle Surveillance - ITS Decision Report. PATH, University of 
California, Berkeley, Institute of Transportation Studies, Berkeley, CA.
APPENDIX A
ANNOTATED BIBLIOGRAPHY


   Summary: Portable DMS were placed in various locations during the Christmas holidays to promote safe diving during the holidays. Signs were used as a reminder for safe driving. The messages include; SURVIVE THE HOLIDAYS; DRIVE ALERT, SOBER AND BUCKLE UP; ARRIVE ALIVE


   Summary: The California Law strictly states that advertising is prohibited within the State highway Right of Way. Advertising in the state of California is not an option on DMS.


   Summary: DMS are used for various applications in different categories. According to the handbook the different categories are traffic management and diversion, warning of adverse conditions (weather), control at crossings, control during construction and maintenance operations, and special-use land and roadway control.


   Summary: “Traffic state descriptor messages should not routinely be displayed in the course of traffic operation during non-incident conditions. They should be reserved for when freeway congestion is not anticipated or is more severe than expected.” Some agencies do decide to display messages during non-incident situations. Some cases may warrant the display of messages during non-incident conditions, to please the public by confirming the operation on the DMS. Public complaints that DMS do not work are common. The value of messages such as “NORMAL TRAFFIC” is questioned due to the varying definition of “NORMAL TRAFFIC”. Displaying messages during non-incident situations may be required to gain the confidence of the motorists.
Summary: Drivers must believe the system is accurate, notably when real time messages are used. The credibility of the message is lost when inaccurate messages are displayed. When the credibility is lost the messages become ignored. There are two ways to display messages. 1) Always display a message, during all times (incident or non-incident), or always display a message during peak times and as required during off peak times. 2) Display messages only during conditions that are abnormal. Factors affecting the comprehension of the message are 1) Do not display trivial information or information that they already know. 2) Only display messages when a decision or response is required from the motorists. In lieu of blank signs, some agencies display applicable information on other freeway conditions or future roadwork information.


Summary: The Transportation Research Board compiled existing information on DMS to create a synthesis of all available information on DMS. The topic of displaying information on DMS during non-incident conditions is discussed as a major issue. According to their survey 77% of the respondents have policies to leave the DMS blank during non-incident conditions, while other agencies display safety messages. 19% of the respondents reported displaying messages continuously. During the construction on the INFORMS project on Long Island some DMS remained idle for 18 months before construction was complete. Due to the reaction of the opposed response of the public New York now has a policy of displaying messages on DMS at all times.


Summary: The millennium edition is the first MUTCD to provide specific specifications for DM. As stated, regulatory, warning, and guidance information related to traffic control, are the only type of messages that should be displayed on the signs. The development of standards for DMS is ongoing and the MUTCD encourages highway and transportation bureaus to monitor existing DMS for suggestions of additional standards to be adopted. DMS shall display only appropriate traffic related information without any advertising.


Summary: Travel information messages should take precedence over all messages. This report reviewed various specific actions for messages, which include; Weather special
events, boundary events, Construction, traffic accidents, hazardous spills, and multiple events. Filler messages should have the least amount of importance of all messages. Filler messages may be used to show that the sign is working properly, but should change often and be accurate to keep the drivers attention. One recommended option would be to display the time and date to show the sign is working. VMS should not have excess or unclear information.


Summary: In this report various applications for messages on DMS were revealed, they included; accidents/incidents, congestion, work zones, weather conditions, special events, general transportation messages, and advertising. The use of a DMS for advertising was discouraged, because it may cause people to ignore the signs. Based on credibility of the message it was said to display nothing on the VMS than to display an incorrect message. Messages such as “NORMAL TRAFFIC” and the time and date may be confusing and considered a diversion. Feedback from motorists said VMS should be left blank during times of normal traffic.


Summary: Most of the first DMS did not have the option to display interactive messages. The first DMS were rotating drums or fold out signs that had a limited number of fixed messages, some lamp matrix signs were used and they could incorporate dynamic messages. Due to the limited number of messages some signs had a place for a blank message. During non-incident situations the sign was left blank due to the limitations of the signs. Although some agencies displayed messages continuously during peak hours.


Summary: Signs are permitted to display public service announcements, which include transportation safety, air quality and messages that promote good driving performance. The messages have the lowest preference of all messages. Based on these guidelines the message should not be displayed more than five hours per day or more than five days per month. Tourist information and advertising on DMS is not allowed. Messages relevant to changes in public law may be displayed, but only on a single panel. Travel time information may be displayed as long as there is a way to display and correct information in real time. Other messages allowed include messages directed at an individual vehicle, test messages, and advance notification of weather or construction.

**Summary:** Only messages specified in the Operational Guidelines for use of CMS may be displayed. The messages include, in priority; Emergencies, hazardous road conditions, traveler information and advance notice such as lane closures, road closures and special events. If one of these messages is not applicable the sign is to remain blank. Advertising of commercial events or entities will not be displayed, only messages that relate to highway safety or congestion reduction may be displayed. The display of redundant guide or warning messages will not be displayed.


**Summary:** This paper was based on a survey of opinions from seven different focus groups. From the survey they found that half the drivers depended on the DMS, and two-thirds supported safety messages. They found safety messages should be specific and not too general, for example “lights on in bad weather” in lieu of a general message like “tailgating is deadly.” This survey demonstrated that displaying self-explanatory messages, such as “Congestion ahead” during rush hour, distracted the drivers more than helping them.


**Summary:** The DMS remain blank during normal traffic conditions. Messages are only displayed when there is a problem. Messages are displayed only when there are situations that motorists need to be aware of.


**Summary:** DMS display messages about congestion, speed restrictions, different routes, special events, and changing driving conditions. Information displayed on DMS is classified as requirements, advice, and warnings. Inaccurate or wrong messages may confuse drivers and not allow enough time for them to comprehend the message. Less information is considered better than too much or inaccurate information. General safety messages and greetings are usually ignored. Much controversy has been raised weather the sign should be left blank during normal traffic conditions or should a general message be displayed such as “NORMAL TRAFFIC CONDITION AHEAD.”
Fellow ITS Professionals:

I am a transportation engineering professor at the University of Alabama at Birmingham. A student of mine is looking into a question that has spurred some discussion here in Alabama - Is it appropriate to use dynamic message signs (DMS) to display information other than traffic-related information?

Obviously, some information would be more appropriate than others, but it is my experience that there is no strict policy. Some agencies display information (e.g. time of day) simply to indicate to the public that the signs are functioning properly. Others strictly forbid non traffic-related messages.

All of that said, we have put together a brief survey to record the state-of-the-practice from various agencies around the country currently involved in ITS and DMS deployments. If you have information on your agency's DMS policies or practices regarding displaying non traffic-related information, please take a moment and fill out the survey below. We have designed the survey to be easily facilitated by simply using the REPLY button on your e-mail editor. Thank you very much for your input. If you would like to receive a summary of the results from our survey please indicate so in the last question of the survey.

Regards,

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f: 205.934.9855

Survey Questions

Please place an X by the appropriate response.

1) Do you work with or manage dynamic messages signs?
   YES
   NO
   Comments:
2) Should dynamic messages signs display messages other than essential traffic control messages?
   YES
   NO
   Comments:

3) Would it be beneficial to drivers to display (non traffic-related) public safety messages?
   YES
   NO
   Comments:

4) Will displaying messages other than essential traffic control messages distract drivers?
   YES
   NO
   Comments:

5) Would displaying messages other than essential traffic control messages compromise traffic management objectives?
   YES
   NO
   Comments:

6) Would displaying messages other than essential traffic control messages cause driver to ignore dynamic messages signs?
   YES
   NO
   Comments:

7) What messages do you currently display during normal traffic conditions (i.e. when no traffic message is warranted)?

8) What messages would you recommend?

9) Would you like to receive a summary of the results of this survey?
   YES
   NO
   Comments:

Again, thank you for your input.
# APPENDIX C

## List of Email Addresses

<table>
<thead>
<tr>
<th>Department Name</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Department of Transportation</td>
<td><a href="mailto:Olga_Gonzalez-Estrada@dot.ca.gov">Olga_Gonzalez-Estrada@dot.ca.gov</a></td>
</tr>
<tr>
<td>California Department of Transportation</td>
<td><a href="mailto:Bill_Lane@dot.ca.gov">Bill_Lane@dot.ca.gov</a></td>
</tr>
<tr>
<td>California Department of Transportation</td>
<td><a href="mailto:Brian_Aalconcel@dot.ca.gov">Brian_Aalconcel@dot.ca.gov</a></td>
</tr>
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<td>California Department of Transportation</td>
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<td><a href="mailto:akaroly@gw.dot.state.ny.us">akaroly@gw.dot.state.ny.us</a></td>
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<td><a href="mailto:collura@vt.edu">collura@vt.edu</a></td>
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<td><a href="mailto:shaadmin@sha.state.md.us">shaadmin@sha.state.md.us</a></td>
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<td>Nebraska Department of Roads (NDOR)</td>
<td><a href="mailto:lbiggins@dor.state.ne.us">lbiggins@dor.state.ne.us</a></td>
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<td>New Hampshire, Goffstown, New Hampshire</td>
<td><a href="mailto:dschwerk@ci.goffstown.nh.us">dschwerk@ci.goffstown.nh.us</a></td>
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<td>New Hampshire, Salem, New Hampshire</td>
<td><a href="mailto:rmoldoff@ci.salem.nh.us">rmoldoff@ci.salem.nh.us</a></td>
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<td><a href="mailto:dot@state.nd.us">dot@state.nd.us</a></td>
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<td>New Mexico State Highway and Transportation Department</td>
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<td>Texas, North Central Texas Council of Governments</td>
<td><a href="mailto:mmorris@ncctog.dst.tx.us">mmorris@ncctog.dst.tx.us</a></td>
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<td>The Intelligent Transportation Systems (ITS) network in Wisconsin</td>
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<td><a href="mailto:randrew@dot.state.wv.us">randrew@dot.state.wv.us</a></td>
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Hello everyone…

A question has come up concerning policies for displays on freeway DMSs - when not providing current traffic advisory information, does your agency display other messages (i.e., “Buckle Up” or other traffic safety messages; time of day; or (hopefully not) “Drink Coca-Cola”)?

Thanks for your input!

Pete

____________________________________
Peter J. Yauch, P.E.
Director of Traffic Engineering and ITS
TEI Engineers & Planners
5110 Eisenhower Blvd., Suite 102
Tampa, Florida 33634

Phone (813) 884-7339
Fax (813) 882-3641

Response #1:

Hi all -

I'm just catching up after some vacation, and followed the thread prompted by Pete's question below. A few more thoughts ...

- I know that the Garden State Parkway Authority (New Jersey) was using their signs to "advertise" concerts at an arena they own. This was eventually shot down as inappropriate, and when I drove the roadway last week (part of my vacation), the signs were dark.

- The majority of other signs I have seen recently have been dark, including NJDOT (as already mentioned), NYSDOT, and CDOT.

- The E-470 toll road authority here in CO uses safety messages for the default.

- I have a vague recollection that NYSDOT Region 10 (Long Island) did a study / had one performed that documented the fact that default safety messages are detrimental ... they increase crashes while folks read the safety message instead of watching the road, and they loose their long-term effectiveness since (as already described) they "never" say anything but safety messages. When I drove this area last week, the signs were dark, and I know they used to apply...
safety menages as the default. The recollection is too vague to remember who to contact, but the Region 10 TOC is (was?) in Hauppauge, Long Island adjacent to the Region 10 offices, and the system was called IMIS and renamed INFORM.

Paul

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Carter & Burgess, Inc - Denver
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Response #2:

Further info. The NYSDOT has been using displays during times of no incidents to tell the public to buckle up it's the law, and wipers on lights on, you know safety stuff. The NYCDOT on the other hand has messages that instruct the public to call an 800 number for traffic information. These are the default messages.

Paul Vetter

Response #3:

I have read a lot of different opinions on the DMS signs. Some public polls have shown that the public does not like irreverent messages. Other polls show they think the sign was a waste if there is no information on it. One thing that is for certain, any messages that relate to accidents or congestion must be removed promptly once the situation has cleared or your sign (and you) will lose credibility. Here in Houston, when the DMS signs were first installed, I saw a message about an accident that occurred in the morning rush that was still up at 2 PM.

Rick J. Staigle, P.E.
Traffic Engineers, Inc.
Houston, Texas

Response #4:

The policy at New Jersey Dept. of Transp. is to provide No message when not providing current traffic advisory info.

Paul Vetter

Response #4:

I understand that experts are split evenly between dark signs and other messages. I am leaning towards dark signs because whenever I drive in the Detroit area that has system like that, and I see some messages that are insignificant to my driving task, I have a tendency of skipping the rest of them that follows. Once I realize it's just a Click-it-or-Ticket, and since I'm Clicked already, I don't expect any new information that might be useful for me coming from these devices.
I would like them to be just traffic signs following MUTCD as close as possible, not a cross breed of a billboard and a traffic sign, just because they resemble billboards but offer even bigger versatility. This also means that if the sign says "Orchard Lake Rd 1/2 mile" for a third time in addition to the ordinary green ones, it's in fact an information overload, and as such is against MUTCD.

I can easily imagine a situation that these signs became so cheap, that we will be installing them every 1000ft to get the flexibility we need. Then what?

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