9th University Transportation Center Spotlight Conference
Automated and Connected Vehicles

November 4–5, 2015
National Academy of Sciences Building
Washington, D.C.

Organized by
Transportation Research Board

Sponsored by
Office of the Assistant Secretary for Research and Technology
U.S. Department of Transportation
Conference Planning Committee
Melissa Tooley, Texas A&M Transportation Institute, Chair
Steven Shladover, California Partners for Advanced Transportation Technology, Alternate Chair
Robert Bertini, California Polytechnic State University, San Luis Obispo
Chandra Bhat, Center for Transportation Research University of Texas at Austin
Mara Campbell, CH2M
Charles Howard, Puget Sound Regional Council
Edward Hutchinson, Florida Department of Transportation
John Maddox, University of Michigan Transportation Research Institute
Zachary Rubinstein, Carnegie Mellon University
Kartlyn Stanley, RAND Corporation
Patrick Szary, Center for Advanced Infrastructure and Transportation, Rutgers University
Stanley Young, National Renewable Energy Laboratory

Liaisons
Thomas Bolle
Robin Kline
Office of the Assistant Secretary for Research and Technology,
U.S. Department of Transportation

TRB Staff
Richard Cunard, Senior Program Officer, Traffic and Operations Engineer
Freda Morgan, Senior Program Associate
Welcome

Connected and automated vehicle (CV–AV) technologies have the potential to effect disruptive change—not just to transportation, but to society’s way of life. This disruptive change would occur not only on the nation’s roadways, but across all modes of transportation. CV–AV technologies can improve safety, reduce harmful emissions, and improve efficiency and reliability. A fully connected transportation system could change the principles of transportation engineering; sight distance could become irrelevant and traffic signals obsolete. On the other hand, the benefits of these technologies could remain unrealized if concerns about data security and privacy are not adequately addressed.

This conference will provide an opportunity for discussion of all these issues and more. The conference is organized around the four general subject clusters identified in National Cooperative Highway Research Program Project 20-24(98), Connected/Automated Vehicle Research Roadmap for the American Association of State Highway and Research Officials: institutional and policy; infrastructure design and operations; planning; and modal applications.

After the opening plenary session sets the tone for the conference by presenting an overview of general-interest topics, plenary sessions in each of the tracks that follow will focus on one of the subject clusters. Speakers will represent the perspectives of academia, industry, and government at all levels. Breakout sessions will give conference participants the opportunity to share their perspectives on the state of the practice in CV–AV and to shape the discussion into the future.

I would personally like to thank the steering committee for their hard work in planning and in organizing this conference. Steering committee members are:

- Ed Hutchinson
- Pat Szary, Infrastructure Design and Operations Track chair
- John Maddox
- Zach Rubinstein
- Steve Shladover, Institutional and Policy Track chair
- Chandra Bhat
- Karlyn Stanley
- Charlie Howard, Planning Track chair
- Mara Campbell
- Stan Young
- Rob Bertini, Modal Applications Track chair

The conference also has benefited greatly from the organizational skills of Rich Cunard and Freda Morgan from TRB, and from the helpful guidance of Tom Bolle and Robin Kline of the U.S. Department of Transportation, Office of the Assistant Secretary for Research and Technology.

The steering committee invites you to participate in the dialogue.

—Melissa Tooley
Texas A&M Transportation Institute
Conference Steering Committee Chair
## CONFERENCE AT A GLANCE

### Wednesday, November 4

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<td>Continental Breakfast</td>
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<td>7:30 a.m.–5:00 p.m.</td>
<td>Registration</td>
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<td>8:30 a.m.–10:15 a.m.</td>
<td>Opening Session: Overview of CV/AV Issues and Progress</td>
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<td>10:45 a.m.–Noon</td>
<td>Plenary Session 1: Institutional and Policy</td>
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<td>Noon–1:30 p.m.</td>
<td>Lunch</td>
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<td>1:30 p.m.–3:00 p.m.</td>
<td>Plenary Session 2: Infrastructure Design and Operations</td>
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<td>Plenary Session 3: Planning</td>
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<td>Continental Breakfast</td>
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<td>7:30 a.m.–3:00 p.m.</td>
<td>Registration</td>
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<td>8:30 a.m.–10:00 a.m.</td>
<td>Plenary Session 4: Modal Applications</td>
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<td>10:00 a.m.–10:30 a.m.</td>
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<td>10:30 a.m.–Noon</td>
<td>Concurrent Breakout Discussion Groups</td>
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<tr>
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<td>Institutional and Policy</td>
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<td>Modal Applications</td>
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<td>Noon–1:30 p.m.</td>
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<td>Breakout Session Reports</td>
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<td>3:00 p.m.–4:00 p.m.</td>
<td>Closing Session and Adjournment</td>
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**SCHEDULE OF EVENTS**

**Wednesday, November 4**

7:30 a.m.–8:30 a.m.  
Continental Breakfast

7:30 a.m.–5:00 p.m.  
Registration

8:30 a.m.–10:15 a.m.  
**Opening Session: Overview of Automated Vehicles–Connected Vehicles (AV/CV) Issues and Progress**  
Melissa Tooley, Texas A&M Transportation Institute (TTI), *moderator*

- **A Cross-Agency Framework for Smart Cities and Connected Communities IT R&D**  
  Keith Marzullo, Director, Federal Networking and Information Technology Research and Development, National Coordination Office
- **U.S. DOT Connected and Automated Vehicle Research Update**  
  Kevin Dopart, Automation Program Manager, Intelligent Transportation Systems Joint Program Office, U.S. Department of Transportation (DOT)
- **Progress to Fully Driverless Cars**  
  Ron Medford, Director of Safety, Self-Driving Car, Google, Inc.
- **Next-Generation Location Services**  
  Jane Macfarlane, Chief Scientist and Head of Research, HERE

10:15 a.m.–10:45 a.m.  
Morning Break

10:45 a.m.–Noon  
**Plenary Session 1: Institutional and Policy**  
Steven Shladover, California Partners for Advanced Transportation Technology, *moderator*

- **American Association of Motor Vehicle Administrators Autonomous Vehicle Best Practices Working Group**  
  Jude Hurin, Nevada Department of Motor Vehicles
- **Ethical Considerations in Design of Automated Driving Systems**  
  Chris Gerdes, Stanford University
- **Sustainability Implications of Automated Driving**  
  Reuben Sarkar, U.S. Department of Energy
- **Insurance Issues for Automated Driving Systems**  
  Edward Collins, Allstate

Noon–1:30 p.m.  
Lunch

1:30 p.m.–3:00 p.m.  
**Plenary Session 2: Infrastructure Design and Operations**  
Patrick Szary, Rutgers University, *moderator*

- **Ohio Smart Mobility Initiative: Blending University Transportation Centers with Community Growth**  
  Carla Bailo, Ohio State University
- **AV/CV Infrastructure and Transportation Agency Readiness**  
  Steve Lockwood, Steve Lockwood, LLC
Infrastructure Considerations for Connected Automation  
Jim Barbaresso, HNTB  
Michigan Mobility Transformation Center and Michigan DOT Deployments in Southeast Michigan  
John Maddox, Mobility Transformation Center, University of Michigan  

3:00 p.m.–3:30 p.m.  
Afternoon Break

3:30 p.m.–5:00 p.m.  
Plenary Session 3: Planning  
Charles Howard, Puget Sound Regional Council, moderator

AV/CV Deployments: Implications for State and Local Transportation Agencies  
Johanna Zmud, TTI  

AV/CV Deployment in Michigan: Considerations for Transportation Planners  
Matt Smith, Michigan DOT  

Understanding the Potential Impacts of Connected and Automated Vehicles on Activity–Travel Behavior: Implications for Transport Modeling  
Ram Pendyala and Patricia Mokhtarian, Georgia Institute of Technology; Chandra Bhat, Center for Transportation Research, University of Texas at Austin  

Results of the Automated Vehicles Symposium 2015 Planning Breakout Session  
Jane Lappin, Office of the Assistant Secretary for Research and Technology  
Audience Discussion

5:00 p.m.–7:00 p.m.  
Reception and Poster Presentations  
Join us for the conference reception and poster session. Beverages and hors d’oeuvres will be served.
Thursday, November 5

7:30 a.m.–8:30 a.m.
Continental Breakfast

7:30 a.m.–3:00 p.m.
Registration

8:30 a.m.–10:00 a.m.
Plenary Session 4: Modal Application
Robert Bertini, California Polytechnic State University, San Luis Obispo, moderator

- Integrating Adaptive Signal Control with Connected Vehicle Technology
  Stephen F. Smith, Carnegie Mellon University
- Connected Work Zone for Improved Freight Mobility and Safety
  Christopher Poe and Robert Brydia, TTI
- Harnessing Vehicle Automation for Public Mobility: An Overview of Ongoing Efforts
  Stan Young, National Renewable Energy Laboratory
- Zipcar: Automated Vehicles and the Future of Urban Mobility
  Justin Holmes, Zipcar

10:00 a.m.–10:30 a.m.
Morning Break

10:30 a.m.–Noon
Concurrent Breakout Discussion Groups
Attendees will split into four breakout groups, each moderated by a planning committee member, for deeper discussions of the topics listed below.

- **Group 1: Institutional and Policy**
  Steven Shladover, California Partners for Advanced Transportation Technology
- **Group 2: Infrastructure Design and Operations**
  Patrick Szary, Rutgers University
- **Group 3: Planning**
  Charles Howard, Puget Sound Regional Council
- **Group 4: Modal Applications**
  Robert Bertini, California Polytechnic State University, San Luis Obispo

Noon–1:30 p.m.
Lunch

1:30 p.m.–3:00 p.m.
Breakout Session Reports

3:00 p.m.–4:00 p.m.
Closing Session and Adjournment
Save the Date

TRB 95th Annual Meeting

January 10–14, 2016

Walter E. Washington Convention Center
Washington, D.C.

www.trb.org/AnnualMeeting