



*driving AV deployment*

The Canadian Automated Vehicles Centre of Excellence

# Autonomous Vehicles & The Calgary Region as a Transportation Hub

## The Calgary Region as a Transportation Hub

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# **AUTONOMOUS VEHICLES**

**Will AVs  
fundamentally  
change how we  
consider the  
Calgary Region as a  
Transportation  
Hub?**

# AUTONOMOUS VEHICLES

Will AVs  
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**YES!**



# Why?

- **Here soon**
- **HUGE socio-economic impacts**
- **Ripple effects everywhere**
- **Not in future plans**
- **Potentially disruptive**

# Here soon

- **Automakers 2020-25?**
- **Google 2017-2019?**
- **Tipping Point 2026?<sup>1</sup>**



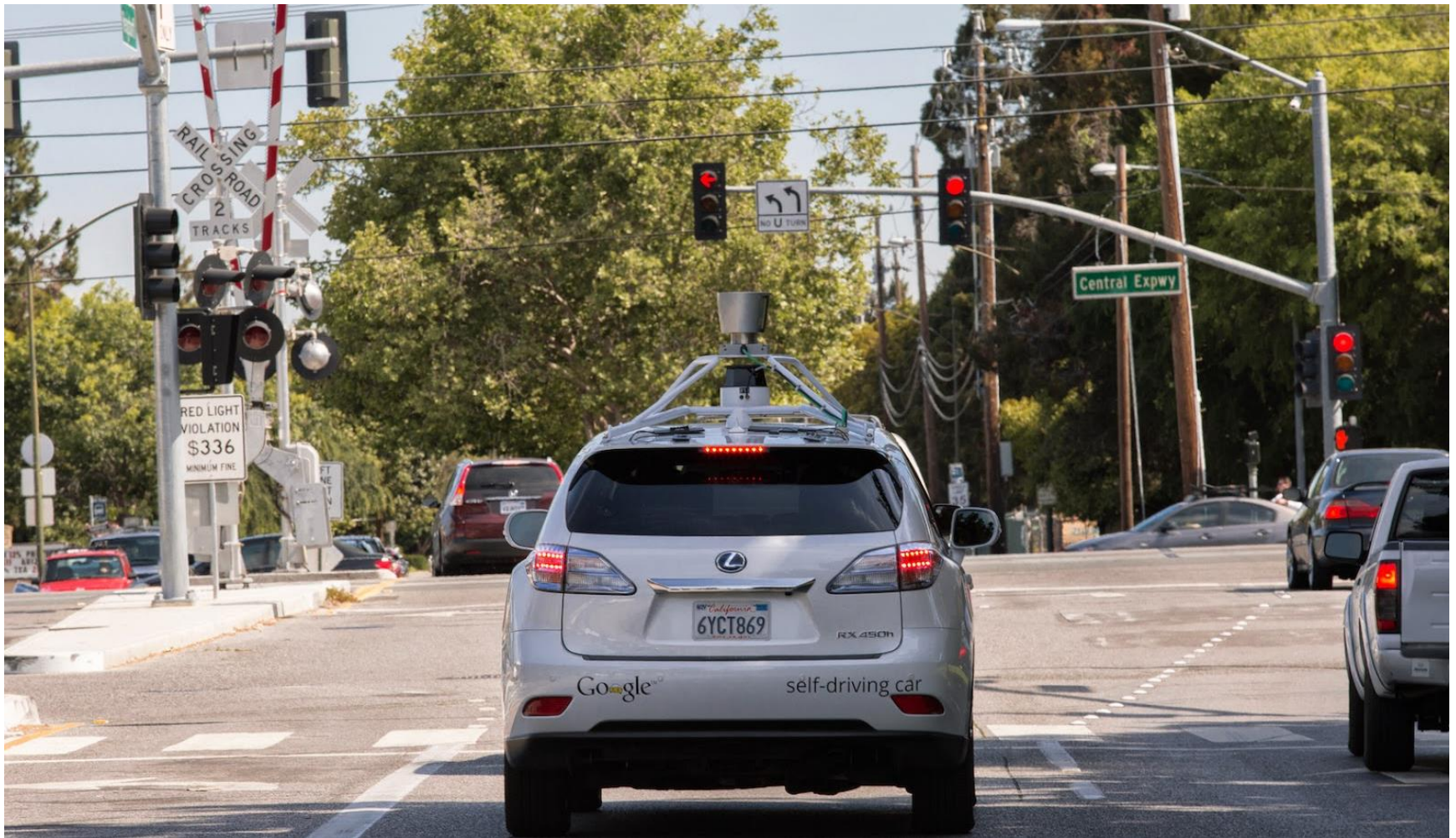
<sup>1</sup>CAVCOE estimate

# 2013 Suncor Autonomous Truck



**Testing in Alberta Oil Sands. From 2008 elsewhere.**

# 2014 Google 'mastering city street driving'



700k miles, cyclists signals, construction zones

## 2014-2016 Google Prototype 'Vehicle' (NEV)



25mph, 100 pilot project CA for 2yrs. 2017-2019?...



# Imminent? - Peloton: Automation and Platooning



**Solving accidents and fuel use**

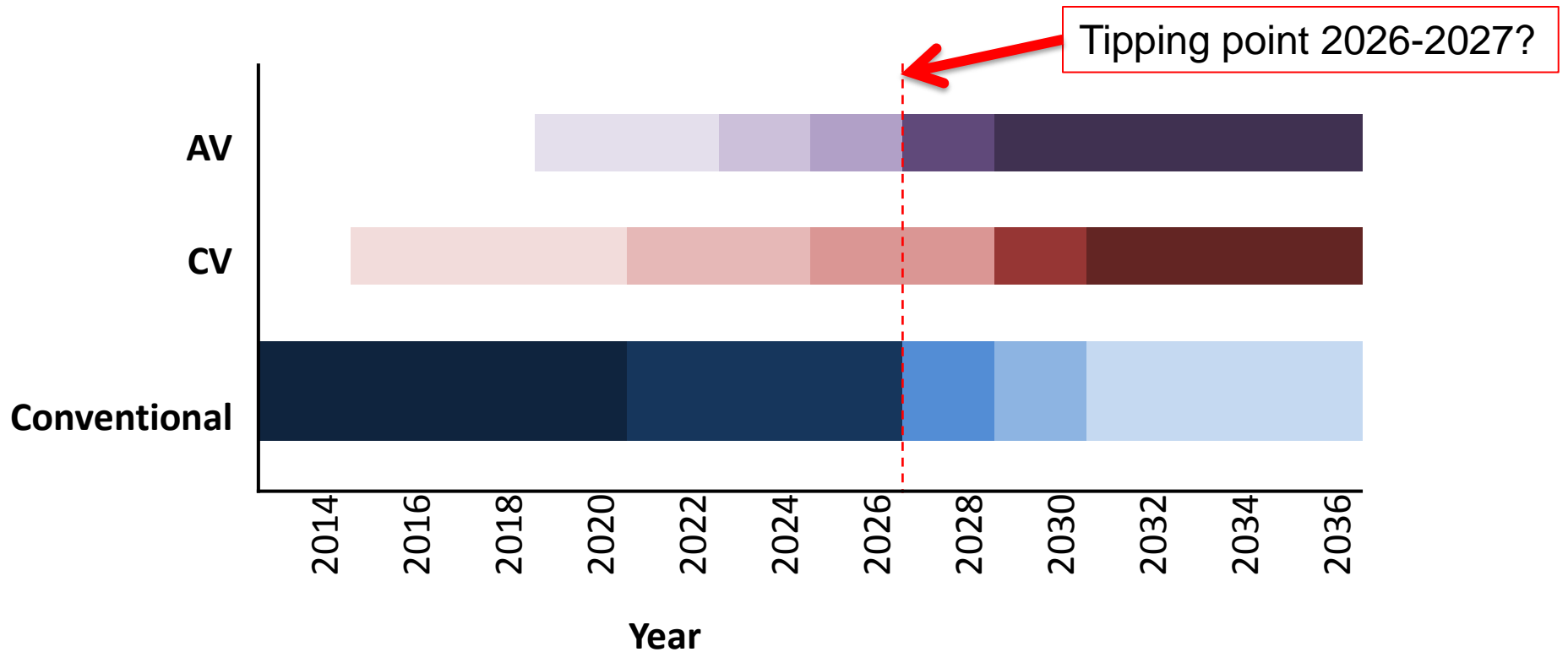
# Mercedes Benz Future Truck 2025



**Many technological elements already available**

# Estimated Timeline and Tipping Point

## RELATIVE IMPACT OF AVs/CVs TO CONVENTIONAL TRAFFIC



# Huge Impacts

- **Safety >80% crash reduction**
- **Time / Congestion**
- **Shared TaaS**
- **YYC Savings \$2 BN/yr<sup>2</sup>**
- **Money flow >20%GDP?<sup>3</sup>**

estimate

<sup>2</sup>CoBC, Van Horne, CAVCOE

<sup>3</sup>CAVCOE estimate

# TaaS: Compelling Business Case

**Car Rentals**

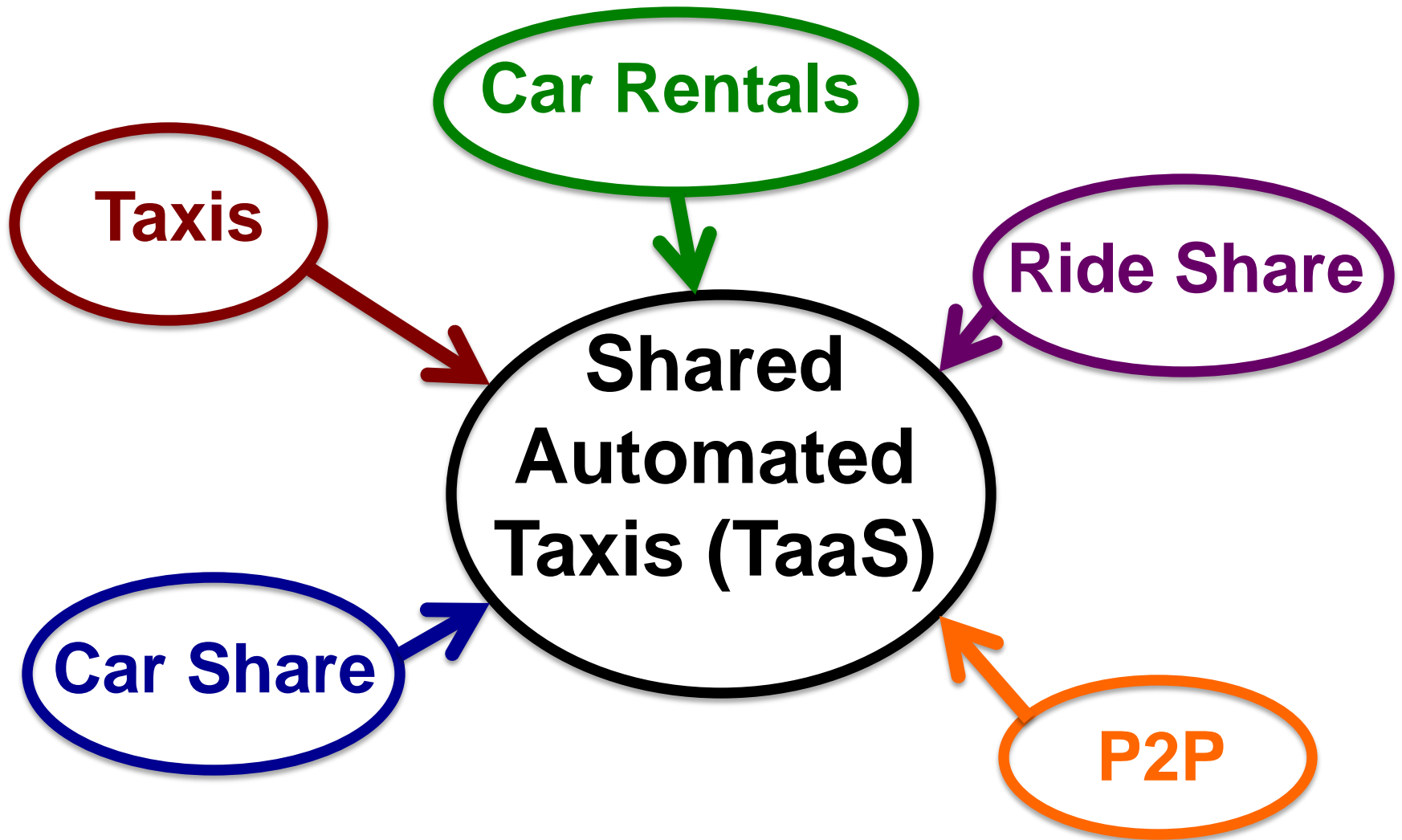
**Taxis**

**Ride Share**

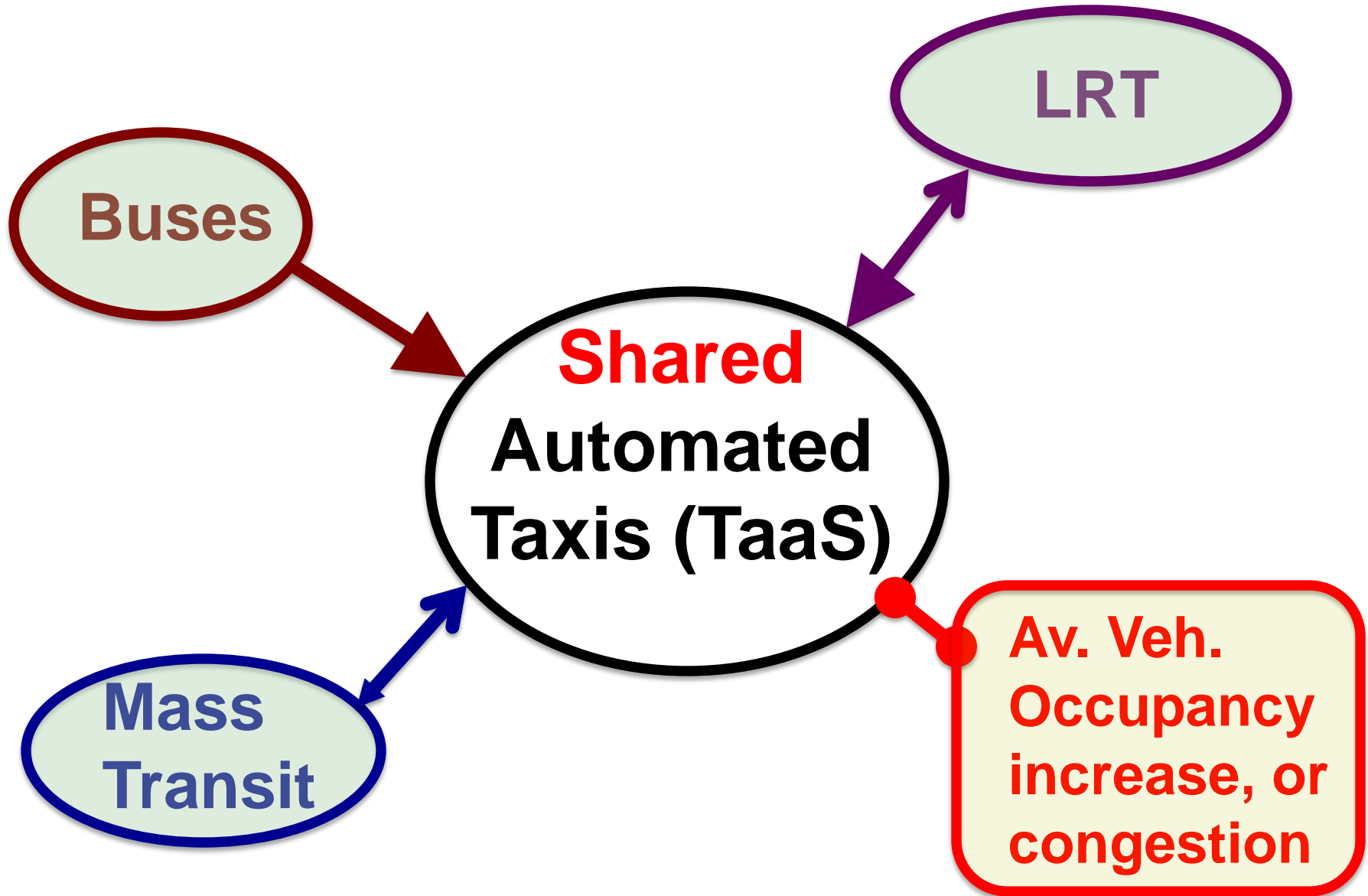
**Car Share**

**P2P**

# TaaS: Compelling Business Case



# TaaS: Modal Shift – Fixed to Flexible



The background of the slide is a collage of numerous stacks of US dollar bills, primarily \$100 bills, arranged in a grid-like pattern. The bills are slightly offset and layered, creating a sense of depth and abundance. The text is overlaid on the right side of the image.

# TaaS Benefits

**Shift from private ownership to 'mobility-on-demand' TaaS model:**


- **save 40% transp. spend**
- **be safer**
- **be more sustainable**
- **be more env. friendly**



# Ripple Effects Everywhere

**Just like Car 1.0 ...**





# Ripple Effects Everywhere

Autonomous  
vehicles  
will change  
*how and where*  
we  
*live and and work*

# Fundamental Changes

**Do plans and forecasts 15 years out allow for:**

- **Sprawl**
- **Densification**
- **Move from ownership to TaaS**
  - **One AV replaces 2 to 13 private vehicles**
  - **Leveraged market penetration**

# Not in future plans

- Transportation
- Municipal
- Parking
- Transit
- Fleet replacement
- Trucking
- Rail
- Government depts.



...and no standards or guidelines

# Autonomous Friendly Corridors (AFCs)



Truck costs ↓40%, use ↑40%

- Central North America Trade Corridor Association (CNATCA)
- Roadway designed for autonomous trucks
- Air corridor - drones
- Mexico to Canada
- **Opportunities for West Coast AFC**
- Start planning now (especially border crossings)

# Autonomous Vehicle Zones (AVZs)



Concept drawing of Landsdown Park in Ottawa. Copyright/Courtesy OSEG, Barry Hobin and Richard Brisban Architects, Canon Design and General Motors for the EN-V pods

*LA Mayor, Eric Garcetti, wants LA to be the first major city with a 'driverless car neighbourhood'*

- **Remove human drivers = Maximum Benefits ASAP**
- **Improve quality of life ranking in all categories**
- **Promote walkability and active transportation**
- **Attracts investment and businesses = faster growth**
- **Being discussed in LA, Singapore, Helsinki**

## **New social norms, behaviours, business models**

**Transportation plans should consider possibility of:**

- **More efficient road network, less congestion**
- **Impact on proposed major infrastructure = due diligence NOW**
- **Impact on short haul flights & rail**
- **Retailers/services come to you**
- **Freight logistics revolutionized**
- **Border Crossings – start NOW**

# Opportunities and challenges

## UPSIDE

- Huge benefits
- Transformational
- Paradigm shift
- New business models





# Opportunities and challenges

## **DOWNSIDE**

- **Formidable**
- **Job displacement**
- **Privacy**
- **Security**
- **Liability**
- **DISRUPTIVE**

# Let's plan now

- **Good policies**
- **Regulations**
- **Due diligence**
- **Maximize benefits**
- **Mitigate downsides**



**Autonomous vehicles are coming soon**

**Let's get ready!**

**It's better to be over-prepared than to  
allow unnecessary socio-economic  
collateral damage.**





**‘Taxi!’** - Let's prepare for the new paradigm

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