

Autonomous Vehicles and Environmental Justice Communities

21st Annual NJDOT Research Showcase

October 23, 2019



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North Jersey Transportation Planning Authority

NJTPA Region

Bergen

Essex

Hudson

Hunterdon

Jersey City

Middlesex

Monmouth

Morris

Newark

Ocean

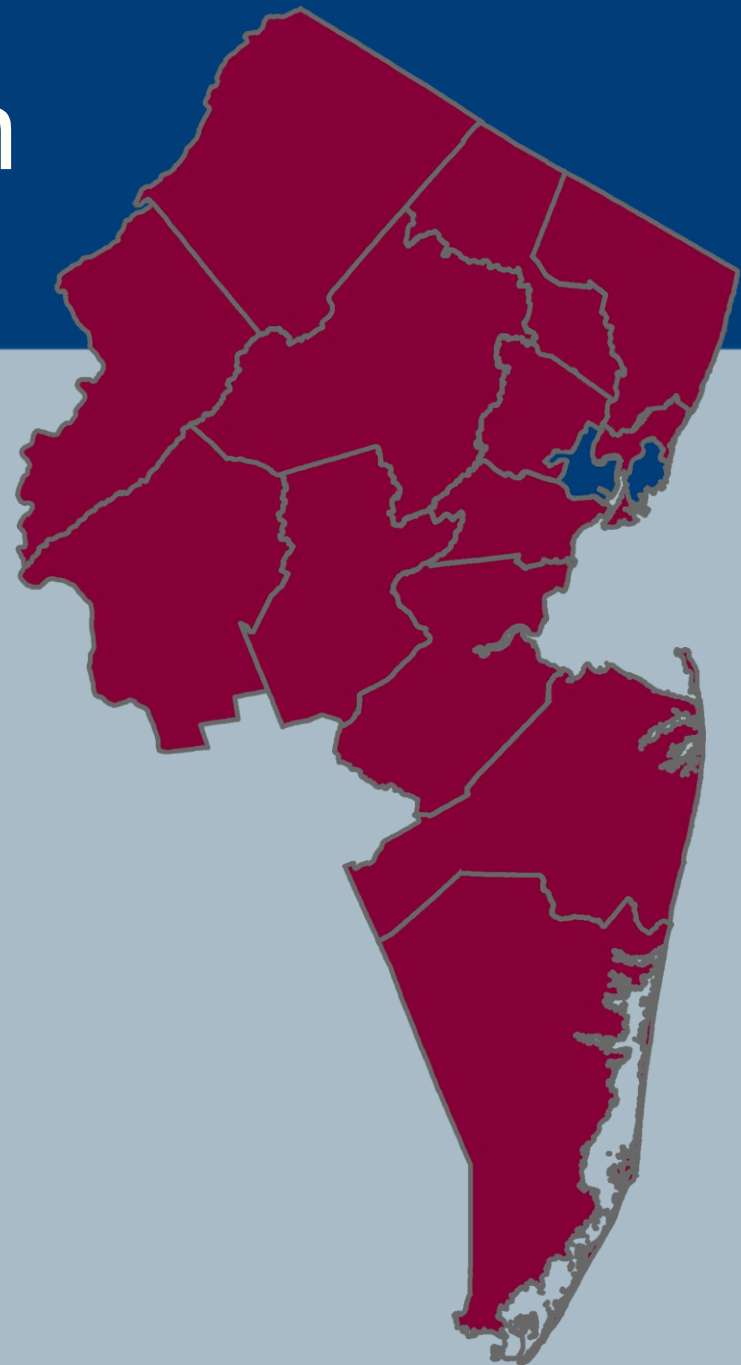
Passaic

Somerset

Sussex

Union

Warren



What Do We Know? What Could Happen?

- Currently there are many unknowns, but we need to investigate the future
- Scenario planning elements:
 - Adoption rates?
 - Land use changes?
 - VMT changes?
 - Enhanced or declining accessibility?
 - Growth or decline in transit service?
 - A shift away from fossil fuel to electric engines?
 - Cybersecurity implications?



Potential for Positive Outcomes

- Electric vehicles improve air quality as the ratio of fossil fuel vehicles to electric vehicles skews toward electric vehicles
 - If AVs are primarily electric, reduced emissions could help all, including EJ communities
- Enhanced accessibility to employment, schools, services and health care
- Vehicles with enhanced safety features result in a decrease in crashes



Positive Outcomes (cont'd)

- Improved transportation opportunities for those who are mobility challenged
- Decreased demand for parking could lead to repurposing parking lots for other uses
- AV technology might add to the capacity of roads which could negate the need for further road expansions

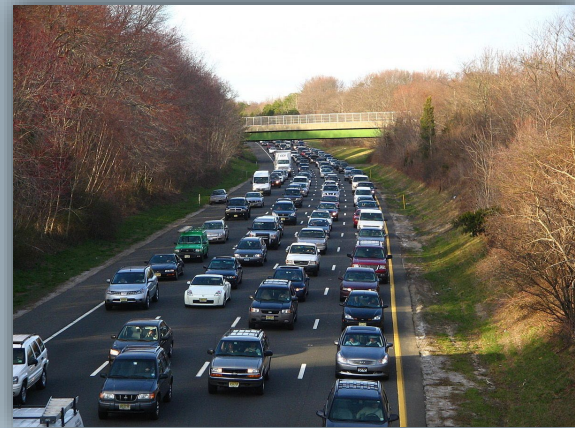


Potential for Negative Outcomes

- AVs can lead to job loss for drivers, especially in the freight industry
- AV cost may be too high for EJ communities to take advantage of AVs
- AV based on-demand car services are expensive for daily commuting
- Increased exposure to cybersecurity vulnerability
- Decrease in revenue due to a decline in taxes and tolls collected and parking and licensing fees, affecting EJ communities

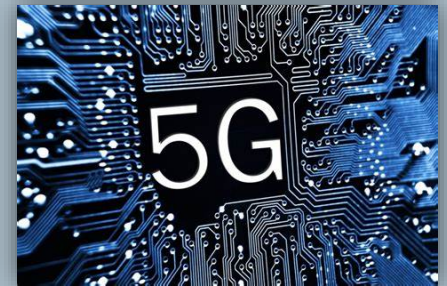
Negative Outcomes (cont'd)

- Convenience of autonomous vehicles may lead to a decrease in transit usage and suburban sprawl
- Convenience can lead to an over-reliance on vehicles resulting in a decrease in walking and biking, which impacts health



Planning Makes a Difference

- Planning can guide the development of AV deployment so that it benefits all
- Infrastructure needs to be in place in all communities
 - Connected vehicle technology (*dedicated short-range communication*)
 - Electric charging stations
 - High speed wireless networks (5G)
 - Cybersecurity focus to harden infrastructure
- Encourage vehicle sharing and active transportation
 - Implementing interconnections with transit (e.g., first-last mile)
 - Maintaining priority for Complete Streets, including pedestrians/bicycles
 - Substantially reducing parking requirements



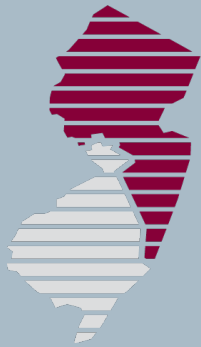
Planning Makes a Difference (cont'd)

- Affordability: Encouraging shared fleets over private AV ownership.
- Planning ensures air quality improves for all people in the region
- Planning creates policies focusing on personal safety
- High transit usage, walking and biking, and the reduction in suburban sprawl are planning priorities
- Planning can guide the affordability to mobility's future
- Planning can prioritize infrastructure improvements
- Planning looks beyond the vehicle and infrastructure toward the health and well-being of communities



Thank You!

Defining the Vision. Shaping the Future.



NJTPA

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