# V2X
The Road Ahead

July 2022

WHAT IS V2X?

Vehicle-to-everything (V2X) technology allows a vehicle to communicate wirelessly with other vehicles, roadway infrastructure, or other road users to share real-time information about the driving environment. The technology has the potential to significantly increase roadway safety and deliver significant environmental and efficiency benefits.

Vehicle-to-Vehicle (V2V) communication enables neighboring vehicles to exchange information about their speed, location, and travel path to help identify – and perhaps even respond to – potential crash threats. This technology can complement existing sensor-based crash avoidance systems that may have line-of-sight limitations or be impacted by weather. It can also facilitate the sharing of sensor data between vehicles to support automated driving.
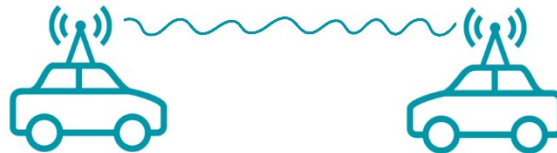
Vehicle-to-Infrastructure (V2I) technology facilitates the communication of data between vehicles and roadway infrastructure, including road signs and traffic lights. This technology can provide drivers with real-time advisories about road conditions, construction zones, crashes, or other hazards. It can also support transportation planners in improving traffic flow by setting variable speed limits or adjusting traffic signal phase and timing.

Vehicle-to-Pedestrian (V2P) communication allows for vehicles and pedestrians, bicyclists, and other vulnerable road users to exchange location information to enable collision alerts or warnings to drivers and, in some cases, pedestrians.

REGULATORY UNCERTAINTY

A key reason that wide-scale V2X deployment has not yet occurred in the United States is regulatory uncertainty. Such uncertainty has played a significant – and arguably insurmountable – role in the technology's delayed deployment.

In early 2013, the Federal Communications Commission first initiated a rulemaking to reallocate spectrum in the 5.9 GHz band that had previously been designated for V2X technology. This created significant market risk for any company seeking to deploy the technology, particularly for safety critical applications. More than 7 years later, the Commission issued a final rule in the proceeding which reallocated 60% of the spectrum away from V2X technology. The final rule also designated a new technology, known as C-V2X, as the communication protocol to support V2X communication in the spectrum that remains for V2X. Unfortunately, even with the final rule, significant regulatory uncertainty remains. The Commission has yet to establish the technical rules required to facilitate the widespread use of C-V2X technology.

Following a successful model pilot deployment of the technology in Michigan, the National Highway Traffic Safety Administration (NHTSA) initiated a rulemaking in August of 2014 to mandate V2V communications for new light-duty vehicles. NHTSA eventually issued a proposal for a new V2V safety standard in January of 2017, but the rulemaking was paused when a new Administration took office. While there is no indication that NHTSA plans to proceed with a mandate, the proposed rule has not been formally withdrawn. This creates additional uncertainty for companies that may be reluctant to deploy technology in consumer vehicles now if there is a possibility that technical specifications that are inconsistent or incompatible with their deployed technology will be established in a forthcoming safety standard.

INDUSTRY LEADERSHIP

The auto industry continues to pursue opportunities to realize the full potential of V2X technology in the United States and to overcome the regulatory uncertainty. For example, in April of 2020, the industry announced a groundbreaking commitment to deploy at least 5 million V2X radios on vehicles and roadway infrastructure over 5 years. Just a few weeks later, the industry unveiled a consensus band plan for how to make beneficial and efficient use of the entire 5.9 GHz band for V2X. The deployment commitment and the band plan were both conditioned on the Federal Communications Commission maintaining the entire 75 MHz of 5.9 GHz spectrum for V2X.

POLICY RECOMMENDATIONS

The auto industry remains committed to V2X technology and is eager to work with policymakers and other stakeholders to bring this important safety technology to the United States market. To foster a policy and regulatory environment that will support the wide-scale deployment of V2X technology, the Alliance for Automotive Innovation makes the following policy recommendations:

1. Resolve any harmful interference to V2X operations in the upper 30 MHz of the 5.9 GHz band from unlicensed operation in the lower 45 MHz of the band.

2. Establish a reimbursement program for V2X licensees transitioning from the lower 45 MHz to the upper 30 MHz.

3. Convene vehicle manufacturers, infrastructure operators, and other stakeholders to achieve consensus on initial message and application prioritization within the reduced spectrum allocation.

4. Direct the United States Department of Transportation, the Federal Communications Commission, and the National Telecommunications and Information Administration to work together with industry stakeholders to identify additional suitable spectrum for V2X operations to support the full suite of V2X applications and next-generation V2X technologies.

5. Prioritize V2X infrastructure within existing transportation funding resources; consider providing a source of dedicated federal funding for V2X infrastructure.

6. Reinvigorate or expand upon the United States Department of Transportation Connected Vehicle Pilot Program to focus on wide-scale V2X deployment.

7. Ensure that V2X is incorporated and, to the extent possible, emphasized in government-funded smart cities-related efforts and programs.

8. Explore the possibility of including V2X as a recommended safety technology under the New Car Assessment Program.

9. Conduct a comprehensive assessment to identify any additional government policies that are needed to realize the full potential of V2X in the United States.

10. Require the United States Department of Transportation or the White House to develop, in coordination with other relevant federal agencies and industry stakeholders, a comprehensive national V2X vision and strategy for the future.