

VMS AND HAR MESSAGE PROJECT

POLICY ON THE USE AND OPERATION OF HIGHWAY ADVISORY RADIO

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NEW JERSEY DEPARTMENT OF TRANSPORTATION POLICY ON THE USE AND OPERATION OF HIGHWAY ADVISORY RADIO

INTRODUCTION

This document establishes a policy on highway advisory radio use and operation for the New Jersey Department of Transportation.

Highway advisory radio (HAR) is a special radio tool that can be used by highway field personnel to give motorists real-time travel information via their vehicle radios. HAR messages can be transmitted using either 10-watt transmission that is FCC licensed or a 0.1 watt lower power transmission that does not require FCC licensing. When properly installed and maintained, 10-watt transmitters have a broadcast range of roughly 1 to 5 miles. HAR may be broadcast on any available FCC-approved frequency. The lower power 0.1-watt system has not yet proven to be feasible for traffic operations. HAR systems can be licensed for specific fixed sites or for portable use.

Motorists approaching a HAR site are advised of its existence by an advanced static or variable message sign which advises motorists to tune to the special frequency on the AM dial to receive the HAR message. When a static message sign is used for the advanced sign, beacons are mounted to the sign and are flashed whenever the NJDOT personnel desires that motorists tune to the HAR station. Messages can either be "live" or prerecorded.

The major advantage of HAR over variable messages signs is that longer messages can be broadcasted to motorists using HAR. In contrast to variable message signs which in practice are limited to about eight seconds of viewing time or about 8 words of message, HAR messages can be broadcast to motorists during a longer period. Thus the amount of information that can be given motorists is much greater using HAR.

Good quality equipment in itself will not ensure that the HAR system is effective. Of extreme importance is the quality of the message. Message quality refers to the manner in which the important information is put together in the messages for the motorists. Well-designed messages are essential for effective HAR systems.

To be effective, HAR must provide timely, accurate and reliable information and they must be used and operated properly. An important consideration in a successfully operating an HAR system is to **maintain credibility**--the motorist's faith in the system. Failure to do so will result in ineffective devices. Credibility will be lost when one or more of the following occurs:

- Information broadcasted is inaccurate (e.g., no accident is observed when motorists pass by the location where an incident was indicated in the HAR message).
- Information broadcasted is not current (e.g., the message is the same each morning when the motorist tunes to the HAR station).

- Information broadcasted is irrelevant to essentially all motorists using that facility.
- Information broadcasted is obvious by inspection, hence, is redundant (e.g., broadcasting “HEAVY CONGESTION” when motorists are driving bumper to bumper in traffic).
- Information broadcasted is trivial relative to more important events occurring on the highway (e.g., broadcasting “SUPPORT YOUR LOCAL RED CROSS” when an incident occurs or road work affects traffic flow downstream).
- Inaccurate numbers are given such as traffic speeds and time to reach a destination which can be easily checked and disproved by motorists. Never broadcast these values unless they can be accurately predicted or time-stamped.

The benefits derived from HAR systems depend on consistency and forethought in their use.

RESPONSIBILITY FOR OPERATION OF HAR

The NJDOT Director of Traffic Operations has final responsibility for the operation of HAR systems on roadways under the jurisdiction of the NJDOT. NJDOT Traffic Operations North and NJDOT Traffic Operations South have the responsibility for the daily operations of HAR in north and south New Jersey, respectively. The Traffic Operations Center Operator has the responsibility to know the status of the HAR under his/her control at all time. “Status” includes knowledge of whether the HAR system is operating and the specific message being broadcast.

GENERAL OPERATIONS

1. **HAR may be used for special needs to provide motorists with real-time information for the following applications:**
 - **Construction and maintenance activities;**
 - **Incident information and management;**
 - **Congested routes to recreational areas (e.g., routes to beaches);**
 - **At locations (e.g., rest areas, airports, etc.) conducive for providing tourists with routing information; and**
 - **Special events.**

HAR should be used for the unusual situations that occur or situations that change which cannot be handled by static traffic control devices or by variable message signs. HAR is not recommended if standard signs can do an effective job or if the HAR message only repeats the message on the signs. More information can be provided to motorists with HAR than with variable message signs.

- 2. Real-time information that conveys current traffic, congestion and adverse weather and/or pavement conditions that affect the travel and safety of motorists should receive the highest priority for broadcast on an HAR system. Traffic-related information that applies to the future (e.g., future lane closures) may also be broadcasted. Public service announcements may be broadcasted as “filler” messages when neither of the above information needs to be provided to motorists. Public service announcements must be approved by the NJDOT Director of Traffic Operations before they are broadcasted.**
- 3. An advance sign that alerts motorists to tune to the HAR station shall be placed far enough upstream of the HAR transmission zone so as to allow motorists sufficient time to tune to the HAR station and hear the message at least twice before any driving action is necessary. The advance sign may either be a static sign or a variable message sign. When a static sign is used, beacons placed on the sign shall be activated to flash whenever current traffic, congestion or adverse weather and/or pavement conditions that affect the travel and safety of motorists is broadcasted. The beacons shall remain deactivated (blank) when all other messages are being broadcasted. When an advance variable message sign is used, the sign shall be activated to alert motorists to tune to the HAR station only when current traffic, congestion or adverse weather and pavement conditions that affect the travel and safety of motorists is broadcasted.**
- 4. When incidents occur which do not require the full closure of the roadway, HAR messages shall not divert motorists to specific alternative routes unless positive guidance is available along the alternative route in the form of either guide signs or trailblazers to the major destination, or else police officers or traffic control personnel control and guide traffic along the alternative route. Furthermore, both of the following conditions should exist:**
 - The HAR operator has knowledge of the conditions on the alternative route; and**
 - The alternative route should result in a time savings to motorists.**

Motorists are more willing to divert to an alternative route before they enter the freeway. They are less willing to divert after they are on the freeway because the average motorist is reluctant to drive unfamiliar routes. Studies have shown that the average motorist would be willing to divert when the time savings is 20 minutes or more. Further studies showed that the average motorist in New Jersey believes that HEAVY DELAY implies a delay of about 25 minutes or more and MAJOR DELAY implies a delay of about 45 minutes or more.

- 5. Messages recommending that motorists divert to specific roadways and/or local streets that are not within the jurisdiction of NJDOT are not advised unless severe conditions exist and the appropriate agencies are involved. Messages supporting preplanned diversion routes are permitted at all times.**

The diversion of traffic from roadways under the jurisdiction of NJDOT to roadways under the jurisdiction of other agencies in the State must be coordinated with those agencies.

- 6. Broadcasting advance notice of construction or other potential impacts to a roadway is acceptable. However, the advance notice should not be broadcasted more than six days before the construction or other event. The advance notice shall be broadcasted in terms of days of the week. Calendar dates shall not be broadcasted. Messages that impact the safety and operations of the roadway shall have priority over advanced notice messages.**

Giving advance notice to roadway activities that may impact their travel helps motorists in planning future trips and travel paths. Research has shown that motorists cannot translate calendar dates to specific days of the week; thus, calendar dates shall not be broadcasted. To adequately sign using the days of the week, it is important that the motorists are not confused as to whether the message applies to the current week or the following week. Thus, the message should not be broadcasted more than six days before the event takes place.

Advanced notice messages have much lower priority to messages that impact the safety and operations of the roadway.

- 7. HAR messages may be used to accommodate motorists traveling to special events (e.g., sporting event) when the anticipated traffic flow rates to the event is 5,000 vehicles per hour or greater, or when an engineering assessment indicates that the added special event traffic will result in congestion on the primary facility. The engineering assessment should consider the capacity of the primary facility, day of the week, time of day, parking capacity at the special event site, and whether the event has a fixed (e.g., football game) or variable starting time (e.g., state fair). The messages may be used to direct motorists from the primary route to an alternative route that will eventually lead to a parking area. Trailblazers shall be used on the alternative route to direct motorists to the special event parking areas. Traffic conditions on the primary route and alternative route must be monitored. Messages intended to elicit diversion shall only be displayed when there is a significant savings in travel time for the motorists destined to the event. The message shall be stopped whenever the alternative route does not provide a significant travel time savings. Another application of HAR during special events is to inform motorists which parking lot has available spaces (or is full) so that motorists can make informed decisions about which parking lots to use.**

Research has shown that one of the most effective uses of HAR is for special events. A very large majority of motorists will respond to HAR messages when the information directs them to a faster route to the special event. The alternative route must provide a significant travel time savings. Also, motorists are concerned with specific directions to parking areas.

One advantage of HAR is that the message can be broadcasted when it is desirable to divert motorists to the alternative route and can be turned off whenever it no longer applies. It is essential that NJDOT personnel monitor the traffic conditions on both the primary and secondary routes to ensure that the motorists are not being diverted to an alternative route that does not provide significant time savings.

- 8. HAR may be used to broadcast major adverse weather and/or driving conditions.**
- 9. Messages should be broadcasted to advise motorists of verified incidents (e.g., accidents, stalled vehicles, etc.) that occur downstream on the freeway, and when warranted, suggest alternative routes under the following conditions:**
 - **Information concerning minor incidents and lane closures should be broadcasted for incidents occurring up to 10 miles from the HAR broadcast range, provided that information about the location, and effects to the motorist (e.g., amount of delay, number of lanes closed, etc) can also be given.**
 - **Messages should be broadcasted for all verified major incidents (e.g., all lanes blocked or closed, truck overturn, etc.) that occur on the freeway downstream of the HAR site regardless of the distance between the HAR and incident. The message should include the location of the incident and the effects to the motorist (e.g., amount of delay, number of lanes closed, etc).**
 - **Information concerning lane-blocking incidents that occur on an intersecting freeway should be broadcast on HAR systems that are upstream of the interchange with that freeway depending on the location, severity and duration of the incident. The message should include the location of the incident and the effects to the motorist (e.g., amount of delay, number of lanes closed, etc).**
 - **HAR systems located on freeways leading to other states may broadcast messages concerning verified major incidents (e.g., all lanes blocked or closed, truck overturn, etc.) on connecting freeways within states in the I-95 Corridor Coalition depending on the location, severity and duration of the incident.**
- 10. Advertising shall not be used in HAR messages when the HAR messages are used for special events.**

FCC regulations prohibit the use of advertisements in HAR messages. Oftentimes, special events will have a significant impact on motorists--those attending the special event and those using the same primary highway to pass by the special event location.

Messages for special events can be well-designed without including the private company or person sponsoring or performing at the event. For example, if Garth Brookes was performing at the Meadowlands, rather than broadcasting “GARTH BROOKES CONCERT”, the facility at which the concert will be performed “MEADOWLANDS” can be used.

11. Messages broadcast on HAR must use words and names that are compatible with the existing static signs.

HAR messages become part of an existing highway information system; therefore, the words used must be compatible with the static signs in at least the following ways:

- Proper names must match those on static guide signs;
- Incident location should be consistent with signed cross-streets and ramps;
- Exit numbers (or names) must be consistent; and
- The names of alternative routes broadcasted should be consistent with existing signing.