



INTRODUCTION

Highway advisory radio (HAR) is a supplemental method of providing motorists with information about traffic conditions. HAR is basically a low-powered AM radio station located near a highway and capable of transmitting within a range of several miles. Signs posted on the highway instruct drivers to tune their vehicle radios to the appropriate broadcast frequency.

HARDWARE

The hardware consists of a radio transmitter, groundplane wiring, antenna, and message recording device. The antenna is mounted on a wood pole, and extends about 50 feet above the ground. The transmitting and recording devices are located in a rectangular grid of about 20 feet by 10 feet, or a circular pattern with wiring radiating from the pole for a distance of up to 50 feet.

BROADCAST FREQUENCY

The 530 AM band is reserved for use by traveler information stations (TIS), which includes highway advisory radios. Other types of stations classified as traveler information stations would include historical sites, airports, national parks and forests, and local tourist information offices. Until recently, the 1610 AM band was also reserved for TIS. Recent changes in FCC rules have opened up the 1610 AM band for commercial radio stations. The new rules also open up the entire 5040 AM to 1700 AM band for TIS, if there are not conflicting commercial stations operating on a close frequency to the proposed TIS frequency. Section 90.242 of the FCC guidelines summarizes the rules for TIS licensing and operation.

FCC LICENSING

If HAR operates at more than one watt power, it must be licensed by the FCC. Normally, a license approval takes 4-6 months. However, a special temporary license (special temporary authorization) *may* be obtained within 10 working days. In order to receive the special temporary authorization, a justification letter must be sent to the FCC indicating the critical need for the temporary license. The letter *should* stress the impacts (traffic delays if radio is not functional) that would result without having HAR. Usually, governmental agencies are able to receive special temporary authorization upon request.

FCC RULES FOR TRAVELER INFORMATION STATIONS (TIS)

The FCC rules are contained in Section 90.242 of the FCC guidelines (available from C.O. Traffic Operations). This includes information as to eligibility, message content, signal strength, and licensing.

Previous license requests for WisDOT have been prepared by a special radio station consultant for a fee of \$150. The consultant asks us to complete a two-page form indicating the location, elevation, nearby airports, message content, and responsible person for the proposed HAR. The consultant then transcribes this information on an official FCC application.

REMOTE CONTROL

The digital recording equipment inside the HAR cabinet is capable of storing a limited duration of messages. This allows the messages to be prerecorded, stored, retrieved, spliced, and broadcast together as a series.

The system is accessed by making a telephone call to the recording device. A menu is provided which allows the operator to record, store, retrieve, splice, and review messages by using the telephone keypad to enter specific commands. The HAR is generally operated by the State Patrol communications officers. A pass code is provided to deter unauthorized entry into the system. The system can be accessed using any touchtone phone.

UTILITIES

The HAR will need 110-volt AC power at the site. A dedicated telephone line is also needed for remote control. The telephone line *should* be a "shielded" line.

The cost to purchase the HAR hardware and install is about \$10,000 per station. Additional costs will be incurred for providing electric power and telephone lines to the transmitter site, on-highway signing to alert motorists to the HAR, and monthly power and telephone operating costs. These additional costs would be about

\$5,000 per HAR. Therefore, the project cost to install and operate a new HAR for a single construction season would be about \$15,000.

SIGNING

Signs *should* be erected in advance of the HAR to instruct motorists to tune their radios to the appropriate frequency. The signal *should* be checked before the signs are placed to ensure a good quality signal at the proposed sign location. The standard sign for construction projects is CONSTRUCTION ADVISORY TUNE RADIO TO 530 AM. A supplemental plaque stating SPECIAL INFO WHEN FLASHING *may* be added along with a pair of yellow lights. The lights would be activated only when a critical message is being broadcast. Activation of the light would be remote controlled via a telephone call to a special remote control device at the sign. If the HAR will be temporarily out of use, the signs *should* be covered or removed.

PURCHASE

The HAR stations can be purchased using highway improvement funds. Because of the specialized nature of the equipment and installation, it is desirable to purchase through the state procurement process so the state has better control over acceptance of the equipment.

MESSAGES

Messages *should* be short enough in duration that the drivers will be able to tune their radios and listen to the entire message twice while within the broadcast range. Usually, messages of about one minute. It is suggested not to exceed two minutes. The messages recycle constantly.

Usually a general message is provided and can be supplemented with additional critical messages as traffic conditions become congested. The two messages can be spliced and played back-to-back without interruption. A general message would include a distance to the project, a description of potential traffic impacts, possible alternative routes, and a suggestion to watch for additional signing (perhaps changeable message signs) for more updated information.

LOCATIONS

The locations for HAR are usually determined from the limits of the construction project or a construction bypass route exit. If a construction bypass is used, the HAR *should* be located well in advance of the exit so drivers can tune, listen, and be prepared to look for the bypass exit. A distance of at least three miles is recommended.

Interchange areas are good locations because of the usable space and availability of utilities as the crossroad. Also, the crossroad *may* provide safer access to the site than having to install and service the equipment by stopping near the live lanes of the Interstate.