

AASHTO Connected Vehicle Infrastructure Deployment Analysis

Christopher J. Hill, Ph.D.
Mixon Hill, Inc.



Overview

- Purpose of Deployment Plan
- Development Approach
- Deployment Scenarios 2011 – 2035
- AASHTO Strategies 2011 – 2014



Purpose

- Address Goals in 2009 Strategic Plan
 - Commitment to advance deployment readiness
 - Better understanding of deployment issues
- Identify a practical approach for infrastructure deployment
- Provide insights into the future of applications, vehicles and communications
- Identify a phased deployment strategy with regional deployments



Approach

- Description and benefits of selected applications
- Market assessment
 - Vehicles-based technologies
 - Communications infrastructure
 - Aftermarket devices
 - Consumer electronics



Approach contd.

- Survey of state activities
 - Actions demonstrate what is important
 - Potential locations for phased deployment
- DSRC assessment
 - What is current state of readiness?
 - What are the deployment issues?



Approach contd.

- Traffic signal controller assessment
 - Scale of upgrading nation's controllers to DSRC operations
- Deployment scenarios 2010 – 2030
- AASHTO strategies
 - Emphasize next 5 years



Key Observations

- Deployments based on compelling evidence
- Benefits to agencies provide incentive to begin deployment
 - Mobility, local safety, and operational performance; active safety in the future
- AASHTO leadership plays an important role
- 2013 NHTSA decision & 2020 “model year zero”



Scenarios 2011

Setting the Direction

- Define a “General Concept for Deployment”
 - Deploy RSE for selected applications and users
 - ❖ Agency operations with controlled fleets
 - ❖ Commercial vehicle transactions
 - ❖ Emergency vehicle pre-emption
 - ❖ Safety applications at isolated intersections
 - Support applications on aftermarket & consumer devices
- Goals
 - Establish specific applications & desired outcomes
 - Begin use of RSE’s and expand coverage
 - Share results with AASHTO community & others



Scenarios 2012

Showing Success

- Continuing path from R&D to early deployment for successful applications
 - Michigan – probe data from test vehicle fleets
 - California – major corridor demonstrating “green wave” in Palo Alto
 - Minnesota – road fee data from public volunteers
 - I-95 Coalition – aftermarket device for commercial vehicle roadside inspection
 - Florida – ITSWC demonstrations



Scenarios 2012

Showing Success

- Develop a National DSRC Footprint Analysis
 - Provide more specific direction for RSE infrastructure deployment
 - Encourage coordination of regional, multi-state, and nationwide deployment
 - ❖ Interstate corridors (early freight emphasis)
 - ❖ Denser urban pockets for signal control & safety
 - Support certificate management goals



Scenarios 2013 – 2014

Jumpstarting Deployment

- NHTSA agency decision
 - Demand for DSRC infrastructure for V2V & V2I
- AASHTO
 - Definitive plan for infrastructure
 - Policy and funding statements
 - Peer deployers' forum
 - Best practices workshops



Scenarios 2015 – 2019

Expanding the Field

- Vehicles with DSRC safety devices emerge in 2019
- RSE expansion for early embedded vehicles
- Increasing collaboration with VIIC
 - Initial 5000 RSE for certificate management
- AASHTO “Green Book” to guide installations and operations
- Applications supporting agency operations maturing
 - AASHTO Application store for agency applications



Scenarios 2020 – 2024

Taking the Solutions to Market

- Manufacturer-equipped vehicles rise to 30%
- Widespread data communications services plus large national DSRC infrastructure
- Variety of connected vehicle applications available through the public and private sector
- Shift from acquiring data to using data for operational improvements



Scenarios 2025 – 2029

Growing to Meet Demand

- Vehicle fleet equipped with DSRC grows to 70%
- Agencies operating a large national infrastructure of DSRC equipment
- DSRC infrastructure explicit part of design, construction, operations
- Applications fully integrated into agency operations
- 2030 and beyond – Connected Vehicles everywhere



AASHTO Strategies 2011

- Information Exchange Program
 - Semi-annual workshops through SSOM
 - Technical briefings – papers, web calls
- Advice memoranda to U.S. DOT
- Initial procurement guidance
 - Leverage U.S. DOT qualified product list
- Explore appropriate forum for national issues with U.S. DOT and VIIC



AASHTO Strategies 2012

- Broaden awareness through education & outreach program
- Establish committee on national DSRC footprint requirements to prepare for initial deployments
 - Engage U.S. DOT and VIIC in review
- Initiate policy on minimum infrastructure deployment levels by all members
- Begin development of formal Connected Vehicle Infrastructure Design Guidelines



AASHTO Strategies 2013 - 2014

- Adopt policy for minimum levels of deployment in each state
- To ensure deployment levels, AASHTO adopts a national funding strategy
- Creation of a Deployment Support program
 - Peer Deployers program
 - Formal education & outreach relationships with associations representing local agencies



AASHTO Strategies Beyond 2014

- Prepare for national build out with National DSRC Footprint Plan
 - Reasonable to assume that the NHTSA regulatory decision will be combined with a national infrastructure decision
- Adopt formal design guides
- Policies on public–private investments for capital and operations



Additional Information

- Report to be published by U.S. DOT ITS JPO
- Contact Jim Wright (JimW@aashto.org)

