

FCC Broadband Workshop: Energy, Environment, and Transportation

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- **Intelligent Transportation:** The Broadband Plan should consider the future needs of a nationwide network that will enable ITS and vehicle safety applications to provide data from vehicle to vehicle and vehicle to roadside infrastructures.
- **Vehicle Communications:** Vehicle communications can help electric vehicles (EVs) operate more efficiently and economically, help data and voice services, and improve mileage.

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Intelligent Transportation

- Public/Private partnership is needed to help deploy a high-speed nationwide interoperable network to support safety, mobility, environmental, and convenience applications.

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Intelligent Transportation

- Initiatives:
 - Department of Transportation (DOT) IntelliDriveSM - formerly known as Vehicle Infrastructure Integration (VII) www.intelldrivdrive.org
 - Safe/smarter transportation system with fully connected driving environment to deliver safety, mobility, and other benefits through a wireless networked environment
 - Will use Dedicated Short Range Communications (DSRC) and other advanced communications
 - Trade Associations such as ITS America and other Consortiums are working to foster the deployment of interoperable communication systems

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Intelligent Transportation

- Status:
 - Oct. 1999 - FCC allocated 5.9 GHz (5.850-5.925 GHz) band for DSRC-based ITS applications and adopted basic technical rules for DSRC operations
 - Dec. 2003 - FCC adopted R&O establishing licensing and service rules for the DSRC
- Implementation Issues:
 - Relevant applications & technology exists
 - In-vehicle technology has been extensively tested
 - Communications equipment is available from many equipment suppliers
 - Needed sensors are already available on the in-vehicle network in most vehicles

Intelligent Transportation

- The communications capability is waiting for government initiatives
 - 5.9 GHz spectrum is already allocated in Europe and the U.S.
 - Japan has allocated similar spectrum
 - Action is needed to put a qualified operator in place to build out the network on favorable terms
 - Can expand along with transportation management infrastructure
 - With sufficient communications infrastructure, regulators can evolve their standards toward a basis in real-world data

Vehicle Communications & Electric Vehicles

- Vehicle communications can make electric vehicles more attractive to consumers by helping electric vehicles:
 - Operate more efficiently and economically
 - Reduce dependence on fossil fuels
 - Reduce environmental impact of road travel
- Issues:
 - Limited driving range
 - Recharge time and cost
 - Scarce recharging infrastructure
 - Battery costs

Vehicle Communications Can Help Data Services

- Range determination
 - Augments in-vehicle navigation system with real-time traffic and road conditions to determine and display one-way and round-trip range based on current battery charge
- Remote battery and range monitoring
 - Driver-accessible Web portal to check EV battery charge status via PC or mobile phone
 - E-mail or text message to notify driver when charging is complete

Vehicle Communications Can Help Data Services

- EV charging station location
 - Delivers location of nearby EV charging stations including queue status
 - Important for success of plug-in EVs in urban areas with street parking
- EV battery swap station location
 - Delivers location of EV charging stations that swap batteries (no need to wait for recharge)
- Economical EV charging
 - For extended (e.g., overnight) charge, monitors electricity rates and communicates to the EV when charging costs are low

Vehicle Communications Can Help Voice Services


- EV roadside assistance
 - Assisted calls from EV drivers to a dealer or roadside assistance provider in the event of a breakdown or service issue
- Battery replacement
 - Assistance in locating a battery replacement facility and scheduling an appointment
- Push usage guidance
 - OEMs can contact EV owners with customized guidance on ways to improve battery usage

Vehicle Communications Can Help Improve Mileage

- Vehicle owners with telematics systems can upload their fuel / power usage data and receive a comparison to other drivers
- Provide vehicle and driver with detailed road characteristics and driving condition information
- Vehicle automatically adjusts throttle / transmission for upcoming hills, curves, hazards
- Vehicle can also prompt driver to adjust speed and acceleration

Additional Mileage Improvements

- Volume of data and real-time needs require delivering data in small increments, based on location of vehicle and direction of travel
 - Wireless delivery also minimizes in-vehicle hardware costs and ensures up-to-date map data



Thank you.