Annual CTS
TRANSPORTATION RESEARCH CONFERENCE

DRAFT PROGRAM

November 3, 2022
Graduate Minneapolis Hotel
University of Minnesota East Bank Campus
Minneapolis, MN

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# Program at a Glance

**Thursday, November 3, 2022**

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<td>8:30–10:15 a.m.</td>
<td><strong>Welcome</strong></td>
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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: The Transport Transformation Can’t Wait for Technofuturistic Utopia</strong></td>
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<td><em>Speaker Peter Norton,</em> Associate Professor of History, Department of Engineering and Society, University of Virginia</td>
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<td><em>Panelists Yingling Fan,</em> Professor, Humphrey School of Public Affairs, University of Minnesota; <em>Thomas Fisher,</em> Director, Minnesota Design Center, University of Minnesota; <em>Mark Valencia,</em> Vice President of Public Engagement and Communications, NewPublica</td>
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<td>10:15–10:30 a.m.</td>
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<td>Tools for Increasing Engagement and Information Sharing</td>
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<td>11:45 a.m.–1:30 p.m.</td>
<td><strong>Luncheon and Presentation: Equity and Electrification</strong></td>
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<td><strong>Opening Comments Jean Wallace,</strong> Deputy Commissioner and Chief Engineer (Interim), MnDOT</td>
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<td><strong>Speaker Shelley Francis,</strong> Co-Founder and Managing Partner, EVNoire and EHVHybridNoire</td>
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<td>1:30–1:45 p.m.</td>
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<td>Understanding Travel During and After COVID-19</td>
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<td>3:00–3:15 p.m.</td>
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<td>Data Dive Into Bike, Scooter, and Pedestrian Travel</td>
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<td><strong>Reception with Hors d’Oeuvres and Cash Bar</strong></td>
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Program Schedule
Thursday, November 3, 2022

7:30–8:30 a.m.  Registration and Buffet Breakfast

8:30–10:15 a.m.  Welcome
Kyle Shelton, Director, Center for Transportation Studies, University of Minnesota

Keynote Presentation and Panel Discussion: The Transport Transformation Can't Wait for Technofuturistic Utopia

Speaker
Peter Norton, Associate Professor of History, Department of Engineering and Society, University of Virginia

Panelists
Yingling Fan, Professor, Humphrey School of Public Affairs, University of Minnesota
Thomas Fisher, Director, Minnesota Design Center, University of Minnesota
Mark Valencia, Vice President of Public Engagement and Communications, NewPublica

"Pay no attention to the man behind the curtain," the Wizard of Oz told the adventurers. The Wizard feared they would discover his deception. This, according to Peter Norton, is our dilemma. We have all the technology we need for the transport transformation, but tech companies, automakers, and others want to convince us that we need unlimited futuristic tech. For 90 years, they have been selling us impossible futures, always on the promise that amazing technology will finally deliver a city in which everyone can drive anywhere at any time without delay. When the promises fail, they invoke the next generation of amazing technology to restore their lost credibility. But amazing technology does not make car dependency work. The promoters' goal has never been transport sufficiency; they sell transport consumerism.

In this presentation, Norton will pull back the curtain, expose the high-tech distraction, and demonstrate that we already have everything we need for the affordable, healthful, inclusive, and sustainable transport future we seek.

Following the presentation, Minnesota experts on connected and automated vehicles will discuss Norton's ideas and explore how academic researchers, agencies, and industry partners can work together to build effective, safe, and innovative transportation technologies.

10:15−10:30 a.m.  Break

10:30−11:45 a.m.  Concurrent Sessions

Winter Weather Technologies

The Need for Low-Salt Design
Presenter: Connie Fortin, Bolton & Menk

Integrating Technologies in Winter Maintenance Activities to Support End-to-End Process Improvements
Presenter: Ben Zietlow, Quetica Consulting

Improving Winter Road Weather Alerts on Highway Dynamic Message Signs
Presenter: Brian Kary, MnDOT
Additional authors: Skylar Knickerbocker, Institute for Transportation, Iowa State University; Garrett Schreiner, MnDOT
Cutting-Edge Planning Strategies for a Modern World

Understanding Post-COVID Safety Concerns Toward the Use of Shared Mobility in Greater Minnesota
Presenter: Xinyi Qian, Tourism Center, University of Minnesota Extension
Additional authors: Neil Linscheid, University of Minnesota Extension; Galen Ryan and Yingling Fan, Humphrey School of Public Affairs, University of Minnesota

Maximizing Transportation Assets by Building Community Connection Through Innovative Development of Rights of Way and Airspace
Presenter: Frank Douma, Humphrey School of Public Affairs, University of Minnesota
Additional authors: Maya Sheikh, Humphrey School of Public Affairs and School of Public Health, University of Minnesota; Hannah Rank, Lisa Austin, and Cyrus Knutson, MnDOT

Comprehensive Equity and Performance Metrics for Bus Priority Projects
Presenter: Joseph Reid, Metro Transit

Environmental Resilience in Transportation

Using Noise Barriers and Snow Fencing to Capture Solar Energy
Presenter: Mijia Yang, Department of Civil, Construction and Environmental Engineering, North Dakota State University
Additional authors: Yao Yu, Department of Civil, Construction and Environmental Engineering, North Dakota State University; Dan Gullickson, MnDOT

Adapting Stormwater Infrastructure in the Face of Climate Change
Presenter: Noah Gallagher, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
Additional authors: John Gulliver, Andrew Erickson, and William Herb, St. Anthony Falls Laboratory, University of Minnesota; Bruce Wilson, Department of Bioproducts and Biosystems Engineering, University of Minnesota; Peter Weiss, College of Engineering, Valparaiso University

Impact of Snow Depth on Fuel Economy of Snow Maintenance Vehicles
Presenter: Dinesh Reddy Challa, Data Science Program, University of Minnesota
Additional authors: Matthew Eagon, Peter Wringa, and William Northrop, Department of Mechanical Engineering, University of Minnesota

Tools for Increasing Engagement and Information Sharing

Rethinking Continuing Education for Public Works and Maintenance Staff
Presenter: Ann Johnson, PE Services

Up Your Social Media Game with Tips from Minnesota Transportation Agencies
Presenter: Tom Holmes, Zan Associates

Tools to Expand the Transportation Workforce in Local Agencies
Presenter: Stephanie Malinoff, Center for Transportation Studies, University of Minnesota

Communicating Freight Data Through Interactive Maps and Dashboard Tools
Presenter: Chris Ryan, HDR
Additional author: Michael Corbett, MnDOT
Luncheon and Presentation: Equity and Electrification

**Opening Comments**  
Jean Wallace, Deputy Commissioner and Chief Engineer (Interim), MnDOT

**Speaker**  
Shelley Francis, Co-Founder and Managing Partner, EVNoire and EVHybridNoire

This year is one of the most transformational moments in history for the electrification sector. With the convergence of the Infrastructure Investment and Jobs Act, the Inflation Reduction Act, infrastructure deployment, workforce and economic development opportunities, and rebate and incentive programs, we have to ask ourselves: What will electrification look like in five years? As we speed toward electrifying all transportation sectors, how can we leverage electrification best practices and diversity, equity, and inclusion considerations to ensure that our approach is accessible to all consumers?

In this presentation, Shelley Francis will examine the historical context of transportation policy and explore how it impacts current transportation, movement, and public health. She will also share electrification best practices from research and case studies using data-driven mobility frameworks.

Break

Concurrent Sessions

### Understanding Driver Behavior

**Modeling Driver Yielding Behavior at Unsignalized Intersections**  
Presenter: Raphael Stern, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota  
Additional author: Tianyi Li, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota

**Understanding the Nature of Police Pursuits Using a Mixed-Methods Approach**  
Presenter: Sam Jacobs, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota  
Additional authors: Nichole Morris and Curtis Craig, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota; Andrew Ryan, School of Public Health, University of Minnesota

**Can Place of Last Drink (POLD) Reduce Alcohol-Related Traffic Crashes?**  
Presenter: Traci Toomey, School of Public Health, University of Minnesota  
Additional authors: Daniel Schriemer, Kathleen Lenk, Richard MacLehose, Toben Nelson, and Eileen Delehanty, School of Public Health, University of Minnesota; Linda Bosma, Bosma Consulting; Kari Gloppen, Minnesota Department of Health

### Transportation Infrastructure

**Highlights of National Road Research Alliance Geotechnical Research**  
Presenter: Raul Velasquez, MnDOT  
Additional authors: Bora Cetin, Michigan State University; Majid Ghayoomi, University of New Hampshire; Soheil Nazarian, University of Texas at El Paso

**Deployment of Drone Fleet and Manual for MnDOT Bridge Inspections**  
Presenter: Jennifer Wells, MnDOT  
Additional author: Barritt Lovelace, Collins Engineers

**Toward the Development of Pavement-Specific Structural Synthetic Fibers**  
Presenter: Pranav Sharma, Department of Civil Engineering, University of Minnesota Duluth  
Additional author: Manik Barman, Department of Civil Engineering, University of Minnesota Duluth

**Load-Rating Assessment of Three Slab-Span Bridges**  
Presenter: Kendall Hill, Department of Civil Engineering, University of Minnesota Duluth
### Intersections of Transportation and the Economy

**Assessing the Economic Effects of Context-Sensitive Main Street Highways in Small Cities**  
Presenter: Robin Phinney, Humphrey School of Public Affairs, University of Minnesota

**The Impacts of Deferred Maintenance in Minnesota**  
Presenter: Raihana Zeerak, Humphrey School of Public Affairs, University of Minnesota  
Additional authors: Camila Fonseca-Sarmiento and Haiyue Jiang, Humphrey School of Public Affairs, University of Minnesota; Jerry Zhao, Zhejiang University

**Setting Up for Success: A New Strategy for Enhancing Highway Preservation Investments**  
Presenter: Michael Corbett, MnDOT  
Additional author: Paul Morris, SRF Consulting Group

### Understanding Travel During and After COVID-19

**Telecommuting During and After COVID-19: Comparing Employers' and Workers' Experiences**  
Presenter: Xinyi Qian, Tourism Center, University of Minnesota Extension  
Additional authors: Neil Linscheid, Center for Community Vitality, University of Minnesota Extension; Duane Hill, MnDOT

**Transit in the COVID-19 Era: Early Results from the 2021–2022 Twin Cities On-Board Survey**  
Presenter: Ashley Asmus, Metropolitan Council  
Additional authors: Eric Lind, Metro Transit; Fred G’sell, ETC Institute; Jonathan Ehrlich, Metropolitan Council

**Scheduling Efficiency and Operator Satisfaction in a COVID-19 World**  
Presenter: Mark Patzloff, Metropolitan Council  
Additional author: Flavie Gagnon-Pontbriand, GIRO, Inc.

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#### Break

3:15–4:30 p.m.  
**Concurrent Sessions**

### Advancing and Measuring Equity

**Equity-First Performance Measures**  
Presenter: Zachary Elgart, Texas A&M Transportation Institute  
Additional authors: Ipek Sener, Todd Hansen, James Cardenas, Lisa Minjares-Kyle, and Ben Ettelman, Texas A&M Transportation Institute

**Telecommuting, Travel Behavior, and Equity**  
Presenter: Kribashini Narayana Moorthy, Transportation Policy and Economic Competitiveness Program, University of Minnesota  
Additional authors: Frank Douma, Adeel Lari, and Maya Sheikh, Humphrey School of Public Affairs, University of Minnesota

**Advancing Equity in Accessibility and Travel Experiences: The Role of Gender and Identity**  
Presenter: Ying Song, Department of Geography, Environment, and Society, University of Minnesota  
Additional authors: Yaxuan Zhang, Department of Geography, Environment, and Society, University of Minnesota; Yingling Fan and Ania McDonnell, Humphrey School of Public Affairs, University of Minnesota; Hally Turner, MnDOT
Transportation and Wildlife

Use of Ultrasonic Technology to Deter Bat Bridge Use During Bridge Repair
Presenter: Basak Betkas, Civil Engineering, Minnesota State University, Mankato
Additional authors: Julie Blanchong, Department of Natural Resource Ecology and Management, Iowa State University; Katelyn Freeseman and Ahmed Albughdadi, Institute for Transportation, Iowa State University

Identifying Deer-Vehicle Collision Concentrations in Minnesota
Presenter: Arian Zare, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
Additional author: Raphael Stern, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota

Roadside Revegetation with Native Plants: Establishment of Plants and Support of Pollinators
Presenter: Emilie Snell-Rood, Department of Ecology, Evolution, and Behavior, University of Minnesota
Additional authors: Tim Mitchell and Ashley Darst, Department of Ecology, Evolution, and Behavior, University of Minnesota; Dan Cariveau and Elaine Evans, Department of Entomology, University of Minnesota; Michael Verhoeven, Graduate Program in Conservation Sciences, University of Minnesota

Designing for Fish Passage at Road-Stream Crossings in Minnesota: Maintaining Connectivity and Building Resiliency
Presenter: Jessica Kozarek, St. Anthony Falls Laboratory, University of Minnesota
Additional authors: William Herb, Matt Hernick, and Chris Lenhart, St. Anthony Falls Laboratory, University of Minnesota

Technology and Traffic Flow

A Modified Traffic Fundamental Diagram for the Mixed Autonomy Highway Traffic Flow
Presenter: Mingfeng Sheng, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
Additional author: Raphael Stern, Civil, Environmental, and Geo- Engineering, University of Minnesota

Evaluation and Refinement of the Minnesota Queue Warning System (MN-QWARN)
Presenter: John Hourdos, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota

Development of a Mobile Smartphone App for Work-Zone Intrusion Reporting
Presenter: Brian Davis, Department of Mechanical Engineering, University of Minnesota
Additional authors: Nichole Morris and Curtis Craig, HumanFIRST Laboratory, Department of Mechanical Engineering, University of Minnesota

Data Dive Into Bike, Scooter, and Pedestrian Travel

Quality Assurance Methods for Hourly Level Bicycle and Pedestrian Automated Counter Data
Presenters: Sebastian Coll and Gustave Stewart, Humphrey School of Public Affairs, University of Minnesota

Minneapolis Shared Bike and Scooter Data
Presenter: Danielle Elkins, City of Minneapolis
Additional authors: Tim Condon, Rick Paulsen, and Russ Brooks, City of Minneapolis

Access Evaluation for Bike Planning in Cook County, Illinois
Presenter: Andrew Owen, Center for Transportation Studies, University of Minnesota
Additional authors: Peter Dirks, Cook County, Illinois; Shirley Shiqin Liu, Center for Transportation Studies, University of Minnesota

4:30–5:30 p.m. Reception with Hors d’Oeuvres and Cash Bar