

## Impacts of Connected Vehicles and Automated Vehicles TRB's Cooperative Research Program Efforts

The **Transportation Research Board** (TRB) manages four cooperative research programs [[NCHRP](#), [TCRP](#), [ACRP](#), [BTSCR](#)] that all have projects related to connected vehicles, automated vehicles, shared mobility, and other disruptive technologies. Contact Zuxuan Deng ([zdeng@nas.edu](mailto:zdeng@nas.edu)) for more information.

### Reports Available

[Evaluation and Synthesis of Connected Vehicle Communication Technologies](#) [NCHRP Web-Only Document 310] presents a compilation of material on the 5.9 GHz band and the actions taken by the FCC from 2019 through early 2021 to reallocate portions of this band away from dedicated use for traffic flow, traffic safety, and other ITS applications that are essential for CAVs.

[Cybersecurity of Traffic Management Systems](#) [NCHRP 03-127, includes 20-102(10)] The guidance is available as part of the [National Operations Center of Excellence](#). After creating an account, users are led through a series of questions regarding their traffic management system field network. The user then receives a report with specific recommendations for improving their cybersecurity posture.

[Connected and Automated Parking Feasibility – A Pilot Study](#) [TCRP IDEA 95 Final Report] is the first pilot study in the United States to test the benefits transit agencies may obtain from deploying automated parking technology.

[Initiating the Systems Engineering Process for Rural Connected Vehicle Corridors, Volume 3: Model System Requirements Specification](#) [NCHRP Report 978] provides information that will apply in general to most current and proposed systems.

[Evaluation of the Effects of Pavement Marking Characteristics on Detectability by ADAS Machine Vision](#) [NCHRP20-102(06) Final Report] prepared for the joint AASHTO SAE Working Group.

[Low-Speed Automated Vehicles \(LSAVs\) in Public Transportation](#) [TCRP Report 220] and [Redesigning Transit Networks for the New Mobility Future](#) [TCRP Report 221] present options.

[Advanced Ground Vehicle Technologies for Airside Operations](#) [ACRP Report 219] identifies potential applications.

NCHRP Project 20-113F produced [nine topical white papers](#) for the [TRB Forum on Preparing for Automated Vehicles and Shared Mobility](#).

[Business Models to Facilitate Deployment of Connected Vehicle Infrastructure to Support Automated Vehicle Operations](#) [NCHRP Web-Only Document 289] helps identify infrastructure investments and applicable business models.

[Guidebook for Managing Data from Emerging Technologies for Transportation](#) [NCHRP Report 952] and [Development of Transactional Data Specification for Demand-Responsive Transportation](#) [TCRP Report 210] address vital data issues.

[Connected Road Classification System \(CRCS\) Development](#) [NCHRP Project 20-24(112)] has produced a [final report](#) and [summary presentation](#).

[Cybersecurity of Traffic Management Systems](#) [NCHRP Project 03-127] has produced an [evaluation tool](#) hosted by the National Operations Center of Excellence.

[Foreseeing the Impact of Transformational Technologies on Land Use and Transportation](#) [NCHRP Report 924] helps agencies prepare for a broad range of disruptive technologies.

[Updating Regional Transportation Planning and Modeling Tools to Address Impacts of Connected and Automated Vehicles](#) [NCHRP Report 896] includes an [Executive Summary](#).

[Dedicating Lanes for Priority or Exclusive Use by Connected and Automated Vehicles](#) [NCHRP Report 891] evaluates opportunities, constraints and guiding principles.



[Implications of Connected and Automated Driving Systems](#) [NCHRP Web-Only Document 253] helps states review their laws and regulations through six volumes and is supported by [A Look at the Legal Environment for Driverless Vehicles](#) [NCHRP Legal Research Digest 69].

[Advancing Automated and Connected Vehicles: Policy and Planning Actions for State and Local Transportation Agencies](#) [NCHRP Report 845] presents potential societal effects and strategies to advance public interests, including a [briefing document](#).

[Impacts of Regulations and Policies on CV and AV Technology Introduction in Transit Operations](#) [NCHRP Web-Only Document 239] and [Challenges to CV and AV Application in Truck Freight Operations](#) [NCHRP Web-Only Document 231] identify next steps for deployment.

[Broadening Understanding of the Interplay Between Public Transit, Shared Mobility, and Personal Automobiles](#) [TCRP Report 195], [Private Transit: Existing Services and Emerging Directions](#) [TCRP Report 196], and [Partnerships Between Transit Agencies and Transportation Network Companies](#) [TCRP Report 204] explore how transit agencies are adapting while airports are covered by [Transportation Network Companies \(TNCs\): Impacts to Airport Revenues and Operations](#) [ACRP Report 215].

[Airports and Unmanned Aircraft Systems](#) [ACRP Report 212] has three volumes and expands upon [Unmanned Aerial Systems \(UAS\) at Airports: A Primer](#) [ACRP Report 144].



## Work Underway

### Institutional & Policy

- [State-of-the-Art Review of Cooperative Automated Transportation \(CAT\) Systems](#) [NCHRP 20-24(128)]
- [Emerging Issues: Impacts of New Disruptive Technologies on the Performance of DOTs](#) [NCHRP 08-127]
- [Prioritization of Risks Related to Connected and Automated Vehicles and Emerging Technologies](#) [NCHRP 23-15, includes 20-102(31)]

### Transportation Planning

- [Mobility-on-Demand and Automated Driving Systems: A Framework for Public-Sector Assessment](#) [NCHRP 20-102(11)]
- [Impact of Transformational Technologies on Underserved Populations](#) [TCRP B-47, includes NCHRP 20-102(23) and 20-102(30)]
- [Realistic Estimates of CAV Implementation Timing](#) [NCHRP 20-102(27)]
- [Incorporating New Mobility Operations into Transportation Demand Modeling](#) [NCHRP 20-102(29)]
- [Land Use Impacts of Shared and Private AVs](#) [NCHRP 20-102(34)]

### Infrastructure Design & Operations

- [Impacts of Connected and Automated Vehicle Technologies on the Highway Infrastructure](#) [NCHRP 20-102(15)]
- [Determining the Impact of Connected and Automated Vehicle Technology on State DOT Maintenance Programs](#) [NCHRP 14-42, includes 20-102(35)]
- [Preparing Traffic Incident Management \(TIM\) Responders for CVs and AVs](#) [NCHRP 20-102(16)]
- [Deployment Guidance for CV Applications in the Open Source Application Development Portal](#) [NCHRP 20-102(17)]
- [Assessing the Impacts of Automated Driving Systems on the Future of Transportation Safety](#) [NCHRP 17-91, includes NCHRP 20-102(18), NCHRP 20-102(32), and BTSCR-07]
- [Infrastructure Modifications to improve the Operational Domain of Automated Vehicles](#) [NCHRP 20-102(21) is combined with NCHRP 20-102(24)]

- [Infrastructure Enablers for Connected and Automated Vehicles and Shared Mobility—Near-Term and Mid-Term](#) [NCHRP 20-102(24)]
- [National Automation Readiness Framework: Coast-to-Coast Automated Mobility by 2025](#) [NCHRP 20-24(126)]
- [Readiness and Effectiveness of Freeway-Based Corridor V2X Applications for Improving Congestion and Safety](#) [NCHRP 20-102(25)]
- [Dynamic Curbside Management: Keeping Pace with New and Emerging Mobility and Technology in the Public Right of Way](#) [NCHRP 20-102(26)]
- [Preparing Transportation Agencies for Connected and Automated Vehicles in Work Zones](#) [NCHRP 20-102(28)]
- [Utilizing Cooperative Automated Transportation \(CAT\) Data to Enhance the Use of Freeway Operational Strategies](#) [NCHRP 08-145]
- [Safety of Vulnerable Road Users in a C/AV Future](#) [NCHRP 20-102(33)]

### IT Infrastructure & Data

- [Algorithms to Convert Basic Safety Messages into Traffic Measures](#) [NCHRP 03-137]
- [Data Integration, Sharing and Management for Transportation Planning and Traffic Operations](#) [NCHRP 08-119, includes NCHRP 20-102(13) and 20-102(14)]

### Modal Applications

- [State and Local Impacts of Automated Freight Transportation Systems](#) [NCHRP 20-102(22)]
- [Best Practices in Coordination of Public Transit and Ride Sharing](#) [NCHRP 08-130]
- [Airside Automated Ground Vehicle Technology \(AGVT\) Demonstration to Support Airport Operations](#) [ACRP 10-32]

### Other

- [Update AASHTO's Connected Vehicle/Automated Vehicle Research Roadmap](#) [NCHRP 20-102(19)]
- [Updated Research Roadmap for NCHRP 20-102](#) [NCHRP 20-102(19)B]

The TRB Library has [Snap Searches](#) on [Connected & Automated Vehicles](#), [Shared Mobility](#), [UAS/UAV](#), and [Electric Vehicles](#).