

# The Opportunity for C-V2X in the U.S.

Market Study  
Third Quarter, 2021





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## A Market Study

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## Abstract

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Vehicle-to-everything (V2X) is an ecosystem of products and services that span various technologies. Cellular V2X (C-V2X) refers to the use of licensed cellular frequency bands, as well as the unlicensed 5.9 GHz band, for communications among:

- In-vehicle units, typically referred to as onboard units (OBUs).
- Roadside units (RSUs), which are the V2X-specific equipment deployed alongside roads and/or at intersections. At minimum, an RSU operates in the 5.9 GHz band (see next point). As such, it is basically an outdoor small cell – a LTE eNodeB and/or a 5G New Radio (NR) gNB.
- Spectrum, this is the 5.9 GHz radio frequency band over which V2X communications happen. In the U.S., and at the time of this writing, the upper 30 megahertz (MHz) of the 5.9 gigahertz (GHz) band is reserved for V2X communications. This band was referred to as the dedicated short range communications (DSRC) spectrum band.
- Communications protocol: Originally, V2X solutions used the 802.11p protocol. Because 802.11p was crafted to work in the 5.9 GHz band, the protocol and the RF band became synonymous, along with the equipment using it. In the last several years, cellular-based V2X (C-V2X) appears to have become the preferred choice for V2X.

In this market study, *iGR* presents an estimate for the cost of deploying C-V2X RSUs along U.S. roads and at intersections, along with the cost of deploying some basic C-V2X use cases.

Key questions addressed in this market study include:

- What is C-V2X and some of its expected use cases?
- Who is driving C-V2X?
- Who are the major C-V2X stakeholders?
- What are some of the key benefits associated with C-V2X?
- What are some of the key challenges associated with deploying C-V2X?
- What standards are associated with C-V2X?
- What is the basic C-V2X network architecture?
- What are roadside units?
- What are onboard units?
- What are some example V2X deployments in the U.S.?
- What might the cost be to deploy C-V2X RSUs alongside U.S. roads?
- What might the cost be to deploy C-V2X RSUs at U.S. intersections?

- What might be the costs associated with deploying several basic C-V2X use cases?

Who should read this market study?

- Mobile operators
- Mobile device OEMs
- Mobile service and application developers
- IoT vendors and solutions providers
- Infrastructure OEMs
- Financial analysts and investors.