

# Planning for Future Mobility at New York State's MPOs

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# What Is Future Mobility?

The changing face of personal and freight movement

- **A**utomated
- **C**onnected
- **E**lectric
- **S**hared



# What Is Future Mobility?

- Some applications are not so new:
  - Shared: TNC
  - Shared: Micromobility (bike, scooter)
  - Shared: Car share
  - Shared: E-commerce
  - Electric: EV cars, light trucks



# What Is Future Mobility?

MOBILITY as a SERVICE (MaaS) or MOBILITY on DEMAND (MOD)

- Purchasing individual trips to meet personal travel needs



Transit



TNC



Bikeshare



Carshare




Scooter

# What is Future Mobility?

- Some applications are in testing, but not yet here
  - AV cars, trucks
  - Connected vehicle applications
  - Drone delivery
  - EV heavy trucks





The dynamic evolution of mobility is disrupting the way we do transportation planning.



# What Do We Know: Synthesis of Current Research

Florida DOT asked RSG to discover and synthesize research findings about future mobility

## RESEARCH NOTES

- Focused on planning context, not vehicle technology
- Includes academic research, not reporting in the popular press
- Includes a review of more than 100 papers published through late 2018



# Research Framework

## Transportation Technology Issues

- Impact on travel demand
- Impact on VMT
- Impact on safety
- Public infrastructure requirements
- Impact on mode share

## Societal Issues

- Social equity & accessibility
- Impact on land use
  - Residential location
  - Business location
  - Parking
  - Urban streets
- Commerce and goods movement



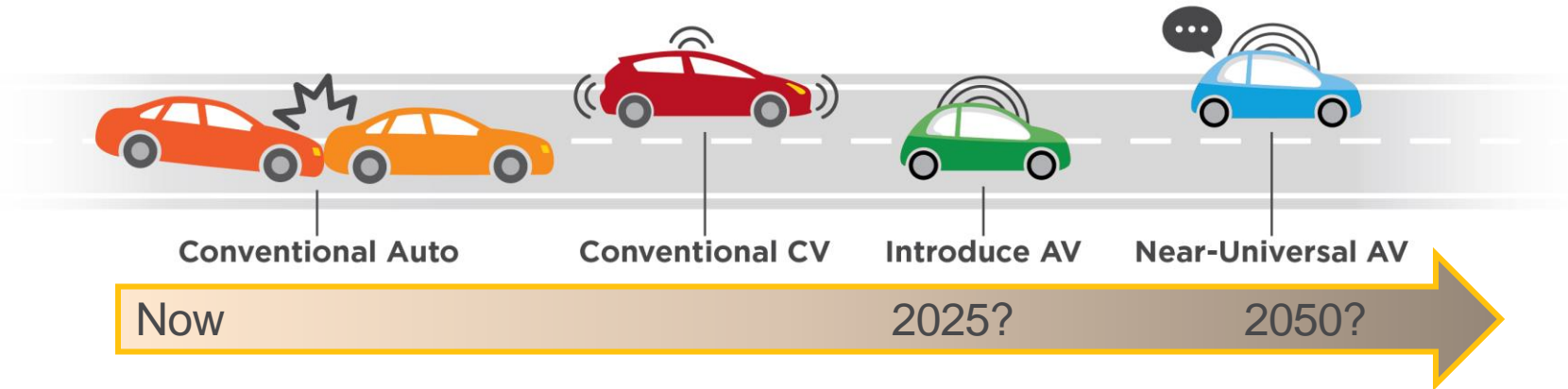




**FINDINGS:**

## **Overarching Issues**

# Overarching Issue: Adoption Timeline



- CV adoption is a near-future opportunity, pending in part on final guidance from NHTSA on communication protocol
- AV may move from testing to use within ten years
- Challenge: Decades of mixed traffic operation

# Overarching Issue: AV Ownership

- Personally owned AVs and Shared AVs have very different impacts
- Will this be left to the marketplace, or is there an incentive to regulate?
- Initial deployment most likely to be shared fleets

The effort to build fully autonomous vehicles by 2021 is a main pillar of Ford Smart Mobility: our plan to be a leader in autonomy, connectivity, mobility, customer experience and analytics. The vehicle will operate without a steering wheel, gas pedal or brake pedal within geo-fenced areas as part of a ride sharing or ride hailing experience. Our goal is to launch self-driving commercial vehicles at scale by 2021



# Overarching Issue: Policy/Regulatory Approach

- Private sector mobility providers are getting in front of local and state governments
- Early focus on regulating AV testing, not future public operation
- Broad range of policy incentives and disincentives can be considered
- Example: NACTO “Guidelines for the Regulation and Management of Shared Active Transportation”



# Institutional Landscape of Future Mobility

- Private Sector: Vehicle manufacturers, technology companies, TNCs and other mobility providers
- New Entrants: Electric utilities, healthcare, insurance
- Public Sector roles:
  - Federal: Address national issues – vehicle design, communications, interstate commerce
  - State: Regulate vehicle operations/licensing, state highway system, insurance
  - Local: Regulate use of public rights-of-way, land use
- MPO role: cooperative forum to bring parties together, provide regional uniformity and collaboration with private entities





**FINDINGS:**

# **Transportation Technology Issues**

# Impact on VMT: Autonomous Vehicles

Factors that may...



## Increase VMT

- Access by non-drivers (young, old, disabled)
- PAV ownership model
- Zero-occupant vehicle trips
- Land use decisions that increase trip length
- Growth of e-commerce
- Reduced use of traditional transit services

## Decrease VMT



- SAV ownership model
- Redefining transit to include more shared-mobility options
- Mode shift to shared active transportation options



# Impact on Safety

Research suggests:

- CV may result in a **50%** crash reduction
- AV may result in a **90%** crash reduction

*Caveat: Assumes high percentage of fleet penetration*



Source: USDOT ITS JPO



# Public Infrastructure Requirements

New mobility options impact publicly funded infrastructure.

- CV will require communications infrastructure to support V2I applications
- Traffic control devices (markings, signs, signals)
- AV reduces “safety buffer” may permit redesign of urban streets while still providing for all users
- Designing for EV charging requirements



# Impact on Mode Share

Rather than focusing on the potential loss of ridership in traditional service models, [researchers] propose reexamining the role that transit can play in providing mobility in a more automated world.

Transit operators become providers of shared mobility:

- Traditional rail and bus services
- Microtransit replaces inefficient routes, provides first/last mile connections
- App-based paratransit





**FINDINGS:**

# **Societal Issues**

# Equity Concerns

“The innovative mobility options...have the potential to increase the accessibility of transportation for many Americans, including these disadvantaged populations. But they may also leave people who are already transportation-disadvantaged further behind, either because they will not be able to take advantage of these new services (*making them relatively worse off*) or because the rise of these new services could reduce some existing services (*making them absolutely worse off*).”

*National Research Council's Committee for Review of Innovative Urban Mobility Services. 2016. "Special Report 319: Between Public and Private Mobility: Examining the Rise of Technology-Enabled Transportation Services,"*



# Equity Concerns

Access to mobility services requires smartphone and bank account.

As many as 36% of low-income households do not have a smartphone (Pew Research Center), and 22% do not use a bank (Brookings Institution).

- Transit operators that do not adapt to new mobility models may have to reduce traditional services
- Persons with disabilities may have reduced access



# Impact on Land Use: Residential Location

The influence of CAV on where people live is a key question.

- People may choose exurban/rural location to take advantage of lower land/housing costs
  - Time in an AV can be productive
  - Cost of vehicle operation may be less per mile
- People may choose urban locations because of greater access to social and cultural activities and transportation options



# Impact on Land Use: Parking

- All AVs will increase demand for curb space for pick-up/drop-off
- Privately owned AVs may be sent home or to fringe lots to avoid cost of urban core parking, reducing need for urban spaces at the cost of increased VMT
- SAVs require storage and maintenance facilities, but these may be in remote locations; SAVs will be in operation for many hours/day

*Cities will need to monitor dynamic changes in parking demand and modify on-street parking ordinances and off-street parking zoning requirements accordingly.*



# Impact on Land Use: Rethinking Urban Streets

Using the available public space to accommodate all modes is not new.

- Where are bus lanes needed?
- Will cyclists feel safer with protected bike boulevards?
- Do TNC cars and delivery trucks share loading zones?
- How much space does reducing lane width free up?
- How can dockless bikes, e-bikes, scooters, and delivery 'bots be accommodated without causing conflicts in use of sidewalk space?





# Freight Movement: Long Haul

- Trucks move the majority of freight in the US
- Long-haul trucking has different needs than urban delivery
- CV: Platooning of conventional trucks saves fuel
- AV: Autonomous trucks individually or in platoon increases productivity
  - Likely need drivers for first/last mile connections



# Freight Movement: Urban Delivery

Urban goods movement:  
from tractor-trailers to parcel  
delivery trucks

- Increased opportunities for off-hours delivery
- Automation of e-commerce: delivery bots to lockers on wheels
- Increasing demand for “immediate” delivery





# Planning for Future Mobility

# Setting the Planning Stage

1. Question underlying assumptions. Future Mobility is changing the planning landscape
2. Societal issues are ever more important
3. The relationship of private and public sectors is shifting
4. Don't let uncertainty paralyze the planning process. Several trends are clear.



# How Does an MPO Plan for Future Mobility?

- The LRTP is the wrong time scale – change is too rapid to be reflected in a 20+ year plan
- MPOs and member agencies must have a platform to support strategic decisions on policies, programs, and actions



# The FUTURE MOBILITY PLAN

1. Goals and objectives: How are the adopted goals and objectives for mobility, safety, energy, air quality, and others impacted by future mobility?
2. Inventory of current conditions: Assess the status of each of the elements of ACES
3. Smart Communities: Are member municipalities pursuing Smart Community initiatives? How can ACES fit in their framework?



# The FUTURE MOBILITY PLAN

4. Linkage to PBPP: How will current and near-term ACES applications affect safety, reliability, and congestion performance?
5. Technology assessment: Review consensus research on what is likely to emerge in the next five years.
6. Policy/regulatory assessment: Inventory current policies that impact ACES elements. Fees, regulation of public rights-of-way, micromobility.



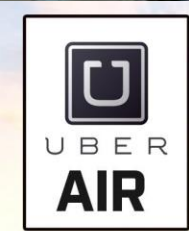
# The FUTURE MOBILITY PLAN

7. ACES forecast: Short to mid-term forecast of market penetration. Consider household travel survey, stated preference survey, strategic modeling platforms.
8. Future Mobility strategies: Strategic MPO actions that maximize near-term benefits, minimize future risks. Review TIP investment approach.
9. FMP update: Revisit the FMP every 2-3 years, determine if baseline conditions have changed





# IT'S COMING! LET'S PLAN FOR IT!





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**THANK YOU!**

