



Highway Advisory Radio (HAR)

TTI
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Photo: Courtesy of Natalie Villwock-Witte, WTI

Description: Highway Advisory Radio (HAR) broadcasts information (i.e. emergency evacuation routing information, shuttle service information, tourist information) through the radios of individual vehicles. Motorists tune their vehicle radio to an AM station that is noted on a static or dynamic message sign (DMS) (see [#TTI3](#)).

Rural Transportation Critical Needs

- Crash Countermeasures
- Emergency Services
- Operations & Maintenance
- Rural Transit & Mobility
- Surface Transportation & Weather
- Tourism & Travel Information
- Traffic Management

Issues Addressed

- Pre-trip Information
- En-route Information
- Public Data Collection
- Public's Ability to Communicate to Transportation Agency

Strategies Achieved

- Road User
- Road
- Vehicle
- Safety Culture
- Engineering
- Emergency Response
- Enforcement
- Education





Applicability

• HAR are a low-cost solution that can be used in a rural setting and frequently used in National Parks to provide tourist information. A HAR is also an effective way to communicate a lengthy safety message to the traveling public. HAR can be used to provide emergency evacuation information during emergency situations. Finally, HAR can be used to provide public awareness messages.

Partnerships

- Tool benefits from collaboration among numerous agencies, which may include:
 - Departments of transportation (local, state, federal)
 - Emergency services
 - Federal land managers
 - Tourism

Key Components

- Message recorder
- Transmitter
- Antenna
- Federal Communications Commission (FCC) License
- Static signs with flashing beacons
- Dynamic message sign (*optional*)

Examples of Implementation

• Rocky Mountain National Park (ROMO), Colorado

In 2011, ROMO began with a pilot implementation of an intelligent transportation system (ITS). The ITS consisted of both DMS and highway advisory radio (HAR). As a result of the topography and other challenges, in subsequent years, ROMO deployed only DMS. The pilot deployment was made possible in part by the support of the Colorado Department of Transportation, Central Federal Lands Highway Division of the Federal Highway Administration, the Paul S. Sarbanes Transit in Parks Technical Assistance Center (since closed due to changes in the federal transportation bill). Both the DMS and HAR were movable. ROMO is considering deployment of a more permanent system. An [Operations Plan](#), [Evaluation Plan](#) and [Evaluation Report](#) were created for the project.

• Gallatin County, Montana

Flash flooding across the Gallatin River Valley made roads unpassable. The county makes use of [portable highway advisory radio systems](#) along with other tools, to provide users of the road network information about road closures, damaged roads, and basic water safety reminders.

• Florida Department of Transportation (FDOT)

The FDOT maintains a [statewide system of HAR stations](#), both portable and fixed that can be used in case of emergency or during serious traffic conditions.

• Oregon Department of Transportation (ODOT)

The ODOT has guidelines for operation of [HAR](#).

• Virginia Department of Transportation (VDOT)

Information about the highway advisory radio in Virginia can be found [here](#).

• Ohio Department of Transportation (ODOT)

Information about the ODOT's highway advisory radio can be found [here](#).





Implementation Considerations (General)

- Be concise. Highway advisory radio (HAR) should contain the minimum number of words needed to convey the situation. Use phrases and short sentences. The motorist should be able to hear the entire message twice within the effective transmission range.
- Follow a standard format:
 - An introductory statement (agency name, location of HAR, date and time),
 - An attention statement (to address a certain group of motorists or destination),
 - A problem statement,
 - A location statement,
 - An effect statement (lane closure, delay, etc.), and
 - An action statement.
- Follow FCC requirements.
- Use clear and accurate messages without inappropriate background noises.
- Consider potential impacts to transmission as a result of topography.
- Ensure that frequency is not used by another non-approved entity.

Implementation Considerations (Pro)

- HAR can disseminate longer pieces of information to the traveling public (as compared with DMS).

Implementation Considerations (Con)

- HAR usage requires that the user take an action to access the information (e.g., tune the radio to the station to get the information).
- HAR may not be as effective in certain topographies. For instance, mountainous topography can limit the effectiveness of an HAR, as the radio transmission may be interrupted. Furthermore, such topography might limit the locations where the HAR can be sited.
- The reach of the message broadcast through the HAR is limited to 4 miles from its transmitter¹.
- Obtaining an FCC License can be a lengthy process.

Opportunities for Future Expansion

- An agency can start with the application of a portable HAR and install a permanent one if the agency finds it to be useful.
- The HAR information could automatically be fed into a vehicle with connected vehicle interfaces.





Additional Resources

- Oregon Department of Transportation, *Guidelines for Operation of Highway Advisory Radio and Travelers Advisory Radio on State Highways (June 2006)*, found here: https://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/docs/pdf/Guidelines_for_the_Operation_of_Highway_Advisory_Radio_on_State_Highways.pdf
- Federal Communications Commission (FCC) License, found here: <https://www.fcc.gov/licensing-databases/licensing>

Useful Tip

A low-cost safety tip is to use it to provide public service announcements during the National Highway Traffic Safety Administration's safety weeks. For more information about upcoming safety weeks, click [here](#).

Cost Range

(Cost/financial information, where noted, is based on 2016 dollars (unless otherwise specified). Cost/financial information is estimated, and will vary based on size and scope of project, number of units, etc. In general, capital costs include initial purchase costs of hardware, software, and other required equipment. Maintenance and operations costs include staff time to operate, monitor and maintain systems; data collection; system upgrades; evaluation; etc.)



Capital Costs: The total capital cost for this tool is low (Less than \$50,000) to medium (\$50,000 to \$100,000). A short-term highway advisory radio (HAR) deployment for a three-month pilot test at Grand Canyon National Park cost \$22,000². Rental costs for the portable units used for Rocky Mountain National Park ranged from \$1,600/month/device to \$3,500/month/device. The differences between prices reflected whether 1) the messages could be changed remotely, 2) training and set-up of the device was provided, 3) assistance for filling out the temporary Federal Communication Commission's license was provided, and 4) a minimum rental period was required. Additional portable costs for HAR were identified as ranging from \$35,500 to \$50,600³. Permanent costs for HAR were indicated as costing \$25,300 to \$55,700³.



Operations Costs: The operations and maintenance cost for this tool is low (Less than \$50,000). The operations and maintenance costs ranged from \$700 to \$1,200³.

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