Annual CTS
TRANSPORTATION RESEARCH CONFERENCE

FINAL PROGRAM

November 1, 2018
Graduate Minneapolis
East Bank Campus
Minneapolis, MN

cts.umn.edu
General Information

Reception
A reception with hors d'oeuvres and a cash bar will take place following the final concurrent sessions, offering attendees further opportunity to socialize with fellow participants and presenters.

Conference Presentations Online
PowerPoint presentations (for which we receive permission from presenters to post) will be available in PDF format a week after the conference at cts.umn.edu/events/conference.

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This conference awards up to 6.5 PDHs. A credit form is included in your conference folder and on the conference website.

AICP Maintenance Credits
This conference has been approved for 13 AICP maintenance credits. A complete list of sessions approved for credit is included in your conference folder, on the conference website, and in the program schedule.

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To participate in Twitter conversations around this year’s Research Conference, please add the hashtag #ctsresconf to your tweets. For the latest news and events from the Center for Transportation Studies, follow @UMNCTS on Twitter and like us on Facebook at facebook.com/UMNCTS.

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Conference attendees can access free wireless internet by selecting the Graduate Convention Center Network and entering password: CTS18.

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• Engage in Twitter conversations
• Upload conference photos
• Keep track of AICP credits and PDH
To get the guide for iOS and Android users: Download 'Guidebook' from the Apple App Store or the Android Marketplace, search for "CTS Conference."

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Ying Song
University of Minnesota
Bruce Wilson
University of Minnesota

Mark Your Calendar
Toward Zero Deaths Conference
October 23–24, 2019
St. Cloud River’s Edge Convention Center, St. Cloud, Minnesota

2019 Annual CTS Transportation Research Conference
November 7, 2019
Graduate Minneapolis, Minneapolis, Minnesota
Welcome to the Conference

The Center for Transportation Studies is pleased to present its Transportation Research Conference and welcomes you to the University of Minnesota campus. The conference convenes researchers and practitioners from Minnesota and the Upper Midwest to highlight new learning, emerging ideas, and the latest innovations in transportation. Concurrent session topics align with the Center’s research emphasis areas: Transportation Safety and Traffic Flow, Transportation Infrastructure, Transportation Planning and the Economy, Environment and Energy in Transportation, and Transportation Education and Engagement.
Many states, including California and Minnesota, have identified reducing driving as an essential strategy to meet their targets for lowering greenhouse gas emissions. How to achieve this strategy, however, remains a question. The rise of ride-hailing services, autonomous vehicles, and other innovations adds to this challenge. How can the research community help policymakers navigate this uncertain future? Professor Susan Handy and her colleagues at the Institute of Transportation Studies, University of California, Davis, are addressing these issues with a series of groundbreaking projects. She will discuss how emerging research results can help state, regional, and local agencies identify the most effective approaches, develop implementation tools, and assess impacts on driving and other outcomes.

Following Handy’s presentation, a panel of Minnesota leaders and experts will share perspectives on reducing greenhouse gas emissions in light of these new transportation innovations.

Frank Douma, Director, State and Local Policy Program, Hubert H. Humphrey School of Public Affairs, University of Minnesota; James Erkel, Attorney and Director, Land Use and Transportation Program, Minnesota Center for Environmental Advocacy; Kjersti Monson, Principal, Chief Executive Officer and Civic Studio Director, Duval Companies; Tim Sexton, Chief Sustainability Officer, Minnesota Department of Transportation
Automated vehicles hold promise to reduce traffic congestion, pollution, crashes, and parking demand. But this promise can only be realized with advanced technology that ensures a vehicle’s situational awareness through perception and mapping—in other words, letting it “see” its surroundings. Current systems, however, do not fully support autonomous vehicles on any road shared by driver-operated vehicles. A major need is a high-performance sensor that uses laser light—LiDAR—to give “sight” to the automated vehicle.

Julie Schoenfeld founded a company with unique technology to produce such a sensor. She will discuss this technology and share her journey as a serial entrepreneur to illustrate how technology entrepreneurship’s pitfalls can be rerouted to successful peaks.

Minnesota Department of Transportation Commissioner Charles Zelle will offer opening remarks.
### Program at a Glance

**Thursday, November 1, 2018**

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Graduate Minneapolis Floor Plan

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**Program Schedule**

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**Speaker** Susan Handy,  
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Tim Sexton, Chief Sustainability Officer, Minnesota Department of Transportation |
| 10:15–10:30 a.m. | **Break** *(Meridian Foyer)* |
| 10:30–11:45 a.m. | **Concurrent Sessions** |
| **1** | **Topics in Transportation Finance and Economics** *(Think 4)*  
**Moderator** Kenneth Buckeye, MnDOT  
**Overview of Special Interest Groups’, Government Officials’, and Elected Officials’ Views on a Distance-Based User Fee Demonstration Project**  
Patrick Haney, Humphrey School of Public Affairs, University of Minnesota  
**An Overview of Distance-Based User Fee Projects Conducted in Minnesota and Around the Country**  
Camila Fonseca Sarmiento, Humphrey School of Public Affairs, University of Minnesota  
**Accessibility and Behavior Impacts of Bus-Highway System Interactions**  
Kristin Carlson, Accessibility Observatory, Center for Transportation Studies, University of Minnesota  
**Lessons Learned from the “Farm to Rural Grocery to Wholesale” Backhaul Distribution Model**  
Kathy Draeger, University of Minnesota Extension Regional Sustainable Development Partnerships; Duke Harrison, Mason Brothers Grocery Wholesale |
| **2** | **Managing Pollutants in the Environment** *(Think 5)*  
**Moderator** John Chapman,  
Department of Bioproducts and Biosystems Engineering, University of Minnesota  
**Capital City Bikeway: A Case Study in Green Infrastructure**  
Cindy Zerger, Toole Design Group  
**Pollution from Urban Stormwater Ponds**  
John Gulliver, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota  
**Optimizing Nutrition of Roadside Plants for Pollinators**  
Tim Mitchell, College of Biological Sciences, University of Minnesota  
**Transportation Resilience Innovations—State DOT Considerations**  
Mike Meyer, WSP |
## Concurrent Sessions

### 10:30−11:45 a.m.

**Concurrent Sessions**

### 3

**Shared Mobility and the Transformation of Public Transit Part I: Public Transit**

**PATHWAYS ROOM**

**Moderator** Eric Lind, Metro Transit

- Park-and-Ride Demand Model Update  
  **Benjamin Nault-Maurer**, SRF Consulting Group
- Improving Travel Mobility by Integrating Public Transit and Ride-Sourcing Services  
  **Yufeng Zhang**, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
- Absenteeism Prediction and Extra-Board Driver Scheduling for Metro Transit  
  **Xiaochen Zhang**, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
- Multimodal Access to Twin Cities Transitways  
  **Jacqueline Nowak**, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota

### 4

**Warning! Entering the Smart Technology Systems Zone**

**SUMMIT ROOM**

**Moderator** Tony Fischer, Metropolitan Council

- Lane Departure Warning System  
  **Mohammad Faizan**, Department of Electrical Engineering, University of Minnesota Duluth
- Evaluation of the Smart Work Zone Speed Notification System  
  **Gordon Parikh**, Minnesota Traffic Observatory, University of Minnesota
- Intersection Conflict Warning Systems  
  **Erik Minge**, SRF Consulting Group

### 11:45 a.m.-1:30 p.m.

**Luncheon and Presentation**

**MERIDIAN BALLROOM**

**The Evolution and Potential of Automated Vehicle Technologies**

- **Opening Comments**  
  **Charles Zelle**, Commissioner, MnDOT
- **Speaker** Julie Schoenfeld, Vice President, Technical Program Management, GM Cruise Automation

Automated vehicles hold promise to reduce traffic congestion, pollution, crashes, and parking demand. But this promise can only be realized with advanced technology that ensures a vehicle’s situational awareness through perception and mapping—in other words, letting it “see” its surroundings. Current systems, however, do not fully support autonomous vehicles on any road shared by driver-operated vehicles. A major need is a high-performance sensor that uses laser light—LiDAR—to give “sight” to the automated vehicle. Julie Schoenfeld founded a company with unique technology to produce such a sensor. She will discuss this technology and share her journey as a serial entrepreneur to illustrate how technology entrepreneurship’s pitfalls can be rerouted to successful peaks.

### 1:30−1:45 p.m.

**Break**

**MERIDIAN FOYER**

### 1:45−3:00 p.m.

**Concurrent Sessions**

### 5

**Are You Reaching Everyone? Making Sure Transportation Work Is Seen, Heard, and Understood**

**THINK 4**

**Moderator** Frank Douma, Humphrey School of Public Affairs, University of Minnesota

- Using Social Media in Transportation Projects and Planning: Lessons From Four Minnesota Case Studies  
  **Kathryn Quick**, Humphrey School of Public Affairs, University of Minnesota
- How to Build a Public Engagement Plan Not Based on Assumptions  
  **Brenda Thomas**, MnDOT
- Uniformity of Terminology for Circular Intersection Designs  
  **Joe Gustafson**, Washington County
- How Planning for Connected and Automated Vehicles Can Help All People  
  **Daniel McNiel**, Transportation Policy and Economic Competitiveness Program, University of Minnesota
**Concurrent Sessions**

### 1:45−3:00 p.m.

#### Advanced Vehicle Technologies (Pathways Room)

**Moderator** Tom Sohrweide, SEH, Inc

- **MnDOT Autonomous Bus Pilot**
  - Jay Hietpas, MnDOT
- **University of Minnesota Solar Vehicle Project**
  - Erick Sipila, College of Science and Engineering, University of Minnesota
- **Integration of Microsimulation and Optimized Autonomous Intersection Control**
  - Jack Olsson, College of Science and Engineering, University of Minnesota

### 3:00−3:15 p.m.

**Break (Meridian Foyer)**

### 3:15−4:30 p.m.

#### Shared Mobility and the Transformation of Public Transit Part II (Summit Room)

**Moderator** Ying Song, Department of Geography, Environment and Society, University of Minnesota

- **Taxing Shared Mobility: Pricing Schemes, Rationales, and Ongoing Discussions**
  - Bingyan Wu, Humphrey School of Public Affairs, University of Minnesota
- **Matching for Dynamic Ride-Sharing System**
  - Pramesh Kumar, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota
- **Impact of Ride-Sharing on Mobility Trends and Vehicle Stock**
  - Suhrid Deshmukh, Massachusetts Institute of Technology
- **Effects of Autonomous Vehicle Car-Sharing System on Road Congestion**
  - Rongsheng Chen, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota

### 4:30−5:15 p.m.

#### Keeping Minnesota’s Bicyclists and Pedestrians Safe (Think 5)

**Moderator** Jim McCarthy, Federal Highway Administration

- **Governing Dockless Bike Share: Early Lessons for Nice Ride Minnesota**
  - Austin Hauf, Humphrey School of Public Affairs, University of Minnesota
- **Implementing Low-Stress Bicycle Routing in National Accessibility Evaluation**
  - Brendan Murphy, Accessibility Observatory, Center for Transportation Studies, University of Minnesota
- **Counting Together in Minnesota**
  - Michael Petesch, MnDOT
- **Methods and Measures for Assessing Pedestrian Exposure to Risk, Crash Risk, and Equity**
  - Tao Tao, Humphrey School of Public Affairs, University of Minnesota

### 5:15−6:00 p.m.

#### ABC Parking Ramps: Reimagining the Future of Parking and Multimodal Transportation Choices (Pathways Room)

**Moderator** Lisa Austin, MnDOT

**Panelists** Frank Douma, Rachel Dame, Humphrey School of Public Affairs, University of Minnesota; Paul Morris, SRF Consulting Group; Dan Edgerton, Zan Associates

For more than 25 years, the ABC Ramps have supported multimodal transportation in downtown Minneapolis with services including parking, carpool discounts; connections to bus, light rail, and passenger rail; bicycle parking; showers for bicyclists; and electric vehicle charging stations. The panel will highlight the University of Minnesota, the City of Minneapolis, the MnDOT, and SRF Consulting Group’s recent research and implementation plan looking at past, present, and future strategies to manage parking supply, promote transportation choices, reduce drive-alone trips, and encourage mode shift. Panelists will also address future program opportunities including leveraging shared mobility trends and the use of mobile applications and technology to provide commuters with increased flexibility and choices for transportation to downtown.
### Concurrent Sessions

#### Solutions in Pavements and Bridges (Think 5)

**Moderator** Manik Barman, Swenson College of Science and Engineering, University of Minnesota Duluth

- Laboratory and Field Experiences with Nontraditional Fog Seals  
  Ed Johnson, MnDOT
- Anchorage of Epoxy-Coated Rebar Post-Installed Using Chemical Adhesives/Deterioration of Mixed Rebar and Fiber-Reinforced Concrete Bridge Deck  
  Benjamin Dymond, Swenson College of Science and Engineering, University of Minnesota Duluth
- Feasibility Study of Enhanced Sensor Data for Bridge Weigh-in-Motion  
  Ravi Kumar, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota
- Effective Treatments of Asphalt Pavement Potholes and Cracks  
  Jared Munch, Swenson College of Science and Engineering, University of Minnesota Duluth

#### Transportation Safety and Risk Exposure (Think 4)

**Moderator** Heidi Schallberg, Metropolitan Council

- Toolkit Toward Achieving Vision Zero  
  Greta Alquist, Toole Design Group
- Raising Couch Potatoes vs. Injured Kids? Safe Routes to School and Pedestrian/Bicycle Injury Cost Estimates  
  Anna Gaichas, Minnesota Department of Health
- Bicycle Safety on Sidewalks: Results of a Crash Analysis and User Survey in Michigan  
  Hannah Pritchard, Toole Design Group
- Assessing the Impacts of Pedestrian-Activated Crossing Systems  
  Peter Dirks, Minnesota Traffic Observatory, University of Minnesota

#### Safe and Efficient Freight Movement (Summit Room)

**Moderator** Matt Schmit, Humphrey School of Public Affairs, University of Minnesota

- Berry Boxes on the Move: Mapping Airports’ Role in Minnesota’s Global Medical Supply Chain  
  Travis Fried, Transportation Policy and Economic Competitiveness Program, University of Minnesota
- Using Truck GPS Data to Evaluate Corridor Freight Flows  
  Christopher Ryan, SRF Consulting Group.
- Applying Network Optimization Modeling to Public Sector Planning – The Case of the St. Paul Port Authority  
  Eric Beazley, Quetica, LLC
- Highway Travel Time Reliability and Congestion in Minnesota  
  Michael Iacono, MnDOT

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**4:30–5:30 p.m.** Reception—Hors d’Oeuvres and Cash Bar (Meridian Foyer)
Conference services provided by the University of Minnesota’s Center for Transportation Studies and College of Continuing and Professional Studies.

Disability accommodations will be provided upon request. This publication is available in alternative formats. Please call 612-624-3708.

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