General Information

Virtual Technology Tips
The 2021 CTS Transportation Research Conference is being hosted on the Pathable platform. To streamline your conference experience, we recommend logging onto the platform a day or two prior to the conference and adding sessions you wish to attend to “My Agenda.”

For more information and tips, visit the virtual conference FAQs at cts.umn.edu/conference/FAQ.

After the conference, Pathable will host video recordings of all sessions for six months. Registered conference attendees will be able to log in and view the sessions they missed or would like to watch again.

Professional Development Hours (PDHs)
This conference awards up to 5.5 PDHs. A credit form is available in Pathable and at cts.umn.edu/events/conference/2021.

AICP Maintenance Credits
This conference has been approved for 5.5 AICP maintenance credits. A complete list of sessions approved for credit is available in Pathable and at cts.umn.edu/events/conference/2021.

Social Media
To participate in social media conversations around this year’s CTS Research Conference, please add the hashtag #ctsresconf to your tweets. For the latest news and events from the Center for Transportation Studies, follow us on Twitter at @UMNCTS and on LinkedIn at linkedin.com/company/ctsumn.

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HDR, Inc.

Raul Velasquez  
Minnesota Department of Transportation

Kevin Western  
Minnesota Department of Transportation

Zhi-Li Zhang  
Department of Computer Science and Engineering, University of Minnesota
## Program at a Glance

**Thursday, November 4, 2021**

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<th>Time</th>
<th>Session</th>
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<tr>
<td>8:00–8:30 a.m.</td>
<td>Conference Opens for Log-on and Technology Checks</td>
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<td><strong>Welcome</strong></td>
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<tr>
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<td><em>Kyle Shelton</em>, Director, Center for Transportation Studies, University of Minnesota</td>
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<td><strong>Keynote Presentation and Panel Discussion: Achieving Drawdown—A Hopeful, Science-Based Plan to Stop Climate Change</strong></td>
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<td><strong>Speaker Jonathan Foley</strong>, Executive Director, Project Drawdown</td>
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<td><strong>Panelists Elise Harrington</strong>, Assistant Professor, Humphrey School of Public Affairs, University of Minnesota; Ashwat Narayanan, Executive Director, Our Streets Minneapolis</td>
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<td>10:15–10:30 a.m.</td>
<td><strong>Break</strong></td>
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<tr>
<td>1</td>
<td>Assessing Climate Resilience of Transportation Infrastructure</td>
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<td>2</td>
<td>Intersection Safety</td>
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<td>3</td>
<td>COVID-19 Lessons Learned</td>
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<td>4</td>
<td>Health and Equity in Transportation</td>
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<tr>
<td>5</td>
<td>CAV Technology Evolutions</td>
</tr>
<tr>
<td>11:45–11:50 a.m.</td>
<td><strong>Break</strong></td>
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<tr>
<td>11:50 a.m.–12:45 p.m.</td>
<td><strong>Afternoon Plenary Session</strong></td>
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<td></td>
<td><em>Andrew Wishnia</em>, Deputy Assistant Secretary for Climate Policy, Office of the Assistant Secretary for Transportation Policy, United States Department of Transportation</td>
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<td><em>Margaret Anderson Kelliher</em>, Commissioner, MnDOT</td>
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<td>12:45–1:45 p.m.</td>
<td><strong>Lunch Break</strong></td>
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<td>1:45–3:00 p.m.</td>
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<tr>
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<td>Electrification: From Transit to Freight</td>
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<tr>
<td>10</td>
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<td>Transit Impacts on Local Communities</td>
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<tr>
<td>12</td>
<td>Latest Research in Shared Mobility and Shared Services</td>
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<td>Human Behavior and Safety</td>
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# Program Schedule

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<td>Jonathan Foley will discuss Project Drawdown’s comprehensive framework for addressing climate change, including the transportation industry’s role in pivoting to a better, more sustainable world. A panel discussion focused on the intersection of transportation, sustainability, and climate change will follow his presentation.</td>
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<td><strong>Moderator:</strong> <em>Jeffrey Meek, MnDOT</em></td>
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<td><strong>Assessing Climate Resilience of Transportation Infrastructure</strong></td>
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<td><em>Jeffrey Meek, MnDOT; Halil Ceylan, Institute for Transportation, Iowa State University; John Fleming, MnDOT</em></td>
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<td>This session will highlight the development of a flood vulnerability assessment, a pilot study of a climate vulnerability assessment, and an investigation of changes in freeze-thaw cycles and trends in Minnesota.</td>
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<td>Intersection Safety</td>
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<td><strong>Moderator:</strong> <em>Joe Gustafson, Washington County</em></td>
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<td><strong>Leveraging Video Data to Predict Driver-Vehicle Interaction Outcomes and Yielding Rates</strong></td>
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<td><em>Raphael Stern, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota</em></td>
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<tr>
<td></td>
<td>Co-authors: <em>Tianyi Li, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota; John Cullom, Department of Computer Science, University of Minnesota</em></td>
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<td><strong>Performance Evaluation of Modified Cyclic Max Pressure Controlled Intersections in Realistic Corridors</strong></td>
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<td><em>Simanta Barman, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota</em></td>
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<td>Co-author: <em>Michael W. Levin, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota</em></td>
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<td><strong>Crash Analysis with Flashing Yellow Arrow Implementation on Highway 96</strong></td>
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<td><em>Taehyoung Kim and Luis C. Flores, Ramsey County</em></td>
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</tbody>
</table>
COVID-19 Lessons Learned

Moderator: Mauricio León, Metropolitan Council

COVID-19 Impacts on Speed and Safety
Shauna Hallmark and Neal Hawkins, Institute for Transportation, Iowa State University
Co-authors: Skylar Knickerbocker and Theresa Litteral, Institute for Transportation, Iowa State University

Telecommuting During COVID-19: How Will It Shape the Future Workplace and Workforce?
Xinyi Qian, Tourism Center, University of Minnesota Extension
Co-author: Neil Linscheid, University of Minnesota Extension Center for Community Vitality

Public Engagement Practices During the COVID-19 Pandemic and Other Disruptive Events
Jeanne Aamodt, MnDOT
Co-author: Christine Kline, CTC & Associates LLC

The Tipping Point: What COVID-19 Travel Reduction Tells Us About Effective Congestion Relief
Paul Morris and Gordon Parikh, SRF Consulting Group
Co-author: Brad Utecht, MnDOT

Health and Equity in Transportation

Moderator: Katie Kowalczyk, City of Minneapolis

Nissa Tupper, MnDOT

Modal Options, Destination Access, and Everyday Well-Being
Yingling Fan, Humphrey School of Public Affairs, University of Minnesota
Co-authors: Greg Lindsey, Humphrey School of Public Affairs, University of Minnesota; Jueyu Wang, Department of City and Regional Planning, University of North Carolina at Chapel Hill

Health and Equity in Long-Range Transportation Planning
Hally Turner, MnDOT

What is Equity in Transportation Electrification? Key Questions, Strategies, and an Equity Analysis Framework
Allison Bell, Bellwether Consulting; Rachel Brumme, Departments of Environmental Studies and Political Science, Luther College

CAV Technology Evolutions

Moderator: Ginny Crowson, Bolton & Menk, Inc.

Highway 52 Connected and Automated Vehicle Study
Jacob Folkeringa, SRF Consulting Group; Cory Johnson, MnDOT

Can Automated Vehicles “See” in Minnesota? Ambient Particle Effects on LiDAR Systems
Lu Zhan, Department of Mechanical Engineering, University of Minnesota
Co-authors: Will Northrop and Darrick Zarling, Department of Mechanical Engineering, University of Minnesota

Maximum-Stability Dispatch Policy for Shared Autonomous Vehicles Based on Zone-Based Dynamic Queueing Models
Te Xu, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota
Co-authors: Maria Cieniawski and Michael W. Levin, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota

Fuel Consumption and Emissions of Mixed Traffic Flow at Different Levels of Autonomy
Mingfeng Shang, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota
Co-author: Raphael Stern, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota

11:45–11:50 a.m. Break
Afternoon Plenary Session

Andrew Wishnia, Deputy Assistant Secretary for Climate Policy, Office of the Assistant Secretary for Transportation Policy, United States Department of Transportation

Margaret Anderson Kelliher, Commissioner, MnDOT

12:45–1:45 p.m. Lunch Break

1:45–3:00 p.m. Concurrent Sessions

6

**Demonstrating Distance-Based Fees Through a Shared Mobility Model**

**Moderator:** Kenneth Buckeye, MnDOT

**Demonstrating Distance-Based Fees Through a Shared Mobility Model**

Chris Berrens, MnDOT; Frank Douma, Humphrey School of Public Affairs, University of Minnesota; Camila Fonseca-Sarmiento, Humphrey School of Public Affairs, University of Minnesota; Mike Warren, WSP

This session will focus on Minnesota’s Distance-Based Fee Demonstration and its major findings and conclusions. Presenters will share MnDOT’s perspective on the project, technical demonstration findings, and a social, economic and policy analysis. A panel discussion will focus on future directions and policy implications for Minnesota around distance-based fees.

7

**Electrification: From Transit to Freight**

**Moderator:** Andrew Andrusko, MnDOT

**Prioritizing Bus Routes for Electrification: A GIS-Based Multi-Criteria Analysis Considering Operational, Environmental, and Social Benefits and Costs**

Behman Davazdah Emami, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota

Co-authors: Ying Song, Department of Geography, Environment and Society, University of Minnesota; Alireza Khani, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota

**Strategies to Accelerate Transportation Electrification in the Twin Cities**

Tony Fischer, Metropolitan Council

**Electric Trucks: Are They Ready for Prime Time?**

Dan Murray, American Transportation Research Institute

8

**Traveler Experience with an Equity Lens**

**Moderator:** Abdullahi Abdulle, MnDOT

**The Subjective Well-Being Benefits of Having a Daily Routine**

Yaxuan Zhang, Department of Geography, Environment, and Society, University of Minnesota

Co-authors: Yingling Fan, Humphrey School of Public Affairs, University of Minnesota; Ying Song, Department of Geography, Environment, and Society, University of Minnesota

**The Segregation of Our Everyday Life: Investigating Space-Time Interactions Across Gender, Race, and Income Groups**

Cecilia Isaac and Rongxuan Zhu, Department of Geography, Environment, and Society, University of Minnesota

Co-author: Ying Song, Department of Geography, Environment, and Society, University of Minnesota

**Integrating Findings from Community Engagement into Project Planning and Development Process: MnDOT Metro Livability Initiative**

Gloria Jeff and Hannah Rank, MnDOT
Public Perception of CAVs

**Moderator:** Thomas Johnson-Kaiser, MnDOT

Examining the Motivations for the Willingness to Own Autonomous Vehicles in the Twin Cities
Tao Tao, Humphrey School of Public Affairs, University of Minnesota
Co-author: Jason Cao, Humphrey School of Public Affairs, University of Minnesota

Let’s Talk About CAV: Understanding Minnesotans’ Knowledge and Attitudes Related to Connected and Automated Vehicle Technology
Katie Caskey, HDR; Tara Olds, MnDOT
Co-author: Marc Valencia, New Publica

**3:00–3:15 p.m.**

**Break**

**3:15–4:30 p.m.**

**Concurrent Sessions**

**10**

Leveraging Infrastructure Improvement Projects to Reconnect Communities

**Moderator:** Joy Miciano, Zan Associates

Leveraging Infrastructure Improvement Projects to Reconnect Communities
Keith Baker, ReConnect Rondo
The Rondo Land Bridge to revitalize an African American cultural enterprise district offers an opportunity to build an inclusive and equity-based local economy that not only restores what was lost, but also creates a continuous cycle of net-positive economic, social, and environmental benefits for the neighborhood and beyond. The restorative development approach championed by ReConnect Rondo leverages the principles of the circular economy, regenerative urbanism, and smart city technologies to create district wealth and wellbeing, while intentionally creating career paths and living-wage jobs for residents who have been denied access to economic opportunity in the past.

**11**

Transit Impacts on Local Communities

**Moderator:** Beth Engum, CBS Squared, Inc.

Accessibility Impacts of Bus Service Allocation Study
Andrew Owen, Center for Transportation Studies, University of Minnesota
Co-author: Kristin Carlson, Center for Transportation Studies, University of Minnesota

Community Station Creation: How Rochester and Its Residents Are Designing Its First BRT
Alicia Valenti, SRF Consulting Group; Jarrett Hubbard, City of Rochester

Did the A-line Arterial Bus Rapid Transit Affect Housing Values in Ramsey County, MN?
Jason Cao, Humphrey School of Public Affairs, University of Minnesota
Co-author: Jack Benson, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota

**12**

Latest Research in Shared Mobility and Shared Services

**Moderator:** Lisa Austin, MnDOT

More Access and Less Traffic: Transportation Demand Management Recommendations for Minnesota Municipalities and Employers
Raihana Zeerak, Humphrey School of Public Affairs, University of Minnesota
Co-authors: Jerry Zhao, School of Public Affairs, Zhejiang University; Camila Fonseca-Sarmiento, Humphrey School of Public Affairs, University of Minnesota

E-scooter Safety Concerns and Crash Mechanisms
Madeleine Roen, Department of Mechanical Engineering, University of Minnesota
Co-authors: Curtis Craig and Nichole Morris, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota

Mobile Parcel Locker Location Under Uncertain Demand
Yiling Zhang, Department of Industrial and Systems Engineering, University of Minnesota
Co-author: Liwei Zeng, Institute for Mathematics and its Applications, University of Minnesota
Human Behavior and Safety

Moderator: John Rodeberg, SEH

Driving Safety and Assessment of Sleepiness
Curtis Craig, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota
Co-authors: Nichole Morris, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota; Conrad Iber, University of Minnesota Medical School

Limited and Relative Intentions to Change Speeding Behaviors: A Mixed Methods Comparison of Minor, Moderate, and Extreme Speeders
Colleen Peterson, Transportation Research Institute, University of Michigan
Co-authors: Joseph E. Gaugler, Toben F. Nelson, and Mark A. Pereira, School of Public Health, University of Minnesota

Development of a Smartphone App to Warn the Driver of Unintentional Lane Departure Using GPS Technology
Imran Hayee, Department of Electrical Engineering, University of Minnesota Duluth

Evaluating Persuasive Messaging Techniques on Attitude Change Toward Restricted Crossing U-Turn Intersections
Katelyn Schwieters and Nichole Morris, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota
Co-author: Curtis Craig, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota
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