The Role of Transit in an Automated Future
Planning for Uncertainty

Lorna Parkins, AICP
Planning for Uncertain Times
How are Communities Planning for CAV?

Bloomberg and the Aspen Institute reached out to 38 cities who are actively working on CAV strategies and found that:

- Last mile transit is the “low-hanging fruit” (right)
- Lack of funds is seen as the biggest barrier to municipal CAV efforts

Source: Bloomberg.org
Technology Opportunities

- 1,065 Rankings for eight categories
- 57 Comments

*Respondents could select 3 items*
Technology Concerns

- 1,042 Rankings for eight categories
- 33 Comments

Respondents could select 3 items
Investment Priorities

- 6,102 Total Rankings
- 573 Comments
- Emerging technologies, mobility on demand, and autonomous shuttles all ranked outside the top 10
How do we plan for uncertainty?

- Identify trends and drivers
- Work through scenarios
- Identify risks and opportunities
- Manage risks, maximize opportunities
- Monitor results
Preparing for Uncertainty: Scenario Planning
Scenario Planning for Uncertain Times
Scenario Planning Approaches

Normative scenarios envision what SHOULD happen?

EXPLORATORY scenarios ask what COULD happen?

→ Discerning preferences, articulating values, shaping vision, strategizing preferred outcomes

→ Discovering opportunities, identifying risks, shaping tactics, optimizing chances of success

What SHOULD Happen?

How should we grow?

How should we invest?

What COULD Happen?

What if we grow much faster or slower?

How might new technologies change the game?
FHWA Scenario Planning Guidance

Stay tuned for new publications on “NextGen” Exploratory Scenario Planning...
Start with Drivers

DRIVERS
(What drives change globally)

- DEMOGRAPHIC
- ECONOMIC
- TECHNOLOGICAL
- ENVIRONMENTAL

TRANSPORTATION OUTCOMES
(How global change can affect transportation)

- DEMAND/BEHAVIOR
- SUPPLY / DELIVERY
- OPERATIONS / PERFORMANCE
- SYSTEM / USER COSTS

Impact on Transportation

Uncertainty

low

high

low

high

1 2 3 4
Assessing Drivers

Example of Public Input Received on Technology Drivers

Y-Axis – Impact on Transportation

X-Axis – Degree of Uncertainty
Chain of Logic from Inputs to Outputs

Driver
- Research, data analysis, extract data from models

Behavior
- Research, expert input, public input

Impact
- Research, data analysis, apply models
Potential Scenario Planning Outputs

**Person Travel**
- Person Trips
- Person Miles
- Mode Mix

**Freight Movement**
- Freight Trips
- Ton Miles
- Mode Mix

**All Travel**
- Recurring Congestion
- Vehicle Miles
- Non-Recurring Congestion

**Costs**
- User Costs
- System Costs
Linking Land Use and Transportation

The VTrans2040 Placetypes reflect areas with noticeable differences in travel behavior as it relates to land use patterns. Each place type varies by mode split and VMT per capita.

Two Key Criteria to Define Placetypes

1. People + Jobs Per Acre (Density)
2. Transit Accessibility

V1 – Rural
V2 – Low-Density Suburban
V3 – Small Town/Suburban
V4 – Multimodal Suburban
V5 – High Density Suburban
V6 – Multimodal Urban
Linking Land Use and Transportation - Example

V2V connectivity, I-95 Corridor Coalition

[1] [2] Information above was inspired by public input
Scenario Overview

High Growth Industrial
- Less Urban
- Higher VMT Assumptions

High Growth High Tech
- More Urban
- More Multimodal

Moderate Growth
- Older Demographics
- Walkable Places

Reduced Growth
- Federal Spending Reduced
- Slower adoption of technology

Industrial Renaissance

Techtopia

Silver Age

General Slowdown
Key Findings:

How can we prepare for the future?

Anticipate Increased Demand
- Automated and on-demand vehicles will unleash growth in travel demand
- Foreseeable changes in travel behavior with connected and automated vehicles (CAV) will increase travel demand
- Tech. innovations in the economy as well as transportation will spur growth in freight traffic

Technology Will Enhance System Performance
- Safety improvements will reduce congestion from incidents
- Information will improve efficient use of the whole system
- Vehicles will become safer, smaller, and able to travel closer together

Timing is Key – Balancing these two sides of the technology future is critical

Design is also Key – Walkable and multimodal places have the most balanced outcomes
Takeaways by Placetype

V1 – Rural
Recurring congestion on two-lane rural roads

V2 – Low-Density Suburban
More VMT on local streets and collectors

V3 – Small Town/Suburban

V4 – Multimodal Suburban

V5 – High Density Suburban
More trips in high density suburban/urban areas

V6 – Multimodal Urban

V7 – High Density Urban

Operational Improvements
Innovative intersection design, dedicated CAV lanes on highways

Demand Management
*ITS, carpools, vanpools park & ride, transit, and peak travel restrictions

Complete Streets
w/ flexible route transit

Complete Streets
w/ integrated, full-spectrum transit
Risks Specific to Transit

- Mobility-on-demand could threaten transit viability
- Mobility-on-demand pricing could have equity implications
- Decoupling transit and land use planning could affect urban form, with additional consequences
- Rising transportation demand could cause additional congestion (and pollution)
- Local streets and other two-lane roads may have challenges accommodating higher demand
Opportunities

- Coordination of transportation, land use and community design can establish the roles of transit and mobility on demand to meet local objectives.
- Early adoption of CAV technology in transit can support more efficient, cost effective and accessible public transportation.
- Funding to support transit can be bolstered by partnerships with private sector entities on sharing trip-making data generated from CAVs, Smart Corridors, etc.
It’s all Related

Sustainability

Environmental

Social

Economic
Thank You!

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