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Planning for Future Mobility: A New Approach for 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, but still evolving:
 - Shared: TNC ridehailing
 - Shared: Micromobility
 - Shared: Car share
 - Shared: E-commerce
 - Electric: EV cars, light trucks



What is Future Mobility?

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

- Individual apps (MOD) or an integrated platform (MaaS)

The dynamic evolution of mobility is disrupting not only how transport services are delivered, but also the way we do transportation planning.

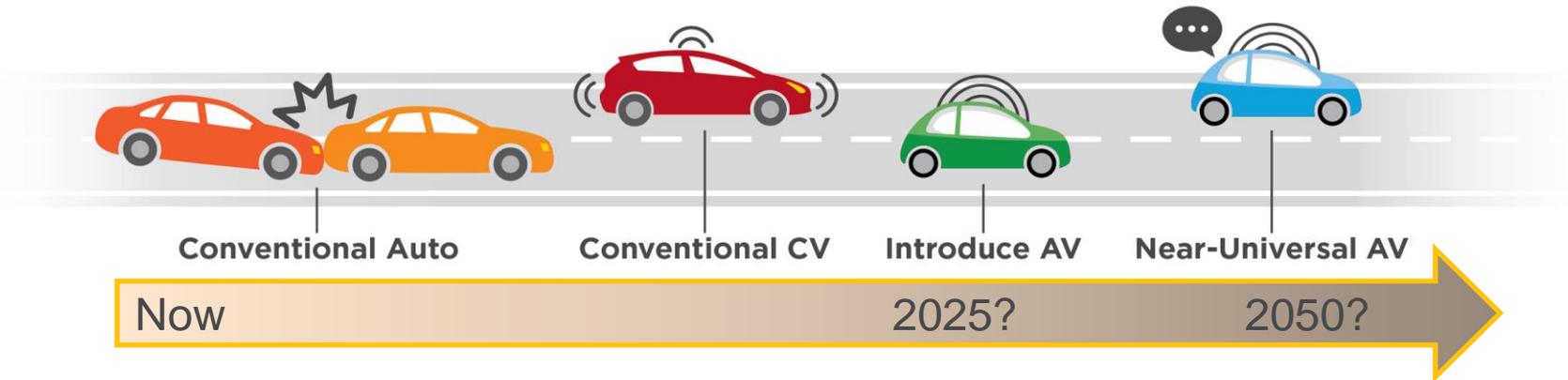




RESEARCH FINDINGS:

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... 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
- Broad range of policy incentives and disincentives can be considered
- Example: NACTO “Guidelines for the Regulation and Management of Shared Active Transportation”
- Example: NACTO “Blueprint for Autonomous Urbanism, 2nd edition”
- Example: NACO “Connected and Automated Vehicle Toolkit”



Overarching Issue: 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





RESEARCH 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.

- Designing for EV charging requirements
- 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



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





RESEARCH 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,"



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.



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 and urban fulfillment centers



Rethinking Urban Streets

Using the available public right-of-way to accommodate all modes and users is not new [think Complete Streets]

But there is growing competition for street, curb space, and sidewalk

- Will cyclists feel safer with protected cycle tracks?
- How to accommodate transit, parking, TNC pick-up/drop-off, and delivery trucks?
- How much space does reduced lane width free up?
- How can dockless bikes, e-bikes, scooters, and delivery 'bots be accommodated without causing hazards to pedestrians, including those with visual or mobility impairments?





Planning for Future Mobility

Setting the Planning Stage

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



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!

