

NCHRP 23-10

Evaluation and Synthesis of Connected Vehicle Communications Technologies

Fact Sheet: FCC Notice of Proposed Rulemaking for 5.9 GHz Realignment

The National Cooperative Highway Research Program (NCHRP) has initiated a project to provide state DOTs with up-to-date information on connected vehicle (CV) communications technologies. The project will help inform state DOT efforts for policy development, strategic planning, and infrastructure investment decisions. The project team of WSP USA and the University of Michigan Transportation Research Institute developed this fact sheet on the implications for state DOTs of the recent Federal Communications Commission (FCC) Notice of Proposed Rulemaking (NPRM) that would reduce the set-aside from 75 MHz to only 30 MHz for CV technologies, establish specific technology requirements within that allocation, and open the rest of the spectrum to unlicensed Wi-Fi devices ([FCC ET Docket No. 19-138](#)). For more information about the NCHRP project, visit the [project web page](#), or search the [TRB website](#) for “NCHRP 23-10”.

In 1999 the Federal Communications Commission (FCC) set aside 75 MHz of spectrum in the 5.9 GHz band for “operations related to the improvement of traffic flow, traffic safety and other intelligent transportation service applications,” realized today through CV applications. The National Highway Traffic Safety Administration (NHTSA) has said this has the potential to save tens of thousands of lives each year - but only if these technologies are given the certainty of a spectrum that is free from signal interference.

The U.S. Department of Transportation (US DOT) has objected to the FCC’s proposed reallocation of the 5.9 GHz spectrum, [going on record](#) stating “it may reasonably be expected that the shift defers accident reduction for another five years, given time to develop, standardize and deploy equipment - either existing concepts in different spectrum or new concepts in existing spectrum.”

Summary of Process/Timeline

The front-end process for an NPRM is structured, but the overall timeline, possible actions, and potential outcomes are highly variable and subject to many different factors.

- NPRM was published in Federal Register - February 6, 2020
- 30-day Comment Period - due March 9, 2020
- 30-day Reply Comment Period - due April 6, 2020 (*submitters can address other comments*)
- Comments are being published on the FCC website, typically 3-5 days after they are received (*large volumes can increase publishing time*)

The time from closing of comment windows to FCC action can vary greatly. The volume and nature of comments may or may not impact timing. The FCC may act prior to the November election or may delay action until after the election. FCC staff will likely take meetings with interested parties to have additional discussion, with summary briefs published as *ex parte* communications on the FCC website.

Possible actions by the FCC:

- Issue a revised Report & Order, that may or may not track with the NPRM
- Take partial action, leaving additional clarifications needed to the service rules
- Issue a further notice of inquiry
- Take no action, letting the issue sit on the back burner for an undetermined amount of time

Possible external factors:

- Inquiries, interactions, and statements from members of Congress could impact the outcome. Congress can also enact legislation that would directly impact FCC actions, but this is less common during election years.
- If an Order is issued, there can (and often will) be petitions for reconsideration. The FCC is under obligation to rule on petitions, but the timeliness of those actions can be uncertain and the amount of change/action is variable.
- If an Order is issued, it is also subject to appeal in a federal court of appeals - usually the DC Circuit Court. The timeliness and results of those appeals can be uncertain.

Anticipated Impacts of the NPRM to State Departments of Transportation

Safety Oriented V2X Applications May Never Develop

- State DOTs who have actively pursued pilot and long-term deployments will be forced to reassess “what is possible” under a new environment. Agencies who may have already delayed plans because of the regulatory uncertainty, or were just getting ready to invest, will need to reexamine whether to move out of the starting blocks. And potential automotive and private sector partners may disappear in a constricted spectrum scenario, which could shift the burden of development costs more onto the state DOTs.

Safety Oriented V2X Applications Might Not Be Reliable - Research [published](#) by the US DOT assessing the proposed realignment has indicated signal interference “will occur, raising the question of the reliability of vehicle-to-everything (V2X) communications in this configuration.” And given the laws of physics that will limit the amount of traffic within the primary safety channel, a reduced number of use-case scenarios for safety applications will be induced, thus transportation safety will be negatively impacted.

Jeopardizes Planned Funding - Several states have programmed funds within the next five years for CV deployment, and others have been awarded federal money through Congressionally supported grant programs. These allocations may not be able to be deferred, and an opportunity to advance deployment will be lost.

Taxpayer-Funded Projects Will Require Updates - Many state DOTs have engaged in pilot projects and long-term deployment of CV technology based on the current rules governing the 5.9 GHz spectrum. While the lessons learned from these deployments can’t be taken away, and a portion of the infrastructure installed will remain useful, there likely would be changes required to hardware, software, and to the overall objectives of deployments - funding for which is not allocated anywhere.

Deployment Momentum Will Be Lost - A decade of effort will need to be evaluated and possibly repeated as state DOTs and the private sector come to grips with channel realignment, new standards development, re-tooled device development, and re-launched proof of concept projects.

Potential Border Limitations - Canada has the full 75 MHz allocated in the 5.9 GHz band for this same purpose; Mexico has stated that CV deployments in the 5.9 GHz band will not face interference. Changing the U.S. rules could render cross-border applications inoperable. Border states may be forced to reconsider CV applications that might have had safety and economic benefits.

Trust and Cybersecurity Could Be Compromised - The CV ecosystem is more than just one channel for safety messages; additional spectrum is needed for certificate management, over-the-air updates, and convenience applications that might financially support even more safety applications. Without this we may be establishing a foundation without sufficient trust, or setting up for a potential failure that could cost lives. Alternatively, we may never see valuable applications develop because we can’t satisfy security needs elsewhere on the spectrum (as some have suggested, but no one has researched yet).

Automated Vehicles Without Connectivity - An automated vehicle is limited to what its current sensors, cameras, and on-board systems can manage. Without the benefit of connectivity, a “systems approach” - where vehicles can communicate with each other, the infrastructure, and with mobile devices of all types - may not be realized. The proliferation and roll-out of driver-assist features and automated driving technology will continue - but without the safety benefits of connectivity.

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