Preparing the City of Toronto for Automated Vehicles

January 19, 2018, Public Works and Infrastructure Committee
Agenda

• Why Prepare for Automated Vehicles?
• What is an Automated Vehicle?
• Current Legislation and Legal Framework
• Transportation Services Divisional Workplan
• Partnerships and Relationships
• Public Opinion Highlights
• Global Context
Why Prepare for Automated Vehicles

• Automated vehicles – commonly called autonomous vehicles or driverless cars – have the potential to dramatically change transportation in Toronto.

• In the short term, new advanced driver assistance systems could improve road safety, increase transportation efficiency, reduce environmental impacts and provide new economic development opportunities.
Why Prepare for Automated Vehicles

• In the longer term, cars that can be operated without a human driver could further improve safety, significantly reduce the cost of transportation, provide increased mobility for non-driving populations, and completely change how we manage the transportation system.

• At the same time, these vehicles could spur more automobile use, facilitate greater travel distances, and create employment challenges for tens of thousands of Torontonians.

• No matter the case, we collectively have the opportunity to anticipate changes, and work to shape them, rather than have automated vehicles shape us.
Automated Vehicles and Disruption

Conceptual Model of the Realignment to and Dealignment from the Internal Combustion-powered Automobile
What is an Automated Vehicle?

- **Partially Automated**
  - Driver Assistance
  - System monitors the environment
  - Monitoring driving environment
  - Control taken by human driver
  - All driving modes

- **Highly Automated**
  - Partial Automation
  - System monitors the environment
  - Monitoring driving environment
  - Control taken by human driver
  - Some driving modes

- **Automated**
  - Conditional Automation
  - System monitors the environment
  - Monitoring driving environment
  - Control taken by human driver
  - Some driving modes

- **Fully Automated**
  - Full Automation
  - System monitors the environment
  - Monitoring driving environment
  - Control taken by system
  - All driving modes
## Automated Vehicles in Ontario and Canada

### Ontario
- *Highway Traffic Act*
- 2016: Testing Framework
- 2018: Proposed changes
- Connected Vehicle/Automated Vehicle (CVAV) Program
- Automated Vehicles Innovation Network (AVIN)

### Canada
- *Motor Vehicle Safety Act*
- “Transportation 2030: A Strategic Plan for the Future of Transportation in Canada”
- Program to Advance Connectivity and Automation in the Transportation System (ACATS)
Divisional Work Plan – 2016-2018

PREPARING FOR AUTONOMOUS VEHICLES

Draft AV Tactical Plan

• Equity
• Environmental Impacts
• Road Safety
• Modal Shift
• Transit-centric
• Traffic Management
• Public Service Vehicles
• Economic Development
• Privacy and Security
• Business Intelligence
Partnerships and Relationships

Transportation Services
- AV Team
- AV Working Group

Other Orders of Government
- Transport Canada
- Ontario Ministry of Transportation
- Peer Cities

Industry

Stakeholders and Partners
- CAVCOE
- University of Toronto
- Ryerson University
- MACAVO
- NACTO

City Staff
Interdivisional Working Group

- Transportation Services
- City Clerk's Office
- City Manager's Office
- City Planning
- Corporate Finance
- Economic Development
- Environment & Energy
- Fire Services
- Fleet Services
- Information & Technology
- Legal Services
- Municipal Licensing & Standards
- Revenue Services
- Solid Waste Management
- Toronto Building
- Toronto Employment & Social Services
- Toronto Office of Partnerships
- Toronto Parking Authority
- Toronto Police Services
- Toronto Public Health
- Toronto Transit Commission
Public Opinion Highlights

• 85% had heard of a “driverless car”
• Most interested in:
  – safety improvements
  – traffic flow
  – eliminating parking
  – support for people with disabilities
• Almost half would commute further

How should governments respond?

Actively Encourage
Actively Discourage
Monitor
Unsure
Take No Action
Global Overview
Next Steps

- Continue research and monitoring
- Engage more divisions in the Working Group
- Support divisions in developing their own work plans
- Stakeholder consultation on the “Tactical Plan”
- Develop deeper relationships with post-secondary institutions
  - iCity Centre for Automated and Transformative Technologies (U of Toronto)
  - Ryerson University
  - University of Waterloo
  - Harvard University
- Explore and support local pilot projects
Preparing the City of Toronto for Automated Vehicles

January 19, 2018, Public Works and Infrastructure Committee