Future of Vehicle-to-Vehicle (V2V) Communication Technology

The Intelligent Transportation Society of America (ITS America)
Why V2V?

- Vehicle safety historically focused on protecting occupants after a crash, influencing driver behavior
  - Fatalities and injuries are down but have reached plateau at around 33,000 fatalities, 2.3 million injuries
  - $800+ billion cost according to U.S. DOT
- Next safety revolution seen using technology to prevent crashes from happening in the first place
- The National Highway Traffic Safety Administration (NHTSA) estimates that V2V communication could address up to 80 percent of all unimpaired crashes
How it Works

• V2V technology developed by the auto and tech industries over the past decade in collaboration with the U.S. Department of Transportation (DOT)
  – Relies on dedicated short-range communication (DSRC) in the 5.9 GHz band set aside by the FCC
  – Enables real-time exchange of basic, anonymous speed and location data between vehicles and ultimately with infrastructure (V2I), consumer devices
  – Provides crash avoidance capability between cars, buses, trucks, and even pedestrians, motorcycles, bikes, traffic signals and other infrastructure
  – Cheaper and more effective than vehicle-based safety systems that only ‘see’ their immediate vicinity
U.S. DOT V2V Decision

- February 3, 2014: U.S. DOT Secretary Anthony Foxx announced steps toward requiring full-scale integration of V2V in all new cars and light trucks
- U.S. DOT to announce plan for V2V in heavy vehicles in 2014, guidance for V2I deployment in 2015
- Strong signal to industry that 5.9 GHz-based DSRC will be the standard for V2V and V2I safety messages
- Can supplement current safety systems comprised of radar, cameras, GPS, pre-emptive braking
- Also seen as key enabling technology for the safe, efficient operation of autonomous vehicles, and for improved traffic management and mobility services
What Does the Future Hold?

- V2I already deployed in Japan, automakers have agreed to deploy V2V in Europe as early as 2015
- U.S. DOT expected to finalize V2V rulemaking by the end of the Obama Administration
- Michigan plans to expand 3,000-vehicle Safety Pilot in Ann Arbor to 30,000 in coming years including V2I
- Takes years to turn over entire fleet but adoption can be accelerated through retrofit and aftermarket
- Safety benefits can be realized with 10% market penetration and increase exponentially from there
- Once V2V is standard, V2I and aftermarket will grow opportunistically based on funding, market forces