V2V: Spectrum and Regulation Battle in the United States

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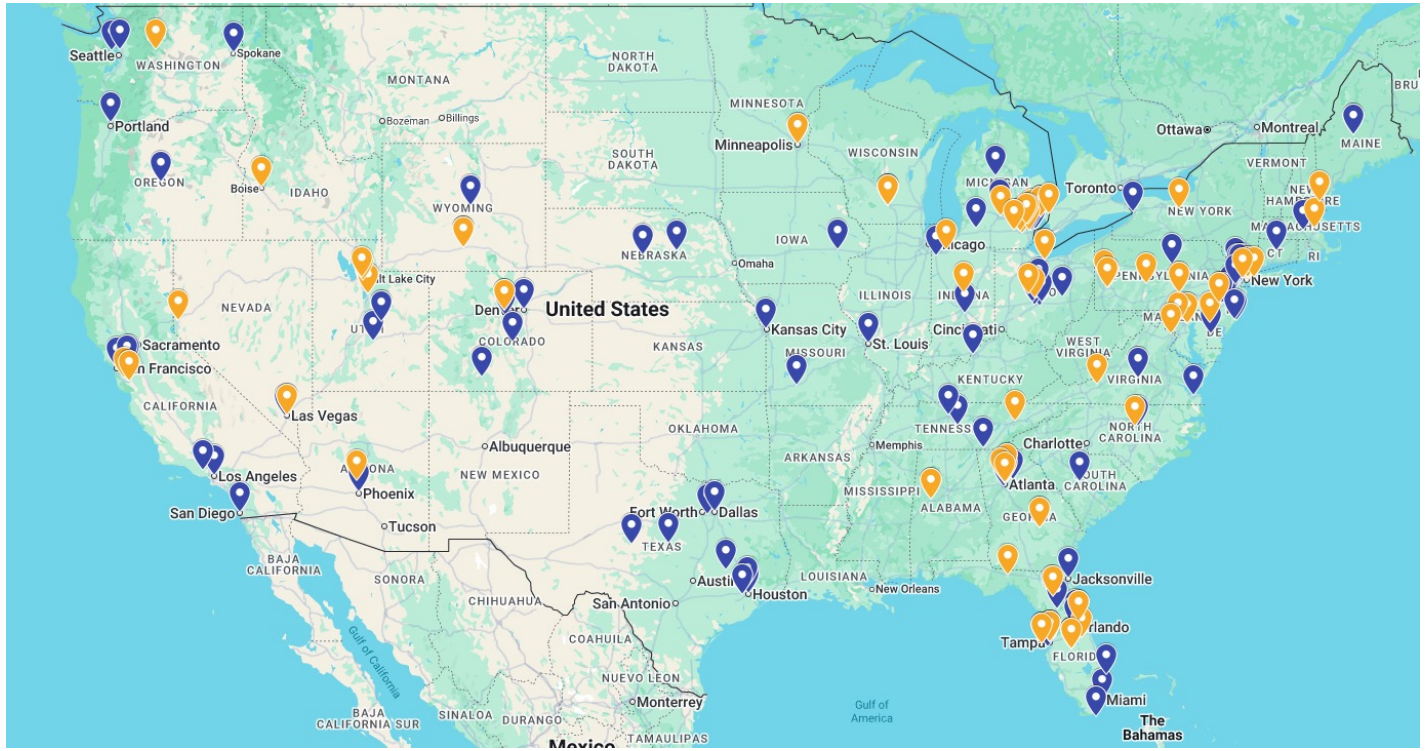
V2V in the United States

- Connected vehicle pilot sites are spreading across U.S.
  - Yellow → active
  - Blue → planned (as of May 2026)



https://www.transportation.gov/research-and-technology/interactive-connected-vehicle-deployment-map

- The U.S. gap:
  Why does adoption and deployment trail the E.U. and China?

Technology Choice: DSRC vs. C-V2X

- USDOT policy is no longer “technology-neutral”
  - Dedicated Short Range Communications (DSRC), based on IEEE 802.11
  - Cellular Vehicle-to-Everything (C-V2X), based on 3GPP 4G/5G
  - But C-V2X is now the only practical option with spectrum support after 2024
- Industry also favors C-V2X
  - **Consensus:** Major manufacturers (Ford, Toyota) pivoted to C-V2X by 2022
- C-V2X is the winner as of 2024, but prolonged fight stalled rollout and deployment progress

The 5.9 GHz Reallocation

- Legal authority split between FCC and NHTSA
  - FCC (Spectrum) vs. NHTSA (Safety Standards)
- From 2004, 5.9 GHz was exclusively for DSRC
- Nov/Dec 2020 – FCC proposed reallocating V2V band
  - DSRC: 75 MHz → **nothing!**
  - C-V2X: nothing → 30 MHz
  - Remaining 45 MHz → new Wi-Fi bands to satisfy consumer demand
- July 2021—February 2025 - FCC order took effect
  - **The end of DSRC:** Effectively banned after one year transition (by Dec ’26)

Key Takeaway

The FCC revoked DSRC's spectrum in 2024 and re-allocated it to Wi-Fi and C-V2X, effectively banning DSRC in the United States

The Legal Mandate: ITS America v. FCC

- FCC strongly opposed by USDOT, NHTSA, 5GAA
  - FCC action will "defer accident reduction for another 5 years"
- Jun. 2021 – ITS America, AASHTO sued the FCC
  - **Legal challenge:** Claimed decision was "arbitrary and capricious," in violation of Administrative Procedures Act; the FCC "ignored expert opinions"
- Aug. 2022 – Appellate court upheld FCC decision and authority
  - D.C. Circuit Court rejected "arbitrary and capricious" safety-based objection
  - Also rejected accompanying claim of FCC encroachment on NHTSA authority

U.S. V2X Roadmap (2004—2024)

- Timeline of conflict between FCC and NHTSA

2004	FCC allocates 75 MHz (5850-5925 MHz) to DSRC
Jan. 2017	NHTSA proposes V2V mandate for new vehicles
Mar. 2017	The new administration abandons planned V2V mandate
2018	Industry begins petitioning for C-V2X to share DSRC's 75 MHz
Nov. 2020	FCC proposes stripping 45 MHz for Wi-Fi, reallocating remaining 30 MHz to C-V2X
Dec. 2020	NHTSA and major industry groups file petitions opposing FCC plans. FCC acts despite objections, issues order confirming the above reallocations.
Jun. 2021	ITS America, AASHTO file federal lawsuit demanding reversal of FCC decision
Aug. 2022	FCC spectrum reallocation plan affirmed by D.C. Circuit Court
Dec. 2024	FCC enters final report and order favoring C-V2X and banning DSRC in 5.9 GHz

Questions and Uncertainties

- What still “fits” in remaining 30 MHz?
  - Some applications may get dropped from development
  - Density Challenge—requiring ultra-efficient messaging to avoid congestion
- Compensation for 1,000s of deprecated DSRC devices?
- How does the FCC define “C-V2X?”
  - Could mean LTE- or NR-V2X, no one knows

Bottom Line: the transition to C-V2X is now effectively complete, but the legal fights to this point delayed U.S. CV deployment