Autonomous Vehicles:

The Road Ahead for Municipalities

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The Direction Forward

**Phase 1 (2012 to 2016)**
Passive autonomous driving

**Phase 2 (2015 to 2019)**
Limited driver substitution

**Phase 3 (2012 to 2022)**
Completed autonomous capacity

**Phase 4 (2022 to future)**
100% autonomous penetration
The new direction ahead

OWNED AUTONOMY
- High tech, individually operated
- Tesla, Mobileye

SHARED AUTONOMY
- Autonomous PODS (Dubai)
- Google, Apple, Uber 2.0

OWNED ECONOMY
- Low technology, individually operated
- Lyft, Uber, Taxi, etc.

SHARED ECONOMY
- Low technology, shared asset
- Uber, Lyft, Taxi, etc.

TODAY
- Mostly single occupant driving
- 100 year old model

Autonomous

Asset Owned

Asset Shared

Human Operated
The Complexity of Autonomous Vehicles

• The Region of Peel has a very diverse set of **roads** which results in a diverse set of **risks**
• Considerations for traffic, rights of way, pedestrians, and cyclists in **urban**, **suburban** and **rural** contexts
A Simultaneous Opportunity and Challenge

Opportunities

• Automobiles are the “most under-utilized asset on the planet”
• Cars are parked 95% of the time
• Automated Freight Delivery
• Reduced fatalities and increased safety

Challenges

• Unpredicted travel behaviour and patterns
  • iCity-CATTS can help
• Costly investments into infrastructure and technology
A Simultaneous Opportunity and Challenge

• The degree to which municipalities prepare for AVs will determine which opportunities can be leveraged and which challenges can be mitigated.

• Planning will require collaboration and extensive partnerships.

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<thead>
<tr>
<th>Positive</th>
<th>Internal</th>
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<tr>
<td>Safer Transportation</td>
<td>Relevance on Technology</td>
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<tr>
<td>Convenience and Luxury</td>
<td>Requires Infrastructure</td>
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<tr>
<td>Accessibility</td>
<td>Ethical Decision Making</td>
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<td>Increased time for alternative activities</td>
<td>Further Testing Required</td>
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<table>
<thead>
<tr>
<th>External</th>
<th>Negative</th>
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<tr>
<td>Growth of Urban Centres</td>
<td>Reduce/Reorganize Employment</td>
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<td>Reduced Traffic Congestion</td>
<td>Special Interest Lobbying</td>
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<td>Decreased Emissions</td>
<td>Injury via Faulty Design</td>
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<td>Decoupling of Buildings/Parking</td>
<td>Privacy Concerns</td>
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<td>Reliance on Vehicles</td>
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Impacts to Future Transportation Planning

**Aging Population**
Will transit networks be required if AVs can provide mobility as a service?

**Goods Movement**
Changing workforce and employment

**Emissions**
Regulating gasoline vs. electric autonomous vehicles

**Future Legislation**
Testing of AVs on local/regional roads
Collision Frequency and Insurance Policies

**Land Use**
Community Design
Parking lots/driveways
Testing Autonomous Vehicles – Region of Peel

- The Region of Peel has a very diverse set of roads which results in many different risks
- Safety of residents is the number one priority
  - High density urban roads are not preferred testing routes (yet)
- Collaborate with MTO and MACAVO to develop testing regulations on regional and local roads
  - Move towards driverless testing

Note: This is non-official and in the draft stage.
Looking Ahead: Municipal Initiatives

- Municipalities are entering unchartered territory in preparation for Autonomous Vehicles
- The Region of Peel dedicated a chapter to Autonomous Vehicles in its Long Range Transportation Plan
- Roles for Governments:
  - AV Data Collection and Maintenance
  - Envision municipal financing and revenue streams of autonomous vehicle mobility
  - Ensuring social equity and employment access for residents through AVs
  - Estimate impacts of AVs on zoning, bylaws, parking, etc.
  - Identifying opportunities in delivering municipal services through autonomous vehicles
Thank You!

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